INTEGRATED HUMAN HEALTH RISK ASSESSMENT
FOR
ANNISTON PCB SITE OPERABLE UNIT 4
ANNISTON, ALABAMA

Prepared for:

U.S. Environmental Protection Agency
Region 4
Atlanta, Georgia

Contract No. EP-S4-08-03

August 2013

Prepared by:

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ASSOCIATES, INC.
MANAGING THE VISION™
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INTEGRATED HUMAN HEALTH RISK ASSESSMENT

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Remedial Action Contract II Lite
Region IV
Contract No. EP-S4-08-03
Task Order 001

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Acronyms and Abbreviations

ABS	dermal absorption factor
ADD	average daily dose
ADEM	Alabama Department of Environmental Management
AF	adherence factor
ALT	Alabama Land Trust
AT	averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
BW	body weight
CA	characterization area
CalEPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm^2	square centimeter
COPC	contaminant of potential concern
CSF	cancer slope factor
CSM	conceptual site model
CTE	central tendency exposure
ED	exposure duration
EF	exposure frequency
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EU	exposure unit
FI	fraction ingested
FOD	frequency of detection
ft	foot
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
IAF	intestinal absorption factor
IRIS	Integrated Risk Information System
IRS	soil ingestion rate
JMWA	J.M. Waller and Associates
KM	Kaplan-Meier
kg	kilogram
LADD	lifetime average daily dose
mg/cm^2	milligram per square centimeter
mg/kg	milligram per kilogram
ND	non-detect
OU	Operable Unit
PAR	Pathways Analysis Report
PAH	polycyclic aromatic hydrocarbon

Acronyms and Abbreviations

PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxin
PCDF	polychlorinated dibenzofuran
PPRTV	Provisional Peer-Reviewed Toxicity Value
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RfC	reference concentration
RfD	reference dose
RFI/CS	RCRA Facility Investigation/Confirmatory Sampling
RME	reasonable maximum exposure
RSL	Regional Screening Level
SA	exposed skin surface area
SQL	sample quantitation limit
SVOC	semi-volatile organic compound
TEF	toxic equivalency factor
TEQ	toxic equivalency
tPCBs	total PCBs
UCL	upper-confidence limit
URF	unit risk factor
VOC	volatile organic compound
WHO	World Health Organization

EXECUTIVE SUMMARY

ES 1. INTRODUCTION

J.M. Waller and Associates, Inc. (JMWA) was tasked by the U.S. Environmental Protection Agency (EPA) to perform a human health risk assessment (HHRA) for Operable Unit 4 (OU-4) of the Anniston Polychlorinated Biphenyl (PCB) Site (the Site) located in Anniston, Alabama. The Anniston PCB Site refers to the area (including all OUs) where hazardous substances, including PCBs (associated with releases or discharges as a result of the operations and waste disposal from the Anniston Plant by Solutia Inc. (Solutia), Monsanto Chemical Company (Monsanto), and their predecessors), have come to be located.

OU-4, the focus of this HHRA, is within Calhoun and Talladega Counties and encompasses the length of Choccolocco Creek and its floodplain from the confluence with Snow Creek, including the backwater area and upstream on Snow Creek to Highway 78, to Lake Logan Martin. The OU-4 HHRA was developed to characterize the potential exposure and risks associated with consumption of fish from Choccolocco Creek, contact with the floodplain soil, and consumption of agricultural products originating in the floodplain. The HHRA was based on the receptors and exposure parameters presented in the Final Pathways Analysis Report (PAR) (JMWA, 2009), and considers the current and future-use exposure pathways by which individuals may be exposed to contaminated media. Exposure pathways were identified based on consideration of the sources and locations of contaminants, the likely environmental fate of the contaminants, and the location and activities of the potentially exposed populations.

During the preparation of this HHRA, the JMWA team reviewed the available information pertaining to the Site from other OUs (i.e., OU-1/OU-2 and OU-3), as well as available information on land and water uses along the Choccolocco Creek. Members of the JMWA team also visited the OU-4 area on multiple occasions, floated major reaches of the Choccolocco Creek, and researched current and future land use trends in the area. This information was applied to the development of the PAR and the exposure assessment presented in this document.

ES 1.1 CONTAMINANTS OF POTENTIAL CONCERN

A contaminant of potential concern (COPC) screening was performed for the OU-4 HHRA. The primary contaminant released from the site was PCBs. Total PCBs (tPCBs, represented as the sum of Aroclors), PCB dioxin-like congener TEQ, 2,3,7,8-TCDD TEQ, and mercury were identified as COPCs for the fish ingestion pathway. Total PCBs and mercury were identified as the primary COPCs in the floodplain soil. In addition, other analytes including dioxins/furans, carcinogenic PAHs, and metals except mercury were identified as COPCs in the floodplain soil, and were evaluated separately due to limited data. As noted in the PAR (JMWA, 2009), only tPCBs were evaluated in agricultural products.

ES 1.2 LAND AND WATER USE

The HHRA evaluated potential risks associated with the current and reasonably anticipated future uses within OU-4.

ES 1.2.1. Current Uses

The OU-4 area includes numerous properties owned by private and public entities that are used for residential, recreational, agricultural, and commercial/industrial purposes. The floodplain area is approximately 6,000 acres. The percentage of each land use in the floodplain is as follows (Arcadis, 2009):

- Agriculture – 40 %
- Forest – 38 %
- Scrub – 10 %
- Commercial/Industrial – 7 %
- Residential – 3 %
- Park – 1 %
- Waste-water treatment plant– 1 %

According to local Agricultural Extension and Farm Service Agents, there are no dairy cattle and only limited row crop production in Calhoun County in the floodplain other than crops such as corn and soybeans that can be used as silage for cattle (Butler, 2009 and West, 2009). Further downstream in Talladega County, row crops are more common (wheat, cotton, corn and soybeans) and acreage in row crops exceeds acreage used to raise beef cattle (Browning, 2009 and Jurriaans, 2009). As with Calhoun County, there are no current dairy farms with grazing cows in the floodplain in Talladega County. Agricultural Extension and Farm Service agents for both counties indicated that locally raised beef consumption is not typical and that the common practice is to sell livestock to local and/or regional buyers (Butler, 2009, Browning, 2009, Jurriaans, 2009, and West, 2009). Small backyard gardens and chicken raising operations are present at many locations in both counties, although it is unclear whether that practice occurs in the floodplain areas.

Fishing is possible anywhere along the Choccolocco Creek, but it is likely that the majority of the fishing occurs at and around bridge crossings where access is easy. Local landowners are also known to fish along the Creek in areas with private access. In addition, given the nature, size, and accessibility of the Creek, it is likely that fishing is more common at locations further downstream than at locations closer to the confluence with Snow Creek.

There has been a fish consumption advisory on the Creek since 1994, recommending no consumption due to PCBs. For the purposes of the evaluation of fish consumption presented in this HHRA, it was assumed that the Creek did not have a fish advisory in place, and that consumption of locally caught fish was not influenced by this advisory. This approach is consistent with EPA policy (EPA, 1990).

Recreational use and exposure to floodplain soil is possible throughout the floodplain area. The forested areas provide attractive habitat for various recreational activities including hiking, fishing, canoeing, wading, etc. It is also likely that local adolescents frequent specific areas along the Creek. Hunting is common at many areas as demonstrated by the deer hunting blinds interspersed throughout the floodplain.

There are a number of residential areas within and adjacent to the floodplain. The commercial/industrial areas within the floodplain area consist of the airport property and two waste-water treatment plants. Natural gas pipelines, a railroad, and aboveground utility lines transect the floodplain at various locations.

ES 1.2.2. Future Uses

The Alabama Land Trust (ALT) is in the process of developing a Conservation Corridor for Choccolocco Creek. The Conservation Corridor is a conservation easement that limits the development and use of the floodplain within certain distances from the Creek bank. There are three distinct zones within the corridor:

- Zone 1 – Creek bank to 100 feet into the floodplain;
- Zone 2 – the area between 100 feet and 200 feet from the edge of the Creek into the floodplain; and
- Zone 3 – the area from 200 feet to a maximum distance of 1,000 feet into the floodplain.

Use restrictions vary depending on the property owner and stipulations in the agreement but, in general, Zone 1 has the largest number of use restrictions followed by Zone 2 and Zone 3. The level of restriction is important because the land use and potential exposure to COPCs within the Conservation Corridor will be different from exposure outside of the Corridor. The status of the Conservation Corridor as of April 2012 has been used in this HHRA.

In areas where the Conservation Corridor does not specifically limit certain uses, it was assumed that future land use will be the same as current land use with no restrictions in place. Future residential development in floodplain areas will need to be monitored to ensure residential exposures do not exceed applicable risk benchmarks.

ES 1.3 EXPOSURE UNITS

OU-4 includes over 35 miles of the Choccolocco Creek floodplain. Solutia developed characterization areas (CAs) that were based on topographical and hydraulic features to evaluate the nature and extent of contamination. Nine CAs were identified along the length of OU-4 and each of the nine CAs were subdivided into two to four subareas based on the side of the Creek (north or south) and amount of 100-year floodplain. Given the size and land use variability of these CAs, EPA determined that additional segmentation of CAs into exposure units (EUs) was necessary to adequately characterize exposure.

The approach for developing EUs was to identify as large an area as reasonable within a CA considering both property ownership and land use. In some cases, entire CAs were identified as an EU, in other cases two or more EUs were identified within a CA. At several areas, the EUs encompassed portions of two CAs. Twenty-five EUs were identified for the direct contact risk assessment in OU-4, and an additional eight EUs were identified to focus on agricultural exposure through direct contact.

ES 2. EXPOSURE ASSESSMENT APPROACH

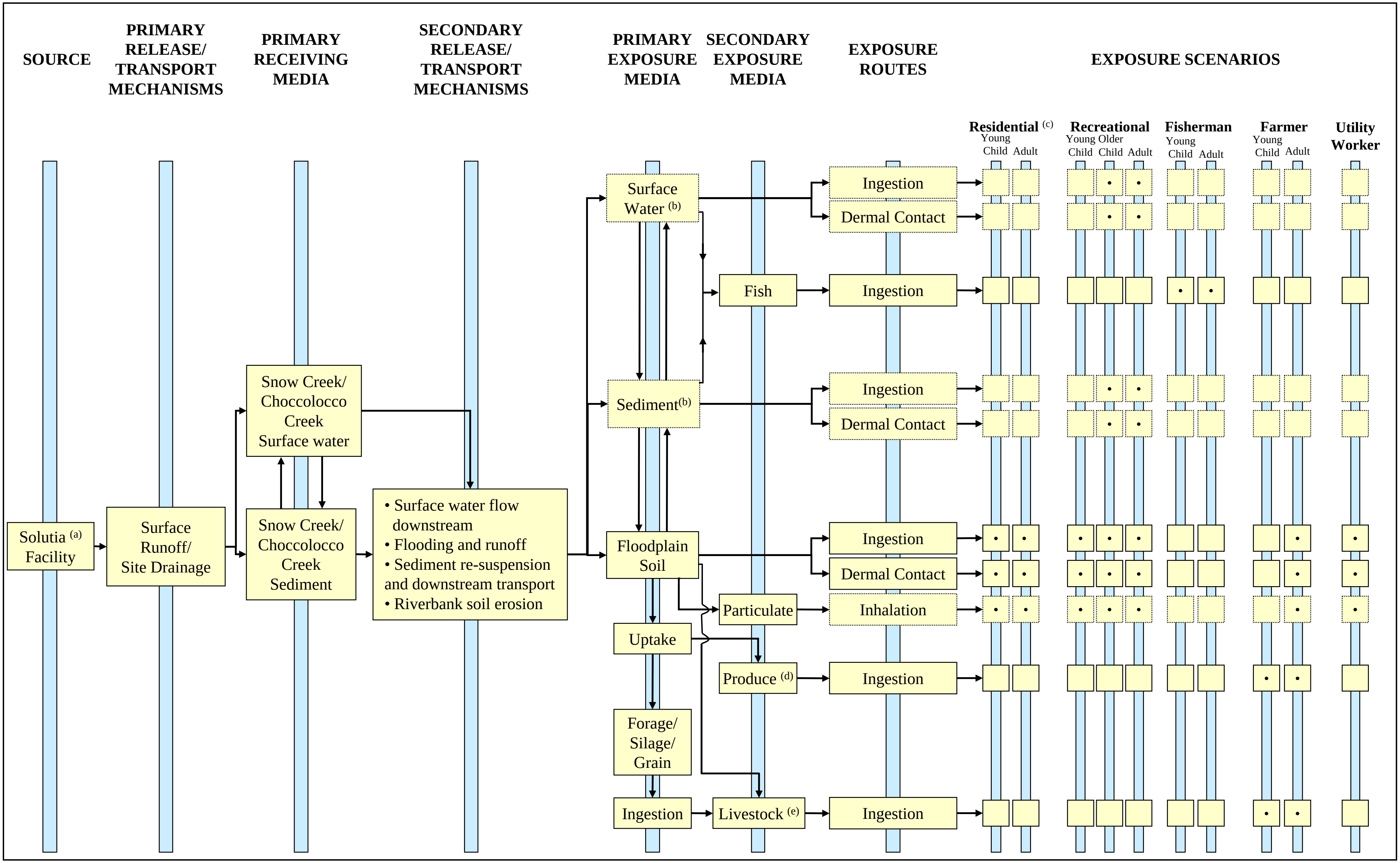
ES 2.1 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) for human exposure has been developed to describe the contaminant sources, the release and transport mechanisms, the receiving media, the exposure media, the exposure routes, and the potentially exposed populations. The primary objective of the CSM is to identify complete and incomplete exposure pathways. A complete exposure pathway has all of the above-listed components, whereas an incomplete pathway is missing one or more. Figure ES-1 illustrates the CSM that was developed for OU-4.

ES 2.1.1. Source of Contamination, Release and Transport Mechanisms, and Receiving Media

The release and transport processes affecting the fate of PCBs within the Choccolocco Creek and its floodplain are interrelated and complex. The following potential contaminant transport pathways have been identified:

- Surface runoff and drainage from the Solutia facility in Anniston.
- Erosion and downstream transport of contaminated bank soil.
- Sediment contamination via runoff carrying suspended soil particles contaminated with PCBs.
- Floodplain soil contamination via deposition of suspended river sediment during out-of-bank flood events.
- Erosion of contaminated floodplain soil (surface and subsurface) during flood events, and subsequent deposition as contaminated river sediment.
- Bioaccumulation and cycling of PCBs within the terrestrial and aquatic food chains exposed to contaminated soil, surface water, and sediment.



Exposure Media	Exposure Routes	Residential (c) Young Child	Residential (c) Adult	Recreational Young Child	Recreational Older Child	Recreational Adult	Fisherman Young Child	Fisherman Adult	Farmer Young Child	Farmer Adult	Utility Worker
Surface Water (b)	Ingestion				•	•					
	Dermal Contact				•	•					
Fish	Ingestion						•	•			
Sediment(b)	Ingestion				•	•					
	Dermal Contact				•	•					
Floodplain Soil	Ingestion	•	•	•	•	•				•	•
	Dermal Contact	•	•	•	•	•				•	•
Particulate	Inhalation	•	•	•	•	•				•	•
Produce (d)	Ingestion								•	•	
Livestock (e)	Ingestion								•	•	

● = Complete exposure pathway

☐ = Incomplete exposure pathway

⬚ = Not evaluated quantitatively.

(a) = Includes all facility-related sources.

(b) = Contaminant concentrations in surface water are qualitatively evaluated by comparing to risk-based concentrations. Consistent with EPA Region 4 guidance, sediment under water will not be evaluated.

(c) = PCB concentrations (95% UCLs) at residentially used areas were compared to the 1 mg/kg remedial level. Areas with concentrations greater than 1 mg/kg will be evaluated further in future remedial decisions.

(d) = Includes aboveground and belowground produce.

(e) = Includes beef (current and future) and dairy products, chickens, and eggs (future only).

Human Health Risk Assessment
Anniston PCB Site
OU-4

Figure ES-1

Conceptual Site Model

December 2009

ES 2.1.2. Primary Exposure Media

Based on the review of the current and potential future land and water uses, the following primary exposure media are of potential concern in OU-4:

- Fish.
- Soil (floodplain).
- Sediment.
- Surface water.
- Agricultural products.

ES 2.2 IDENTIFICATION OF EXPOSURE PATHWAYS

The length of the Choccolocco Creek within OU-4, and the size and multiple uses of the floodplain, pose a significant challenge to effectively assessing human health risk from direct and indirect exposures for both current and potential future uses. Children and/or adults could be exposed to soil while engaging in a variety of activities around their homes or recreational activities at other locations. Adults could be exposed to soil while working in agricultural, landscaping, utility maintenance, and other occupations. Sediment and surface water exposure could occur along the riverbanks or in shallow areas of the Creek during recreational activities such as fishing, canoeing, swimming, or wading. Anglers, farmers, and hunters and their families could be exposed to Site contaminants from consumption of fish caught from the Creek, or crops and other agricultural products raised in the floodplain.

For OU-4, three potentially significant modes of contact between contaminated media and humans were evaluated:

- Consumption of fish.
- Direct contact with contaminated media (soil, sediment, and surface water).
- Consumption of agricultural products (e.g., vegetables, beef) grown or raised in the floodplain.

The following sections describe the possible receptors and exposure pathways considering both current and potential future land and water uses.

ES 2.2.1. Fish Consumption

The potential exposure and risks from consuming recreationally-caught fish from the Choccolocco Creek were evaluated. Choccolocco Creek in the vicinity of Lake Logan Martin appears to be a favorite feeder stream of anglers (Phillips, 2009; BamaBassFishing, 2009). The Choccolocco is suggested as a stream to consider for float fishing (ADCNR, 2009), that is good for bank fishing (ADCNR, 2008), and is mentioned in the book *America's Best Bass Fishing* (Price, 2000). There has been a fish consumption advisory on the Creek since 1994, recommending no consumption due to PCBs. However, the presence of PCBs in fish collected from Choccolocco Creek coupled with the popularity of these areas for fishing suggest that ingestion of recreationally caught fish may be a route of potential exposure to PCBs, even with the fish consumption advisory. In addition, EPA guidance requires that risk assessments evaluate fish ingestion under the assumption that no fish consumption prohibition exists (EPA, 1990).

The analytical data used to determine the fish exposure point concentrations were derived from samples that represent fish species, fish length, and fish tissue (fillet) that are most typically caught and consumed by the local population.

ES 2.2.2. Direct Contact Exposure

The direct contact portion of the HHRA evaluates the potential exposure to floodplain soil, sediment, and surface water.

Floodplain Soil Exposure

For soil contact, the following exposure pathways were considered: incidental soil ingestion, dermal contact and absorption, and inhalation of particulates.

Sediment and Surface Water Exposure

Consistent with EPA Region 4 guidance, direct contact with sediment in underwater areas was not quantitatively evaluated in this HHRA because of infrequent contact by human receptors. Based on the low levels observed in the available surface water data, the surface water contact exposure scenarios were also eliminated from consideration.

ES 2.2.3. Agricultural Products Consumption

The potential exposure and risk to an individual who grows vegetables and crops and raises livestock in the floodplain was evaluated. In contrast to the direct contact and fish consumption portions of the HHRA that were based on empirical soil and fish tissue data, the presence of PCBs in the agricultural products consumed by humans was estimated using models. The models predict the degree to which PCBs measured in the floodplain soil could be transferred to plants (root uptake) and animals (incidental soil ingestion and ingesting feed grown in the floodplain). Model input values were based on site-specific information (when available), including regional farm management practices.

ES 2.3 CHARACTERIZATION OF POTENTIALLY EXPOSED POPULATIONS

ES 2.3.1. Recreational Anglers

Recreational anglers, including a young child and an adult, were assumed to ingest fish caught in the Choccolocco Creek. The fish tissue data collected by Solutia in 2008 were used to develop contaminant concentrations in fish, and fish consumption estimates were developed from applicable studies of similar waterbodies.

ES 2.3.2. Residents

Potential residential structures with property in the floodplain that could be affected by PCB contamination were identified by Solutia (Arcadis, 2010). Following the identification of the structures, representatives from EPA and Solutia performed a field investigation to delineate the residentially used areas surrounding the structure that could be contacted by residents. These residentially used areas are planned for evaluation as part of the Non-Time Critical Removal Action agreement between Solutia and EPA and, as a result, are not in the scope of this HHRA. Future residential development in floodplain areas will need to be monitored to ensure residential exposures do not exceed applicable risk benchmarks.

ES 2.3.3. Recreational Users

Recreational exposure, including bank fishing, hunting, hiking, etc., is the predominant exposure occurring in the floodplain. It is expected that some degree of recreational exposure occurs at the majority of the EUs (commercial and industrial areas excluded). The presence of the

Conservation Corridor would not affect the potential contact with floodplain from recreational exposure. That is, the use restrictions in Conservation Corridor agreements do not affect individuals that use the floodplain for non-intrusive recreational activities such hiking and walking.

ES 2.3.4. Utility Workers

Utility workers could be exposed to contaminants in surface and subsurface soil via incidental ingestion and dermal contact during activities such as easement or equipment maintenance, and/or the installation of new equipment such as utility poles or piping. This potential exposure was assumed to be intensive for a short duration. A construction worker scenario was not considered to be a complete exposure scenario because flooding events preclude major construction in the floodplain.

ES 2.3.5. Farmers

The farmer (adult) was assumed to intensively contact the floodplain surface soil (incidental ingestion and dermal contact and absorption) when tilling the soil and planting and harvesting crops. In addition, the farmer, including a young child, was assumed to consume agricultural products (e.g., vegetables and beef) raised in the floodplain.

ES 3. RESULTS

The OU-4 HHRA characterized the potential exposure and risks associated with consumption of fish from Choccolocco Creek, direct contact with the floodplain soil, and consumption of agricultural products originating (i.e., grown or raised) in the Choccolocco Creek floodplain. EPA uses a target cancer risk range of 1E-06 to 1E-04 (or 1 in a million to 1 in 10,000) to determine whether a site needs to be remediated. Cancer risks below 1E-06 are typically assumed to be *de minimus* and would require no action to remediate or mitigate human health risks. Risks within this range are usually considered acceptable, but specific decisions are made on a site-specific basis by EPA. Risks that exceed 1E-04 usually require remediation and/or mitigation; however, no “bright line” has been established at the upper end of the risk range, and decisions on the need to remediate or mitigate are made on a site-specific basis.

For noncancer hazards, EPA uses a target HI of one. Where HIs exceed this target number, remediation may be warranted; however, similar to the cancer evaluation, risk management decisions are made on a site-specific basis.

The estimates of cancer risk and noncancer HIs summarized below are compared to these benchmarks as a way of providing a perspective on the estimated risk levels for the various stakeholders. Figures ES-2 and ES-3 are visual presentations of tPCB reasonable maximum exposure (RME) cancer risk and hazard indices for each exposure pathway.

ES 3.1 FISH INGESTION

The RME risk levels from fish ingestion exceeded the EPA cancer risk range (1E-06 to 1E-04). The RME cancer risks from tPCBs were greater than 1E-04 for all locations and fish groupings. The RME cancer risks from PCB dioxin-like congener TEQ and 2,3,7,8-TCDD TEQ were less than the risks from tPCBs and were within or above the EPA risk range. As would be expected, the central tendency exposure (CTE) cancer risks were less than the RME and were within or slightly above the EPA risk range.

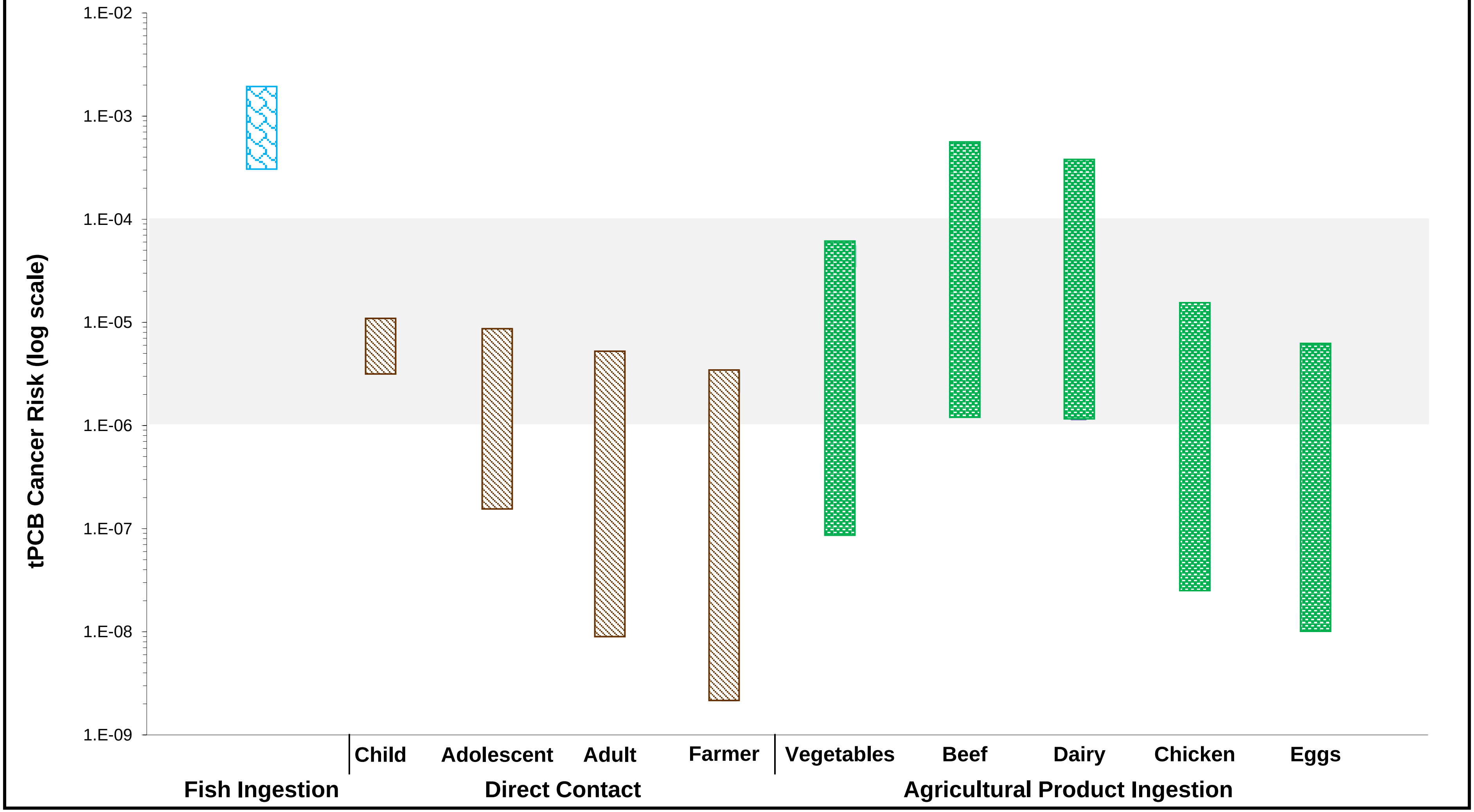
Total PCBs resulted in RME HQs greater than 10 for every location. The RME HQs from mercury, PCB dioxin-like congener TEQ, and 2,3,7,8-TCDD TEQ were greater than one at a number of locations but were less than the tPCBs HQs. The CTE HQs were less than the RME, but with HQs for tPCBs still greater than one.

ES 3.2 DIRECT CONTACT EXPOSURE

The results of the direct contact risk calculations are presented below, with the primary COPCs exposure unit (EU) risks presented first, and the risks associated with the other COPCs presented separately because the amount of analytical data available for the other COPCs were limited and EU-specific risks could not be calculated.

ES 3.2.1. Exposure Unit Risks

Primary COPCs for direct contact exposure were tPCBs, PCB dioxin-like congener TEQ, and mercury. Based on the available toxicity characteristics, cancer risks were estimated for tPCBs and PCB dioxin-like congener TEQs only; whereas HQs were estimated for all three primary COPCs.



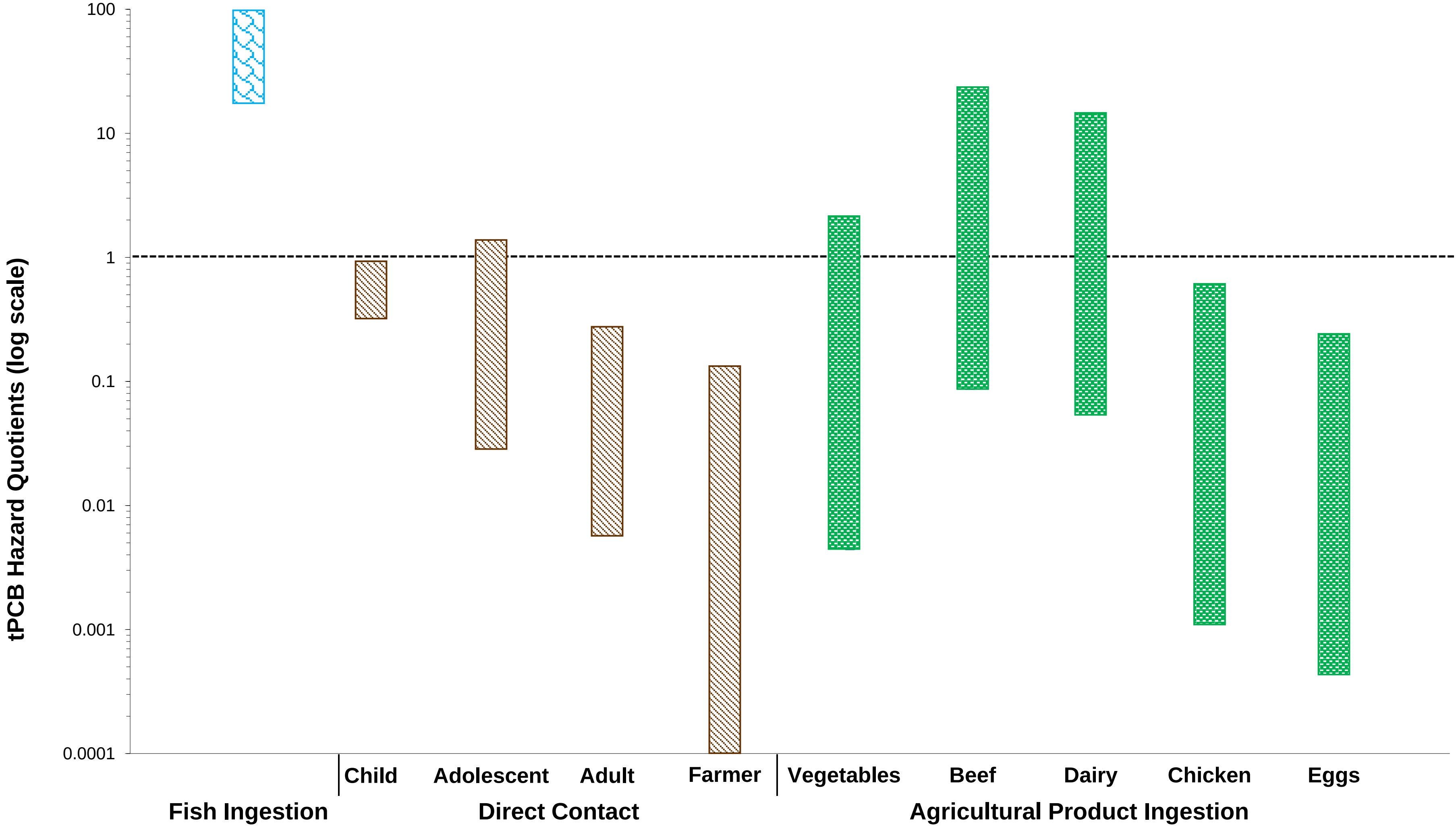
Legend:

Notes:

1) Fish ingestion risk range represents minimum to maximum RME tPCB risks including all fish species and location groupings.
2) Direct contact risk range represents minimum to maximum RME tPCB risks including all EUs at which the receptor was evaluated. Note the adult receptor range includes both recreational and worker exposure.
3) Agricultural product ingestion risk ranges represent the minimum to maximum RME tPCB risks calculated for 1 to 40 mg/kg in soil and 10 to 100% floodplain soil exposure, as appropriate for scenario.
4) Gray shaded area represents EPA's cancer risk range (1E-06 to 1E-04).

FIGURE ES-2

tPCB RME Cancer Risks
ANNISTON PCB SITE – OU4



Legend:

Notes:

1) Fish ingestion HQ range represents minimum to maximum RME tPCB HQs including all fish species and location groupings.
2) Direct contact HQ ranges represent minimum to maximum RME tPCB HQs including all EUs at which the receptor was evaluated. Note the adult receptor range includes both recreational and worker exposure.
3) Agricultural product ingestion HQ ranges represent the minimum to maximum RME tPCB HQs calculated for 1 to 40 mg/kg in soil and 10 to 100% floodplain soil exposure, as appropriate for scenario.
4) Horizontal dashed line represents EPA’s noncancer benchmark of one.

FIGURE ES-3

tPCB RME Hazard Quotients
ANNISTON PCB SITE – OU4

The recreational and farmer cancer risks based on both tPCBs and PCB dioxin-like congener TEQ were either within or less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 at all applicable EUs. The utility worker cancer risks for both tPCBs and PCB dioxin-like congener TEQ were less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 at all EUs.

With very minor exceptions, the noncancer recreational exposure HIs were less than one for all three primary COPCs. The utility worker and farmer HIs were also less than one at all direct contact EUs.

Recreational user, utility worker, and farmer CTE cancer risks were less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 and the noncancer benchmark of one at all direct contact and agricultural EUs.

ES 3.2.2. Site-Wide Risks for Other COPCs

Due to limited data, site-wide risks from direct contact with floodplain soil were estimated separately for 2,3,7,8-TCDD TEQ, carcinogenic PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene), aluminum, arsenic, chromium, cobalt, iron, and manganese. To provide an estimate of all potential recreational exposures, risks were estimated assuming high contact and low contact recreational exposure.

The RME site-wide total cancer risks were within the EPA acceptable risk range for the other COPCs. The noncancer HIs were well below the noncancer benchmark of one. All CTE cancer risks and noncancer HIs were below these benchmarks.

ES 3.3 AGRICULTURAL PRODUCT CONSUMPTION

Current and potential future food production activities by the farmer who grows vegetables and crops and raises livestock in the floodplain were evaluated. Risks were not calculated for specific areas, properties, or agricultural practices because to do so would only provide information for a single set of scenarios and would not be useful if/when conditions and farming practices change in the future. Rather, the agricultural exposure component of the HHRA evaluates where agricultural use is occurring (or could occur) and uses representative tPCB concentrations to generate risk matrices incorporating multiple potential farming practices and home grown ingestion scenarios.

Total PCB soil concentrations were set at 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg to reflect the range of concentrations in floodplain areas used for agricultural purposes. Fraction ingested (FI) assumptions, which account for the varying livestock raising practices in the floodplain, were set at 10%; 25%; 50%; 75%; or 100%. The 100% FI value was not evaluated for beef and dairy cattle because the sizes of the agricultural areas within the EUs would likely preclude cattle from obtaining 100% of their diet from within the floodplain.

ES 3.3.1. Chicken, Egg and Vegetable Ingestion

Even at the worst case assumptions of the amount of these products ingested and tPCB soil concentrations, the calculated cancer risks were within EPA's risk range, and with very minor exceptions, the HQs were below one. Based on the conservative assumptions included in the HHRA, the potential for any unacceptable risks from consuming chicken, eggs, and vegetables is minimal.

ES 3.3.2. Beef and Dairy Ingestion

Cancer risks and hazard quotients for beef and dairy ingestion ranged from below to above the EPA benchmarks, depending upon the soil concentration and fraction ingested scenario considered. In general, at the highest tPCB soil concentrations (e.g., 20 and 40 mg/kg) and/or the highest FIs (e.g., 25 and 50%), estimated risks were greater than the cancer and noncancer benchmarks.

Although there is currently no evidence to suggest that the consumption of locally raised beef is currently occurring in OU-4, based on these results, consuming beef on a regular basis over a long period of time from cattle grazed in areas with the highest soil tPCB concentrations found in agricultural areas (e.g., 20 and 40 mg/kg) would be a potential health concern for local farmers.

Although there are no known dairy farms within the OU-4 floodplain, if that situation changed in the future, the potential exists for risks to local dairy farmers and their families should they consume milk on a regular basis over a long period of time from dairy cows located at the highest tPCB concentration areas of the floodplain.

ES 3.4 INTEGRATED RISK

The focus of the HHRA was on evaluating potential risk from the three primary exposure pathways on an individual basis. This approach was taken because at a site like OU-4, which covers more than 35 Creek miles and 6,000 acres of floodplain, there are too many potential combinations of exposures through multiple pathways to quantify total integrated risks in any meaningful manner.

The most important consideration in understanding the risk profile for OU-4 is that fish ingestion risk is the most important exposure pathway. Beef and dairy consumption could be important if an individual raised a significant amount of beef or dairy products for personal consumption in the most highly contaminated areas of the floodplain for a long period of time. It is also important to note that the agricultural product risks are based on estimated, not measured concentrations, which are expected to be conservative in nature. Other than this worst case agricultural pathway assumption, combining the direct contact and/or agricultural product risks to risks associated with fish ingestion would have little impact on the overall results. Conversely, if an individual heeded the fish consumption advisory, and did not consume fish from the Choccolocco Creek on a regular basis, most farming and recreational practices would not be likely to result in unacceptable risks.

ES 4. CONCLUSIONS

As with any HHRA, there are numerous sources of uncertainty associated with an attempt to estimate current and future potential human health risks. Detailed discussions of the most important aspects of uncertainty in the OU-4 HHRA were presented in the individual sections of the report. In general, the uncertainties inherent in the risk assessment process tend to overestimate risk to protect public health. This is also true of this HHRA in that the majority of the assumptions used would tend to overestimate risk to human health. Overall, the following conclusions can be drawn:

- Fish consumption poses a potentially significant human health risk to those who regularly consume fish from the Choccolocco Creek at or near the levels assumed in the HHRA.

- Risks from consuming locally raised beef and dairy products from the highest concentration areas also could pose health risks if current practices changed and a significant portion of an individual's beef and/or dairy intake was locally raised and consumed over a long period of time. More typical exposures to these products, even if originating from the floodplain, are unlikely to cause any unacceptable health risks.

- Risks from other agricultural product consumption, including chicken, eggs, and vegetables are not likely to be a concern under any current or future circumstances.

- Risks from direct contact exposures are not likely to be of any concern even at the highest concentration areas.

1 INTRODUCTION

J.M. Waller and Associates, Inc. (JMWA) was tasked by the U.S. Environmental Protection Agency (EPA) to perform a human health risk assessment (HHRA) for Operable Unit 4 (OU-4) of the Anniston Polychlorinated Biphenyl (PCB) Site (the Site). This risk assessment was performed under Contract No. EP-S4-08-03, Task Order No. 01. The Anniston PCB Site refers to the area (including all OUs) where hazardous substances, including PCBs (associated with releases or discharges as a result of the operations and waste disposal from the Anniston Plant by Solutia Inc. (Solutia), Monsanto Chemical Company (Monsanto), and their predecessors), have come to be located. The former PCB plant property is owned by Solutia. Solutia's Anniston plant encompasses approximately 70 acres of land and is located about 1 mile west of downtown Anniston, Alabama (see Figure 1-1).

To facilitate the investigation, the Anniston PCB Site has been divided into OUs:

- OU-1/OU-2: consists of both residential and non-residential properties near the former Monsanto Company's Anniston PCB manufacturing plant (the plant) and downstream, following Snow Creek to Highway 78.
- OU-3: consists of the plant, the South Landfill, and the West End Landfill.
- OU-4: encompasses the length of Choccolocco Creek and its floodplain from the confluence with Snow Creek, including the backwater area and upstream on Snow Creek to Highway 78, to Lake Logan Martin.

This OU-4 HHRA report is the next step in EPA's evaluation of the potential risks to human health associated with the Anniston PCB Site. HHRAs have been produced for OU-1/2 and OU-3.

The OU-4 HHRA was developed to characterize the potential exposure and risks associated with consumption of fish from Choccolocco Creek, contact with the floodplain soil, and consumption of agricultural products originating in the floodplain. The HHRA was based on the receptors and exposure parameters presented in the Final Pathways Analysis Report (PAR) (JMWA, 2009), and considers the current and future-use exposure pathways by which individuals may be exposed to contaminated media. Exposure pathways were identified based on consideration of the sources and locations of contaminants, the likely environmental fate of the contaminants, and the location and activities of the potentially exposed populations.

1.1 OVERVIEW OF THE HHRA

During the preparation of this HHRA, the JMWA team reviewed the available information pertaining to the Site from other OUs (i.e., OU-1/OU-2 and OU-3), as well as available information on land and water uses along the Choccolocco Creek. Members of the JMWA team also visited the OU-4 area on multiple occasions, floated major portions of the Choccolocco Creek, and researched current and future land use trends in the area. This information was applied to the development of the PAR and the exposure assessment presented in this document.

The HHRA was developed in accordance with EPA Guidance set forth in the following documents:

- Specific risk assessment guidance from EPA Region 4.
- *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part A* (EPA, 1989).
- *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors* (EPA, 1991).
- *Guidelines for Exposure Assessment* (EPA, 1992).
- *Exposure Factors Handbook 2011 Edition (Final)* (EPA, 2011).
- *Exposure Factors Handbook*, Volumes I, II, and III (EPA, 1997).
- *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins* (EPA, 2000).
- *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part D* (EPA, 2001).
- *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (EPA, 2002).
- *CSFII Analysis of Food Intake Distributions* (EPA, 2003).
- *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment. Final* (EPA, 2004).
- *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA, 2005).
- *Child-Specific Exposure Factors Handbook* (EPA, 2008).
- *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part F, Supplemental Guidance for Inhalation Risk Assessment. Final* (EPA, 2009).

1.2 SITE BACKGROUND AND SETTING

1.2.1 Site Location and Description

The Anniston PCB Site is located in parts of Calhoun and Talladega Counties in the north-central part of Alabama (Figure 1-1). The Anniston PCB Site consists of the entire geographic area in Anniston and its environs where PCBs have come to be located. EPA believes that the vast majority of the PCBs in the Anniston area were released from the operations of the former Monsanto Company's Anniston PCB manufacturing plant. Today the former PCB plant property is owned by Solutia and currently produces para-nitrophenol and polyphenyl compounds.

EPA has been performing investigations in Anniston under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to evaluate the threat to public health, welfare, or the environment posed by hazardous substances, including PCBs. As previously mentioned, the Anniston PCB Site has been divided into OUs to facilitate the investigation and cleanup. Figure 1-2 presents the locations of the Anniston PCB Site OUs.

1.2.2 Site History

A thorough discussion of the manufacturing history at the Solutia facility was included in the Resource Conservation and Recovery Act (RCRA) Facility Investigation/Confirmatory Sampling (RFI/CS) Work Plan for the Anniston, Alabama, Facility (Golder, 1997). As reported therein, manufacturing operations began in 1917 with the production of ferro-manganese, ferro-silicon, ferro-phosphorous compounds, and phosphoric acid (added later) by the Southern Manganese Corporation. In 1927, the production of organic chemicals began with the introduction of biphenyl, which remains a major product today. In 1930, Southern Manganese Corporation became Swann Chemical Company (Swann); in May 1935, Monsanto Chemical Company purchased Swann. PCBs were produced at the plant from 1929 until 1971. In 1997, Monsanto Company formed Solutia and transferred ownership for certain chemical divisions. Solutia currently produces para-nitrophenol and polyphenyl compounds at the Anniston plant.

During its operational history, the plant disposed of hazardous and nonhazardous waste at various areas, including the West End landfill and the South landfill, which are located adjacent to the plant. The West End Landfill encompasses six acres of land, located on the southwestern side of the plant. The West End Landfill was used for disposal of the plant's wastes from the mid-1930s until approximately 1960. In 1960, Monsanto Company began disposing of wastes at the South Landfill. Disposal of wastes at the South Landfill ceased around 1988. During the time that the West End Landfill and the South Landfill were used to dispose of wastes, there was a potential for hazardous substances, including PCBs, to be released from the landfills via soils and sediments being transported in surface water leaving the property. In addition, during the time that PCBs were manufactured by Monsanto Company at its Anniston plant, an aqueous stream flowing to a discharge point (currently identified as DSN0001) on the property contained PCBs. Discharge from that discharge point flowed to a ditch, the waters of which flowed toward Snow Creek. Sampling by EPA, Solutia, Alabama Department of Environmental Management (ADEM), and other parties has indicated that sediments in drainage ditches leading away from the plant, Snow Creek, and Choccolocco Creek, as well as sedimentary material in the floodplains of these waterways, contain varying levels of PCBs and other contaminants.

The Site has been evaluated extensively since 1980. Environmental work has included a combination of investigative and remedial efforts conducted pursuant to a variety of environmental permits. The environmental response efforts under RCRA included the general areas of the Solutia manufacturing plant, which were termed the "On-Site" area, and areas downstream of the Solutia manufacturing plant, termed the "Off-Site" area.

1.2.3 Land and Water Use

The HHRA evaluated potential risks associated with the current and reasonably anticipated future uses within OU-4.

1.2.3.1 Current Uses

The OU-4 area includes numerous properties owned by private and public entities that are used for residential, recreational, agricultural, and commercial/industrial purposes. The floodplain area is approximately 6,000 acres. The percentage of each land use in the floodplain is as follows (Arcadis, 2009):

- Agriculture – 40 %
- Forest – 38 %
- Scrub – 10 %

- Commercial/Industrial – 7 %
- Residential – 3 %
- Park – 1 %
- Waste-water treatment plant– 1 %

According to local Agricultural Extension and Farm Service Agents, there are no dairy cattle and only limited row crop production in Calhoun County in the floodplain other than crops such as corn and soybeans that can be used as silage for cattle (Butler, 2009 and West, 2009). Further downstream in Talladega County, row crops are more common (wheat, cotton, corn and soybeans) and acreage in row crops exceeds acreage used to raise beef cattle (Browning, 2009 and Jurriaans, 2009). As with Calhoun County, there are no current dairy farms with grazing cows in the floodplain in Talladega County. Agricultural Extension and Farm Service agents for both counties indicated that locally raised beef consumption is not typical and that the common practice is to sell livestock to local and/or regional buyers (Butler, 2009, Browning, 2009, Jurriaans, 2009, and West, 2009). Small backyard gardens and chicken raising operations are present at many locations in both counties, although it is unclear whether that practice occurs in the floodplain areas.

Fishing is possible anywhere along the Choccolocco Creek, but it is likely that the majority of the fishing occurs at and around bridge crossings where access is easy. Local landowners are also known to fish along the creek in areas with private access. In addition, given the nature, size, and accessibility of the Creek, it is likely that fishing is more common at locations further downstream than at locations closer to the confluence with Snow Creek.

For the purposes of the evaluation of fish consumption, it was assumed that the Creek did not have a fish advisory in place, and that consumption of locally caught fish was not influenced by this prohibition. This approach is consistent with EPA policy (EPA, 1990). Solutia developed and implemented a creel study that provided some useful information on current fishing habits along the Creek (i.e., fishing frequency with the fish consumption advisory in place).

Recreational use and exposure is possible throughout the floodplain area. The forested areas provide attractive habitat for various recreational activities including hiking, fishing, canoeing, wading, etc. It is also likely that local adolescents frequent specific areas along the creek.

Hunting is common at many areas as demonstrated by the deer hunting blinds interspersed throughout the floodplain.

There are a number of residential areas within and adjacent to the floodplain. The commercial/industrial areas consist of the airport property and two waste-water treatment plants. Natural gas pipelines, a railroad, and aboveground utility lines transect the floodplain at various locations.

1.2.3.2 Future Uses

The Alabama Land Trust (ALT) is in the process of developing a Conservation Corridor for Choccolocco Creek. The Conservation Corridor is a conservation easement that limits the development and use of the floodplain within certain distances from the Creek bank. There are three distinct zones within the corridor:

- Zone 1 – creek bank to 100 feet into the floodplain;
- Zone 2 – the area between 100 feet and 200 feet from the edge of the Creek into the floodplain; and
- Zone 3 – the area from 200 feet to a maximum distance of 1,000 feet into the floodplain.

Use restrictions vary depending on the property owner and stipulations in the agreement but, in general, Zone 1 has the largest number of use restrictions followed by Zone 2 and Zone 3. The level of restriction is important information because the land use and potential exposure to contaminants of potential concern (COPCs) within the Conservation Corridor will be different from exposure outside of the Corridor. The status of the Conservation Corridor within OU-4 is presented in detail in Section 7.1. Although changes are likely to be made to various properties within OU-4 as additional agreements are developed, the status as of April 2012 has been used in this HHRA.

In areas where the Conservation Corridor does not specifically limit certain uses, it was assumed that future land use will be the same as current land use with no restrictions in place. Future residential development in floodplain areas will need to be monitored to ensure residential exposures do not exceed applicable risk benchmarks.

1.3 EXPOSURE UNITS

OU-4 includes over 35 miles of the Choccolocco Creek floodplain. Solutia developed characterization areas (CAs) that were based on topographical and hydraulic features to evaluate the nature and extent of contamination. Nine CAs were identified along the length of OU-4 and each of the nine CAs were subdivided into two to four subareas based on the side of the Creek (north or south) and amount of 100-year floodplain. Given the size and land use variability of these CAs, EPA determined that additional segmentation of CAs was necessary to adequately characterize exposure. Therefore, the existing CAs were further divided into exposure units (EUs) to develop a meaningful exposure assessment.

The approach for developing EUs was to identify as large an area as reasonable within a CA considering both property ownership and land use. In some cases, entire CAs were identified as an EU, in other cases two or more EUs were identified within a CA. At several areas, the EUs encompassed portions of two CAs. Twenty-five EUs were identified for the direct contact risk assessment in OU-4, and an additional eight EUs were identified to focus on agricultural exposure through direct contact. Figure 1-3 presents the locations of the direct-contact EUs.

After identifying the EUs, the next step was to evaluate the level of contamination and to eliminate those EUs with minimal PCB concentrations. EUs were eliminated from consideration in the HHRA when tPCB concentrations (either maximum detected concentration or 95% upper confidence limit of the mean [UCL]) were less than 1 mg/kg tPCBs. EUs were further refined for agricultural exposures. Identification of agricultural exposure units (Ag-EUs) is discussed in Section 7.2.

1.4 STRUCTURE OF THE HHRA REPORT

The HHRA evaluates three primary routes of exposure: fish ingestion, contact with floodplain soil, and ingestion of agricultural products from the floodplain. It was necessary to structure the HHRA so that these exposure routes could be evaluated separately and then integrated at the end. This HHRA report is comprised of 9 sections, as follows:

- Section 1 – Introduction – Provides an overview of the report, site background and setting, and the approach to the HHRA.

- Section 2 – Exposure Pathways and Strategy for the HHRA – Presents a conceptual site model and identifies the exposure pathways and the potentially exposed receptors.

- Section 3 – Hazard Identification – Describes the available data and the evaluation and reduction for use in the HHRA, as well as the contaminant of potential concern screening.

- Section 4 – Toxicity Assessment – Presents the toxicity values used to determine hazard quotients/cancer risks.

- Section 5 – Risks from Fish Consumption – Presents information specific to the consumption of fish and the associated risk results.

- Section 6 – Risks from Direct Contact Exposure – Presents information specific to direct contact with soil and the associated risk results.

- Section 7 – Risks from Agricultural Products Consumption – Presents information specific to the consumption of agricultural products and the associated risk results.

- Section 8 – Integrated Risk Characterization – Discusses the potential risks from exposure to multiple pathways.

- Section 9 – Results – Discusses the general findings of the HHRA.

Note that references are contained within each section of the report. In addition, as this report integrates three risk assessments, segments with significant commonalities among them were discussed in upfront sections to reduce redundancies.

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2 EXPOSURE PATHWAYS AND STRATEGY FOR THE HUMAN HEALTH RISK ASSESSMENT

2.1 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) for human exposure describes the contaminant sources, the release and transport mechanisms, the receiving media, the exposure media, the exposure routes, and the potentially exposed populations. The primary objective of the CSM is to identify complete and incomplete exposure pathways. A complete exposure pathway has all of the above-listed components, whereas an incomplete pathway is missing one or more. Figure 2-1 illustrates the CSM that was developed for OU-4. Each component of the conceptual site model is examined in detail in the following sections.

2.1.1 Source of Contamination, Release and Transport Mechanisms, and Receiving Media

PCBs released in the past from the Solutia facility have been transported primarily in storm water in Snow Creek and ultimately discharged into the Choccolocco Creek. The release and transport processes affecting the fate of PCBs within the Choccolocco Creek and its floodplain are interrelated and complex. The following potential contaminant transport pathways have been identified:

- Surface runoff and drainage from the Solutia facility in Anniston.
- Erosion and downstream transport of contaminated bank soil.
- Sediment contamination via runoff carrying suspended soil particles contaminated with PCBs.
- Floodplain soil contamination via deposition of suspended river sediment during out-of-bank flood events.
- Erosion of contaminated floodplain soil (surface and subsurface) during flood events, and subsequent deposition as contaminated river sediment.
- Bioaccumulation and cycling of PCBs within the terrestrial and aquatic food chains exposed to contaminated soil, surface water, and sediment.

2.1.2 Primary Exposure Media

Based on the review of the current and potential future land and water uses, the following primary exposure media are of potential concern in OU-4:

- Fish.
- Soil (floodplain).
- Sediment.
- Surface water.
- Agricultural products.

2.2 IDENTIFICATION OF EXPOSURE PATHWAYS

The length of the Choccolocco Creek within OU-4, and the size and multiple uses of the floodplain, poses a significant challenge to effectively assessing human health risk from direct and indirect exposures for both current and potential future uses. Children and/or adults could be exposed to soil while engaging in a variety of activities around their homes or recreational activities at other locations. Adults could be exposed to soil while working in agricultural, landscaping, utility maintenance, and other occupations. Sediment and surface water exposure could occur along the riverbanks or in shallow areas of the Creek during recreational activities such as fishing, canoeing, swimming, or wading. Anglers, farmers, and hunters and their families could be exposed to Site contaminants from consumption of fish caught from the Creek, or crops and other agricultural products raised in the floodplain.

The potential exposure associated with consuming wild game (e.g., deer and turkey) taken from the floodplain was considered for inclusion in the HHRA. However, the exposure from consuming game is expected to be negligible given the home ranges of the game, the limited contact time with the affected media in OU-4, and the subsequent lack of contaminant uptake and transfer into the tissues of targeted game species. In addition, the conservative assumptions related to human consumption of beef and chicken raised in the floodplain that were quantified in the HHRA exceed any reasonable estimate of the potential consumption of wild game from the same areas. Therefore, consumption of game was not quantitatively evaluated in the HHRA.

For OU-4, three potentially significant modes of contact between contaminated media and humans were evaluated:

- Consumption of fish.
- Direct contact with contaminated media (soil, sediment, and surface water).
- Consumption of agricultural products (e.g., vegetables, beef) from the floodplain.

The following sections describe the possible receptors and exposure pathways considering both current and potential future land and water uses. An identified pathway does not imply that exposures are actually occurring, only that the potential exists for the pathway to be complete.

2.2.1 Fish Consumption

The potential exposure and risks from consuming recreationally-caught fish from the Choccolocco Creek were evaluated. Choccolocco Creek in the vicinity of Lake Logan Martin appears to be a favorite feeder stream of anglers (Phillips, 2009; BamaBassFishing, 2009). The Choccolocco is suggested as a stream to consider for float fishing (ADCNR, 2009), that is good for bank fishing (ADCNR, 2008), and is mentioned in the book *America's Best Bass Fishing* (Price, 2000). There has been a fish consumption advisory on the Creek since 1994, recommending no consumption due to PCBs. However, the presence of PCBs in fish collected from Choccolocco Creek coupled with the popularity of these areas for fishing suggest that ingestion of recreationally caught fish may be a route of potential exposure to PCBs, even with the fish consumption advisory. In addition, EPA guidance requires that risk assessments evaluate fish ingestion under the assumption that no fish consumption advisory exists (EPA, 1990).

Studies have demonstrated that fish consumption in Alabama is an important benefit to low-income anglers and their families (Auburn, 1998); however, there is no evidence confirming that subsistence fishing or hunting are conducted in the area near the Creek. Therefore, subsistence level fish ingestion from fish caught in the Choccolocco Creek was determined to be unreasonable based on the local demographics, a lack of any evidence supporting this practice, the likely inability of portions of the Creek to support subsistence level consumption, and more attractive fishable waterbodies nearby such as Lake Logan Martin and over 100 reservoirs in the two county area. The implications associated with not evaluating this scenario are discussed in the Uncertainty Analysis (Section 5.4).

The analytical data used to determine the fish exposure point concentrations were derived from samples that represent fish species, fish length, and fish tissue (fillet) that are most typically caught and consumed by the local population.

2.2.2 Direct Contact Exposure

The direct contact portion of the HHRA evaluates the potential exposure to floodplain soil, sediment, and surface water.

2.2.2.1 Floodplain Soil Exposure

For soil contact, the following exposure pathways were considered: incidental soil ingestion, dermal contact and absorption, and inhalation of particulates. Typically, the inhalation of particulates exposure pathway results in exposure and risks that are minimal compared to the exposure and risks associated with the incidental ingestion and dermal contact and absorption exposure pathways. An analysis was performed assuming worst-case tPCB concentrations in the soil and the most conservative inhalation exposure parameters to determine if the inhalation of particulate pathway warrants further evaluation in the HHRA. This analysis showed that inhalation exposure is well below other soil related exposures and as such, it was not evaluated quantitatively in the HHRA. Appendix A presents the details of this evaluation.

2.2.2.2 Sediment and Surface Water Exposure

Consistent with EPA Region 4 guidance, direct contact with sediment in underwater areas was not quantitatively evaluated in this HHRA because of infrequent contact by human receptors. Based on the low levels observed in the available surface water data, the surface water contact exposure scenarios were also eliminated from consideration. A risk-based surface water screening evaluation supporting this decision is provided in Appendix B.

2.2.3 Agricultural Products Consumption

The potential exposure and risk to an individual who grows vegetables and crops and raises livestock in the floodplain was evaluated. In contrast to the direct contact and fish consumption portions of the HHRA that were based on empirical soil and fish tissue data, the presence of PCBs in the agricultural products consumed by humans was estimated using models. The models predict the degree to which PCBs measured in the floodplain soil could be transferred to plants (root uptake) and animals (incidental soil ingestion and ingesting feed grown in the floodplain). Model input values were based on site-specific information (when available), including regional farm management practices.

2.3 CHARACTERIZATION OF POTENTIALLY EXPOSED POPULATIONS

2.3.1 Recreational Angler

Recreational anglers, including a young child and an adult, were assumed to ingest fish caught in the Choccolocco Creek. The fish tissue data collected by Solutia in 2008 were used to develop contaminant concentrations in fish, and fish consumption estimates were developed from applicable studies of similar waterbodies (see Subsection 3.2.2).

2.3.2 Residents

Potential residential structures with property in the floodplain that could be affected by PCB contamination were identified by Solutia (Arcadis, 2010). Following the identification of the structures, representatives from EPA and Solutia performed a field investigation to delineate the residentially used areas surrounding the structure that could be contacted by residents. These residentially used areas are planned for evaluation as part of the Non-Time Critical Removal Action agreement between Solutia and EPA and, as a result, are not in the scope of this HHRA.

2.3.3 Recreational Users

Recreational exposure is the predominant exposure occurring in the floodplain. It is expected that some degree of recreational exposure occurs at the majority of the EUs (commercial and industrial areas excluded). The presence of the Conservation Corridor would not affect the potential contact with floodplain from recreational exposure. That is, the use restrictions in Conservation Corridor agreements do not affect individuals that use the floodplain for non-intrusive recreational activities such hiking and walking.

The recreational users were assumed to contact the surface soil (0 to 1 ft bgs) in the floodplain through the incidental ingestion and dermal contact and absorption exposure routes. The potential exposure associated with the recreational user population was based on a number of recreational activities that can occur within the floodplain (e.g., bank fishing, hunting, hiking, walking, etc.). Young child, adolescent, and adult receptors were evaluated depending on the EU. Adolescents (7 through 16 years) and adults were the most frequently evaluated receptors based on the nature of the area and the difficulty a young child would likely experience attempting to recreate in the floodplain area. The young child (1 through 6 years) was considered at areas with easy access to the floodplain area (near a residence).

2.3.4 Utility Workers

Utility workers could be exposed to contaminants in surface and subsurface soil (0 to 4 ft bgs) via incidental ingestion and dermal contact during activities such as easement or equipment maintenance, and/or the installation of new equipment such as utility poles or piping. This potential exposure was assumed to be intensive for a short duration. A construction worker scenario was not considered to be a complete exposure scenario because flooding events preclude major construction in the floodplain.

2.3.5 Farmers

The farmer (adult) was assumed to intensively contact the floodplain surface soil (incidental ingestion and dermal contact and absorption) when tilling the soil and planting and harvesting crops. In addition, the farmer, including a young child, was assumed to consume agricultural products (e.g., vegetables and beef) raised in the floodplain (see Section 7 – Risks from Agricultural Products Consumption).

2.3.6 Selection of Exposure Unit-Specific Exposure Scenarios

Table 2-1 presents the exposure scenarios that were evaluated at each of the direct contact EUs. A determination was made as to whether low contact or high contact recreational exposure is likely to occur at the EU. Low contact recreational exposure (adolescent and adult) was the predominant type of recreational exposure evaluated as a result of the remoteness of the floodplain areas, the limited access to the floodplain because of land ownership issues, and/or the difficult access due to vegetation and terrain. High contact recreational exposure (child, adolescent, and adult) was evaluated at the areas where access was not restricted such as near parks (i.e., Oxford Lake Park) and near residences. Figures 2-2 through 2-10 present the direct contact EUs along with the evaluated exposure scenarios. Agricultural EUs are discussed in Section 7.2.

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3 HAZARD IDENTIFICATION

The hazard identification presents the data available to assess site risks, outlines the approach used to summarize site data, and identifies contaminants of potential concern (COPCs). The following sections describe the methods that were used for data reduction, data evaluation, and selection of COPCs:

- Available Data (Section 3.1).
- Data Evaluation (Section 3.2).
- Contaminant of Potential Concern Screening (Section 3.3).

3.1 AVAILABLE DATA

The sampling and characterization activities for OU-4 were performed by Solutia and followed a phased sampling approach. The phased approach was implemented to account for the large area and complexity of the OU. Phase 1 and Phase 2 sampling (BBL, 2006 and Arcadis, 2009) constitute the majority of the data used in the HHRA. Phase 3 sampling was completed in 2012 and focused on localized areas that were identified at the conclusion of Phase 2 as needing additional sampling to satisfactorily characterize the nature and extent of PCB contamination. The phased sampling did not include Oxford Lake Park. Historical PCB data was used for the Oxford Lake Park area (the upper extent of OU-4).

3.1.1 Fish

Fish concentration data have been collected in the Choccolocco Creek dating back to approximately 1993. However, only data collected by Solutia during the Phase 2 sampling (November-December, 2008) were used in this HHRA (see Table 3-1). There were 362 fish samples collected from the Choccolocco Creek; 122 bass, 113 catfish, and 127 sunfish. All of the fish samples were analyzed for total PCBs as represented by the sum of Aroclors (tPCBs), select metals (i.e., arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel, and vanadium), and mercury. A subset (approximately 10%) of the sample locations were analyzed for PCB dioxin-like congeners (36 samples) and dioxin/furan congeners (35 samples).

3.1.2 Soil

Available soil data date back to 2000 (Oxford Lake Park data) and continue to 2011/2012. Table 3-2 presents the soil data that were collected by Solutia and used in the HHRA. There were 901 soil sample locations within the floodplain area of OU-4. Surface soil samples (0 to 1 foot below ground surface [ft bgs]) were collected at nearly every location (896). At approximately 130 locations, samples were collected between 1 and 4 ft bgs. All of the floodplain soil samples were analyzed for tPCBs. Mercury was analyzed at 666 locations. A subset of the sample locations were analyzed for PCB dioxin-like congeners (119 locations), dioxin/furan congeners (114 locations), other metals (83 locations), and other contaminants such as volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and herbicides (15 locations).

3.2 DATA EVALUATION

This section presents the approach that was followed to prepare the analytical data for use in the COPC screening process and for the calculation of risks.

3.2.1 Data Reduction

Data reduction involves the evaluation of data qualifiers and their potential use in the HHRA process and describes the treatment of duplicate and co-located samples. The following guidelines were used in developing the data sets to evaluate risk associated with OU-4:

- If an analyte was not detected in any sample from a given medium, it was not considered further for that medium.
- All “U” qualified data represent samples for which the analyte was not present or was below the sample quantitation limit (SQL) and reported as a non-detect (ND).

When field duplicate samples were collected, the following approach was used to calculate the concentrations to be evaluated in the HHRA:

- If the analyte was detected in both the original (primary) sample and the field duplicate, the maximum detected concentration was used.
- If the analyte was detected in either the primary or duplicate sample and was ND in the other sample, the detected concentration was used.

- If the analyte was ND in the primary and duplicate sample, the lower detection limit was used.

3.2.2 Fish Data Groupings

The analytical data ultimately used to determine the fish exposure point concentrations (EPCs) were derived from samples that represent fish species, fish length, and fish tissue (fillet with the skin removed) that are typically caught and consumed by the local population from Choccolocco Creek. The determination of EPCs for fish ingestion required two grouping decisions: 1) which species to group, if any; and 2) which locations to group, if any.

3.2.2.1 Species

The Solutia/Arcadis creel survey (2009) indicated that bass were the most popular food fish, and more than half of the anglers responding reported eating all of the species listed (i.e., bass, striped bass, brim, crappie, channel catfish, blue catfish, and sunfish). Table 3-3 presents a summary of the fish species commonly targeted by anglers in Alabama from the 2006 U.S. Fish and Wildlife National Survey of Fishing, Hunting and Wildlife-Associated Recreation in Alabama (DOI/DC, 2006). Largemouth bass and catfish were identified as preferred species for recreational anglers (Wright and DeVries, 2003). The data appear relatively consistent among studies.

There are several different ways to group the available fish data, including:

- By species;
- By taxonomic groups (e.g., bass, catfish, crappie, sunfish);
- By targeted species (e.g., bass, catfish, panfish); and
- Combining all species.

For this evaluation, the grouping of fish data by species considered human behavior and exposure issues. In general, there are two types of anglers: those that target specific types of fish and those that eat whatever they catch. Anglers often take different fishing approaches depending on what they are targeting. For example, fishing for catfish would entail one approach (bottom fishing) whereas fishing for panfish (or bass) would require different approaches, which could be combined within a single visit to a location. In addition, fishing for panfish is typically similar for all types of panfish, and anglers who favor this type of fish often keep whatever species is biting that day. Therefore, to cover anglers who would only tend to target and consume a particular fish type (e.g., bass) and anglers who might consume any fish they were able to catch, "targeted species" groupings were used to estimate exposure and risk, as well as a separate grouping for "all species" as follows:

- All Species;
- Targeted Species
  - Bass (i.e., largemouth and spotted);
  - Catfish; and
  - Panfish (i.e., crappie and sunfish).

3.2.2.2 Location

Fish sampling was performed at nine locations along the portion of the Choccolocco Creek under evaluation. Jackson Shoals is a unique physical feature in the Choccolocco Creek that serves as a logical separation point. The Creek below (downstream of) Jackson Shoals is influenced by the Lake Logan Martin impoundment and is slower moving. Upstream of Jackson Shoals, the Creek is characterized as free-flowing with no major impoundment areas.

	Location	**Sample Area Description**
Below Jackson Shoals	1	Highway 77
	2	Jackson Trace
Above Jackson Shoals	3	Eastaboga Road
	4	Curry Station
	5	Priebes Mill
	6	Silver Run
	7	Highway 21
	8	Friendship Road
	9	Snow Creek

These locations are up to 37 miles downstream from the confluence with Snow Creek. It is not reasonable to assume that an individual would fish all the locations given the distances, so an evaluation was performed to determine a logical grouping of sites based on both distance travelled and the need to achieve a workable sample size of each of the fish groupings. Figure 3-1 is a location map showing each of the fish sampling locations.

3.2.2.2.1 Fishing Behavior

There are significant physical differences between portions of the Creek upstream and downstream of Jackson Shoals. The two locations downstream of or below the Shoals are logically grouped as these areas of the Creek are wider, slower moving, and can be readily fished from a boat. Upstream of or above the shoals, the river is more narrow and bank fishing is the most likely scenario. Data grouping decisions in this portion of the Creek are a function of the distance between the locations and PCB concentration gradients as they apply to the need to develop supportable statistics.

The Solutia/Arcadis Creel Survey (2009) indicated that, based on data from 46 anglers, the mean distance travelled from the individual’s home to the fishing location was 12.6 miles, with most traveling 10 miles or less. When asked about alternate fishing locations, of those fishing below Jackson Shoals (i.e., at Jackson Trace Road or Highway 77; n= 36), there were only 3 responses indicating that anglers also fished above Jackson Shoals (Arcadis, 2009; Table 5). Of the 17 anglers interviewed above Jackson Shoals, at least 11 responded that they also fished below the Shoals and 3 anglers indicated they fished another location above the Shoals. One fished 3 locations away, one fished 2 locations away, and one fished the two locations immediately upstream. It should be noted that anglers were selected for interview based on publicly accessible fishing locations. Individuals who own or visit private property areas to fish were not included in this creel survey.

3.2.2.2.2 Statistics

PCBs are the primary COPCs at the site; and therefore, PCB concentrations are the most important metric when performing statistics to determine which locations should be grouped. Using the four categories of fish species noted above (i.e., all species, bass, catfish, and panfish), one-way analysis of variance (ANOVA) and Tukey Honestly Significant Difference (HSD) comparisons were made. ANOVA is a statistical technique for comparing the means among more than two sample groups. If the ANOVA (at a 95% confidence level) indicated that there were differences among the means, the Tukey’s HSD Test was used for indicating specifically which of the locations were different from one another. This is important because if the means of two different groups of data are statistically different, the potential exists for the final EPC to be inflated or unrealistically high.

Given the Creek characteristics and statistical results, certain location groupings are indicated:

- Locations 1 and 2;
- Locations 3 and 4; and
- Locations 5 through 9.

A more detailed discussion of the groupings is presented in Appendix C.

3.2.2.3 Summary of Fish Groupings

Data groupings used to evaluate fishing in the Choccolocco Creek are based on each targeted species group (i.e., bass, catfish, and panfish) and all species combined in the following location groupings:

- Group A – Locations 1 and 2;
- Group B – Locations 3 and 4; and
- Group C – Locations 5 through 9.

Summary statistics for the selected groupings for fish data are presented in Tables 3-4 through 3-6. Note that the following apply in selecting these groupings for developing EPCs.

- Individual species groups allow the public to gain an understanding of potential risks based on what types of fish they target and consume.

- For bass, although there are two species in this group, many anglers cannot tell the difference between the two (largemouth or spotted), so they were combined into one group.

- For panfish, although there are five species in this group, it was assumed that most anglers who eat panfish do not discriminate among the species typically found in Choccolocco Creek.

Grouping all species into one dataset provides an approximation of exposure to individuals that eat fish from each of the species groupings on an approximately equal basis. However, uncertainty in the risk estimate occurs when the species consumed differ from the species analyzed.

3.2.3 Floodplain Soil Sample Location Averaging

EPA Region 4 defines the 0 to 1 ft bgs depth range as the surface soil available for direct human contact (EPA, 2000). As such, the available data from the top foot of soil was evaluated. Soil samples were collected at each soil sample location from multiple depth intervals. To avoid biasing the dataset toward locations with multiple results, a representative concentration was calculated per location. For surface soil, the samples collected between the 0 to 0.5 ft bgs and 0.5 to 1 ft bgs depth intervals at a location were averaged. For the subsurface, the samples collected from multiple intervals between 0 to 4 ft bgs were averaged. The concentration results at each location were averaged as follows:

- If the samples were detected, the observed concentrations were averaged.
- If one of the samples was not detected and the other sample(s) was detected, the detected concentration(s) was averaged with the non-detect sample assuming the contaminant was present at the detection limit level.

The resultant average concentrations for each sampling location were used in the evaluation of the potential floodplain soil exposure and risks.

3.2.4 Calculation of Toxic Equivalency Values

Dioxin/furans and PCB dioxin-like congeners were detected in OU-4 floodplain soil and fish from Choccolocco Creek. Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) (dioxins and furans), and PCB congeners are commonly found as complex mixtures when detected in environmental media. Humans can be exposed to variable distributions of individual dioxin and furan compounds, referred to as “congeners,” and PCB congeners that vary by source and pathway of exposure. There are over 200 PCDD and PCDF congeners. There are 209 PCB congeners. Currently, 17 of the dioxin and furan congeners are designated as carcinogens by EPA (Van den Berg et al., 2006; EPA, 2010). There are 12 PCB congeners with dioxin-like carcinogenic activity.

The *World Health Organization* (WHO) (Van den Berg et al., 2006) has developed toxic equivalency factors (TEFs) to evaluate the relative toxic potencies and risks for the 17 dioxin and furan congeners and the 12 PCB congeners. The TEFs relate the carcinogenic potency of the individual congeners to the carcinogenic potency in man of the reference congener 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD). The TEFs were developed from scientific review of the toxicological studies, along with consideration of chemical structure, persistence, and resistance to metabolism. The TEF value assigned to select dioxin/furan and PCB dioxin-like congener is shown below:

Congener	**Mammal TEFs (unitless)**
1,2,3,4,6,7,8-HpCDD	0.01
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
1,2,3,4,7,8-HxCDD	0.1
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,7,8,9-HxCDF	0.1
1,2,3,7,8-PeCDD	1
1,2,3,7,8-PeCDF	0.03
2,3,4,6,7,8-HxCDF	0.1
2,3,4,7,8-PeCDF	0.3
2,3,7,8-TCDD	1
2,3,7,8-TCDF	0.1
OCDD	0.0003
OCDF	0.0003
PCB-77	0.0001
PCB-81	0.0003
PCB-126	0.1
PCB-169	0.03
PCB-105	0.00003
PCB-114	0.00003
PCB-118	0.00003
PCB-123	0.00003
PCB-156	0.00003
PCB-157	0.00003
PCB-167	0.00003
PCB-189	0.00003

Source: Van den Berg et al., 2006

*Dioxins/furans are abbreviated as follows:

HpCDD = Heptachlorodibenzodioxin.
HpCDF = Heptachlorodibenzofuran.
HxCDD = Hexachlorodibenzodioxin.
HxCDF = Hexachlorodibenzofuran.
PeCDD = Pentachlorodibenzo-p-dioxin.
PeCDF = Pentachlorodibenzofuran.
TCDD = Tetrachlorodibenzo-p-dioxin.
TCDF = Tetrachlorodibenzofuran.
OCDD = Octachlorodibenzodioxin.
OCDF = Octachlorodibenzofuran.

A 2,3,7,8-TCDD toxic equivalent (TEQ) concentration was calculated for each dioxin/furan and/or PCB dioxin-like congener sample by multiplying the concentration of each congener by its respective TEF. If a given congener was not detected in any samples in a given medium, it was not included in the TEQ calculation for that medium. If the congener was detected at least once in a sample set, the TEQ concentration was determined by multiplying the detected concentrations and the non-detects at the SQL with the TEF. For each sample, the individual congener TEQs were summed to obtain a total 2,3,7,8-TCDD TEQ for that sample for dioxin/furan congeners only and PCB dioxin-like congeners only. The equations that follow present the TEQ calculation approach.

$$\mathrm{TEQ}_{\mathrm{dioxin/furan}} = \sum_{n1} (\mathrm{PCDD}_i \ \mathrm{x}\ \mathrm{TEF}_i) + \sum_{n2} (\mathrm{PCDF}_i \ \mathrm{x}\ \mathrm{TEF}_i)$$

$$\mathrm{TEQ}_{\mathrm{PCBcongeners}} = \sum (\mathrm{PCB}_i \ \mathrm{x}\ \mathrm{TEF}_i)$$

Where:

TEQ = Toxic equivalent concentration.
PCDD = Polychlorinated dibenzo-p-dioxin congener.
PCDF = Polychlorinated dibenzofuran congener.
PCB = PCB dioxin-like congener.
TEF = Toxic equivalency factor.

The exceptions to the $\mathrm{TEQ}_{\mathrm{PCBcongeners}}$ calculation above were for PCB dioxin-like congeners PCB-126 and PCB-167 in fish tissue. Both of these congeners were detected only once in 36 fish samples, and so as not to inappropriately inflate the individual sample TEQs by assuming their presence (i.e., multiplying the full SQL by the TEF and adding to the other congeners to obtain a sample-specific TEQ), contributions from PCB-126 and PCB-167 to the total $\mathrm{TEQ}_{\mathrm{PCBcongeners}}$ were made only in the respective fish sample with the detected concentration of these congeners.

3.3 CONTAMINANT OF POTENTIAL CONCERN SCREENING

Based on the long history of releases from the Solutia facility in Anniston, contamination is present in environmental media in OU-4. The primary contaminant released from the site was PCBs. Other contaminants present in OU-4 media include metals, dioxin/furan congeners, polycyclic aromatic hydrocarbons (PAHs), pesticides, and various VOCs and SVOCs. The concentrations of the observed contaminants were screened against risk-based criteria and background levels (for metals) to determine which of these contaminants warranted further evaluation in the HHRA. The COPC screening process was conducted in accordance with EPA Region 4 guidance (EPA, 2000).

The maximum detected concentrations in fish and floodplain soil were compared to the EPA Regional Screening Levels (RSLs) (EPA, 2012). The cancer based RSLs were set at a target cancer risk of one-in-a-million, 1E-06. The noncancer based RSLs were set at a target hazard quotient of 0.1, which is one-tenth of the RSL value presented on the RSL Table. The fish tissue RSLs were based on a default fish ingestion rate of 54 g/day (equates to consuming approximately 13 ounces of fish tissue per week). This is likely an over-estimate of the level of fish consumption assumed to occur in Choccolocco Creek. The residential soil RSLs were used for the soil evaluation. The residential soil RSLs are based on assumptions indicative of exposure associated with residential backyards. They over-estimate the recreational level of exposure that dominates the current use of the floodplain.

If the medium-specific maximum detected concentration was less than the RSL, the analyte was eliminated from further consideration in the HHRA. If the maximum concentration exceeded the RSL, the contaminant was identified as a COPC. Further, because at least one PAH concentration exceeded the RSL, all detected PAHs were identified as and retained as COPCs (EPA, 2000).

Exceedances of the fish RSLs by metals were further evaluated by comparing site sediment concentrations with background levels from Fort McClellan (SAIC, 1998) and from locations upstream of the hydraulic influence of the Solutia facility in Anniston. The premise of the background sediment comparison is that if the site sediment levels are consistent with background, then site fish concentrations are a result of background sediment levels.

For metals in soil exceeding the RSLs, a comparison with regional-specific background levels was performed. The source of the background data was the Fort McClellan Background Metals Survey Report (SAIC, 1998). The background data used in the comparison were from the 0 to 1 ft bgs depth range and were collected from between 1992 through 1997. The site maximum concentrations were compared to two times the average background concentration (EPA, 2000). If the site maximum was less than the two times average background level, the metal was eliminated from consideration as a COPC.

The following subsections present the results of the COPC screening process for fish and soil.

3.3.1 Fish

Fish tissue samples were collected from nine sampling locations in Choccolocco Creek. Various fish species were collected from each sampling location. For the purposes of the COPC screening evaluation, the available data from the targeted species were pooled and summarized.

Table 3-7 presents summary statistics (i.e., frequency of detection, range of detected concentrations, location of maximum detected concentration, and average concentration) of contaminants that were detected in fish tissue along with the screening toxicity value. The contaminants that exceeded the fish RSLs are:

- tPCBs (represented by the sum of Aroclors)
- PCB dioxin-like congener 2,3,7,8-TCDD TEQ
- Dioxins/furans 2,3,7,8-TCDD TEQ
- Arsenic
- Chromium
- Lead
- Mercury

Based on these exceedances, tPCBs, PCB dioxin-like congener TEQ, 2,3,7,8-TCDD TEQ, and mercury will be evaluated as COPCs in the HHRA. Arsenic, chromium, and lead were eliminated based on a comparison to background as described in the following paragraphs.

Absent fish tissue data from background locations, direct comparison to site fish tissue levels could not be performed. However, given what is known about the relationship between contamination levels in sediment and the potential uptake and accumulation of contaminants in fish, the site sediment concentrations of arsenic, chromium, and lead were compared to background levels as a surrogate comparison for screening purposes. Site sediment samples were collected from each fish sampling location in the Creek along with locations sampled for the ecological risk assessment. The site sediment concentrations were initially compared to levels observed at Fort McClellan. The site concentrations were also compared to sediment data collected from locations upstream of the Facility in Anniston.

The table below presents a comparison of the concentrations of arsenic, chromium, and lead observed in Choccolocco Creek sediment with background sediment concentrations from Fort McClellan (SAIC, 1998). Focusing on the headwater extents of streams upgradient from the developed portion of Fort McClellan, the background samples were collected from depositional areas within a streambed. The result of the comparisons indicates that the site maximum arsenic concentration is less than the Fort McClellan background. The site maximum concentrations of chromium and lead exceed the Fort McClellan background.

	Site	**Fort McClellan Background**	
Metal	**Maximum Concentration (mg/kg)**	**Average Concentration (mg/kg)**	**2X Average Concentration (mg/kg)**
Arsenic	7.5	5.7	11.4
Chromium	105	16	32
Lead	53	19	38

The site sediments were also compared to data collected upstream of the confluence of Snow Creek and the 11th Street Ditch in Anniston. The data collected from this area are considered to be background for the Snow Creek and the Choccolocco Creek watersheds within the Anniston area. The results of this comparison indicate that the levels observed in OU-4 are less than the levels observed upstream of Anniston for all metals.

	Site	**Anniston Upstream Background**	
Metal	**Maximum Concentration (mg/kg)**	**Average Concentration (mg/kg)**	**2X Average Concentration (mg/kg)**
Arsenic	7.5	12.9	25.8
Chromium	105	134	268
Lead	53	119	238

Given the relationships between site and background sediment concentrations, the levels of arsenic, chromium, and lead in the fish appears to be a consistent with background levels in the Anniston area. Therefore, these metals were eliminated as COPCs in fish.

3.3.2 Soil

The surface soil data (0 to 1 ft bgs) collected during the Phase 1, Phase 2, and Phase 3 sample collection efforts were used in the COPC screening process. Samples were collected from 0 to 0.5 ft bgs and 0.5 to 1 ft bgs. There were over 800 soil sample locations within the floodplain, all of which were analyzed for tPCBs. Mercury was analyzed at over 600 locations. A subset of the sample locations were analyzed for PCB dioxin-like congeners, dioxin/furan congeners, metals, and other contaminants.

Subsurface soil data were collected at a subset of the sample locations. These data were collected from 1 to up to 4 ft bgs depending on the location. The subsurface data were analyzed for tPCBs, PCB dioxin-like congeners, dioxin/furan congeners, and metals. The site subsurface soil datasets for the metals (except for mercury) consisted of five or fewer samples, precluding any meaningful comparisons of site (subsurface) and background concentrations. Mercury has the largest dataset (24 subsurface samples) and the average concentrations of mercury in surface and subsurface soil are similar (1.1 mg/kg and 0.88 mg/kg in surface and subsurface, respectively [see Tables 3-8 and 3-9]).

Table 3-8 presents the contaminants that were detected in the surface soil (0 to 1 ft bgs). The detected analytes included PCBs, dioxins/furans, SVOCs and VOCs, pesticides, PAHs, and metals. The list below presents those detected contaminants that exceeded the residential soil RSLs:

- tPCBs (represented by the sum of Aroclors)
- PCB dioxin-like congener as 2,3,7,8-TCDD TEQ
- Dioxins/furans 2,3,7,8-TCDD TEQ
- Benzo(a)pyrene
- Aluminum
- Arsenic
- Chromium
- Cobalt
- Iron
- Manganese
- Mercury
- Thallium
- Vanadium

The organic contaminants that exceed their RSLs will be carried forward as COPCs. Because of the benzo(a)pyrene exceedance of the residential soil RSL, all of the detected carcinogenic PAHs will be evaluated as COPCs (EPA, 2000).

The metals were subjected to a background comparison. Table 3-10 presents a summary of the metals detected in the background samples collected from Fort McClellan (0 to 1 ft bgs). The comparisons of site metals concentrations to the background values are shown on Table 3-11. Per EPA Region 4 guidance (EPA, 2000), the site maximum concentrations were compared with two times the background average concentrations. Of the metals with maximum concentrations greater than the RSLs, the site levels of thallium and vanadium were less than background. The background comparisons for the other metals that exceeded the RSLs indicate that the site levels were greater than the background levels. With the exception of mercury, the site levels were less than three times greater than background. The site mercury level was over 400 times greater than background. Thus, the following metals will be evaluated as COPCs in the HHRA: aluminum, arsenic, chromium, cobalt, iron, manganese, and mercury.

3.3.3 COPC Screening Summary

<u>Fish</u>

The COPCs in fish include tPCBs (sum of Aroclors), PCB dioxin-like congeners (evaluated as TEQ), dioxin/furan congeners (evaluated as TEQ), and mercury.

Soil

Total PCBs and mercury were identified as COPCs in the floodplain soil. Both of these analytes were sampled for extensively in the floodplain. Based on the robustness of the soil dataset, tPCBs and mercury were considered the "primary COPCs" for OU-4 soil. PCB congeners were sampled for less extensively than tPCBs but given the relationship between tPCBs and PCB congeners, the PCB congeners were also considered a primary COPC. A statistical analysis was performed to investigate the relationship between paired tPCBs and PCB congener sample results. This analysis is presented in Appendix D.

The other analytes (dioxins/furans, carcinogenic PAHs, and metals except mercury) that were also selected as COPCs were termed the "other COPCs". These COPCs cannot be evaluated in the HHRA in the same manner as the primary COPCs due to the limited dataset. Section 6.2.2 presents the approach that was followed to quantitatively evaluate the primary COPCs and the other COPCs in the HHRA.

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4 TOXICITY ASSESSMENT

The toxicity assessment examines information concerning the potential human health effects of exposure to COPCs. The goal of the toxicity assessment is to provide, for each COPC, a quantitative estimate of the relationship between the magnitude and type of exposure and the severity or probability of human health effects. The toxicity values presented in this section are integrated with the information presented in the exposure assessment to characterize the potential for the occurrence of adverse health effects.

Cancer slope factors (CSFs) are the dose-response values used to evaluate potential carcinogens. Noncancer effects, such as organ damage or reproductive effects, are evaluated by reference doses (RfDs). The following hierarchy was used for selection for toxicity values:

- Tier 1 – Integrated Risk Information System (IRIS) (EPA, 2012a); and
- Tier 2 – Values presented on the most recent RSL Table (EPA, 2012b). Toxicity values presented on the RSL Table are from a number of sources including EPA (Provisional Peer-Reviewed Toxicity Values), the California Environmental Protection Agency (CalEPA), and the Agency for Toxic Substance and Disease Registry (ATSDR).

4.1 NONCANCER EFFECTS

For noncancer effects, it is assumed that there exists a dose below which no adverse health effects would occur. Below this "threshold" dose, exposure to a COPC can be tolerated without adverse effects. Therefore, for noncancer effects, a range of exposures exist that can be tolerated. Toxic effects are manifested only when physiologic protective mechanisms are overcome by exposures to a COPC above its threshold level.

The potential for noncancer health effects resulting from oral or dermal exposure to COPCs is assessed by comparing an exposure estimate (intake or dose) to an RfD. The RfD is expressed in units of mg/kg-day and represents a daily intake of COPC per kilogram of body weight that is not sufficient to cause the threshold effect of concern. An RfD is specific to the COPC, the route of exposure, and the duration over which the exposure occurs.

Two exposure durations are applicable to noncancer doses calculated in this HHRA – subchronic and chronic. Subchronic exposures are those that are greater than subacute (approximately 28 days) but less than 10% of a lifetime (7 years based on a lifetime of 70 years). Child recreational direct contact exposures were considered subchronic; therefore, subchronic RfDs were used to calculate hazard quotients for those receptors. Chronic RfDs (corresponding to exposures of at least 10% of a lifetime) were used to assess all other noncancer exposures.

Dermal RfDs are derived from the corresponding oral RfD values. To derive the dermal RfD, the oral RfD (based on an administered dose) is multiplied by the gastrointestinal tract absorption efficiency factor to determine an RfD based on an absorbed dose rather than an administered dose. The resulting dermal RfD is used to evaluate the dermal (absorbed) dose calculated by the dermal exposure algorithms.

Oral RfDs are presented in Table 4-1. Dermal RfDs and the absorption efficiencies used in their determination are also included in Table 4-1. The absorption efficiencies were obtained from EPA’s RAGS Part E Guidance (EPA, 2004). Table 4-1 also includes the primary target organs affected by each listed COPC, where information is available. This information may be used in the risk characterization to segregate risks by target organ effects when the total hazard index (HI) is greater than 1.0.

4.2 CANCER EFFECTS

The toxicity information considered in the assessment of potential carcinogenic risks includes slope factors and a weight-of-evidence narrative consistent with EPA’s 2005 Guidelines for Carcinogenic Risk Assessment (EPA, 2005). These guidelines use standard narrative descriptors (Carcinogenic to Humans, Likely to Be Carcinogenic to Humans, Suggestive Evidence of Carcinogenic Potential, Inadequate Information to Assess Carcinogenic Potential, and Not Likely to Be Carcinogenic to Humans) to describe the likelihood that a COPC is a human carcinogen and are based on an evaluation of the available data from human and animal studies.

The CSF is the toxicity value used to quantitatively express the carcinogenic risk of cancer-causing COPCs via oral and dermal routes of exposure. It is defined in the IRIS glossary as:

> An upper-bound, approximately a 95 percent confidence limit, on the increased cancer risk from a lifetime exposure to an agent. This estimate, usually expressed in units of proportion (of a population) affected per mg/kg-day, is generally

> reserved for use in the low-dose region of the dose-response relationship, that is, for exposures corresponding to risks less than 1 in 100.

Dermal CSFs are derived from the corresponding oral CSF values. To derive the dermal CSF, the oral CSF is divided by the gastrointestinal absorption efficiency factor to determine a CSF based on an absorbed dose rather than an administered dose.

Oral CSFs are presented in Table 4-2. Dermal CSFs and the absorption efficiencies used in their determination are also included in Table 4-2. The absorption efficiencies were obtained from EPA's RAGS Part E Guidance (EPA, 2004).

4.3 TOXICITY VALUES FOR ASSESSING 2,3,7,8-TCDD TEQS

As recently published in IRIS (EPA, 2012a):

> For the assessment of human health risks posed by exposure to mixtures of TCDD and dioxin-like compounds (DLCs), including polychlorinated dibenzo-*p*-dioxins, polychlorinated dibenzofurans, and dioxin-like polychlorinated biphenyls, and when data on a whole mixture or a sufficiently similar mixture are not available, EPA recommends use of the consensus mammalian Toxicity Equivalence Factor (TEF) values developed by the World Health Organization (EPA, 2010a; EPA, 2010b; Van den Berg et al., 2006).

Therefore, the 2,3,7,8-TCDD RfD and CSF were used to quantify hazards and risks from both dioxin/furan and PCB dioxin-like congener TEQ concentrations. The application of the 2,3,7,8-TCDD RfD to PCB dioxin-like congener TEQs is a new approach that was based on direction from EPA.

4.4 REFERENCES

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5 RISKS FROM FISH CONSUMPTION

5.1 INTRODUCTION

This section presents an evaluation of the fish ingestion pathway for recreational anglers who fish the Choccolocco Creek. Although there currently exists a fish consumption prohibition, recommending that no fish caught from the Choccolocco in the area under evaluation be consumed, it was assumed for the purposes of this analysis that there are no restrictions on fish consumption. EPA risk assessment policy directs the evaluation of the potential risks without reducing the likely exposure because of the fish consumption advisory.

As noted in the beginning of this HHRA, certain sections that are common to all three pathway risk assessments have been previously presented (e.g., toxicity assessment). This section provides the exposure assessment, the risk characterization, and a discussion of key uncertainties.

5.2 EXPOSURE ASSESSMENT

The exposure assessment for the fish ingestion pathway estimates the nature, extent, and magnitude of potential exposure from consuming fish caught in the Choccolocco Creek. The exposure assessment involves several steps, which are listed below:

- Calculating exposure point concentrations (EPCs) for the fish data groupings summarized in Section 3.2.2.
- Identifying the exposure models and parameters with which to calculate exposure doses.
- Calculate exposure doses.

To provide a range of exposure and risks, the reasonable maximum exposure (RME) and central tendency exposure (CTE) scenarios were evaluated (EPA, 1992). The RME, an estimate of the high-end exposure in a population, is based on a combination of average and high-end estimates of exposure parameters typically representing the 90th percentile or greater of expected exposure. The CTE represents an estimate of the average exposure in a population and is based on central estimates of exposure parameters. Both the RME and CTE were evaluated for the fish ingestion pathway.

5.2.1 Exposure Point Concentrations

The following guidelines were used to determine the EPCs for fish tissue. The EPC for a given data set, in general, is represented by the 95% upper-confidence limit of the mean (95% UCL; EPA, 2010a and b). The equations that are used for the 95% UCL calculations are based upon the shape and underlying distribution of the concentration data. Note that each contaminant per data set is looked at individually and professional judgment is used, guided by both the ProUCL Technical Manual (EPA, 2010a) and the ProUCL User's Guide (EPA, 2010b) to determine the appropriate 95% UCL to select.

ProUCL calculates 95% UCLs using 15 different computation methods, 5 parametric and 10 non-parametric. Parametric methods rely on the estimation of parameters (such as the mean or the standard deviation) describing the distribution of the variable of interest in the population; non-parametric methods do not.

Support documentation (ProUCL outputs) for the calculation of the ProUCL-based EPCs is presented in Appendix E. The EPCs for the COPCs used in the risk assessment are presented in Tables 5-1 through 5-3. Note that the same EPC value was used for the RME and CTE scenarios.

As shown on Tables 3-4 through 3-6 the detection frequencies for the fish COPCs ranged from 99 to 100%. The high levels of detection eliminate any issues that could arise when calculating EPCs for data sets with a high amount of censored data. Fish EPCs for all COPCs were selected per species/grouping based on the criteria below.

- If only 1 or 2 samples were collected within a data grouping, the EPC is the maximum detected concentration.
- If between 3 and 8 samples were collected within a data grouping, the EPC is the 75th percentile. Full detection limits were used as values for the non-detected samples in these small data sets.
- If 8 or more samples were collected within a data grouping, the appropriate distribution of the data set was determined and UCLs/EPCs were selected as guided by the ProUCL supporting documentation.

5.2.2 Exposure Models and Parameters

As noted previously, the recreational fisherman scenario consists of an adult or child who may be exposed to COPCs through the ingestion of fish from the Choccolocco Creek.

Dose estimates for recreational anglers were calculated for one receptor – an individual who consumes fish as a child (1 through 6 years) and an "adult" (age 7 to 30 years). Exposure doses were calculated separately using age-adjusted factors.

The evaluation of subsistence anglers was considered for this assessment, but was not included because no evidence has been found of subsistence angling practices in OU-4.

Table 5-4 presents the equations used to calculate exposure doses and summarizes the recreational anglers' exposure parameters. Details regarding the parameters are presented in the subsections below.

5.2.2.1 Fish Consumption Rate

Many studies have estimated fish consumption in the United States. Region 4 suggests a default rate of 54 g/day (in combination with an exposure frequency of 350 days/year) when site-specific information is not available (EPA, 2000). This default ingestion rate is the upper-bound value that was in place at the time of the writing of the Region 4 guidance (EPA, 2000 and 1991). Additionally this default ingestion rate remains the value currently used in the calculation of Regional Screening Levels for human ingestion of fish (EPA, 2012a). The 54 g/day rate, which equates to consuming approximately 13 ounces of fish tissue per week, is still a valid, upper-bound value to use for screening purposes.

As emphasized by Moya (2004), data for the general population are often useful, but specific data on recreational fishing are needed to assess potential exposure to individuals at the higher end of the consumption range. Recreational fishermen, subsistence fishing populations, and some racial/ethnic minority groups have been shown to consume fish and shellfish at higher rates than the general population. Because interest in recreational angling varies with proximity to suitable water bodies, species of fish available, and economic factors, it is most appropriate to evaluate data specific for the recreational anglers residing near the study area. This is complicated for the

Choccolocco Creek because there has been a fish consumption advisory, recommending no consumption, since 1994.

Solutia conducted a creel/angler survey for the portion of the Choccolocco Creek that constitutes OU-4 (Arcadis, 2009). However, the results of Solutia's survey are likely to be biased low due to the fish consumption advisory. As such, the fish consumption rate estimates resulting from the Solutia study were not used to calculate the RME scenario risks, but were used in the derivation of the CTE fish consumption rate.

5.2.2.1.1 RME

The purpose of this section is to determine the potential RME exposure to individuals consuming fish caught from the Choccolocco creek assuming there was no fish consumption advisory in place and assuming there was no knowledge of contamination, as is required by EPA (EPA, 1990).

Suitable information to derive fish consumption rates from the Choccolocco Creek were not available; therefore, regional data derived by state or local agencies or interested parties were considered. Three principal studies relevant to the patterns of recreational fish consumption in the Alabama region were identified:

- ADEM (1993) – *Estimation of Daily Per Capita Freshwater Fish Consumption of Alabama Anglers*;
- ADCNR (Wright and DeVries, 2003) – *2002 Alabama Freshwater Anglers Survey*; and
- Burger et al. (1999) – *Factors in Exposure Assessment: Ethnic and Socioeconomic Differences in Fish and Consumption of Fish Caught along the Savannah River*.

Detailed discussions of each principal study are presented in Appendix F. Ultimately, the study selected for the derivation of the adult fish ingestion rate was the ADEM (1993) study that estimated adult consumption rates of recreationally caught freshwater fish in Alabama. The mean consumption rate of 30 g/day, calculated by the serving size method for all respondents based on site meals only, was used in this evaluation. This consumption rate equates to eating one 8-ounce meal per week. Based on ratios of child to adult ingestion rates (as presented in Appendix F), 15 g/day was used as a reasonable estimate of the consumption rate for the child of a recreational angler. An age-adjusted ingestion rate of 16.3 g-yr/kg-day was calculated (see Table 5-4).

5.2.2.1.2 CTE

Data presented in the Solutia creel/angler survey for the Choccolocco Creek (Arcadis, 2009) was used to derive the CTE ingestion rates. This survey was a one-year angler intercept survey of Choccolocco Creek that began on 28 June 2008 and ended 27 June 2009 focused entirely on publicly accessible fishing locations (i.e., bridge crossings), and did not include any interviews with individuals who own or otherwise have access to other locations along the Creek. Some relevant statistics are as follows.

- 52 of the 72 anglers observed were interviewed.
- 8 of those 52 interviewees had caught fish at the time of the interview.
- 4 of those 8 individuals had kept the fish they had caught.
- 3 of the 4 individuals that kept fish allowed Solutia to measure their fish and answered questions regarding ingestion rates.
- 7 total fish were caught among these 3 interviewees.

Fish ingestion rates estimated from the interviews ranged from 0.14 to 7.9 g/day, with an average of 2.8 g/day (n = 3). This average was selected as the adult CTE ingestion rate. The CTE rate equates to eating between 4 and 5 meals (8 ounce) per year. As for the child RME ingestion rate, one-half of the adult consumption rate was used to determine the child ingestion rate, i.e., 2.8 g/day divided by 2 = 1.4 g/day. An age-adjusted ingestion rate of 1.5 g-yr/kg-day was calculated (see Table 5-4). It should be noted that this CTE ingestion rate may be biased low considering it was based on a study that was conducted in the presence of the long-standing fish consumption prohibition.

5.2.2.2 Fraction Ingested

Fraction ingested (FI) refers to the fraction of the recreationally-caught fish consumed by anglers from the Choccolocco Creek in the absence of any consumption prohibition. Given that the fish consumption rates were based on “site-only” values instead of consumption from all Alabama waters, the starting point for an FI was 1.0 for the recreational angler scenario. That is, it was assumed that the recreational angler catches and consumes all of their fish from Choccolocco Creek up to the amount assumed in the consumption rate estimation.

Although, as noted previously, there are books and web forums that anecdotally suggest that the Choccolocco Creek is good for fishing; other, potentially more attractive fishing areas are available in the vicinity to recreational anglers, particularly, Lake Logan Martin. The Choccolocco Creek flows into the Coosa River at Lake Logan Martin approximately 37 miles downstream (southwest) of Anniston.

The Lake Logan Martin reservoir extends 48.5 miles from the Neely Henry dam to the Logan Martin Dam. It has 275 miles of shoreline, covers 15,263 acres, and is up to 69 feet deep (average depth 18 ft; Lakelubbers, 2008). Information released by the ADCNR in their Bass Anglers Information Team (BAIT) report indicates that the quality of fishing in Lake Logan Martin was ranked #5 in the state. The lake has three free public boat ramps and several pay-as-you-go launch sites (Phillips, 2009).

Aside from the availability of more desirable fishing areas in the vicinity of the Choccolocco Creek, the type of fishing in the creek, for the most part, differs from the sites ADEM used to derive the site-only ingestion rates (i.e., wading and bank fishing versus fishing from a boat in reservoirs and dam tailwaters) it was necessary to consider a modified consumption rate to account for these differences. Therefore, fish ingestion FIs other than one were considered for the Choccolocco Creek.

Because the characteristics of Choccolocco Creek vary along the 37 mile length of the OU-4 study area, river section-specific FIs were determined. Jackson Shoals is a unique physical feature in the Choccolocco Creek that serves as a logical separation point. The conditions upstream of Jackson Shoals (river miles 10-37; fish locations 3-9) are much different from those below Jackson Shoals to Lake Logan Martin (river miles 0-10; fish locations 1-2). For example:

- The lower or downstream portion of the Creek is larger and would be expected to contain more legally catchable fish per mile than above Jackson Shoals;

- The lower portion of the Creek is boatable (e.g., boats can come up the Creek from the Lake to Jackson Shoals and there is a boat launch at river mile 7, Highway 77 access point); whereas boating above Jackson Shoals is limited by the size of the creek, depth of the water at some places, obstructions, and locations to put in; and

- Other than bridge crossings, public wade-in access in the portion above Jackson Shoals is limited by the amount of private property bordering the Creek.

Based on professional judgment regarding the areas most likely to be fished, stream characteristics, amount of fish present, accessibility issues, species of fish in the Creek, and the average ingestion rate among others, the portion of Choccolocco Creek downstream of Jackson Shoals, i.e., fish locations 1 and 2 or Group A, was assigned an FI of 1, as noted above.

The portion of the Creek between fish locations 3 and 9 (Groups B and C) is unlikely to consistently provide catch amounts high enough to support a 30 g/day adult ingestion rate for the avid recreational angler. For one adult to ingest an annual average of 30 g skin-off fillet/day, approximately 50 lbs. of fish would need to be caught (assuming a conservative dress-out ratio of 0.5) per year. The average number of days Alabama anglers fish rivers and streams is 21 (DOI/DC, 2006; 90 percent confidence interval = 15 to 27); therefore, on average, approximately 2.2 lbs of fish would need to be caught at each outing to obtain the necessary mass. This would be difficult to accomplish in the upstream portions of the Choccolocco Creek and anglers who consume that much fish would be more likely to fish in areas with larger concentrations of sizable fish. As such, the FI for fish locations 3 through 9 was estimated at 0.5 or 50% of the rate downstream of Jackson Shoals. These FI values are used for both the RME and CTE scenarios.

5.2.2.3 Cooking Loss

Cooking loss was not considered because the fish tissue concentrations are based on skin-off fillet samples. PCBs tend to sequester in the fat and skinning the fillets effectively removes the majority of the fat deposits, resulting in what are likely relatively similar concentrations to cooked skin-on fillets.

5.2.2.4 Gastrointestinal Absorption Factor

The 2002 RFI/CS Report used an intestinal absorption factor of 30% from ingested soil based on a matrix effect on aged PCBs (EPA, 1986). However, fish consumption text within the 1986 document notes that it is assumed that there is complete absorption of the contaminant (i.e., PCBs) associated with the consumption of fish. Therefore, the 30% gastrointestinal absorption factor for PCBs from soil is not appropriate to use for fish ingestion and the absorption factor for all fish COPCs is one.

5.2.2.5 Body Weight

The average BW values for the young child (1 through 6 years) and the adult were 15 kg and 70 kg, respectively (EPA, 1989, 2008).

5.2.2.6 Averaging Time

The cancer-based AT was based on a 70-year lifetime for all age groups and equates to 25,550 days (70 years x 365 days/year) (EPA, 1989). The noncancer AT for each of the scenarios was based on the receptor- and scenario-specific exposure duration (ED) in years multiplied by 365 days/year. The noncancer-based AT is constant across all of the scenarios in that it is always the ED multiplied by 365 days/year.

5.2.2.7 Exposure Doses

Calculated exposure doses are presented in RAGS D format in Appendix G.

5.3 RISK CHARACTERIZATION

The risk characterization integrates the information developed in the exposure assessment and the toxicity assessment (Section 4) into an evaluation of the potential risks from consuming fish obtained from the Choccolocco Creek. Cancer risks were calculated for those COPCs with evidence of carcinogenicity and for which cancer toxicity values were available. Noncancer health effects were evaluated for COPCs (i.e., including carcinogens) for which noncancer toxicity values were available.

5.3.1 Cancer Risk

Potential cancer risks from oral exposure were calculated by multiplying the estimated LADD intake that was calculated for a COPC through an exposure route by the exposure route-specific CSF (Table 4-2), as follows:

$$\text{Risk} = \text{LADD} * \text{CSF}$$

Where:

LADD = Lifetime average daily dose; intake averaged over a 70-year lifetime as mg COPC/kg-body weight per day.

CSF = COPC- and route-specific cancer slope factor $(\text{mg/kg-day})^{-1}$.

Cancer risks were summed across the relevant pathways for a given receptor and exposure scenario to yield a cumulative lifetime risk. EPA's cancer risk range is an increased risk of developing cancer, based on a plausible upper-bound estimate of risk, of approximately 1 in 1,000,000 (1E-06) to 1 in 10,000 (1E-04). This range is used to guide remedial actions under CERCLA.

5.3.2 Noncancer Health Effects

Potential noncancer health effects were evaluated by the calculation of hazard quotients (HQs) and hazard indices (HIs). An HQ is the ratio of the ADD through a given exposure route to the COPC-specific RfD (Table 4-1). The HQ-RfD relationship is illustrated by the following equation:

$$\text{HQ} = \text{ADD}/\text{RfD}$$

Where:

ADD = Average daily dose; estimated daily intake averaged over the exposure duration (mg/kg-day).

RfD = Reference dose (mg/kg-day).

HQs were summed to calculate HIs for each scenario. A total HI was calculated based on exposure to the COPCs from exposure routes for each receptor. HIs of less than one indicate that adverse health effects associated with the exposure scenario are unlikely to occur.

5.3.3 Risk Results

As discussed in Section 3.2.2.1, in order to cover potential anglers who would target and consume a particular fish type and those who might consume any fish they were able to catch, “targeted species” and “all species” groupings were used to estimate risk. Species groupings are as follows:

- All species;
- Bass (i.e., largemouth and spotted);
- Catfish; and
- Panfish (i.e., crappie and sunfish).

Because it is not reasonable to assume that an individual would fish all the locations given the distances between the collection locations, the fish sampling locations were grouped based on the observed tPCB concentrations, the distance between the fish collection sites, and the need to achieve a statistically supportable sample size of each of the fish groupings.

Each of the species groupings noted above was evaluated within the following location groupings:

- Group A – Locations 1 and 2;
- Group B – Locations 3 and 4; and
- Group C – Locations 5 through 9.

Appendix H contains RAGS 9 Tables presenting fish ingestion cancer risks and HQs. The RME cancer risks and HQs are summarized in Tables 5-5 and 5-6 for the primary COPCs and TEQs, respectively. The analogous CTE summary tables are presented in Tables 5-7 and 5-8. In general, the RME risk levels for the “all species” grouping exceeded the EPA cancer risk range (1E-06 to 1E-04). The RME cancer risks from tPCBs were greater than 1E-04 for all locations and fish groupings. The RME cancer risks from PCB dioxin-like congener TEQ were less than the tPCB cancer risks for all locations and fish groupings. The RME risks from 2,3,7,8-TCDD TEQ were less than the risks from tPCBs and the PCB dioxin-like congener TEQ. The RME cancer risks from the targeted species groupings were similar to the risks calculated for the “all species” category.

Total PCBs resulted in RME HQs greater than 10 for every location. The RME HQs from mercury, PCB dioxin-like congener TEQ, and 2,3,7,8-TCDD TEQ were greater than one at a number of locations but were less than the tPCBs HQs.

As would be expected, the CTE cancer risks and HQs were less than the RME. Cancer risks were within or slightly above the EPA risk range and HQs for tPCBs were greater than one. The following sections discuss the risk results in greater detail.

5.3.3.1 Group A (Locations 1 and 2)

Tables H-1 and H-2 present the RME risks for Group A. The CTE risks are presented on Tables H-3 and H-4. The table below summarizes the range of RME risks for the "all species" grouping:

COPC	RME Cancer Risk	RME Hazard Quotient
tPCBs	1E-03	62
Mercury	NA	2
PCB Dioxin-like Congeners TEQ	5E-04	12
2,3,7,8-TCDD TEQ	1E-04	4

NA = Not applicable.

As presented, the "all species" grouping total and individual RME risks exceeded EPA's applicable cancer and noncancer risk thresholds. The RME risks for the targeted species groupings are similar to the risks for the "all species" grouping.

The ranges of the CTE risks for the "all species" grouping are summarized below. The individual CTE cancer risks were within EPA's applicable cancer risk range. Total PCBs had an HQ greater than one.

COPC	CTE Cancer Risk	CTE Hazard Quotient
tPCBs	5E-05	6
Mercury	NA	0.2
PCB Dioxin-like Congeners TEQ	4E-05	1
2,3,7,8-TCDD TEQ	1E-05	0.4

NA = Not applicable.

5.3.3.2 Group B (Locations 3 and 4)

Tables H-5 and H-6 present the RME risks for Group B. The CTE risks are presented on Tables H-7 and H-8. The table below summarizes the range of RME risks for the "all species" grouping:

COPC	RME Cancer Risk	RME Hazard Quotient
tPCBs	6E-04	37
Mercury	NA	1
PCB Dioxin-like Congeners TEQ	1E-04	3
2,3,7,8-TCDD TEQ	3E-05	0.6

NA = Not applicable.

As presented, the "all species" grouping total RME risks were at or exceeded EPA's applicable cancer and noncancer risk thresholds, with the exception of mercury and the 2,3,7,8-TCDD TEQ. The RME risks for the targeted species groupings are similar to the risks for the "all species" grouping.

The ranges of the CTE risks for the "all species" grouping are summarized below. The CTE total and individual cancer risks fell within EPA's cancer risk range. The noncancer HI from tPCBs was greater than one.

COPC	CTE Cancer Risk	CTE Hazard Quotient
tPCBs	6E-05	7
Mercury	NA	0.2
PCB Dioxin-like Congeners TEQ	2E-05	0.5
2,3,7,8-TCDD TEQ	5E-06	0.1

NA = Not applicable.

5.3.3.3 Group C (Locations 5 through 9)

Tables H-9 and H-10 present the RME risks for Group C. The CTE risks are presented on Tables H-11 and H-12. The table below summarizes the range of RME risks for the "all species" grouping:

COPC	RME Cancer Risk	RME Hazard Quotient
tPCBs	1E-03	71

Mercury	NA	1
PCB Dioxin-like Congeners TEQ	1E-04	3
2,3,7,8-TCDD TEQ	1E-05	0.3

NA = Not applicable.

As presented, the "all species" grouping total RME risks were at or exceeded EPA's applicable cancer and noncancer risk thresholds, with the exception of mercury and the 2,3,7,8-TCDD TEQ. The RME risks for the targeted species groupings are similar to the risks for the "all species" grouping.

The ranges of the CTE risks for the "all species" grouping are summarized below. The individual CTE cancer risks fell within or at EPA's cancer risk range. Although the noncancer total HIs were greater than one, the individual HQs were less than one, with the exception of tPCBs.

COPC	CTE Cancer Risk	CTE Hazard Quotient
tPCBs	1E-04	13
Mercury	NA	0.2
PCB Dioxin-like Congeners TEQ	2E-05	0.6
2,3,7,8-TCDD TEQ	2E-06	0.06

NA = Not applicable.

5.4 UNCERTAINTY ANALYSIS

The uncertainty analysis in a risk assessment provides to decision makers (i.e., risk managers) information about the key assumptions, their inherent uncertainty and variability, and the impact of this uncertainty and variability on the estimates of risk. The uncertainty analysis shows that risks, in this case from the fish ingestion pathway, are relative in nature and do not represent an absolute quantification. The subsections that follow identify the major uncertainties inherent in the fish ingestion HHRA to determine if the calculated risks may have been overestimated or underestimated, and the approximate degree to which this may have occurred.

5.4.1 Hazard Identification

Analytes without Screening Values – Lead does not have an established screening value for fish concentrations and was not quantitatively evaluated in the risk assessment process. Because toxicity criteria were not available, risks (cancer and noncancer) could not be estimated. It is likely that site risks are underestimated as a result of this lack of toxicity criteria.

Congener Data Availability – Congener data (PCBs and dioxins/furans) were available for approximately 10% of the fish samples. Given the number of samples per location and species groups, it was not possible to calculate a UCL-based EPC for any species/location group combination except for “all species” at Location A and “all species” and panfish at Location C. In the other instances, an alternative EPC (maximum detected concentration or 75th percentile value) was selected. It is not known if this uncertainty results in an over- or underestimate of risk.

Trends Analysis **–** ADEM monitors contaminant concentrations in fish in Alabama waterways, including the Choccolocco Creek. Since 1993, there have been four areas in the Creek from which fish have been collected. Of these, one is upstream of OU-4 and not applicable for use, and one that is close to Oxford only had data collected in 1993, which eliminates the ability to perform any trends analysis. The Eastaboga area (within risk assessment Group C) has had a total of 38 fish analyzed for tPCBs among 1993, 2004, and 2007 sampling events. The Pell City area (within risk assessment Group A) has had a total of 219 fish analyzed for tPCBs among 1994, 1996, 1999, 2001, 2004, 2007, and 2010 sampling events. Figures 5-1 and 5-2 show trends in fish concentrations in each of these areas, respectively. Note that fish were grouped into the same species categories as in the quantitative risk assessment (i.e., bass, catfish, and panfish) for this exercise. In general, these graphs indicate that tPCB concentrations have been decreasing over the last 16-17 years.

5.4.2 Exposure Assessment

5.4.2.1 General Uncertainties

Selection of Exposure Parameters **–** The selection of exposure parameters directly influence the calculated doses (chronic daily intakes), and ultimately the calculation of risk. The RME concept was used to estimate the exposure potential. The RME is defined as the "maximum exposure that is reasonably expected to occur at the site" (EPA, 1989). The RME parameters contribute to an overestimation of real-life exposures and a resulting overestimation of risk for most individuals.

The use of the CTE is designed to provide a more typical exposure and risk estimate. However, given that the Creek has a long standing fish consumption prohibition, and that risk assessments are supposed to evaluate risk in the absence of any fishing restrictions, it is likely that the CTE underestimates actual risk to an individual who would otherwise fish and consume fish more regularly in a uncontaminated waterbody.

Exposed Populations **–** Consumption of the whole fish is common for certain ethnic populations (e.g., southeast Asian cultures). However, a review of the most recent census estimates indicated that southeast Asian ethnic populations represent a small portion (< 1%) of the Calhoun and Talladega County populations (see Appendix F, Table F-4). If there are individuals in the area who eat whole fish, risk may be underestimated as PCBs and other COPCs tend to accumulate in fatty tissue and whole fish contain higher deposits of fat than skin-off fillets.

Subsistence fishing populations would consume considerably more fish than the consumption rate used in this HHRA. However, no evidence was found that points to the existence of subsistence fishing in the area around the Choccolocco Creek, and it was considered unlikely to occur. If subsistence fishing populations were to be determined to exist along the Creek, risks would be underestimated for this population.

Another exposed population that was not evaluated in this HHRA includes those individuals who have property along the river or have access to the river at locations other than the limited number of public access fishing locations. It is possible that an individual with easy access to a good fishing location could fish and consume fish to a greater degree than that assumed in the HHRA, which would result in the calculated risks underestimating real risks for these individuals. This is especially true for the CTE scenario, which was based on current conditions and actual respondents to the Solutia Creel Survey (Arcadis, 2009) at only the nine access points. Individuals at other locations along the Choccolocco Creek with greater access could consume more fish than that estimated by the Creel Survey, which would result in an underestimation of risk for the CTE.

Data Groupings **–** Locational groupings were determined based on tPCB concentrations. The distribution of other COPCs within the Choccolocco Creek may be different from tPCBs. It is not known which direction the uncertainty would affect risk; but given the magnitude of risks and relatively small differences in risks between locations, it would likely have minimal effect on the risk assessment outcomes.

***CTE Ingestion Rate* –** Given the likelihood that the current fish consumption advisory posted on this portion of the Creek would reduce the local population's frequency of fishing and the amount of fish consumed, it is anticipated that the creel/angler survey identifies a current fish consumption rate, which was used as the basis of the CTE ingestion rate, that is lower than it would likely be for similar rivers and streams without an advisory. This would tend to underestimate risk for the CTE individual**. "**In addition, the CTE fish ingestion rate, which was based on the Solutia Creel Survey, could underestimate current exposure and risk based on a potential tendency by respondents to either not respond or not respond accurately due to their knowledge of the existing fish consumption advisory.**"**

***Fraction Ingested* –** As noted in the Exposure Assessment, different FI values were used for different portions of the Creek. A value of 1.0 was used for downstream of Jackson Shoals and 0.5 was used for upstream of the Shoals. Of the 17 anglers interviewed in Solutia's Creel Survey upstream of Jackson Shoals, at least 11 responded that they also fished downstream of the Shoals and 3 anglers indicated they fished another reach upstream of the Shoals (Arcadis, 2009). For anglers fishing upstream of the Shoals (i.e., Groups B and C) that also fish downstream of the Shoals, risks may be underestimated due to the assumed difference in the FIs. For anglers who fish in Choccolocco Creek as well as other locations, and consume their fish, risks would tend to be overestimated as some portion of their total fish consumption would come from other sources assumed not to be contaminated.

5.4.3 Toxicity Assessment

PCBs, 2,3,7,8-TCDD TEQ from PCB dioxin-like congeners, mercury, and 2,3,7,8-TCDD TEQ from dioxins/furans were the only COPCs evaluated in the fish ingestion risk assessment. The toxicity values used in this risk assessment for these COPCs represent the most current values available in U.S. governmental databases and reports (EPA, 2012b; CalEPA-OEHHA 2010; ATSDR, 2009).

The CSFs and RfDs are derived to be health protective and tend to overestimate true toxicity in humans. Therefore, risk calculations, which are partially based on toxicity estimates, may be overstated in general. The exact degree of overestimation cannot be determined and each COPC must be evaluated on a case-by-case basis. The following sections provide a brief discussion of some of the principal uncertainties related to the toxicity of PCBs and TEQ contaminants.

PCB CSF **–** The PCB CSF (EPA, 2012b) is based on animal studies using commercial mixtures of PCBs (Aroclors). EPA has developed both high-end and central tendency estimates of the PCB CSF. The upper-bound and central estimate slope factors for highly chlorinated PCB mixtures, such as those detected in fish sampled in the Choccolocco Creek, differ only by a factor of two.

There are a number of uncertainties associated with the use of animal studies to predict cancer risk in humans, both qualitatively and quantitatively, through the CSF. Qualitatively, PCBs have been classified as probable human carcinogens (former EPA category B2) based on clear evidence of carcinogenicity in animal experiments and suggestive studies in human populations. Quantitatively, major sources of uncertainty in the application of experimental information to human exposure are the extrapolation of animal studies to human populations, the extrapolation of the high experimental doses to the lower doses from environmental exposures, the extrapolation to less than lifetime doses (including the impact of early life exposures), and the extrapolation of results from commercial mixtures to environmental mixtures. The first three uncertainties are common to the derivation of many CSFs derived by EPA. The extrapolation from commercial to environmental mixtures is specific to mixtures such as PCBs, which adds additional uncertainty to the risk estimate for tPCBs.

tPCB RfD **–** The RfD for tPCBs used in this assessment was based on immunological effects observed in rhesus monkeys exposed to Aroclor 1254 (EPA, 2012b). An uncertainty factor of 300, which accounts for sensitive members of the population and for extrapolating from animal data to human data, is incorporated into the RfD. EPA is currently reviewing new studies on noncancer effects of PCBs as part of the ongoing IRIS review process. These studies report possible associations between developmental and neurotoxic effects in children from pre-natal or post-natal exposures to PCBs.

Major sources of uncertainty associated with the PCB RfDs include:

- The selection of uncertainty factors in the derivation of the RfDs, including the length of the study, the critical effect, the quality of the dataset, and the variability of the human population, including sensitive subpopulations.
- The assumption that the critical effects in animal studies are the critical effects in humans.
- The assumption that the dose metric of average daily dose is applicable to bioaccumulative compounds.
- The potential for toxicity changes resulting from variations in PCB mixtures (“weathering”) following release to the environment.

In addition to the uncertainties with the chronic RfD, there is additional uncertainty associated with toxic effects that may result from shorter exposure durations. The critical period of exposure for developmental effects associated with *in utero* exposure may be days or weeks instead of the long-term exposure assessed in this report. The potential impact of these acute (short-term) exposures was not evaluated in this assessment, which could lead to an underestimate of the risk associated with tPCBs.

***2,3,7,8-TCDD CSF* –** Cancer risks from dioxins/furans and dioxin-like PCBs were characterized using the TEQ methodology. Toxic equivalency factors (TEFs) developed by WHO (Van den Berg et al., 2006) were used to calculate the TEQ for these contaminants. TEFs are order of magnitude estimates that do not include expressions of uncertainty in predicted dioxin-like toxicity. Some TEFs are based on cancer-related effects, and others are based on noncancer-related effects. The TEQ approach assumes that the effects of the individual congeners are additive and does not address possible antagonism or synergism. The result of the TEQ methodology is a concentration or dose that has a potency that is expressed in terms of its equivalency to 2,3,7,8-TCDD (EPA, 2010c).

Cancer risks are characterized by multiplying the TEQ, expressed as a lifetime average daily dose, with the CSF for 2,3,7,8-TCDD. The CSF for 2,3,7,8-TCDD TEQ used in this assessment (CalEPA-OEHHA, 2010) is based results of a linearized multistage model using male mouse hepatocellular adenoma/carcinoma tumor data for TCDD and female rat neoplastic nodule/hepatocellular carcinoma data for HexaCDD, both from inhalation exposures (CalEPA-OEHHE, 2009). California Department of Health Services (CDHS) has found that the most sensitive species/sex/site for the induction of cancer by TCDD is the male mouse with hepatocellular adenomas or carcinomas, with a response an order of magnitude greater than the least sensitive species/sex/site examined (female mouse subcutaneous fibromas). However, there is less than a four-fold difference in the unit risk between animals species for liver tumors.

Uncertainties with this toxicity value include the assumption that oral and inhalation routes are equivalent, the concentration of TCDD in the air would be the daily oral dose, the route of exposure does not affect absorption, and that there is no difference in metabolism and pharmacokinetics between animals and humans. Although studies regarding relative absorption via differing routes show that inhalation of CDDs is at least as available as through gastrointestinal absorption, it cannot be definitely determined if the aforementioned factors lead to an overestimate in risks because the available data also suggest that the degree and rate relative of absorption are dependent upon the media on which the CDDs are adsorbed and the degree of chlorination (ATSDR, 1998).

2,3,7,8-TCDD RfD – Noncancer hazards from dioxins/furans and dioxin-like PCBs were characterized using the TEQ methodology. Oral TCDD exposure is associated with adverse noncancer effects, including hepatic, neurological, immunological, reproductive, endocrine, and developmental effects. The RfD for dioxins/furans and PCB dioxin-like congeners used in this assessment was based on two epidemiologic studies, reporting either reproductive or developmental effects in humans exposed to TCDD through an industrial accident in Seveso, Italy in 1976 (EPA, 2012b).

Decreased sperm concentrations and decreased motile sperm counts were reported in men who were 1-9 years of age at the time of the Seveso accident. Serum TCDD levels were measured in samples collected within one year of the initial exposure. A LOAEL of 2.0E-08 mg/kg-day was calculated (Mocarelli et al., 2008 as in EPA, 2012b).

TCDD concentrations in maternal plasma were related to increased levels of thyroid stimulation hormone (TSH) in neonates. This toxicological concern is with the increased metabolism and clearance of the thyroid hormone thyroxine (T4). Adequate levels of thyroid hormones are essential during the brain development of newborns and young infants. Disruption of these hormones during pregnancy and neonatal stages can lead to neurological deficiencies, particularly in attention and memory. A LOAEL of 2.0E-08 mg/kg-day was calculated for this study also (Baccarelli et al., 2008 as in EPA, 2012b).

An uncertainty factor (UF) of 30 was applied to this dose to calculate the RfD. The 30 value comes from combining a UF of 3 to account for interindividual variability and a UF of 10 and to account for extrapolating from a lowest observable adverse effect level (LOAEL) to a no observable adverse effect level (NOAEL) (EPA, 2012b).

EPA has noted that confidence in the oral RfD is listed as “high.” The two principal studies were identified as “well conducted” by EPA and they show health effects in humans (as opposed to animals). There is some uncertainty with the exposure in the Mocarelli et al. study are based on a high dose exposure followed by gradual elimination. This is not considered an issue with the Baccarelli et al. study as the maternal exposures were not subject to large fluctuations because the maternal blood measurements occurred several years following the accident and newborns were exposed over a much narrower critical window. However, there is uncertainty with the extrapolation of serum TCDD concentrations from the time of measurement to the time of pregnancy (EPA, 2012b).

2,3,7,8-TCDD Toxicity Reanalysis – In May 2010, EPA released *Reanalysis of Key Issues Related to Dioxin Toxicity and Response to NAS Comments*, which contained a revised oral slope factor of 1E+06 $(mg/kg\text{-}day)^{-1}$. The response to comment period closed in September of 2010. EPA intends to revise the draft to respond to the Science Advisory Board’s (SAB) recommendations and public comments, share the revised report internally with other federal agencies and White House offices, then update and modify the dioxin reassessment. EPA released an updated IRIS profile containing an RfD for 2,3,7,8-TCDD in February 2012. At that time, it was indicated that the revised oral slope factor would be released “as soon as possible.” If the currently discussed toxicity criteria are eventually adopted, the cancer risks for dioxins and dioxin-like compounds presented in this HHRA would increase significantly (i.e., up to approximately 7.7 times).

5.4.4 Risk Characterization

5.4.4.1 Calculation of Total Cancer Risk from PCBs

Total PCB cancer risk was quantified by multiplying tPCB doses by the PCB CSF, and TEQ cancer risk was quantified by multiplying TEQ doses from PCB dioxin-like congeners by the CSF for 2,3,7,8-TCDD. However, estimating total cancer risk from tPCBs and TEQ is not straightforward for several reasons:

- Aroclors are complex commercial mixtures that contain many individual PCB congeners as well as a small component of chlorinated furans (Cogliano, 1998).
- The fate and transport properties of individual congeners differ, and PCB mixtures in the environment can differ significantly from the original commercial products.
- The cancer bioassays used to derive the PCB CSF were conducted using commercial Aroclors as test materials rather than the environmental PCB mixtures to which people are exposed.

Because of the potential differences between the commercial Aroclor mixtures that were tested and the PCB mixture in the environment, there is uncertainty associated with applying the PCB CSF to environmental mixtures. For example, if the relative proportion of carcinogenic PCB congeners is higher in the environmental mixture than in the Aroclor used in the cancer bioassays that form the basis of the PCB CSF, use of the PCB CSF alone may underestimate cancer risk from tPCBs. Several commercial Aroclors were used to determine the CSF (i.e., Aroclors 1016, 1242, 1254, and 1260). The chlorine in the site-specific fish data (calculated using total homolog concentrations) accounted for approximately 56% of the weight of the total homologs, which indicates that the environmental mixture in fish in the Choccolocco Creek would tend to be more closely associated with the heavier, and typically more toxic congener groupings. Therefore, it is likely that the PCB CSF does underestimate the site-specific cancer risk to some degree.

It is possible that one or more of the 12 PCB dioxin-like congeners (and the furans that compose a small fraction of the Aroclor mixture) might be present in environmental mixtures in higher proportions than in the commercial Aroclors. These PCB congeners were evaluated as TEQ using the approach developed for chlorinated dioxins and furans. Although the carcinogenic potency of these PCB congeners (and the furans that compose a small fraction of the Aroclor mixture) is already accounted for in the PCB CSF, to the extent that they were present in the Aroclor mixture tested in the animal bioassay(s), assessing risks for tPCBs may not capture the full extent of risks from dioxin-like PCBs. Environmental mixtures, particularly those found in the food chain (in fish, for example), may have enhanced concentrations of these and other highly persistent congeners. This appears to be true in fish in Choccolocco Creek as the % weight of the 12 PCB dioxin-like congeners with TEFs in commercial Aroclors generally ranges from about 2 to 12% (ATSDR, 2000); with the % weight of these same congeners (assuming nondetects present at the detection limit) in the site-specific fish data ranging from approximately 6 to 17%, with a mean of 11%.

Although PCB cancer risk can be quantified as TEQ, this approach alone may not fully account for PCB carcinogenicity because PCBs have been associated with carcinogenic mechanisms other than dioxin-like effects. For example, EPA's SAB cited the van der Plas et al. (2000) study of rats exposed to Aroclor 1260, which suggests that most of the tumor promotion potential of PCB mixtures is attributable to the nondioxin-like fraction (SAB, 2001). Because this fraction is not included in the TEQ calculation, van der Plas et al. (2000) concluded that the tumor promotion potential of PCBs might be underestimated by the TEQ approach alone.

To address the concern that some of the cancer potency of dioxin-like PCBs in environmental mixtures may pose a health risk that is predicted by the PCB CSF, cancer risks for tPCBs and PCB dioxin-like congeners were not summed. This approach underestimates the total cancer risk. Although the best approach to evaluating total cancer risk would be to appropriately account for the potential enrichment of dioxin-like congeners in the environmental mixture, the uncertainties associated with that approach decrease the useability of the information.

5.4.5 Summary

In total, it is difficult to determine whether risks would over or underestimated. A number of factors could lead to an overestimation of risk and a number of factors could lead to an underestimation of risk. The overall RME approach to the risk assessment would tend to overestimate risk for all but the most exposed individuals, while the CTE risk would tend to underestimate risk (especially if no fish consumption advisory was in place) given that it was based on an actual Creel survey on a river with a longstanding fish consumption prohibition.

5.5 RISK SUMMARY

Figures 5-3 and 5-4 present the fish ingestion cancer risks and HQs, respectively, for the “all species” grouping at each location. Although only the “all species” grouping was presented, as noted in the Risk Characterization text and tables (Section 5.3), the various targeted species break-outs (e.g., bass, catfish, and panfish) have relatively similar risk estimates. Each of the COPC cancer risks and HQs are presented individually so that their relative contributions are clear for both RME and CTE risks.

All of the RME cancer risk results were equal to or greater than the EPA cancer risk range of 1E-06 to 1E-04, with the exception of 2,3,7,8-TCDD TEQ risk within Groups B and C, which were within the cancer risk range. All of the RME HQs in all groups were at or above the benchmark of one. All of the CTE cancer risks were within the risk range, with the exception of the Group C tPCB risk, which was equal to the upper-end of EPA’s risk range (i.e., 1E-04). With the exception of tPCBs, which had CTE HQs well above one in all locations, the other CTE HQs were at or below this benchmark.

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6 RISKS FROM DIRECT CONTACT EXPOSURE

6.1 INTRODUCTION

This section presents an evaluation of the direct contact pathway, which includes exposure from incidental ingestion and dermal absorption from contaminated floodplain soil. Because of the size of the floodplain in OU-4 (more than 6,000 acres), property ownership, and varied land use, the floodplain area was separated into 25 exposure units (EUs) to facilitate the evaluation of exposure and risk for the recreational, utility worker, and farmer scenarios (see Section 1.3). As discussed in Section 2.3.2, residential areas are being evaluated as part of the Non-Time Critical Removal Action agreement between Solutia and EPA and, as a result, are not in the scope of this HHRA.

As noted in the beginning of this HHRA Report, certain sections that are common to all three pathway risk assessments have been previously presented (e.g., toxicity assessment). This section provides the exposure assessment, the risk characterization, and a discussion of key uncertainties associated with the direct contact with floodplain soil component of the OU-4 HHRA.

6.2 EXPOSURE ASSESSMENT

The exposure assessment estimates the nature, extent, and magnitude of potential exposure of humans to COPCs considering both current and future uses. The exposure assessment involves several steps, which are listed below:

- Determining EUs for evaluation.
- Calculating exposure point concentrations (EPCs) for each of the exposure scenarios and routes of exposure.
- Identifying the exposure scenarios, models, and parameters with which to calculate exposure doses.

To provide a range of exposure and risks, the reasonable maximum exposure (RME) and central tendency exposure (CTE) scenarios were evaluated (EPA, 1992). The RME, an estimate of the high-end exposure in a population, is based on a combination of average and high-end estimates of exposure parameters typically representing the 90th percentile or greater of actual expected exposure. The CTE represents an estimate of the average exposure in a population and is based on central estimates of exposure parameters. Both the RME and CTE were evaluated for each exposure scenario.

6.2.1 Exposure Units

As presented in Section 1.3, the OU-4 floodplain area was divided into 25 EUs. This section evaluates the level of contamination within each EU and eliminates from further evaluation in the HHRA those EUs with minimal tPCB concentrations. EUs were eliminated from consideration in the HHRA when tPCB concentrations (either maximum detected concentration or 95% upper confidence limit of the mean [UCL]) were less than 1 mg/kg tPCBs, the previously agreed upon target level for tPCBs.

Soil exposure was evaluated as both surface soil and total soil, with surface soil defined as 0-1 foot bgs, and total soil defined as 0-4 feet bgs. Surface soil concentrations were applied to recreational and farmer soil in which the vast majority of exposure would likely be to the top foot of soil. Total soil was specifically limited to the utility or industrial worker who could be exposure to a greater depth during typical work activities.

Table 6-1 presents the 25 EUs, the maximum tPCB surface soil concentration, the tPCB surface soil 95% UCL, and EU-specific tPCB surface soil EPCs (see Section 6.2.2 for discussion of EPC calculation). Seven of the EUs had tPCB surface soil EPCs less than 1 mg/kg and were eliminated from further consideration in the HHRA. Eighteen of the EUs had a surface soil EPC greater than 1 mg/kg tPCBs and were therefore retained for further investigation in the HHRA.

Four EUs had either utility lines or industrial facilities (e.g., wastewater treatment plant). Table 6-2 presents the 4 total soil EUs evaluated, the maximum tPCB total soil concentration, the tPCB total soil 95% UCL, and EU-specific tPCB total soil EPCs. All four of the EUs had tPCB total soil EPCs greater than 1 mg/kg tPCBs and were therefore retained for further investigation in the HHRA.

Ag-EUs, as identified in Section 7, were used to develop data sets/statistics for use in intake calculations for direct contact exposures to the farmer.

Tables 6-3 and 6-4 present the surface soil and total soil summary statistics for the primary COPCs in the retained direct contact EUs, respectively. Table 6-5 presents the surface soil summary statistics for the primary COPCs at the agricultural EUs (Ag-EUs 1 through 8).

6.2.2 Exposure Point Concentrations

The subsections below present the methods used to calculate the EPCs for the primary COPCs (tPCBs, PCB congeners, and mercury) and the other COPCs.

6.2.2.1 tPCBs and Mercury

The following guidelines were used to determine the EPCs in floodplain soil for tPCBs and mercury for the direct contact risk assessment for each of the EUs. In general, the EPC is represented by the 95% upper-confidence limit of the mean (95% UCL; EPA, 2010a and b). The equations that are used for the 95% UCL calculations are based upon the shape and underlying distribution of the concentration data. Note that each contaminant is looked at individually and professional judgment is used, guided by both the ProUCL Technical Manual (EPA, 2010a) and the ProUCL User's Guide (EPA, 2010b).

ProUCL calculates 95% UCLs using 15 different computation methods, 5 parametric and 10 non-parametric. Parametric methods rely on the estimation of parameters (such as the mean or the standard deviation) describing the distribution of the variable of interest in the population; non-parametric methods do not.

Support documentation (ProUCL outputs) for the calculation of the ProUCL-based EPCs is presented in Appendix I. The EPCs for tPCBs and mercury within the direct contact and agricultural EUs are presented in Tables 6-6 through 6-8. Note that the same EPC value was used for the RME and CTE scenarios.

Soil EPCs for tPCBs and mercury were based on the criteria below.

- If 8 or more samples were collected and the dataset contained more than 5 percent but less than 50 percent detects and at least 4 detects, a nonparametric-based UCL (either Kaplan-Meier (KM) or bootstrapping derived), as per ProUCL's non-parametric-based UCL recommendation, was selected. Note that the bootstrapping method was not considered unless there were at least 10 detects.

- If 8 or more samples were collected within a data grouping and the data set contains at least 50% detects, the appropriate distribution of the data set is determined and UCLs/EPCs are selected as guided by the ProUCL supporting documentation. If the recommended UCL exceeds the maximum detected concentration, a Chebyshev-based UCL is selected as the EPC if possible. If the Chebyshev-based UCL is still higher than maximum detected concentration, the maximum concentration is selected as the EPC.

6.2.2.2 PCB Dioxin-like Congeners in Floodplain Soil

PCB dioxin-like congeners were also identified as a primary COPC, but an alternative approach was required for determining EPCs because there was not enough data collected in each of the EUs to develop a supportable statistical value. Instead, the EPCs for PCB dioxin-like congeners in floodplain soil were estimated using regression equations based on paired tPCB and dioxin-liked PCB congener concentrations from throughout OU-4. A detailed description of the regression analysis and the approach to estimating PCB dioxin-like congener EPCs is presented in Appendix D. Tables 6-9 and 6-10 present the surface soil and total soil EPCs, respectively, for the PCB dioxin-like congener TEQ within the direct contact EUs. Table 6-11 presents the surface soil EPCs for the PCB dioxin-like congener TEQ within the agricultural EUs.

6.2.2.3 Other Floodplain Soil COPCs

Other soil COPCs (i.e., dioxin/furan congeners, PAHs, and metals, excluding mercury) were evaluated differently since the data set is limited because these COPCs were sampled in only 10% of the samples collected from the floodplain. A site-wide approach was used to calculate EPCs for these COPCs. A single EPC was calculated for each of the other soil COPCs and was assumed to be representative of the COPC concentration throughout OU-4. EPA’s ProUCL program was used to calculate the EPCs. Support documentation (ProUCL outputs) for the calculation of the UCLs is presented in Appendix I. EPCs used in the risk assessment for the other soil COPCs are presented in Table 6-12.

6.3 EXPOSURE PARAMETERS

This section presents the exposure parameters that were used to quantify exposure in terms of contaminant intake (exposure dose). Table 6-13 presents the exposure parameters for each receptor, which were initially presented in the Final PAR (JMWA, 2009). The mathematical formulas used in estimating exposure intakes are also shown on these tables.

To streamline the presentation and discussion of exposure parameters, they were separated into two categories. The first category was the constant exposure parameters that were similar for all exposure scenarios. These parameters were not repeated in each scenario-specific discussion. The second category was the variable exposure parameters. These parameters were usually different for each exposure scenario and were presented in the exposure scenario-specific discussions in Section 6.3.2.

6.3.1 Constant Exposure Parameters

The exposure parameters values that were constant for all of the exposure scenarios are listed below:

- Body weight (BW).
- Averaging time (AT) – cancer and noncancer.
- Dermal absorption factor (ABS).
- Intestinal absorption factor (IAF) from soil.

6.3.1.1 Body Weight

The average BW values for the young child (1 through 6 years) and the adult were 15 kg and 70 kg, respectively (EPA, 1989, 2008). For the adolescent (7 through 16 years), the BW was 45 kg (EPA, 1997, 2000). These values were used in the RME and CTE evaluations and are constant across all scenarios.

6.3.1.2 Averaging Time

The cancer-based AT was based on a 70-year lifetime for all age groups and equates to 25,550 days (70 years x 365 days/year) (EPA, 1989). The noncancer AT for each of the scenarios was based on the receptor- and scenario-specific exposure duration (ED) in years multiplied by 365 days/year. The noncancer-based AT was constant across all of the scenarios in that it was always the ED multiplied by 365 days/year.

6.3.1.3 Dermal Absorption Factor

The ABS term (unitless) represents the fraction of a COPC that was assumed to penetrate the skin following dermal contact with contaminated soil. Similar to the HHRAs performed for OU-1/2 and OU-3 of the Anniston PCB Site, an ABS value of 0.06 was used for PCBs (Solutia, 2002). The ABS values for the other COPCs were obtained from EPA RAGS Part E guidance (EPA, 2004) and are listed below. The ABS values were used in the RME and CTE evaluations.

COPC	Dermal Absorption Factor
PCBs (includes PCB congeners)	0.06
Mercury	Not available
2,3,7,8-TCDD	0.03
PAHs	0.13
Aluminum	Not available
Arsenic	0.03
Chromium	Not available
Cobalt	Not available
Iron	Not available
Manganese	Not available

6.3.1.4 Intestinal Absorption Factor from Soil

The IAF term (unitless) represents the fraction of COPCs that was assumed to be absorbed through the gastrointestinal tract following the incidental ingestion of the soil. Similar to the HHRAs performed for OU-1/2 and OU-3, an IAF value of 0.3 was used for PCBs in soil (Solutia, 2002). IAF values for the other COPCs were 1.0. The IAF values were used in the RME and CTE evaluations for all of the scenarios involving the soil ingestion route of exposure.

6.3.2 Receptor-specific Exposure Parameters

6.3.2.1 Recreational User Exposure Parameters

Recreational users are potentially exposed to COPCs in surface soil (0 to 1 ft bgs) through incidental ingestion and dermal contact and absorption. The recreational receptors included young children, adolescents, and adults that use the OU-4 floodplain for various recreational activities, including walking, hiking, picnicking, riding all-terrain vehicles, hunting, fishing, and related activities. The exposure parameters for the recreational user scenario were developed to cover the potential exposure associated with the most soil intensive recreational activity. The age groups of the recreational user receptors evaluated at an EU were determined based on the EU’s access characteristics. The young child receptor was evaluated at EUs located close to residences or at areas with easy access to the floodplain. The adolescent and adult were evaluated at every recreational EU. Table 2-1 presents the recreational user exposure scenario evaluated per EU.

RME

The incidental soil ingestion rates (IRS) for residential exposure in the list below were used in the RME evaluation for the recreational users.

- Young child – 200 mg/day (EPA, 1991, 1997).
- Adolescent – 100 mg/day (EPA, 1991, 1997).
- Adult – 100 mg/day (EPA, 1991, 1997).

The following exposed skin surface area (SA) values were used in the RME evaluation:

- Young child – exposed skin surface includes head, hands, forearms, lower legs, and feet. This equates to a SA value of 2,800 cm^2 (EPA, 2004).

- Adolescent – exposed skin surface includes head, hands, forearms, and lower legs. This equates to a SA value of 5,300 cm^2 (EPA, 2004).

- Adult – exposed skin surface includes head, hands, and forearms. This equates to a SA value of 3,300 cm^2 (EPA, 2004).

The following soil-to-skin adherence factor (AF) values were used in the RME evaluation:

- Young child – a value of 0.3 mg/cm^2 was used, which is the 95th percentile value for the daycare children activity (EPA, 2004).

- Adolescent – a value of 0.4 mg/cm^2 was used, which is the 95th percentile value for children playing in dry soil activity (EPA, 2004).

- Adult – a value of 0.1 mg/cm^2 was used, which is the 95th percentile value for the commercial/industrial groundskeeper activity (EPA, 2004).

The following ED values were used in the RME evaluation:

- Young child – a value of 6 years was used, based on the age range of 1 through 6 years.

- Adolescent – a value of 10 years was used, based on the age range of 7 through 16 years.

- Adult – a value of 30 years was used. This value is consistent with EPA's default residential ED (EPA, 1997). The duration of 30 years is supported by 2006 Census data for Calhoun and Talladega Counties related to the year an individual moved into their current residence. The data indicate that approximately 10% of the respondents have been in their current dwelling since 1969 or earlier (U.S. Census Bureau, 2007a, 2007b).

For soil ingestion, a fraction ingested (FI) value of 1.0 was used. A FI of 1.0 assumes that the exposed individual receives 100% of their daily soil intake while engaging in recreational activities at the EU.

Exposure frequency (EF) can vary at different EUs as a function of the location and accessibility of the EUs. At the majority of the EUs, the recreational users were assumed to be exposed to soil 52 days/year which assumes exposure one day per week over the course of a year (52 weeks). This EF is half of the recreational user EF value used in the OU-1/2 HHRA (CDM, 2008). Many of the floodplain areas are not readily accessible as a result of vegetation. Thus, a reduced recreational user EF was used. This is referred to as low contact recreational. At recreational EUs located near residential properties or areas where access is not restricted by vegetation (e.g., along maintained pathways), a higher EF value was used (104 days/year). This is termed high contact recreational.

CTE

The RME parameters for SA were also used for the CTE analysis. The young child and adolescent RME ED values were also used for the CTE.

The IRS values in the list below were used in the CTE evaluation.

- Young child – 100 mg/day (EPA, 1991, 1997).
- Adolescent – 50 mg/day (EPA, 1991, 1997).
- Adult – 50 mg/day (EPA, 1991, 1997).

The following AF values were used in the CTE evaluation:

- Young child – a value of 0.04 mg/cm^2 was used, which is the geometric mean value for the daycare children activity (EPA, 2004).

- Adolescent – a value of 0.04 mg/cm^2 was used, which is the geometric mean value for the children playing in dry soil activity (EPA, 2004).

- Adult – a value of 0.02 mg/cm^2 was used, which is the geometric mean value for the commercial/industrial groundskeeper activity (EPA, 2004).

An ED value of 15 years was used for the adult recreational user. This value is half of the RME value. A soil FI value of 0.5 was used. This assumes that the exposed individual receives 50% of their daily soil intake from within the EU. At the majority of the recreational EUs, the recreational users were assumed to be exposed to soil 26 days/year which assumes exposure one day every two weeks over the course of a year (52 weeks). An EF value of 52 days/year (once a week) was used at recreational EUs located near residential properties.

6.3.2.2 Utility Worker Exposure Parameters

Utility workers, or other industrial workers, could be exposed to COPCs in surface and subsurface soil (total soil) within OU-4 via the incidental soil ingestion and dermal contact routes of exposure during typical work activities that require excavation and repair. The exposure was based on intense soil contact activities that were assumed to have a short duration.

RME

The IRS was 330 mg/day (EPA, 2002). The SA value was 3,300 cm^2 (EPA, 2004) and assumes that the head, hands, and forearms are exposed. The AF value was 0.3 mg/cm^2, which corresponds to the 95th percentile value for the construction workers activity (EPA, 2004). The utility worker ED was 1 year. The EF was 10 days/year which assumes the utility worker maintains easements, and inspects, repairs and replaces equipment. The FI was 1.0.

CTE

The RME parameters SA and ED were also used for the CTE analysis. An IRS value of 100 mg/day was used (EPA, 2003). The AF value was 0.1 mg/cm^2, which corresponds to the geometric mean value for the construction workers activity (EPA, 2004). The EF was 5 days/years, which is half of the RME value. The FI was 0.5.

6.3.2.3 Farmer Exposure Parameters

The farmer exposure scenario consists of an adult contacting floodplain soil during typical farming activities such as planting and harvesting. It is applied to EUs that are currently used for agricultural purposes.

RME

Higher soil ingestion rates are used for contact-intensive activities such as farming. EPA recommends a soil ingestion rate of 330 mg/day for construction work activities (EPA, 2002). This value represents the 95th percentile rate based on a study by Stanek at al. (1997). The 90th percentile ingestion rate from the Stanek study was 200 mg/day. The IRS of 200 mg/day was used in the RME for the adult farmer. This rate applies to the planting and harvesting activities in which heavy equipment can be used and fugitive dust generated.

The RME EF for the adult farmer contact with floodplain soil was 10 days/year. This value is based on a 200-day growing season and assumes that a farmer spends 5 days/year planting and 5 days/year harvesting in the floodplain. A SA value of 3,300 cm^2 was used. An AF value of 0.4 mg/cm^2, which is the 95th percentile value for the farmer activity, was used (EPA, 2004). The farmer based ED value of 40 years was used in the RME evaluation (EPA, 2005). A FI value of one was used.

CTE

The RME parameters for SA and ED were also used for the CTE analysis. The IRS was 100 mg/day (EPA, 2003). The CTE EF for the adult farmer contact with floodplain soil was 5 days/year. An AF value of 0.1 mg/cm^2, which is the geometric mean value for the farmer activity, was used (EPA, 2004). A soil FI value of 0.5 was used.

6.3.2.4 Exposure Doses

Calculated exposure doses are presented in RAGS D format in Appendix J.

6.4 RISK CHARACTERIZATION

The risk characterization integrates the information developed in the exposure assessment and the toxicity assessment into an evaluation of the potential risks associated with exposure to COPCs. Cancer risks were calculated for those COPCs with evidence of carcinogenicity and for which cancer toxicity values were available. Noncancer health effects were evaluated for COPCs (i.e., including carcinogens) for which noncancer toxicity values were available.

6.4.1 Cancer Risk

Potential cancer risks from oral exposure were calculated by multiplying the estimated LADD intake that was calculated for a COPC through an exposure route by the exposure route-specific CSF, as follows:

$$\text{Risk} = \text{LADD} * \text{CSF}$$

Where:

LADD = Lifetime average daily dose; intake averaged over a 70-year lifetime as mg COPC/kg-body weight per day.

CSF = COPC- and route-specific cancer slope factor $(\text{mg/kg-day})^{-1}$.

EPA's cancer risk range is an increased risk of developing cancer, based on a plausible upper-bound estimate of risk, of approximately 1 in 1,000,000 (1E-06) to 1 in 10,000 (1E-04).

6.4.2 Noncancer Health Effects

Potential noncancer health effects were evaluated by the calculation of hazard quotients (HQs) and hazard indices (HIs). An HQ is the ratio of the ADD through a given exposure route to the COPC-specific RfD. The HQ-RfD relationship is illustrated by the following equation:

$$\text{HQ} = \text{ADD/RfD}$$

Where:

ADD = Average daily dose; estimated daily intake averaged over the exposure duration (mg/kg-day).

RfD = Reference dose (mg/kg-day).

HQs were summed to calculate HIs for each scenario. HIs were calculated for each exposure route, and a total HI was calculated based on exposure to the COPCs from exposure routes for each receptor. HIs of less than one indicate that adverse health effects associated with the exposure scenario are unlikely to occur.

6.4.3 Risk Results

The following subsections present the results of the RME risk calculations. Section 6.4.3.1 presents the RME risk results for the EUs. The EU-specific risks were based on the primary COPCs (tPCBs, PCB TEQ, and mercury). Section 6.4.3.2 presents the RME site-wide risk results based on potential exposure to the other COPCs (2,3,7,8-TCDD TEQ, carcinogenic PAHs, aluminum, arsenic, chromium, cobalt, iron, and manganese). As discussed previously in this report, the amount of analytical data available for the other COPCs were limited and therefore EU-specific risks could not be calculated. Site-wide (i.e., OU-4 area) risks were estimated based on the limited amount of data assuming that the calculated EPCs were representative of the entire OU-4 area. There is uncertainty associated with this approach that is discussed in the Uncertainty Analysis.

6.4.3.1 Exposure Unit Risks

Tables 6-14 and 6-15 present a summary of the total RME cancer risks and noncancer HIs from the primary COPCs (tPCBs, PCB TEQ, and mercury) at each direct contact EU and agricultural EU, respectively. The recreational cancer risks based on both tPCBs and PCB dioxin-like congener TEQ were either within or less than the EPA acceptable cancer risk range of 1E-06 to 1E-04. The maximum recreational cancer risk was observed at C3S-EU2. High contact recreational exposure was evaluated at this EU for the young child, adolescent, and adult receptors. The total tPCB cancer risks at C3S-EU2 ranged from 4E-06 to 8E-06. The PCB dioxin-like congener TEQ cancer risks at C3S-EU2 ranged from 1E-06 to 3E-06. The utility worker cancer risks for both tPCBs and PCB dioxin-like congener TEQ were less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 at all EUs. The tPCB cancer risks for the utility worker ranged from 1E-08 to 1E-07. The PCB dioxin-like congener TEQ cancer risks for the utility worker ranged from 2E-09 to 2E-08. The farmer cancer risks were at or less than the EPA acceptable cancer risk range at every agricultural EU and ranged from 3E-09 to 3E-06 for tPCBs and 8E-11 to 3E-07 for PCB dioxin-like congener TEQ.

The noncancer RME HIs for all soil contact exposure scenarios (recreational, worker, and farmer) were less than or equal to the noncancer benchmark of one at all of the direct contact EUs.

Appendix K presents the RAGS Part D Tables 9 and 10 for both the RME and CTE evaluations. Recreational user, utility worker, and farmer CTE cancer risks were less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 at all direct contact and agricultural EUs. Recreational user, utility worker, and farmer CTE HIs were less than the noncancer benchmark of one at all direct contact and agricultural EUs.

6.4.3.2 Site-Wide Risks

Site-wide RME risks were estimated for 2,3,7,8-TCDD TEQ, carcinogenic PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene), aluminum, arsenic, chromium, cobalt, iron, and manganese. Risks were estimated assuming high contact and low contact recreational exposure. Table 6-16 presents the results of the RME cancer risk calculations. Table 6-17 presents the RME noncancer HIs.

The site-wide cancer risks were within the EPA acceptable risk range. The risks ranged from 2E-06 to 9E-06. The noncancer HIs were less than the noncancer benchmark of one, ranging from 0.04 to 0.7.

6.5 UNCERTAINTY ANALYSIS

The uncertainty analysis in a risk assessment provides to the appropriate decision makers (i.e., risk managers) information about the key assumptions, their inherent uncertainty and variability, and the impact of this uncertainty and variability on the estimates of risk. The uncertainty analysis shows that risks are relative in nature and do not represent an absolute quantification. The subsections that follow identify the major uncertainties inherent in the HHRA process by report section to determine if the calculated risks may have been overestimated or underestimated, and the approximate degree to which this may have occurred.

6.5.1 Hazard Identification

Analytes without Screening Values – Lead does not have an established screening value for soil concentrations and was not quantitatively evaluated in the risk assessment process. Because toxicity criteria were not available, risks (cancer and noncancer) could not be estimated. It is likely that site risks are slightly underestimated as a result of this lack of toxicity criteria.

Congener Data Availability – Congener data were available for approximately 10% of the soil samples. EPCs for dioxin-like PCB congeners in floodplain soil were estimated using regression equations based on paired tPCB and dioxin-liked PCB congener concentrations from throughout OU-4. It is not known if this uncertainty results in an over- or underestimate of risk, but the magnitude of the uncertainty is likely to be minimal.

6.5.2 Exposure Assessment

Selection of Exposure Assumptions – The exposure assumptions directly influence the calculated doses (chronic daily intakes), and ultimately the calculation of risk. The RME concept was used to estimate the exposure potential for each of the receptors that were evaluated in the HHRA. The RME is defined as the "maximum exposure that is reasonably expected to occur at the site" (EPA, 1989). These assumptions contribute to an overestimation of real-life exposures and a resulting overestimation of risk for most individuals, in some cases to a relatively significant degree. The use of the CTE is designed to provide a more typical exposure and risk estimate for those individuals who would contact floodplain soil.

6.5.3 Toxicity Assessment

A detailed presentation of the key issues associated with toxicity uncertainties was presented in Section 5.4.3 in the Fish Risk Assessment section, and is not repeated here. In general, given the conservative nature of the development of toxicity factors, it is likely that the use of these criteria in evaluating exposure and risk through direct contact exposure results in an overestimation of risk.

6.5.4 Risk Characterization

A detailed discussion of some of the key issues associated with presenting PCB and congener risk was presented in the Fish Risk Assessment in Section 5.4.4, and is not repeated here.

In general, due to the conservative nature of the exposure assumptions, especially for the RME, and the toxicity criteria, it is likely that the risks presented for direct contact exposure are overestimated to a significant degree.

6.6 RISK SUMMARY

Cancer risks and hazard quotients estimated for direct contact exposure were all within or less than typical risk ranges for both RME and CTE exposures. In addition, based on the conservative approach taken in calculating these risks, it is unlikely that direct contact exposure of residents, recreators, farmers, or workers to floodplain soils would result in unacceptable human health risks.

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7 RISKS FROM AGRICULTURAL PRODUCTS CONSUMPTION

7.1 INTRODUCTION

The focus of this portion of the HHRA is the current and potential future food production activities by the farmer who grows vegetables and crops and raises livestock in the floodplain. The ingestion of agricultural products takes into account the current agricultural practices in OU-4. It also considers the reasonably anticipated future agricultural practices. Risks were not calculated for specific areas, properties, or agricultural practices because to do so would only provide information for a single set of scenarios and would not be useful if/when conditions and farming practices change in the future. Rather, it evaluates where agricultural use is occurring (or could occur) and uses representative tPCB concentrations to generate risk matrices incorporating multiple potential farming practices and home grown ingestion scenarios.

An investigation of current agricultural practices indicated that the primary uses of the floodplain in OU-4 are cattle grazing (for beef production) and crops (for direct sale and to a lesser extent, cattle feed) (Butler, 2009, Browning, 2009, Jurriaans, 2009, and West, 2009). Dairy production is no longer practiced in the floodplain areas of OU-4, according to farm service agents in Calhoun and Talladega Counties; and no evidence was found that chickens, eggs, or garden vegetables are commonly raised in floodplain soil, although it is possible that this could change in the future (Butler, 2009, Browning, 2009, Jurriaans, 2009, and West, 2009).

As described earlier, the Alabama Land Trust (ALT) is in the process of developing a Conservation Corridor for Choccolocco Creek. The Conservation Corridor is a conservation easement that limits the development and use of the floodplain within certain distances from the Creek bank. Depending on the property and specific stipulations in the agreement, restrictions can be applied to residential, commercial, industrial, recreational, or agricultural uses.

Figure 7-1 shows the areas where the Conservation Corridor restricts agricultural uses. It is possible that additional properties will become part of the Conservation Corridor in the future. This is important information for the agricultural component of the OU-4 HHRA because the land use and potential exposure to COPCs (tPCBs) within the easement will be different from exposure outside of the easement. The boundaries of the Conservation Corridor were taken into consideration in the delineation of agricultural exposure units (Ag-EUs).

Section 7.2 describes the Ag-EUs which represent areas within OU-4 where agricultural use is occurring or could reasonably occur in the future, and where the maximum detected tPCB concentration is greater than 1 mg/kg. Section 7.2 also provides a summary of the tPCB data in each Ag-EU and provides the justification for the range of tPCB concentrations used for modeling uptakes. Section 7.3 is the Exposure Assessment, which describes the approach used to model the transfer of soil tPCB concentrations into agricultural crops and animal tissue and presents the farmer exposure parameters. Section 7.4 provides the estimates of risk for each agricultural practice at a series of tPCB soil concentrations, and Section 7.5 provides a description of the major sources of uncertainty associated with this analysis. A summary of the risks is presented in Section 7.6 and references are presented in Section 7.7.

7.2 AGRICULTURAL EXPOSURE UNITS

The first step in evaluating potential exposure and risks from agricultural uses is to determine where agricultural activities are occurring (or could potentially occur) in the floodplain. Figures 7-2 through 7-4 present the locations of the designated Ag-EUs. Note that the Ag-EUs are separate and distinct from the direct contact EUs described in Section 2.

The Ag-EUs were delineated using the available aerial photography and information obtained during numerous trips to the floodplain area by EPA personnel and their contractors. The Ag-EUs included land used for growing row crops and grasses and where cattle were observed grazing. Areas with agricultural use restrictions imposed by the Conservation Corridor were not included in the Ag-EUs. The floodplain soil data (for tPCBs only) from each of the Ag-EUs were summarized to determine the extent of contamination levels that may be of concern for agricultural exposure. Table 7-1 presents this information.

As shown on Figures 7-2 through 7-4, eight Ag-EUs have been identified. Additional areas within OU-4 are used for agricultural purposes but all of the tPCB concentrations were less than 1 mg/kg; therefore, these areas were not evaluated further. Total PCB exposure point concentrations (EPCs) for each of the eight Ag-EUs were calculated following the approach presented in Section 6.2.2. These EPCs ranged from less than 1 mg/kg to 42.5 mg/kg. Based on the EPCs, exposure and risk from agricultural practices were calculated for the following tPCB concentrations: 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg.

7.3 EXPOSURE ASSESSMENT

As noted previously, current agricultural activities in the OU-4 floodplain are primarily beef cattle grazing and row crop production. Row crops are considered in regard to their use as animal feed crops, not as human consumables. Raising of dairy cows (milk consumption) and poultry (chicken and egg consumption) and growing of vegetables within the floodplain are considered potential future activities.

7.3.1 Agricultural Modeling

In contrast to the fish consumption (Section 5) and direct contact with soil (Section 6) portions of the HHRA, PCBs in the agricultural products consumed by humans were not measured, but were estimated using uptake/transfer models for the following reasons:

- Wide range of current and potential farming practices in the area;
- Potential for changes in both farming practices and locations in the future; and
- Uncertainty associated with soil concentrations for any specific farming practice.

The models predict the degree to which PCBs measured in the floodplain soil could be transferred to plants (root uptake) and animals (incidental soil ingestion and ingesting feed grown in the floodplain). As noted in the PAR (JMWA, 2009), only tPCBs were planned to be evaluated in agricultural products. Predictive models were used to estimate the concentrations of tPCBs in plants (i.e., vegetables and animal feed) and animal products.

The approach and models presented in EPA’s *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (HHRAP) (EPA, 2005) were preferentially used. The types of plants that were evaluated included above ground vegetables, below ground (root) vegetables for human consumption, and animal feed (e.g., pasture grass and silage). The predicted concentrations of tPCBs in vegetables were used to estimate exposure from human consumption of home grown garden vegetables. The predicted concentrations in animal feed (i.e., forage/silage/grain) were used to model uptake into animals grazing/foraging in the floodplain and consuming feed raised in the floodplain.

The models used in the HHRA are designed to be conservative and may result in an over-estimate of the concentrations of tPCBs in the agricultural products of interest and a potential overestimate of risk to humans who are assumed to consume these products. This modeling-related conservatism is addressed in the Uncertainty Analysis (Section 7.5). Table 7-2 presents a summary of the parameters used in the agricultural product modeling. These are the same parameters presented in the PAR (JMWA, 2009).

Table 7-3 presents a summary of the modeled tPCB concentrations in agricultural products assuming a soil concentration of 1 mg/kg tPCBs. Predicted tPCB concentrations in livestock were modeled based on a variety of livestock ingestion assumptions. This was done by altering the fraction of food that is assumed to be grown in the floodplain. The fraction ingested terms (FI) used in this analysis included 10%, 25%, 50%, and 100%, depending on the agricultural product. The predicted tPCB concentrations in agricultural products at the unity concentration were used to estimate risks at the range of tPCB concentrations in soil observed in the Ag-EUs.

7.3.1.1 Soil-to-Plant Transfer Mechanisms

This section describes the mechanisms by which PCBs can migrate from the soil to plant tissue. Contaminants such as PCBs are transferred from soil to plant tissue by:

- Root uptake from soil and transfer into above ground vegetation.
- Partitioning from soil to root vegetables.

The biotransfer factors (BTF) for above ground plants (BTF_{ag}), including vegetables and animal feed, were calculated on a dry weight basis using the correlation equation from Travis and Arms (1988) as presented in Equation 7-1. As previously described by EPA (1995), the BTF values for most compounds are a function of water solubility, which is inversely proportional to octanol/water partitioning coefficient (Kow). Thus, for compounds with a high Kow value (e.g., PCBs), which indicates very low water solubility, the potential transfer is expected to be minimal.

The correlation equation developed by Travis and Arms does not distinguish between above ground produce, forage, silage, or grain. Equation 7-1 was derived from experiments performed on compound classes such as DDT, pesticides, dioxins, furans, and PCBs. Therefore, because of the similarities between the test compound classes and the OU-4 contaminants, it is considered by EPA to be a valid modeling approach.

Equation 7-1

$$\log \mathrm{BTF}_{ag} = 1.588 - 0.578(\log \mathrm{Kow})$$

The log Kow value used in the modeling analyses was 6.5. This value is for Aroclor 1254 and was obtained from EPA's HHRAP (EPA, 2005).

The BTF for root vegetables (BTF_{bg}) was based on a root concentration factor (RCF). The RCF value is calculated on a wet weight basis based on experiments by Briggs et al. (1982) using Equation 7-2, which is specific to compounds with a log Kow value of greater than 2.0.

Equation 7-2

$$\log \mathrm{RCF}_{\text{wet weight}} = 0.77 \text{ x } \log \mathrm{Kow} - 1.52$$

The log RCF and a soil-water partitioning coefficient (Kds) value were used to calculate the BTF_{bg} on a wet weight basis (Equation 7-3). A Kds value of 24,535 (cm^3/gram) based on Aroclor 1254 was used (EPA, 2005). An empirical correction factor of 0.01 was applied to the calculated BTF_{bg} value to reduce the PCB uptake to root vegetables. Because of the protective outer skin, size, and shape of below ground produce, transfer of PCBs to the center of the produce is unlikely (EPA, 2005).

Equation 7-3

$$\mathrm{BTF}_{bg} = \frac{10^{\log \mathrm{RCF}_{\text{wet weight}}}}{\mathrm{Kds}} \text{ x } 0.01$$

Empirical constants and calculated transfer factors are presented in Table 7-2.

7.3.1.2 Prediction of Concentrations in Vegetables

Home grown produce was evaluated in two categories: above ground vegetables and below ground (root) vegetables. The soil-to-plant BTFs described in the previous section were applied to the unity tPCB concentration of 1 mg/kg to yield an estimate of the concentration of tPCBs in home grown produce (see Equations 7-4 and 7-5). The modeled above ground produce concentrations are in dry weight. For consistency with the vegetable ingestion rates discussed in Section 7.3.2, it was necessary to convert the produce concentrations to wet weight. A moisture content of 94% was used for above ground vegetables. This value represents the average moisture content of cucumbers, peppers, and tomatoes (EPA, 1997).

Equation 7-4

<u>Above ground produce</u>

$$C_{ag} = C_{soil} \text{ x } BTF_{ag} \times CF$$

Where:

C_{ag}	=	Concentration of tPCBs in above ground produce due to root uptake (mg/kg wet weight).
C_{soil}	=	Concentration of tPCBs in soil (mg/kg dry weight). The unity tPCB concentration term (i.e., 1 mg/kg) was initially used.
BTF_{ag}	=	Soil-to-plant biotransfer factor for above ground produce – 0.00678 ([mg COPC/kg dry weight plant]/[mg COPC/kg dry weight soil]).
CF	=	Conversion factor (0.06 kg dry weight/kg wet weight; does not apply to forage/silage/grain).

Equation 7-5

<u>Below ground produce</u>

$$C_{bg} = C_{soil} \text{ x } BTF_{bg}$$

Where:

C_{bg}	=	Concentration of tPCBs in below ground produce due to root uptake (mg/kg wet weight).
C_{soil}	=	Concentration of tPCBs in soil (mg/kg dry weight). The unity tPCB concentration term (i.e., 1 mg/kg) was initially used.
BTF_{bg}	=	Soil-to-plant biotransfer factor for below ground produce – 0.00125 ([mg COPC/kg wet weight plant tissue]/[mg COPC/kg dry weight soil]).

Empirical constants and calculated transfer factors are presented in Table 7-2. Calculated tPCB concentrations in produce based on a tPCB soil concentration of 1 mg/kg are presented in Table 7-3.

7.3.1.3 Prediction of Concentrations in Animal Feed

Total PCB concentrations in pasture grass, silage, and grain were predicted to determine the potential intake of livestock. The BTF_{ag} value derived using Equation 7-1 was applied to the unity tPCB concentration of 1 mg/kg to derive the levels of tPCBs in the feed of animals in the floodplain area (Equation 7-4). Because the animal feed consumption rates are on a dry weight basis, there is no need to convert the grain, silage, and pasture grass to wet weight. Empirical constants and calculated transfer factors are presented in Table 7-2. Calculated tPCB concentrations in animal feed based on a tPCB soil concentration of 1 mg/kg are presented in Table 7-3.

7.3.1.4 Prediction of Concentrations in Animal Products

The potential transfer of tPCBs from soil and food into animal tissue was predicted using regression models. Equations developed by Travis and Arms (1988) have been commonly used to predict contaminant transfer from affected media and food into beef and milk. However, there is a significant amount of uncertainty surrounding the Travis and Arms approach based on the limited log Kow range upon which the regression equation is based and questions surrounding the validity of the underlying biotransfer data set (EPA, 2005). As a result, EPA developed a new methodology for predicting transfer into beef and milk (RTI, 2005). Basically, the updated methodology predicts transfer into animal fat (BTF_{fat}) where lipophilic compounds such as PCBs tend to sequester (see Equation 7-6), The BTF_{fat} values are then adjusted to account for the assumed fat content in animal products.

Equation 7-6

$$\log \mathrm{BTF}_{fat} = -0.099 \text{ x } (\log \mathrm{Kow})^{2} + 1.07 \text{ x } \log \mathrm{Kow} - 3.56$$

Empirical constants and calculated transfer factors are presented in Table 7-2.

7.3.1.4.1 Beef

PCBs may accumulate in the tissue of beef cattle that graze in the floodplain as a result of ingesting pasture grass and soil or feed grown in the floodplain. The BTF_{fat} value calculated in Equation 7-6 was adjusted to account for the assumed fat content in beef on a wet weight basis as shown in the Equation 7-7.

Equation 7-7

$$BTF_{beef} = 10^{\log BTF_{fat}} \text{ x } 0.19$$

The beef cattle ingestion rates of food items (forage, silage, and grain) and soil were obtained from the HHRAP (EPA, 2005). Given the limited transfer of PCBs from soil to animal feed plants, the incidental ingestion of soil by grazing cattle is the primary contributor to the overall PCB intake. The beef cattle incidental soil ingestion rate was 0.5 kg/day and was derived as follows:

Average beef cattle weight: 590 kg (EPA, 2005).
Daily dry matter intake rate: 2% of average body weight. 590 kg x 2% = 11.8 kg DW/day (EPA, 2005).
Soil ingestion: 4% of total dry matter intake (EPA, 2005).
Beef cattle ingestion rate: 11.8 kg DW/day x 4% = 0.5 kg/day.

tPCBs in beef tissue were estimated assuming the cattle ingest forage, silage, grain, and soil. In addition, tPCBs in beef tissue were estimated assuming the cattle ingest forage and soil only (no silage or grain).

Equation 7-8 presents the general equation for calculating the concentration of tPCBs in beef tissue on a wet weight basis. The FI terms used in Equation 7-8 were set at different values (10%, 25%, and 50%) to account for the varying livestock raising practices in the floodplain with consideration given to the current and hypothetical future uses. The highest FI value (100%) was not used for cattle because the sizes of the agricultural areas within the floodplain within an EU do not seem to lend themselves to cattle obtaining 100% of their diet from within the floodplain.

Equation 7-8

$$C_{beef} = \left(\sum\left(FI_i \text{ x } IR_i \text{ x } C_i\right) + FI_{soil} \text{ x } IR_{soil} \text{ x } C_{soil} \text{ x } Bs\right) \text{x } BTF_{beef} \text{ x } MF$$

Where:

C_{beef}	=	Concentration of tPCBs in beef (mg/kg wet weight).
FI_i	=	Fraction of plant type i (forage, silage, and grain) grown on contaminated soil and ingested by the animal (unitless). For this analysis, the FI term was set at the following values: 10%, 25%, and 50%.
IR_i	=	Ingestion rate of plant type i eaten by the animal per day (kg dry weight plant/day). Forage – 8.8; Silage – 2.5; and Grain – 0.47.
C_i	=	Concentration of tPCBs in plant type i eaten by the animal – 0.00678 (mg/kg dry weight).
FI_{soil}	=	Fraction of ingested soil from the floodplain. For this analysis, the FI term was set at the following values: 10%, 25%, and 50%.
IR_{soil}	=	Ingestion rate of soil eaten by the animal per day (0.5 kg dry weight/day) (EPA, 2005).
C_{soil}	=	Concentrations of tPCBs in soil (mg/kg dry weight).
Bs	=	Soil bioavailability factor (unitless). A value of 1.0 was used.
BTF_{beef}	=	Beef biotransfer factor – 0.031 (day/kg wet weight tissue).
MF	=	Metabolism factor (unitless). A value of 1.0 was used.

Empirical constants and calculated transfer factors are presented in Table 7-2. Calculated tPCB concentrations in beef based on a tPCB soil concentration of 1 mg/kg are presented in Table 7-3.

7.3.1.4.2 Dairy Products

Although there are no known dairy operations within OU-4, uptake into dairy products was estimated assuming the potential for future dairy operations. PCBs may accumulate in the milk of dairy cattle that graze in the floodplain as a result of ingesting pasture grass and soil or feed (silage) grown in the floodplain. The BTF_{fat} value calculated in Equation 7-6 were adjusted to account for the assumed fat content in milk on a wet weight basis as shown in the Equation 7-9.

Equation 7-9

$$BTF_{milk} = 10^{\log BTF_{fat}} \text{ x } 0.04$$

The dairy cattle ingestion rates of food items (forage, silage, and grain) and soil were obtained from the HHRAP (EPA, 2005). Given the limited transfer of PCBs from soil to animal feed plants, incidental soil ingestion by the dairy cattle is the primary contributor to the overall PCB intake. The dairy cattle incidental soil ingestion rate was 0.4 kg/day and was derived as follows:

Average dairy cattle weight: 630 kg (EPA, 2005).
Daily dry matter intake rate: 3.2% of average body weight. 630 kg x 3.2% = 20 kg DW/day (EPA, 2005).
Soil ingestion: 2% of total dry matter intake (EPA, 2005).
Dairy cattle ingestion rate: 20 kg DW/day x 2% = 0.4 kg/day.

tPCBs in milk were estimated assuming the cattle ingest forage, silage, grain, and soil. In addition, tPCBs in milk were estimated assuming the cattle ingest only forage and soil from the floodplain (i.e., no silage or grain obtained grown within the floodplain).

Equation 7-10 presents the general equation for calculating the concentration of tPCBs in dairy milk on a wet weight basis. The FI terms used in Equation 7-10 were set at different values (10%, 25%, and 50%) to account for the varying livestock raising practices in the floodplain with consideration given to the current and hypothetical future uses. The highest FI value (100%) was not used for dairy cattle since they do not typically graze a significant portion of their time in most dairy operations and the sizes of the agricultural areas within the floodplain within an EU do not seem to lend themselves to cattle obtaining 100% of their diet from within the floodplain. Grazing and subsequent incidental soil ingestion is the most important mechanism for predicting tPCB concentrations in dairy products, and the use of the 100% FI value would be a significant overestimate of potential future exposure to this product.

Equation 7-10

$$C_{milk} = \left(\sum\left(FI_i \text{ x } IR_i \text{ x } C_i\right) + FI_{soil} \text{ x } IR_{soil} \text{ x } C_{soil} \text{ x } Bs\right) \text{x } BTF_{milk} \text{ x } MF$$

Where:

C_{milk}	=	Concentration of tPCBs in milk (mg/kg wet weight).
FI_i	=	Fraction of plant type i (forage, silage, and grain) grown on contaminated soil and ingested by the animal (unitless). For this analysis, the FI term was set at the following values: 10%, 25%, and 50%.
IR_i	=	Ingestion rate of plant type i eaten by the animal per day (kg dry weight plant/day). Forage – 13.2; Silage – 4.1; and Grain – 3.0.
C_i	=	Concentration of tPCBs in plant type i eaten by the animal – 0.00678 (mg/kg dry weight).

$$C_{milk} = \left(\sum\left(FI_i \text{ x } IR_i \text{ x } C_i\right) + FI_{soil} \text{ x } IR_{soil} \text{ x } C_{soil} \text{ x } Bs\right) \text{x } BTF_{milk} \text{ x } MF$$

Where:

FI_{soil}	=	Fraction of ingested soil from the floodplain. For this analysis, the FI term was set at the following values: 10%, 25%, and 50%.
IR_{soil}	=	Ingestion rate of soil eaten by the animal per day (0.4 kg dry weight/day) (EPA, 2005).
C_{soil}	=	Concentrations of tPCBs in soil (mg/kg dry weight).
Bs	=	Soil bioavailability factor (unitless). A value of 1.0 was used.
BTF_{milk}	=	Milk biotransfer factor – 0.00652 (day/kg wet weight tissue).
MF	=	Metabolism factor (unitless). A value of 1.0 was used.

Empirical constants and calculated transfer factors are presented in Table 7-2. Calculated tPCB concentrations in milk based on a tPCB soil concentration of 1 mg/kg are presented in Table 7-3.

7.3.1.4.3 Chickens and Eggs

PCBs may accumulate in chicken and subsequently eggs as a result of incidentally ingesting floodplain soil or feed (grain) grown in the floodplain. The BTF_{fat} value calculated in Equation 7-6 was adjusted to account for the assumed fat content in chicken and eggs on a wet weight basis as shown in the Equation 7-11.

Equation 7-11

$$BTF_{chicken} = 10^{\log BTF_{fat}} \text{ x } 0.14$$

$$BTF_{eggs} = 10^{\log BTF_{fat}} \text{ x } 0.08$$

The chicken ingestion rates of grain and soil were obtained from the HHRAP (EPA, 2005). Equation 7-12 presents the general equation for calculating the concentration of tPCBs in chickens and eggs on a wet weight basis. The FI terms used in Equation 7-12 were set at different values (10%, 25%, 50%, and 100%) to account for the varying livestock raising practices in the floodplain with consideration given to the current and hypothetical future uses.

Equation 7-12

$$C_{chicken} = \left(FI_{grain} \text{ x } IR_{grain} \text{ x } C_{grain} + FI_{soil} \text{ x } IR_{soil} \text{ x } C_{soil} \times Bs\right) \text{x } BTF_{chicken} \text{ x } MF$$

$$C_{eggs} = \left(FI_{grain} \text{ x } IR_{grain} \text{ x } C_{grain} + FI_{soil} \text{ x } IR_{soil} \text{ x } C_{soil} \times Bs\right) \text{x } BTF_{eggs} \text{ x } MF$$

Where:		
$C_{chicken}$	=	Concentration of tPCBs in chicken (mg/kg wet weight).
C_{eggs}	=	Concentration of tPCBs in eggs (mg/kg wet weight).
FI_{grain}	=	Fraction of grain grown on contaminated soil and ingested by the animal (unitless). For this analysis, the FI term was set at the following values: 10%, 25%, 50%, 100%.
IR_{grain}	=	Ingestion rate of grain (0.2 kg dry weight plant/day).
C_{grain}	=	Concentration of tPCBs in grain – 0.00678 (mg/kg dry weight).
FI_{soil}	=	Fraction of ingested soil from the floodplain. For this analysis, the FI term was set at the following values: 10%, 25%, 50%, and 100%.
IR_{soil}	=	Ingestion rate of soil (0.022 kg dry weight/day) (EPA, 2005).
C_{soil}	=	Concentrations of tPCBs in soil (mg/kg dry weight).
Bs	=	Soil bioavailability factor (unitless). A value of 1.0 was used.
$BTF_{chicken}$	=	Chicken biotransfer factor – 0.0228 (day/kg wet weight tissue).
BTF_{eggs}	=	Eggs biotransfer factor – 0.013 (day/kg wet weight tissue).
MF	=	Metabolism factor (unitless). A value of 1.0 was used.

Empirical constants and calculated transfer factors are presented in Table 7-2. Calculated tPCB concentrations in chicken and eggs based on a tPCB soil concentration of 1 mg/kg are presented in Table 7-3.

7.3.2 Exposure Parameters

Consumption of home grown vegetables, beef, dairy products (milk), chicken, and eggs were evaluated for the adult and young child using the range of tPCB concentrations in floodplain soil discussed in Section 7.2 (i.e., 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg). Exposure algorithms and the associated input parameters are found on Tables 7-4 and 7-5. Details regarding the derivation of parameter values are presented below. Note that only RME exposures were calculated. CTE exposure parameters were not used in the agricultural assessment because of the hypothetical nature of the exercise along with the use of variable percent grown/raised in the floodplain.

Information presented in EPA's *CSFII Analysis of Food Intake Distributions* (EPA, 2003) was used to estimate the potential exposure resulting from the consumption of food products grown or raised in the floodplain. Per capita food intake estimates on an "as consumed" basis were used. "As consumed" intake rates are based on the weight of the food in the form that it is consumed. As a result, preparation and cooking losses of contaminants were not applied to the intake rates.

For the RME analysis, the average of the 95th percentile intake values across the appropriate age categories was used. The per capita intake rates were multiplied by the fraction of the intake that is home produced to arrive at the estimate of the 'as consumed' home grown intake rate that was used in the HHRA. The fraction of intake that is home produced was obtained from the *Exposure Factors Handbook* (EPA, 1997). Table 7-6 presents the 95th percentile intake rates for each of the agricultural items evaluated. Table 7-7 presents the fraction of these items assumed to be home grown. Table 7-8 applies information in both the previous tables to derive overall agricultural product ingestion rates.

The fraction of produce (above ground and below ground vegetable) that is ingested from the floodplain (the FI term) is typically based on the fraction of the planted area within the floodplain. A range of FI values was used to account for potential changes in farmed areas. For this analysis, the FI term for vegetable ingestion was set at the following values: 10%, 25%, 50%, 75%, and 100%. An EF of 350 days/year was used for the child and adult. The farmer based ED value of 40 years (EPA, 2005) was used in the RME evaluation: 6 years of child exposure and 34 years of adult exposure.

7.4 RISK CHARACTERIZATION

The risk characterization integrates the information developed in the exposure assessment (Section 7.3) and the toxicity assessment (Section 4) into an evaluation of the potential risks associated with exposure to tPCBs. The calculation of risks through the ingestion of agricultural products pathway differs from the fish ingestion risks and direct contact with soil risks in that risk matrices were calculated in this section to account for a range of tPCB concentrations along with a range of farming practices and human consumption rates.

7.4.1 Cancer Risk

Potential cancer risks from ingesting agricultural products were calculated by multiplying the estimated LADD intake that was calculated for a COPC through an exposure route by the exposure route-specific CSF, as follows:

$$\text{Risk} = \text{LADD} * \text{CSF}$$

Where:

LADD = Lifetime average daily dose; intake averaged over a 70-year lifetime as mg COPC/kg-body weight per day.

CSF = COPC- and route-specific cancer slope factor $(mg/kg\text{-}day)^{-1}$.

EPA's cancer risk range is an increased risk of developing cancer, based on a plausible upper-bound estimate of risk, of approximately 1 in 1,000,000 (1E-06) to 1 in 10,000 (1E-04). This range is used to guide remedial actions under CERCLA.

7.4.2 Noncancer Health Effects

Potential noncancer health effects were evaluated by the calculation of hazard quotients (HQs). An HQ is the ratio of the ADD through a given exposure route to the COPC-specific RfD. The HQ-RfD relationship is illustrated by the following equation:

$$HQ = ADD/RfD$$

Where:

ADD = Average daily dose; estimated daily intake averaged over the exposure duration (mg/kg-day).

RfD = Reference dose (mg/kg-day).

HQs of less than one indicate that adverse health effects associated with the specific COPC (i.e., tPCBs) under the exposure scenario are unlikely to occur.

7.4.3 Risk Results

Tables 7-9 through 7-13 present the estimated risks for each of the agricultural products.

7.4.3.1 Vegetable Ingestion

The risk matrix for vegetable ingestion is presented on Table 7-9. Risks were calculated assuming the following scenarios:

- tPCB soil concentrations were set at 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg.
- Fraction of ingested vegetables grown in the floodplain were set at 10%, 25%, 50%, 75%, and 100%.

Even at the highest FI assumption and the highest tPCB soil concentration, the calculated cancer risks were within EPA's risk range. The total HI slightly exceeded the noncancer benchmark of one at the highest tPCB soil concentration of 40 mg/kg and the highest FI assumption of 100%. Given that home grown vegetables are typically raised near the actual residences and the highest soil tPCB concentrations in most of the Ag-EUs are away from the residential areas and closer to the Creek, the potential for any unacceptable risks from consuming home grown vegetables is low.

7.4.3.2 Beef Ingestion

The risk matrix for beef ingestion is presented on Table 7-10. Risks were calculated assuming the following scenarios:

- tPCB soil concentrations were set at 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg.
- Two cattle ingestion scenarios were assumed. The first assumed the cattle ingest forage, silage, grain, and soil from the floodplain. The second cattle ingestion scenario assumed the cattle ingest forage and soil from the floodplain. For both scenarios, the FI terms were set at 10%, 25%, and 50%.

The cancer risks at 1 mg/kg tPCBs in soil for all cattle ingestion scenarios were within EPA risk range of 1E-06 to 1E-04. The HQs at 1 mg/kg tPCBs in soil for all fraction ingested from the floodplain scenarios were less than the noncancer benchmark of one.

The cancer risks at 5 mg/kg tPCBs in soil for all cattle ingestion scenarios were within EPA risk range of 1E-06 to 1E-04. The HQs were slightly greater than one at the 5 mg/kg tPCBs soil level assuming the 50% FI ingestion scenario.

At the 20 mg/kg tPCB soil levels, the cancer risks were greater than 1E-04 for the 50% FI scenario. The HQs were greater than one (up to a maximum of approximately 10) at the 20 mg/kg soil levels for all ingestion scenarios.

At the 40 mg/kg tPCB soil levels, the cancer risks were greater than 1E-04 for the 25% and 50% ingestion scenarios. The HQs were greater than one (up to a maximum of approximately 19) at the 40 mg/kg tPCB soil levels for all ingestion scenarios.

Based on these results, consuming meat on a regular basis over a long period of time from cattle grazed in areas with the highest soil tPCB concentrations found in agricultural areas (20 and 40 mg/kg) would be a potential health concern for local farmers.

7.4.3.3 Dairy Ingestion

The risk matrix for dairy (milk) ingestion is presented on Table 7-11. Risks were calculated assuming the following scenarios:

- tPCB soil concentrations were set at 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg.
- Two cattle ingestion scenarios were assumed. The first assumed the cattle ingest forage, silage, grain, and soil. The second cattle ingestion scenario assumed the cattle ingest forage and soil. For both scenarios, the FI terms were set at 10%, 25%, and 50%.

The cancer risks at 1 mg/kg tPCBs in soil for all cattle ingestion scenarios were within the EPA risk range of 1E-06 to 1E-04. The HQs at 1 mg/kg tPCBs in soil for all cattle ingestion scenarios were less than the noncancer benchmark of one.

At 5 mg/kg tPCBs in soil, the cancer risks were within the EPA risk range for all three fraction ingested from the floodplain scenarios. The HQ was slightly greater than one at the 5 mg/kg tPCB soil level for the 50% FI scenario for forage/silage/grain/soil.

At the 20 mg/kg tPCBs in soil level, the cancer risks were within the EPA risk range for all scenarios. The HQs were greater than one for the 25% and 50% ingestion scenarios (up to a maximum of 6).

At the 40 mg/kg tPCB soil levels, the cancer risks were greater than 1E-04 for the 50% ingestion scenarios. The HQs were greater than one (up to a maximum of 13) at the 40 mg/kg tPCB soil levels for all ingestion scenarios.

Although there are no known dairy farms within the OU-4 floodplain where elevated levels of tPCBs exist, the potential exists for risks to local dairy farmers should they consume milk on a regular basis over a long period of time from dairy cows from a future dairy operation with grazing sited in the highest tPCB concentration areas of the floodplain.

7.4.3.4 Chicken and Eggs Ingestion

The risk matrices for chicken and eggs ingestion are presented on Tables 7-12 and 7-13, respectively. Risks were calculated assuming the following scenarios:

- tPCB soil concentrations were set at 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg.
- The chickens were assumed to ingest grain and soil. The FI terms were set at 10%, 25%, 50%, and 100%.

The calculated cancer risks were either within or less than EPA's risk range. The HQs were less than the noncancer benchmark of one.

Although there are no known chicken raising operations within the floodplain where elevated levels of tPCBs exist, even if such operations were considered in the future, there is little likelihood for any unacceptable health risks from the consumption of locally raised chicken or eggs.

7.5 UNCERTAINTY ANALYSIS

The uncertainty analysis in a risk assessment provides to the appropriate decision makers (i.e., risk managers) information about the key assumptions, their inherent uncertainty and variability, and the impact of this uncertainty and variability on the estimates of risk. The uncertainty analysis shows that risks are relative in nature and do not represent an absolute quantification. The subsections that follow identify the major uncertainties inherent in the agricultural products consumption component of the HHRA to determine if the calculated risks may have been overestimated or underestimated, and the approximate degree to which this may have occurred.

7.5.1 Exposure Assessment

Exposure Point Concentrations – The range of tPCB EPCs used in this analysis were based on the tPCB soil concentrations observed at each Ag-EU. The EPCs, typically represented by a 95% UCL or an upper-bound statistical value, are the tPCB levels for the entire Ag-EU and assume that the evaluated activity (e.g., gardening or grazing) occurs throughout the Ag-EU. This may not be the case. Further, the EPCs were assumed to be unchanged over the duration of exposure (40 years).

Selection of Exposure Parameters **–** The exposure assumptions directly influence the calculated doses (chronic daily intakes), and ultimately the calculation of risk. The RME concept was used to estimate the exposure potential for each of the receptors that were evaluated in the HHRA. The RME is defined as the "maximum exposure that is reasonably expected to occur at the site" (EPA, 1989). These assumptions contribute to an overestimation of real-life exposures and a resulting overestimation of risk for most individuals, in some cases to a relatively significant degree.

Future Use Assumptions **–** Risks were calculated for several agricultural products such and dairy, vegetables, chicken and eggs that are without evidence of current production in the floodplain. Although the potential exists for these practices to be used in the future, such an occurrence is unlikely. The most critical product from a risk perspective would be dairy products (i.e., milk). A future dairy operation in the floodplain is an unlikely occurrence as the operation would be expensive to start, it goes against current trends for farming in the general area, and if commercialized, would likely have significantly less grazing than that assumed in this analysis. Therefore, estimated risks from dairy products are likely overestimated to a significant degree.

Consumption Rates **–** Risks were calculated assuming farmers grow and consume a significant portion of their regular diet from food sourced in the floodplain over a long period of time (40 years). In actuality, based on interviews with local agricultural agents, the consumption of locally-raised beef is not a common occurrence. Most beef cattle are sold off and not consumed by local farming families. To the degree that current practices do not reflect the assumptions used in this assessment relating to locally raised beef consumption rates, the risks would be overestimated, most likely to a significant degree.

Soil Bioavailability Factor (Bs) **–** in the agricultural exposure assessment, a soil bioavailability factor of one (1.0) was used when calculating the tPCB concentration in animal tissue (beef, dairy products, and poultry) (see Equations 7-8, 7-10, and 7-12). This is the approach recommended by EPA (EPA, 2005) in the absence of specific information supporting a lower Bs, and indicates that all of the PCBs present in soil would be absorbed upon ingestion into the beef cattle or dairy cow, for example. Studies have indicated that compounds like PCBs may not be

100% bioavailable and that some portion is likely to stay associated with the soil and not transfer to meat or milk. However, most of these studies have focused on animals with similar digestive systems to humans, such as pigs, and have not focused on ruminants such as cows, that may be more likely to have a high Bs. Therefore, the body of the report maintained the EPA recommended Bs of 1.0.

However, it is likely that some amount of PCBs in the soil matrix is not completely bioavailable, even to ruminants. In Section 6.0, Risks from Direct Contact Exposure, an Intestinal Absorption Factor (IAF), which is equivalent to the Bs term, of 0.3 or 30% was used to estimate bioavailability from soil ingested by humans. While data are not available to support using this less conservative value for cattle/cows, a value of 50% was selected as a lower end bounding value to gain an understanding of the impact on the estimated risks from using a less conservative Bs.

A sensitivity analysis was conducted to determine the impact on the overall risk estimates of assuming a lower Bs. Only beef and dairy consumption was evaluated because they represented the primary exposure pathways that resulted in risk estimates greater than 1E-04 and/or greater than a hazard index of one. All of the other exposure assumptions remained the same.

Tables 7-14 and 7-15 present the modified risk estimates for beef and dairy ingestion, respectively, assuming the lower end Bs. As shown in Table 7-14, only the most conservative set of assumptions for beef ingestion, including the highest soil concentrations, resulted in predicted cancer risks greater than 1E-04. For noncancer HIs, only soil concentrations at 20 and 40 mg/kg resulted in HIs greater than 1.0.

Table 7-15 shows the risk estimates for dairy consumption. The cancer risk and HIs show similar results in that only the higher soil concentrations and more conservative exposure assumptions result in risks greater than typical benchmarks.

The actual Bs for cattle/cows is most likely somewhere between 50% and 100%, but reliable data are not available to determine a more definitive value. It is very likely that assuming 100% soil bioavailability of PCBs in the risk assessment overestimates risk to some degree.

7.5.2 Toxicity Assessment

A detailed presentation of the key issues associated with toxicity uncertainties was presented in Section 5.4.3 in the Fish Risk Assessment section, and is not repeated here. In general, given the conservative nature of the development of toxicity factors, including the toxicity factors for PCBs, it is likely that the use of these criteria in evaluating exposure and risk through direct contact exposure results in an overestimation of risk.

7.5.3 Risk Characterization

The risks calculated in this section focused on tPCBs (represented by the sum of Aroclors), the primary site COPC. This approach was taken as this section was based on a modeling exercise, a range of tPCB concentrations, current agricultural uses, and hypothetical future agricultural uses within OU-4. Risks were not calculated for other COPCs such as dioxin-like PCB congeners and mercury. This could underestimate the potential risks from the ingestion of agricultural products grown or raised in OU-4.

7.6 RISK SUMMARY

The results of a conservative, modeling-based evaluation of agricultural products currently raised in floodplain areas, and other products from potential future agricultural practices, indicate that minimal, if any, risks from tPCBs are likely to arise from consuming locally raised chicken, eggs, or vegetables.

Although there are no dairy operations in the floodplain areas at the current time, if local farmers were to raise dairy cattle for personal consumption at some point in the future, the potential exists for health impacts at the highest tPCB concentration areas combined with the most conservative FI assumptions. More typical dairy operations, with less grazing and more silage feeding, would be unlikely to raise any health concerns.

Beef cattle are currently raised in the floodplain, and at the tPCB concentrations evaluated, even as low as 5 mg/kg, there is a potential for unacceptable health risks to the farmer who raises and consumes a significant portion of beef from home grown sources over a long period of time.

It should be stressed that beef and dairy exposure and risks are the result of a significant number of assumptions applied to conservative models. It is very likely that these risk estimates are overestimated to a larger degree than the other exposure pathways.

7.7 REFERENCES

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8 INTEGRATED RISK CHARACTERIZATION

The preceding sections evaluated potential risk from the three primary exposure pathways on an individual basis. This approach was taken because at a site like OU-4, which covers more than 35 creek miles and 6,000 acres of floodplain, there are too many potential combinations of exposures through multiple pathways to quantify total integrated risks in any meaningful manner. In addition, providing a separate evaluation of the key exposure pathways provides all interested parties with a clear understanding of the activities that result in the highest potential risk.

This section evaluates Site-related tPCB risk to individuals who live, work, and recreate along the Choccolocco Creek and have the potential to be exposed to more than a single exposure pathway. Total PCBs are the focus of this section as it is the primary COPC for the Site, it results in the highest estimated risks, and it is the only COPC evaluated across all three of the primary exposure scenarios (i.e., fish ingestion, direct contact with floodplain soil, and agricultural product ingestion). Focusing on tPCBs allows for comparisons to be made among the primary exposure scenarios and determinations to be made as to what exposure scenarios may require further evaluation.

Sections 5, 6, and 7 present the risk results from the fish consumption, direct contact, and agricultural product consumption pathways for all COPCs, respectively. The fish consumption pathway presents the highest potential health risks based on the exposure parameters used in the analysis. Direct contact exposure, even in floodplain areas with the highest tPCB concentrations and/or the most intense exposure activities, does not result in any risks greater than 1E-05, or noncancer hazard indices (HIs) that are above one. The agricultural product consumption pathway shows potentially elevated risk for beef and dairy consumption for the most exposed hypothetical farmers, with the vast majority of agricultural area within OU-4 not likely to be of concern. As noted previously, the risks from agricultural product consumption differ from the fish consumption and direct contact risks in that they are based on uptake and transfer models into edible tissue and not based on empirical, field-collected data.

One way of providing an overall perspective on the relative contributions to risk from each of the exposure pathways is to show their estimated risks in a graphical format. Figure 8-1 presents the RME cancer risks for each of the exposure pathways, ranging from the highest RME risk to the lowest RME risk based on the parameters used in the HHRA. As can be seen in the Figure, fish ingestion represents the highest potential risk, with the range representing differences in locations and types of fish consumed. Because the risk presentation on Figure 8-1 is on a logarithmic scale, adding any of the direct contact exposures to the fish consumption risk would have little impact on the overall results. This means that for people who fish often and consume fish from the Choccolocco Creek regularly, direct contact exposure during fishing activities, or any other of the activities evaluated in the HHRA, would add little risk relative to the cancer risk estimated for fish ingestion. For example, an individual who consumed “all fish” from Location C (cancer risk = 1.21E-03) and also contacted floodplain soil on a regular basis as an adult while recreating in nearby C3S-EU2 (cancer risk = 4.10E-06) would have a combined risk from tPCBs of 1.214E-03, 99.7% of which would be attributable to consuming fish. Please note that while risk levels are typically presented to only 1 significant figure (e.g., 1E-03), risks in this section are presented with additional significant figures to show the relative contributions between various exposure pathways.

The only activity that would have any significant impact on the estimated cancer risks due to fish ingestion (as evaluated in the HHRA), would be consuming beef or dairy products from cattle raised in the floodplain, a practice that does not seem to be common in the area. Figure 8-1 shows that both beef and dairy product consumption can, under certain worst-case soil concentrations, cattle grazing/feeding practices, and human consumption rate assumptions, result in a significant increase in cancer risk. As noted above, fish consumption risk for tPCBs at Location C for “all fish” is 1.21E-03. If a farmer in that same upstream location of the Creek (Ag EUs 1 through 5) raised beef cattle in the contaminated floodplain and consumed a significant amount of that beef over a long time period, the tPCB risk could be as high as 4.45E-04, resulting in a combined risk of 1.66E-03. In this worst case example of an individual who also consumed fish on a regular basis, fish consumption risk would still be the primary contributor to the total, but the beef consumption risk would be 27% of the tPCB estimated risk, significantly higher than the direct contact contribution.

Figure 8-2 provides similar information for noncancer hazards, considering the same situations as presented above for the cancer risk. Adding fish hazard to direct contact exposure near Location C for the angler would increase the tPCB fish ingestion HI of 71 by 0.2 for a total of 71.2, with direct contact exposure representing a negligible percentage (0.3%) of the total noncancer hazard. Combining the fish ingestion HI (71) to the worst-case beef ingestion HI (19) yields a hazard index of 90, with beef ingestion contributing 21% of the value.

The most important consideration in understanding the risk profile for OU-4 is that fish ingestion risk is the most important exposure pathway. Beef and dairy consumption could be important if an individual raised a significant amount of beef or dairy products for personal consumption in the most highly contaminated areas of the floodplain (Ag EUs 1 through 3) for a long period of time. It is also important to note that the agricultural product risks are based on estimated, not measured concentrations, which are expected to be conservative in nature. Other than this worst case agricultural pathway assumption, combining the direct contact and/or agricultural product risks to risks associated with fish ingestion would have little impact on the overall results. Conversely, if an individual heeded the fish consumption advisory, and did not consume fish from the Choccolocco on a regular basis, most farming and recreational practices would not be likely to result in unacceptable risks.

9 RESULTS

The OU-4 HHRA was developed to characterize the potential exposure and risks associated with consumption of fish from Choccolocco Creek, direct contact with the floodplain soil, and consumption of agricultural products originating in the Choccolocco Creek floodplain. The HHRA was based on the receptors and exposure parameters presented in the Final Pathways Analysis Report (PAR) (JMWA, 2009), and considers the current and future-use exposure pathways by which populations may be exposed to contaminated media. Exposure pathways were identified based on the Conceptual Site Model presented in Subsection 2.1 that discusses the sources and locations of contaminants, the likely environmental fate of the contaminants, and the location and activities of the potentially exposed populations. (Residential exposures and risk are not included in this HHRA, but are evaluated separately by agreement with EPA).

EPA uses a target cancer risk range of 1E-06 to 1E-04 (or 1 in a million to 1 in 10,000) to determine whether a site needs to be remediated. Cancer risks below 1E-06 are typically assumed to be *de minimus* and would require no action to remediate or mitigate human health risks. Risks within this range are usually considered acceptable, but specific decisions are made on a site-specific basis by EPA. Risks that exceed 1E-04 usually require remediation and/or mitigation, however no “bright line” has been established at the upper end of the risk range, and decisions on the need to remediate or mitigate are made on a site-specific basis.

For noncancer hazards, EPA uses a target HI of one. Where HIs exceed this target number, remediation may be warranted; however, similar to the cancer evaluation, risk management decisions are made on a site-specific basis.

The estimates of cancer risk and noncancer HIs summarized below are compared to these benchmarks as a way of providing a perspective on the estimated risk levels for the various stakeholders. Figures 8-1 and 8-2 are visual presentations of tPCB RME cancer risk and hazard indices for each of exposure pathways.

9.1 FISH INGESTION

In general, the RME risk levels from fish ingestion exceeded the EPA cancer risk range (1E-06 to 1E-04). The RME cancer risks from tPCBs were greater than 1E-04 for all locations and fish groupings. The RME cancer risks from PCB dioxin-like congener TEQ and 2,3,7,8-TCDD TEQ were less than the risks from tPCBs and were within or above the EPA risk range. As would be expected, the CTE cancer risks were less than the RME and were within or slightly above the EPA risk range.

Total PCBs resulted in RME HQs greater than 10 for every location. The RME HQs from mercury, PCB dioxin-like congener TEQ, and 2,3,7,8-TCDD TEQ were greater than one at a number of locations but were less than the tPCBs HQs. The CTE HQs were less than the RME, but with HQs for tPCBs still greater than one.

9.2 DIRECT CONTACT EXPOSURE

The results of the direct contact risk calculations are presented below, with the primary COPCs exposure unit (EU) risks presented first, and the risks associated with the other COPCs presented separately. As discussed previously in this report, the amount of analytical data available for the other COPCs were limited and therefore EU-specific risks could not be calculated.

9.2.1 Exposure Unit Risks

Primary COPCs for direct contact exposure were tPCBs, PCB dioxin-like congener TEQ, and mercury. Based on the available toxicity characteristics, cancer risks were estimated for tPCBs and PCB dioxin-like congener TEQs only; whereas HQs were estimated for all three primary COPCs.

The recreational and farmer cancer risks based on both tPCBs and PCB dioxin-like congener TEQ were either within or less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 at all applicable EUs. The utility worker cancer risks for both tPCBs and PCB dioxin-like congener TEQ were less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 at all EUs.

With very minor exceptions, the noncancer recreational exposure HIs were less than one for all three primary COPCs. The utility worker and farmer HIs were also less than one at all direct contact EUs.

Recreational user, utility worker, and farmer CTE cancer risks were less than the EPA acceptable cancer risk range of 1E-06 to 1E-04 and the noncancer benchmark of one at all direct contact and agricultural EUs.

9.2.2 Site-Wide Risks for Other COPCs

Due to limited data, site-wide risks from direct contact with floodplain soil were estimated separately for 2,3,7,8-TCDD TEQ, carcinogenic PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene), aluminum, arsenic, chromium, cobalt, iron, and manganese. To provide an estimate of all potential recreational exposures, risks were estimated assuming high contact and low contact recreational exposure.

The RME site-wide total cancer risks were within the EPA acceptable risk range for the other COPCs. The noncancer HIs were well below the noncancer benchmark of one. All CTE cancer risks and noncancer HIs were below these benchmarks.

9.3 AGRICULTURAL PRODUCT CONSUMPTION

Current and potential future food production activities by the farmer who grows vegetables and crops and raises livestock in the floodplain were evaluated. Risks are not calculated for specific areas, properties, or agricultural practices because to do so would only provide information for a single set of scenarios and would not be useful if/when conditions and farming practices change in the future. Rather, it evaluates where agricultural use is occurring (or could occur) and uses representative tPCB concentrations to generate risk matrices incorporating multiple potential farming practices and home grown ingestion scenarios.

Total PCB soil concentrations were set at 1 mg/kg, 5 mg/kg, 20 mg/kg, and 40 mg/kg to reflect the range of concentrations in floodplain areas used for agricultural purposes. Fraction ingested (FI) assumptions were set at 10%; 25%; 50%; 75%; or 100%. The term indicates the amount of the home grown product consumed that was grown in the contaminated area of the floodplain. The 100% FI value was not evaluated for beef and dairy cattle because the sizes of the agricultural areas within the EUs would likely preclude cattle from obtaining 100% of their diet from within the floodplain.

9.3.1 Chicken, Egg and Vegetable Ingestion

Even at the worst case assumptions of the amount of these products ingested and tPCB soil concentrations, the calculated cancer risks were within EPA's risk range, and with very minor exceptions, the HQs were below one. Based on the conservative assumptions included in the HHRA, the potential for any unacceptable risks from consuming chicken, eggs, and vegetables is minimal.

9.3.2 Beef and Dairy Ingestion

Cancer risks and hazard quotients for beef and dairy ingestion ranged from below to above the EPA benchmarks, depending upon the soil concentration and fraction ingested scenario considered. In general, at the highest tPCB soil concentrations (e.g., 20 and 40 mg/kg) and/or the highest FIs (e.g., 25 and 50%), estimated risks were equal to or greater than the cancer and noncancer benchmarks.

Although there is currently no evidence to suggest that this practice is currently occurring in OU-4, based on these results, consuming meat on a regular basis over a long period of time from cattle grazed in areas with the highest soil tPCB concentrations found in agricultural areas (e.g., 20 and 40 mg/kg) would be a potential health concern for local farmers and their families.

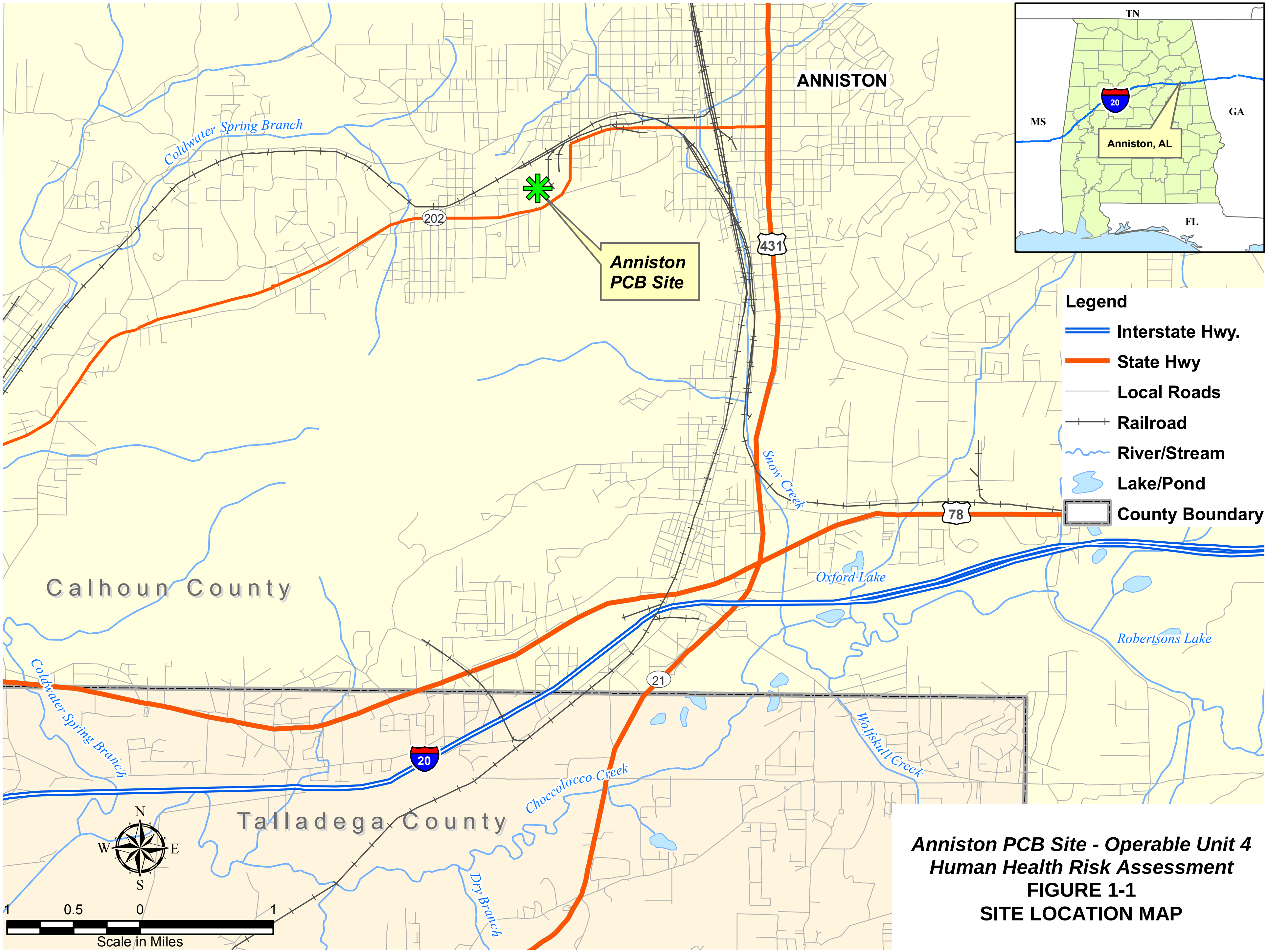
Although there are no known dairy farms within the OU-4 floodplain, if that situation changed in the future, the potential exists for risks to local dairy farmers and their families should they consume milk on a regular basis over a long period of time from dairy cows located at the highest tPCB concentration areas of the floodplain.

9.4 CONCLUSIONS

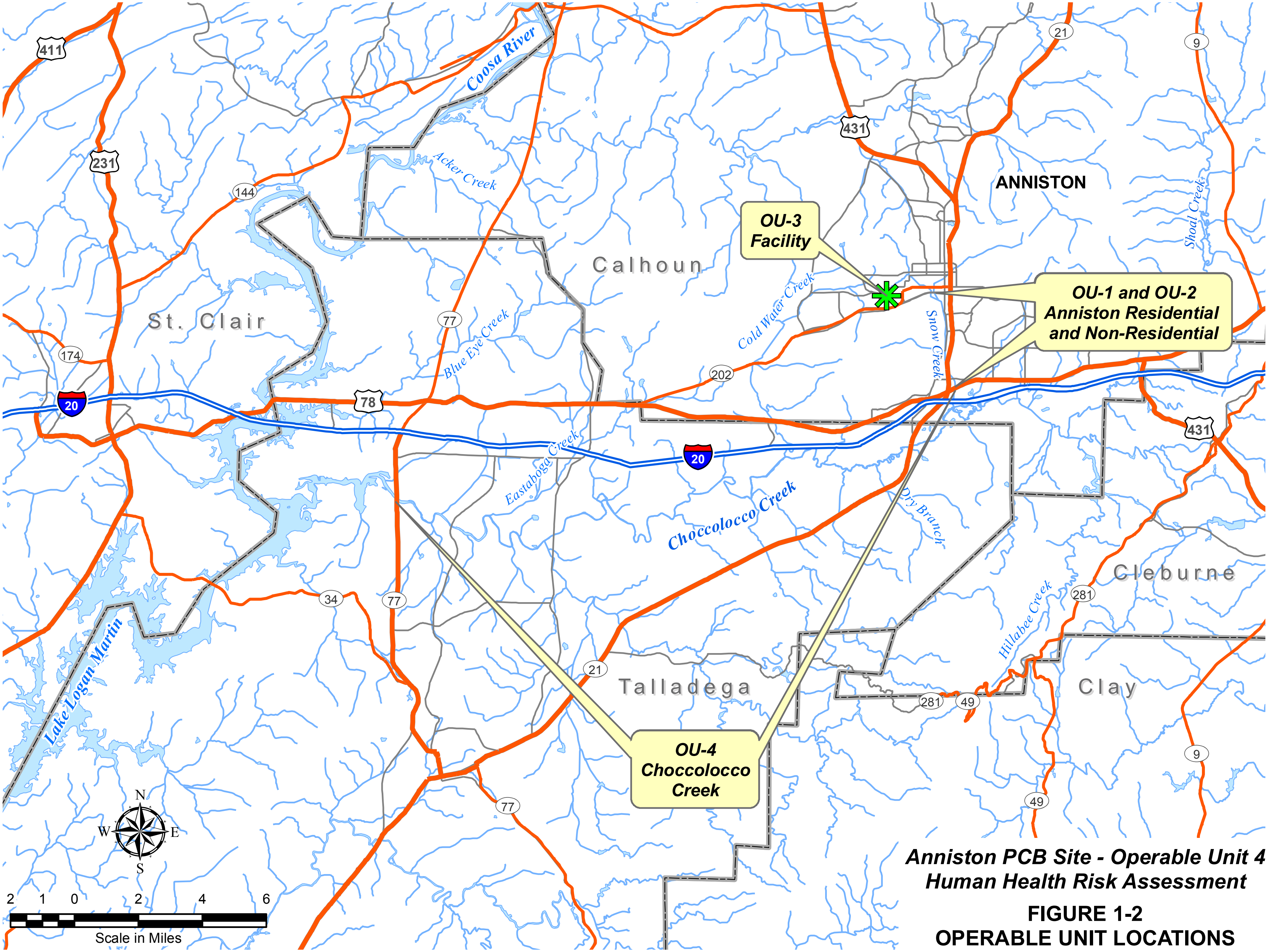
As with any HHRA, there are numerous sources of uncertainty associated with an attempt to estimate current and future potential human health risks. Detailed discussions of the most important aspects of uncertainty in the OU-4 HHRA were presented in the individual sections of the report. In general, the uncertainties inherent in the risk assessment process tend to overestimate risk to protect public health. This is also true of this HHRA in that the majority of the assumptions used would tend to overestimate risk to human health. Overall, the following conclusions can be drawn:

- Fish consumption poses a potentially significant human health risk to those who regularly consume fish from the Choccolocco Creek at or near the levels assumed in the HHRA.
- Risks from consuming locally raised beef and dairy products from the highest concentration areas also could pose health risks if current practices changed and a significant portion of an individual's beef and/or dairy intake was locally raised and consumed over a long period of time. More typical exposures to these products, even if originating from the floodplain, are unlikely to cause any unacceptable health risks.
- Risks from other agricultural product consumption, including chicken, eggs, and vegetables are not likely to be a concern under any current or future circumstances.
- Risks from direct contact exposures are not likely to be of any concern even at the highest concentration areas.

FIGURES

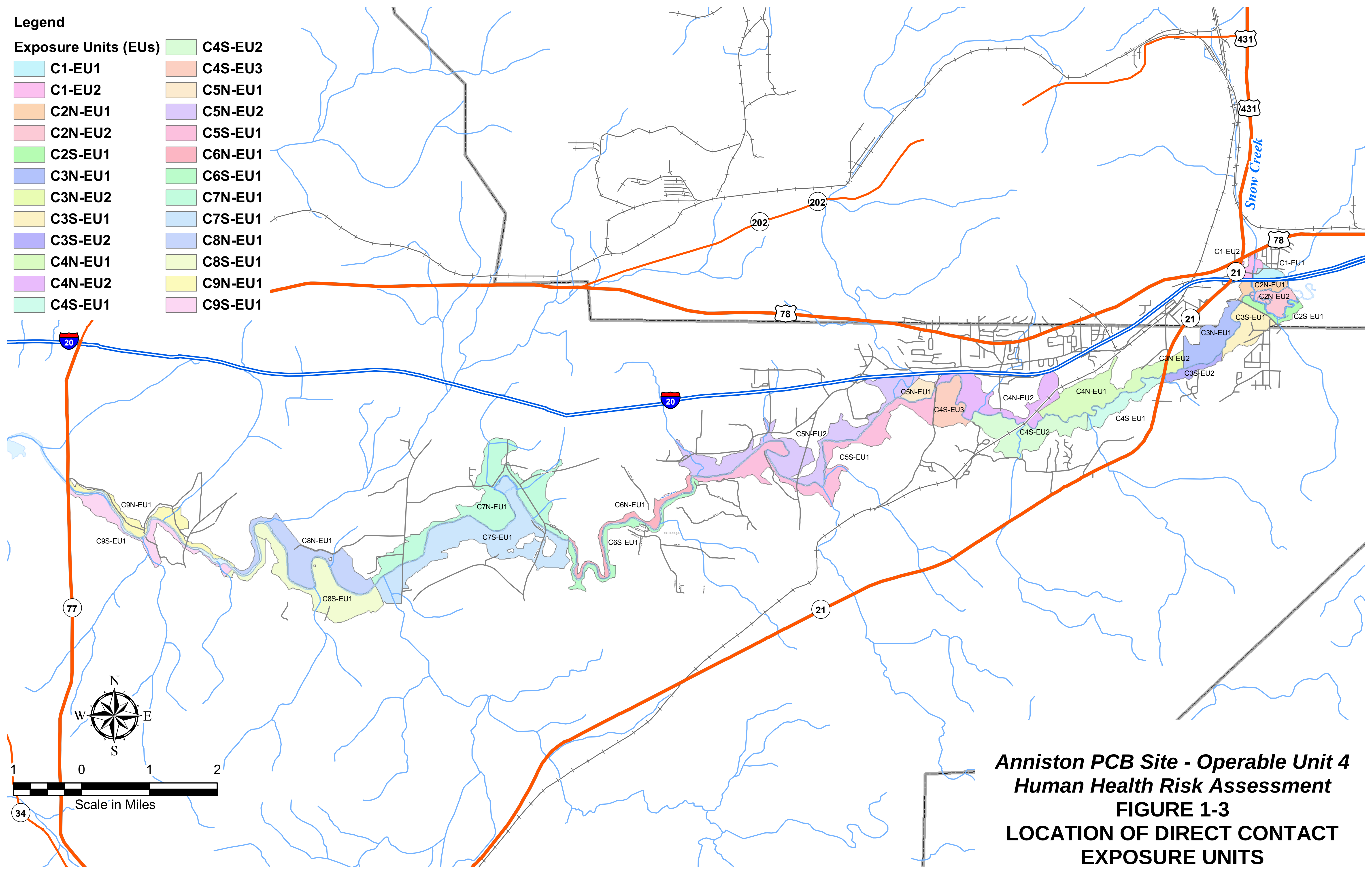


Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment
FIGURE 1-1
SITE LOCATION MAP



Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

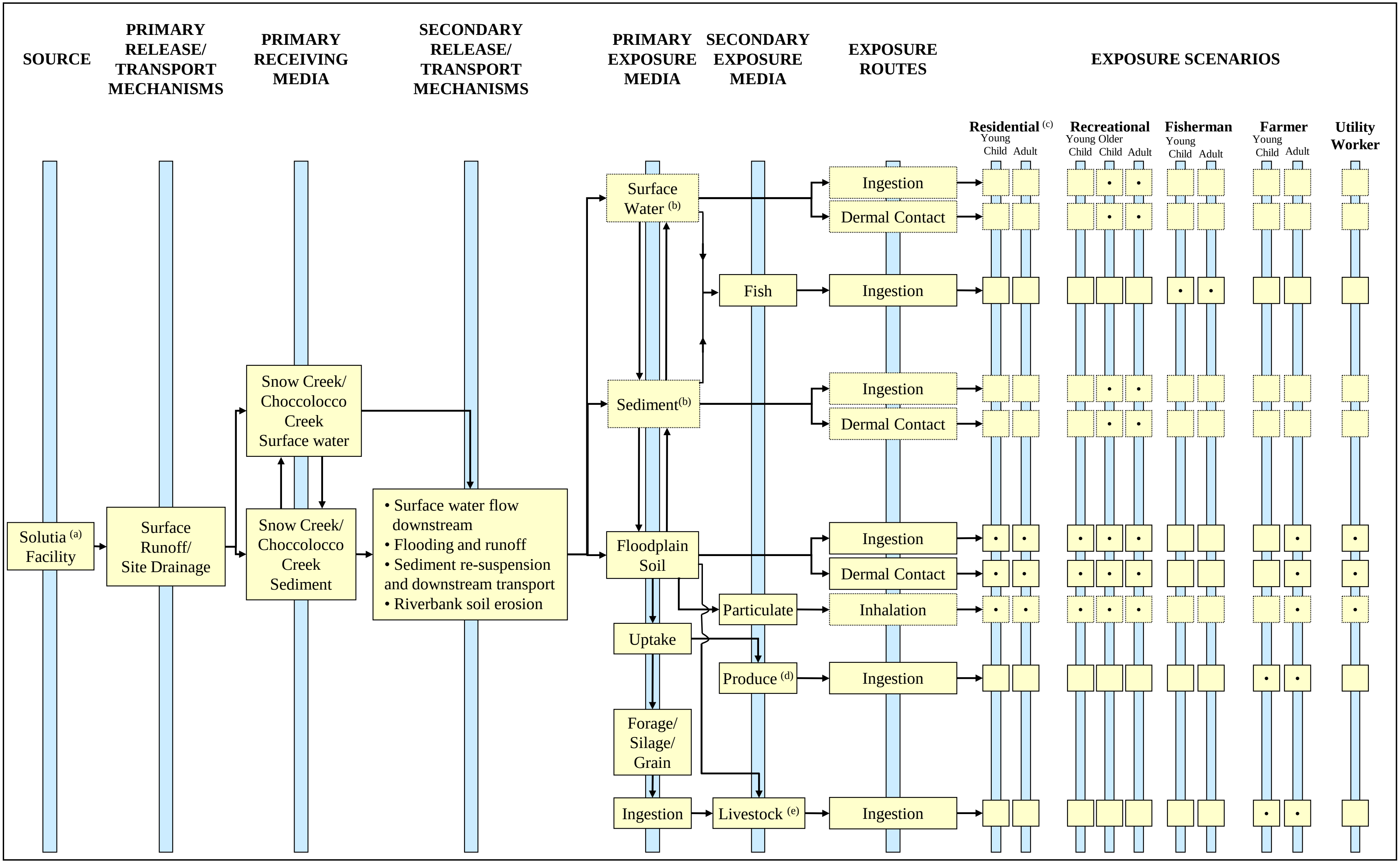
FIGURE 1-2
OPERABLE UNIT LOCATIONS



Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 1-3

LOCATION OF DIRECT CONTACT EXPOSURE UNITS



• = Complete exposure pathway

☐ = Incomplete exposure pathway

☐ = Not evaluated quantitatively.

(a) = Includes all facility-related sources.

(b) = Contaminant concentrations in surface water are qualitatively evaluated by comparing to risk-based concentrations. Consistent with EPA Region 4 guidance, sediment under water will not be evaluated.

(c) = PCB concentrations (95% UCLs) at residentially used areas were compared to the 1 mg/kg remedial level. Areas with concentrations greater than 1 mg/kg will be evaluated further in future remedial decisions.

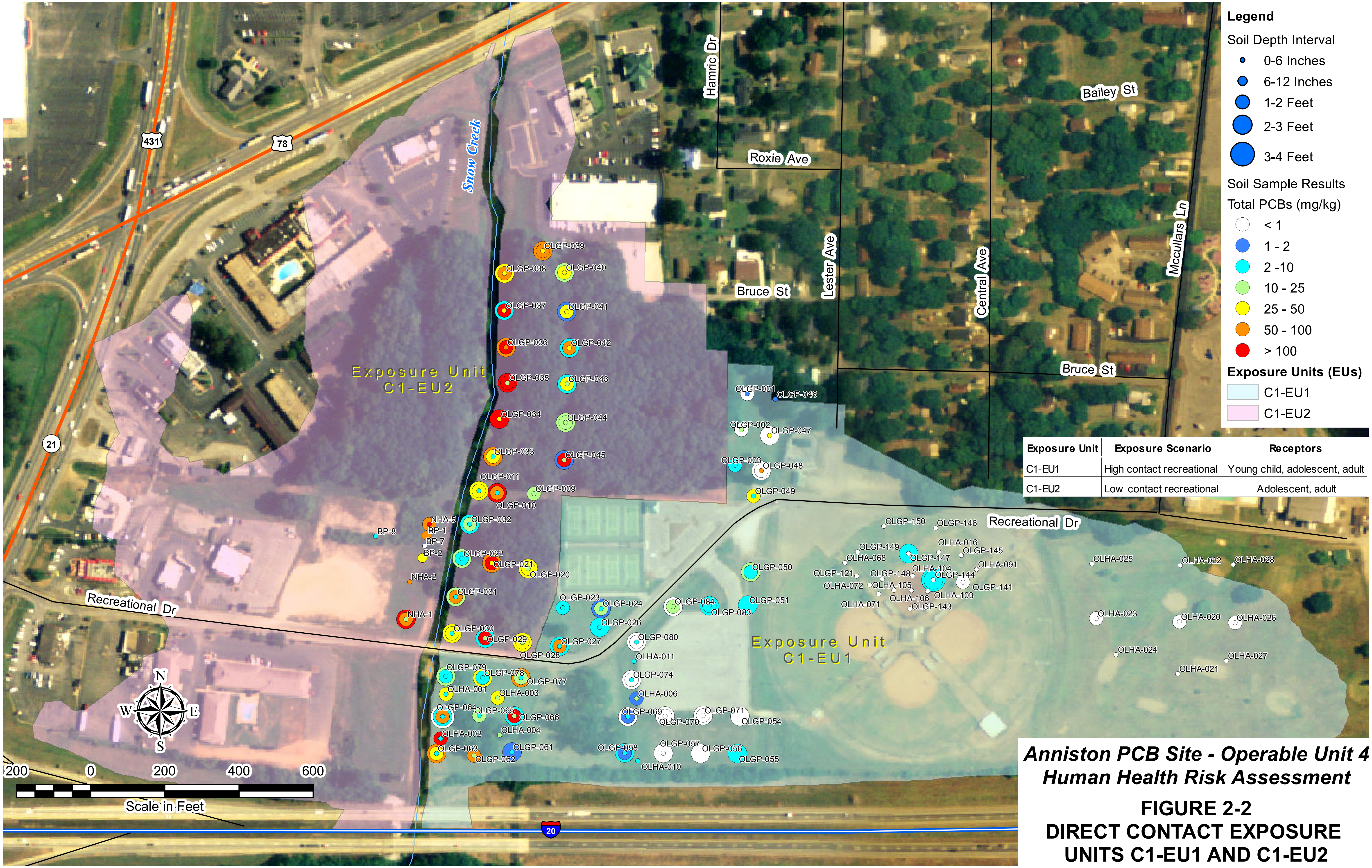
(d) = Includes aboveground and belowground produce.

(e) = Includes beef (current and future) and dairy products, chickens, and eggs (future only).

Human Health Risk Assessment
Anniston PCB Site
OU-4

Figure 2-1

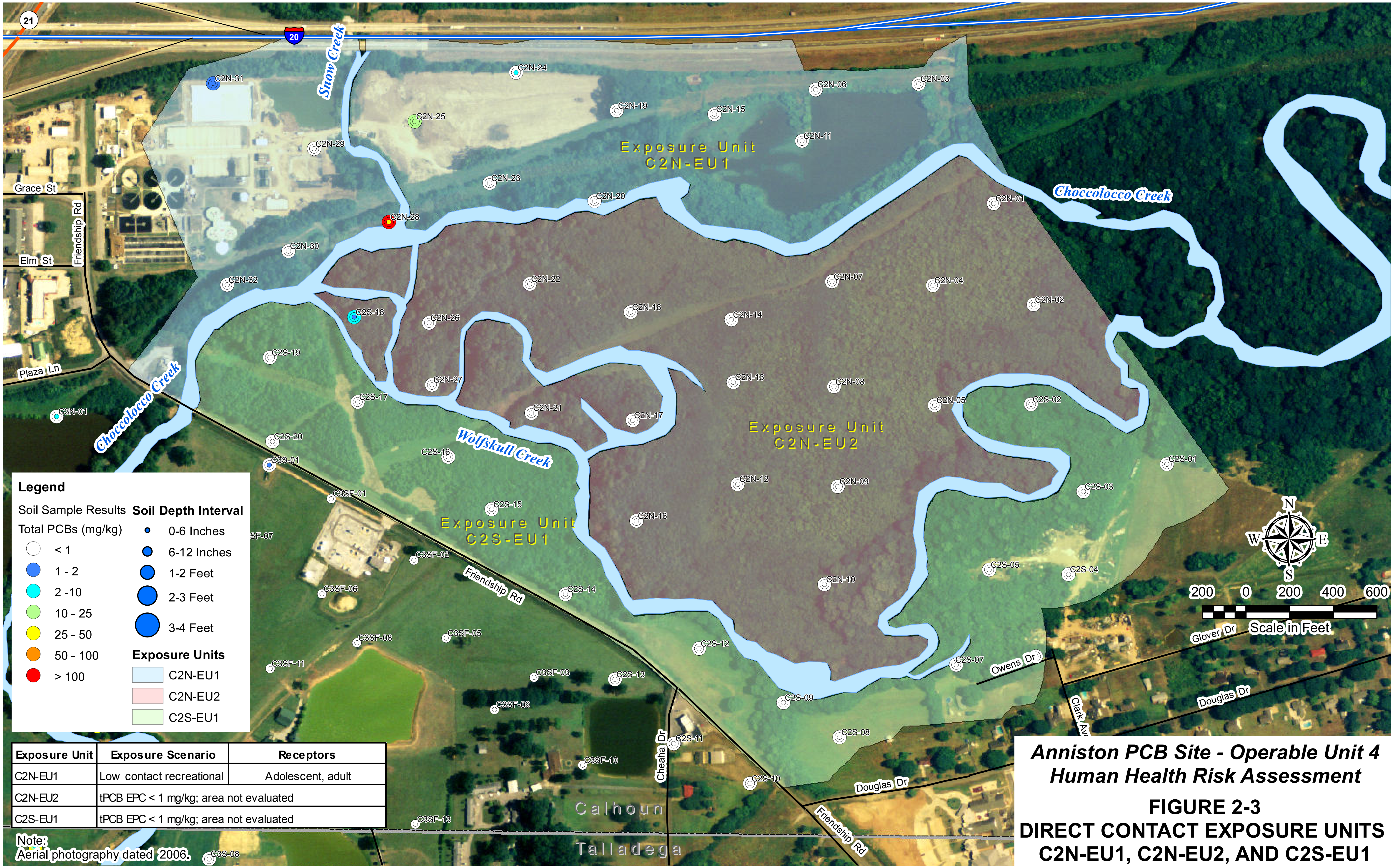
Conceptual Site Model



Exposure Unit	Exposure Scenario	Receptors
C1-EU1	High contact recreational	Young child, adolescent, adult
C1-EU2	Low contact recreational	Adolescent, adult

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 2-2
DIRECT CONTACT EXPOSURE UNITS C1-EU1 AND C1-EU2

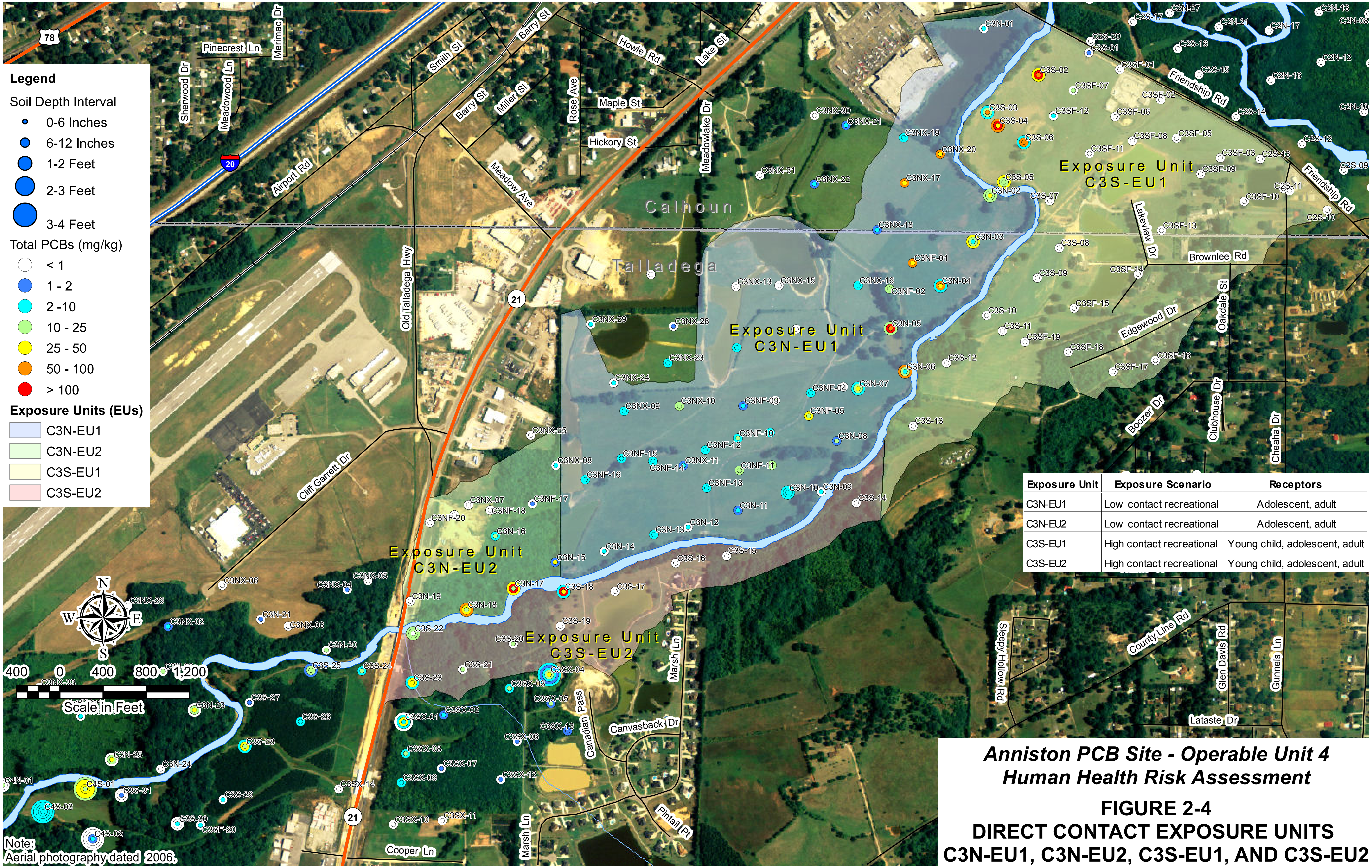


Exposure Unit	Exposure Scenario	Receptors
C2N-EU1	Low contact recreational	Adolescent, adult
C2N-EU2	tPCB EPC < 1 mg/kg; area not evaluated	
C2S-EU1	tPCB EPC < 1 mg/kg; area not evaluated	

Note:
Aerial photography dated 2006.

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 2-3
DIRECT CONTACT EXPOSURE UNITS C2N-EU1, C2N-EU2, AND C2S-EU1

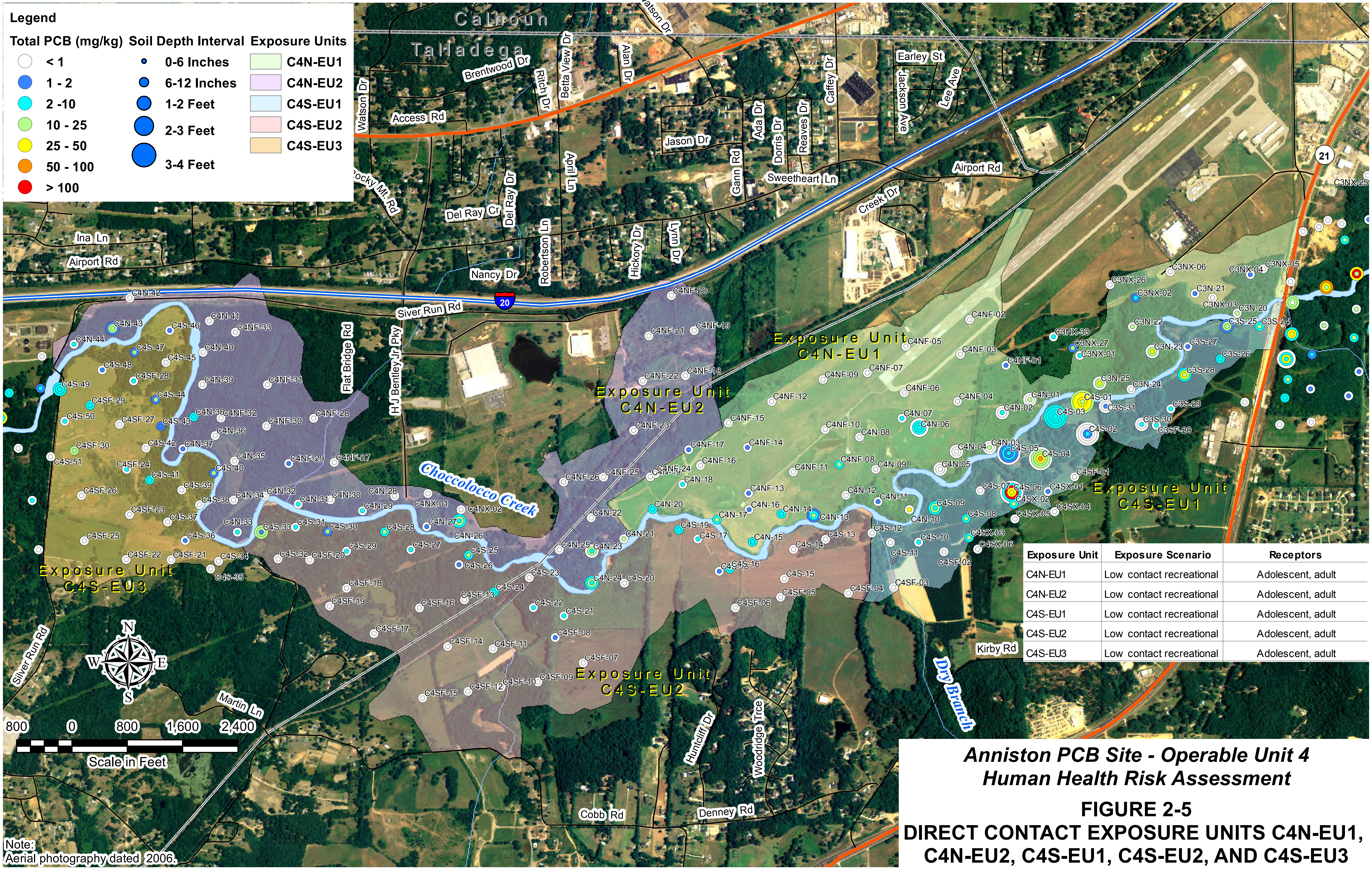


Exposure Unit	Exposure Scenario	Receptors
C3N-EU1	Low contact recreational	Adolescent, adult
C3N-EU2	Low contact recreational	Adolescent, adult
C3S-EU1	High contact recreational	Young child, adolescent, adult
C3S-EU2	High contact recreational	Young child, adolescent, adult

Note:
Aerial photography dated 2006.

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 2-4
DIRECT CONTACT EXPOSURE UNITS C3N-EU1, C3N-EU2, C3S-EU1, AND C3S-EU2

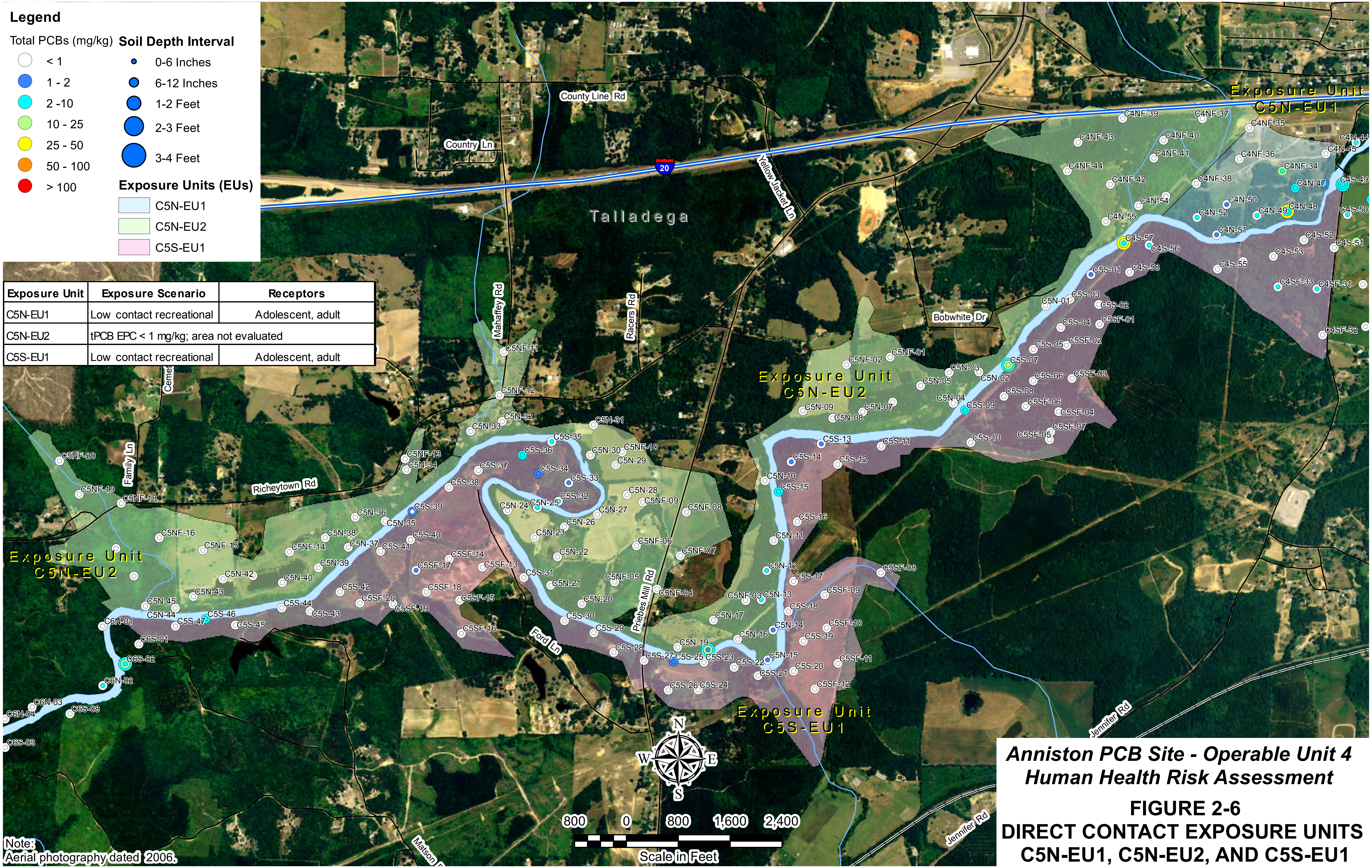


Exposure Unit	Exposure Scenario	Receptors
C4N-EU1	Low contact recreational	Adolescent, adult
C4N-EU2	Low contact recreational	Adolescent, adult
C4S-EU1	Low contact recreational	Adolescent, adult
C4S-EU2	Low contact recreational	Adolescent, adult
C4S-EU3	Low contact recreational	Adolescent, adult

Note:
Aerial photography dated 2006.

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 2-5
DIRECT CONTACT EXPOSURE UNITS C4N-EU1, C4N-EU2, C4S-EU1, C4S-EU2, AND C4S-EU3



Legend

Total PCBs (mg/kg)

- ○ < 1
- ● 1 - 2
- ● 2 -10
- ● 10 - 25
- ● 25 - 50
- ● 50 - 100
- ● > 100

Soil Depth Interval

- ● 0-6 Inches
- ● 6-12 Inches
- ● 1-2 Feet
- ● 2-3 Feet
- ● 3-4 Feet

Exposure Units (EUs)

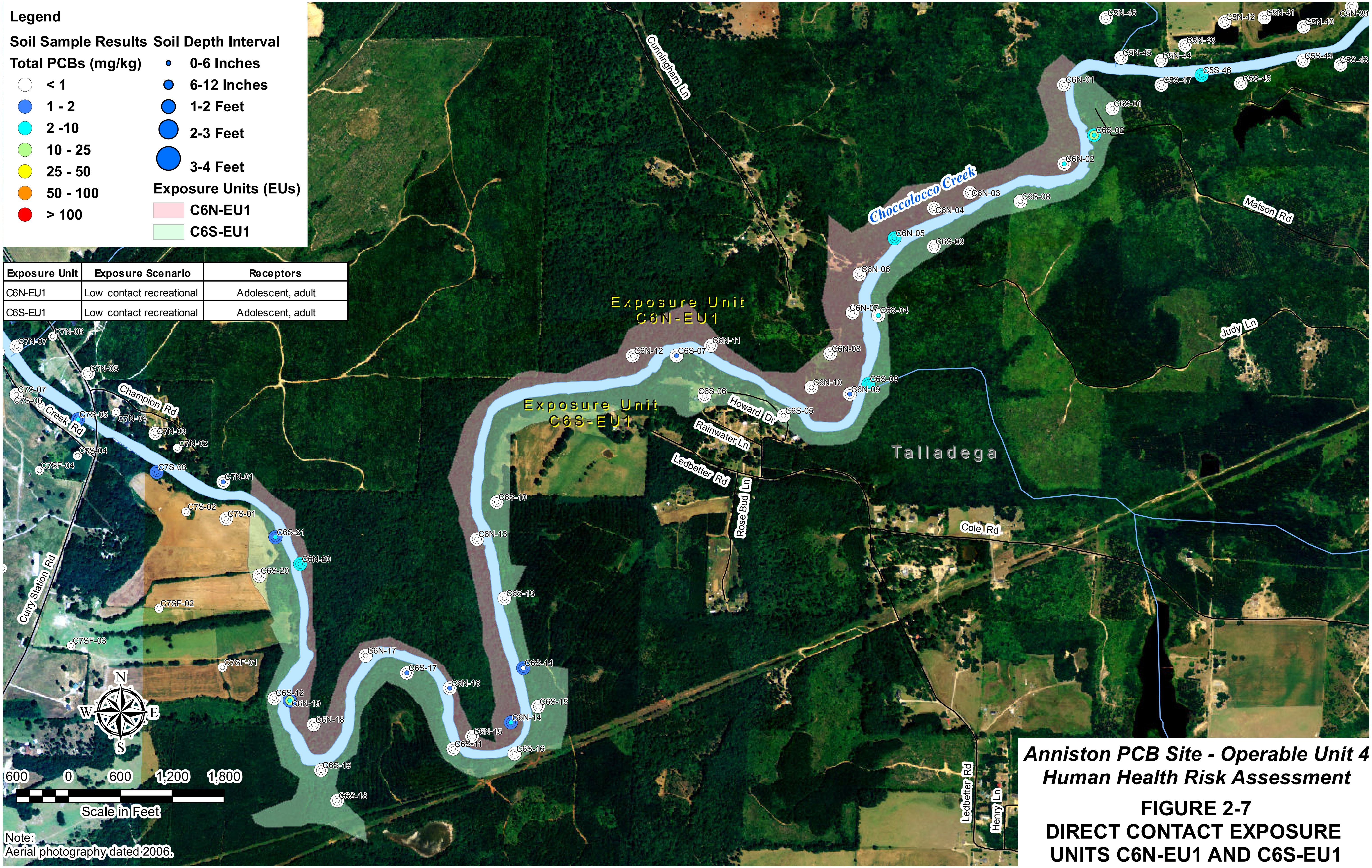
- 🟦 C5N-EU1
- 🟩 C5N-EU2
- 🟪 C5S-EU1

Exposure Unit	Exposure Scenario	Receptors
C5N-EU1	Low contact recreational	Adolescent, adult
C5N-EU2	tPCB EPC < 1 mg/kg; area not evaluated	
C5S-EU1	Low contact recreational	Adolescent, adult

Note:
Aerial photography dated 2006.

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 2-6
DIRECT CONTACT EXPOSURE UNITS C5N-EU1, C5N-EU2, AND C5S-EU1

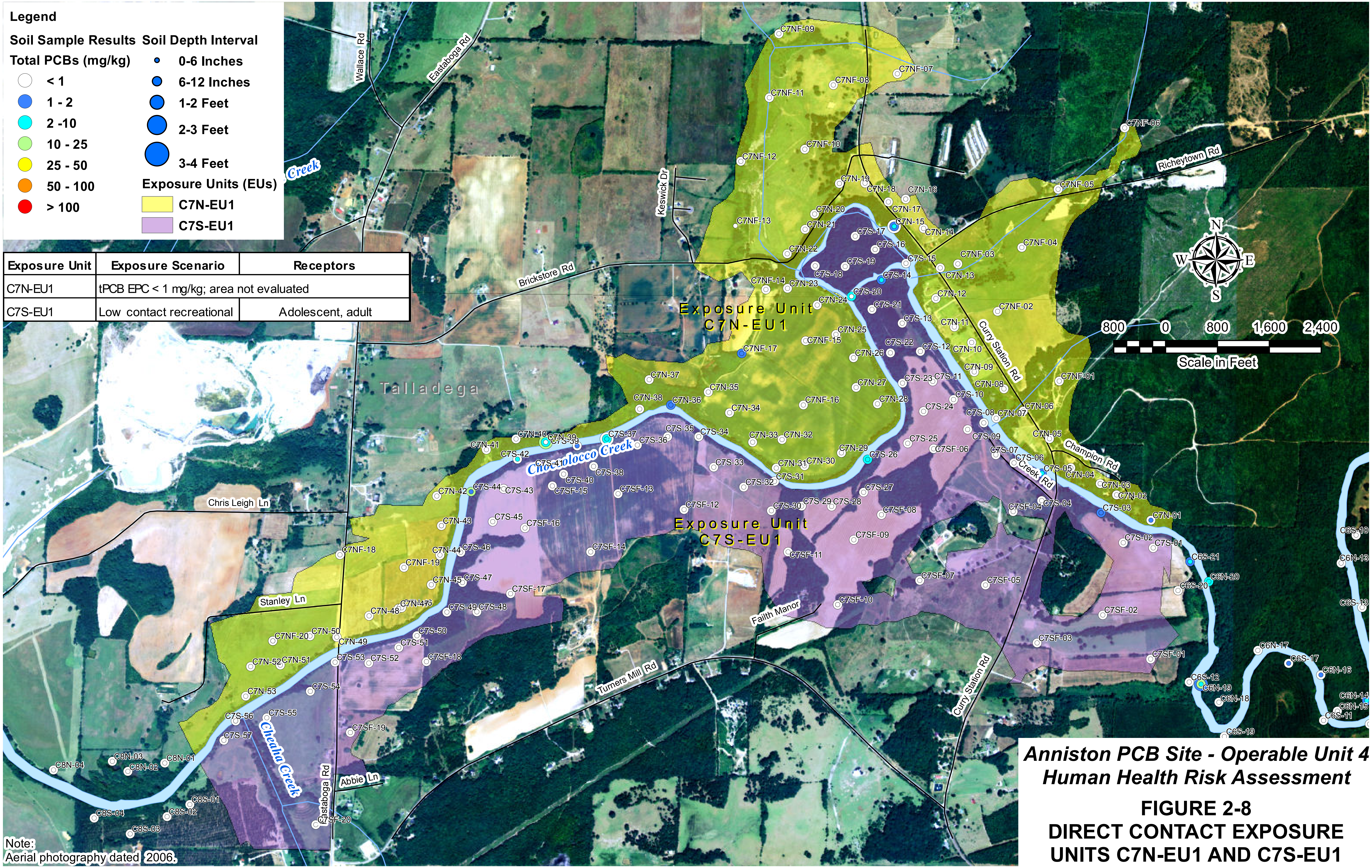


Exposure Unit	Exposure Scenario	Receptors
C6N-EU1	Low contact recreational	Adolescent, adult
C6S-EU1	Low contact recreational	Adolescent, adult

Note:
Aerial photography dated 2006.

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 2-7
DIRECT CONTACT EXPOSURE UNITS C6N-EU1 AND C6S-EU1

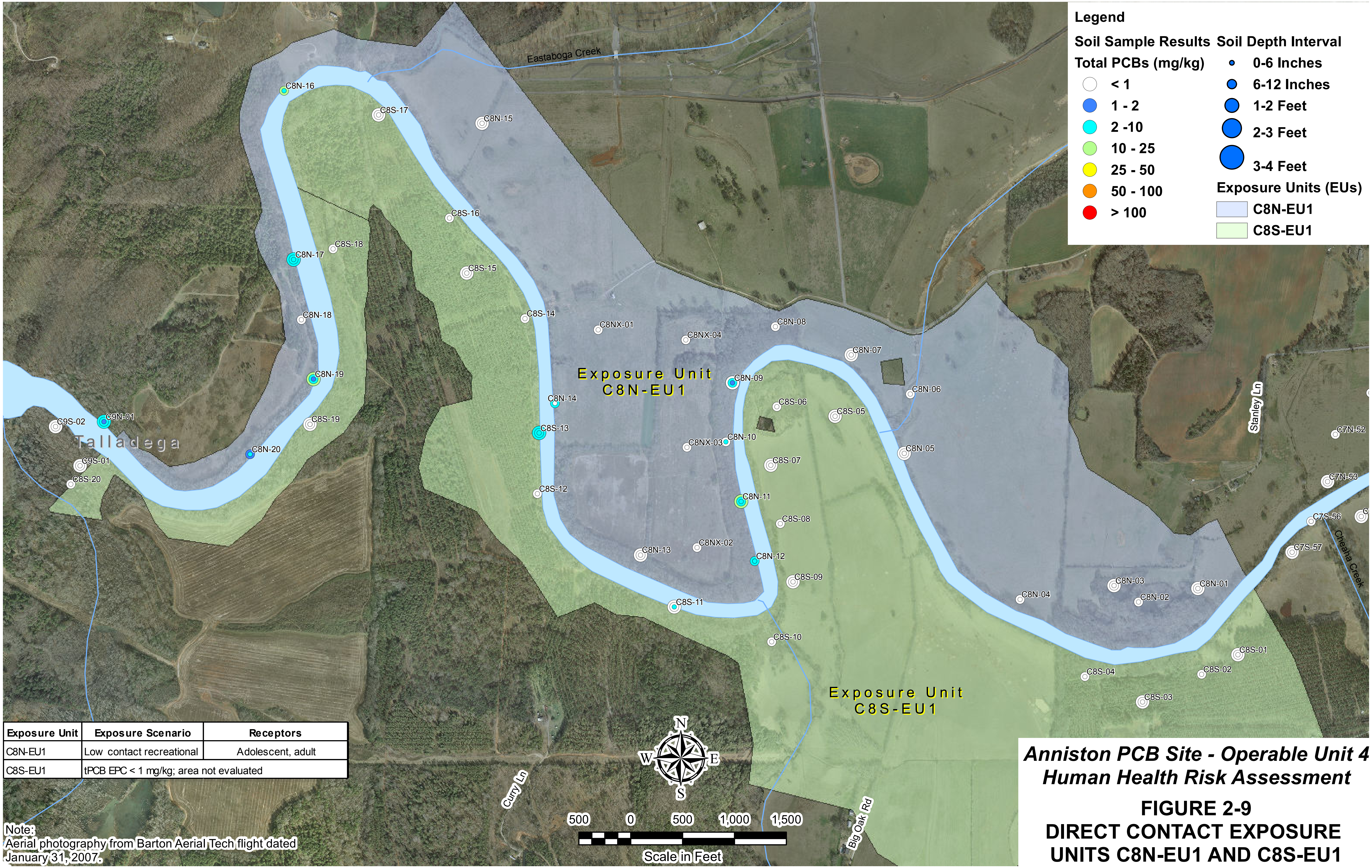


Exposure Unit	Exposure Scenario	Receptors
C7N-EU1	tPCB EPC < 1 mg/kg; area not evaluated	
C7S-EU1	Low contact recreational	Adolescent, adult

Note:
Aerial photography dated 2006.

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 2-8
DIRECT CONTACT EXPOSURE UNITS C7N-EU1 AND C7S-EU1



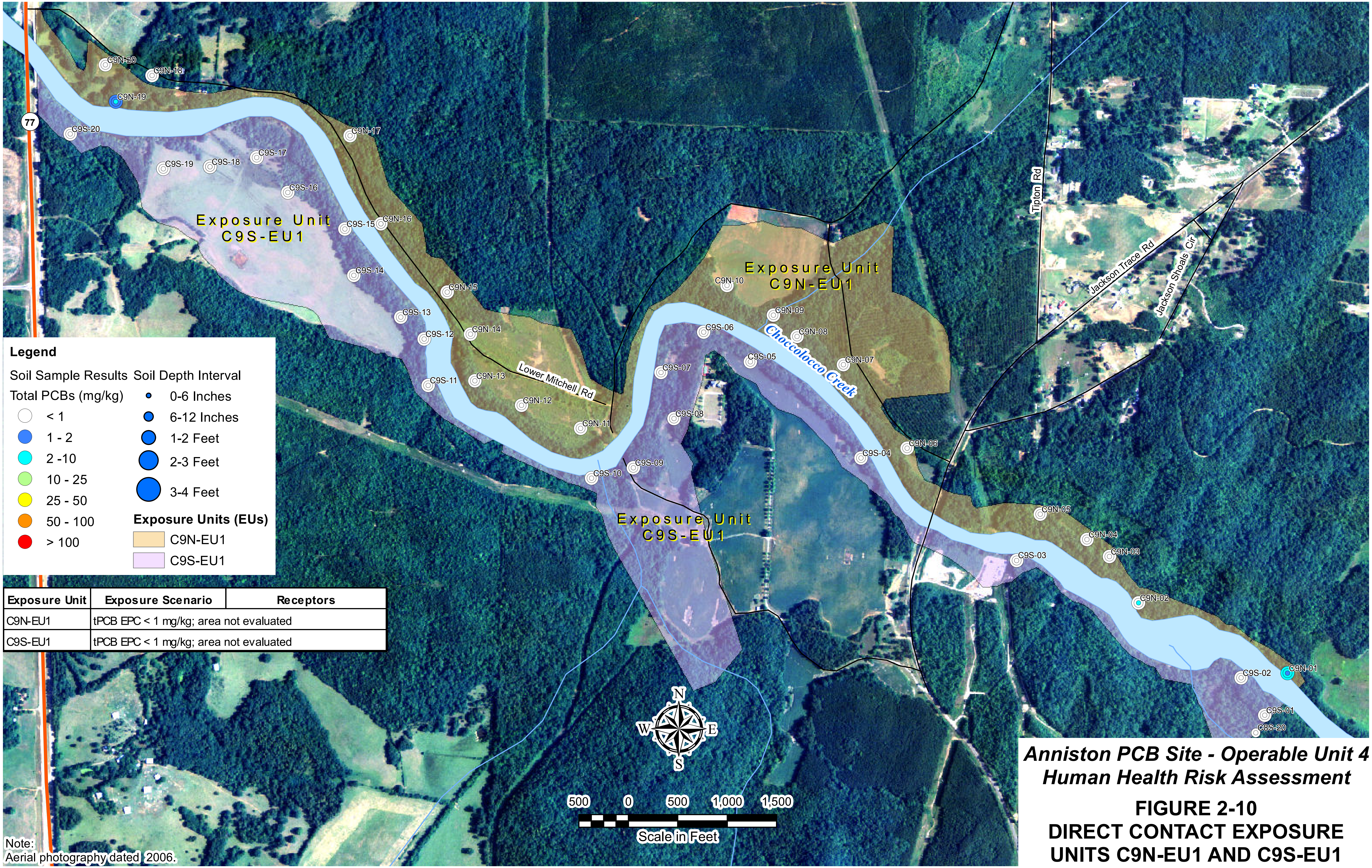
Exposure Unit	Exposure Scenario	Receptors
C8N-EU1	Low contact recreational	Adolescent, adult
C8S-EU1	tPCB EPC < 1 mg/kg; area not evaluated	

Note:
Aerial photography from Barton Aerial Tech flight dated
January 31, 2007.

Anniston PCB Site - Operable Unit 4 Human Health Risk Assessment

FIGURE 2-9

DIRECT CONTACT EXPOSURE UNITS C8N-EU1 AND C8S-EU1

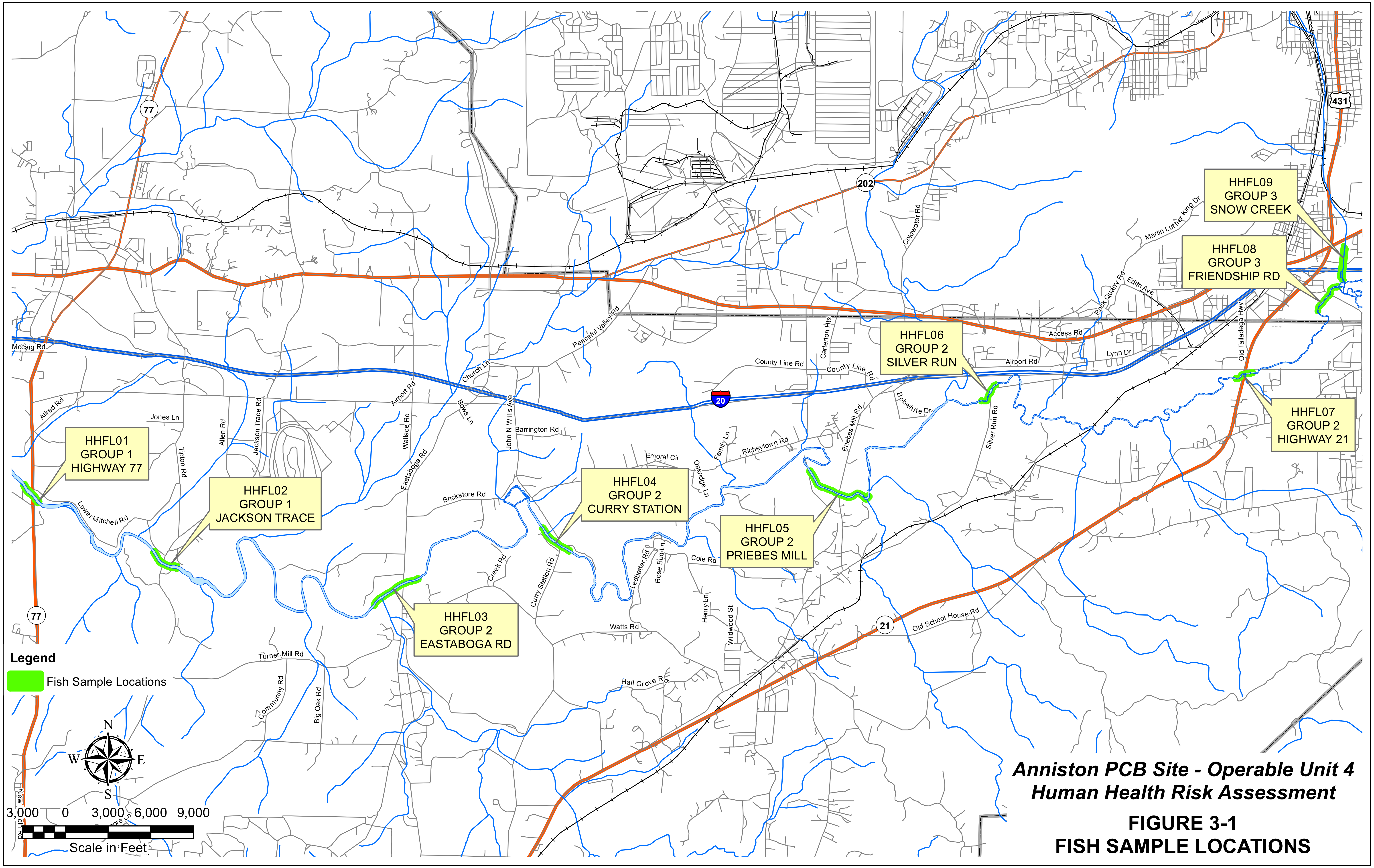


Exposure Unit	Exposure Scenario	Receptors
C9N-EU1	tPCB EPC < 1 mg/kg; area not evaluated	
C9S-EU1	tPCB EPC < 1 mg/kg; area not evaluated	

Note:
Aerial photography dated 2006.

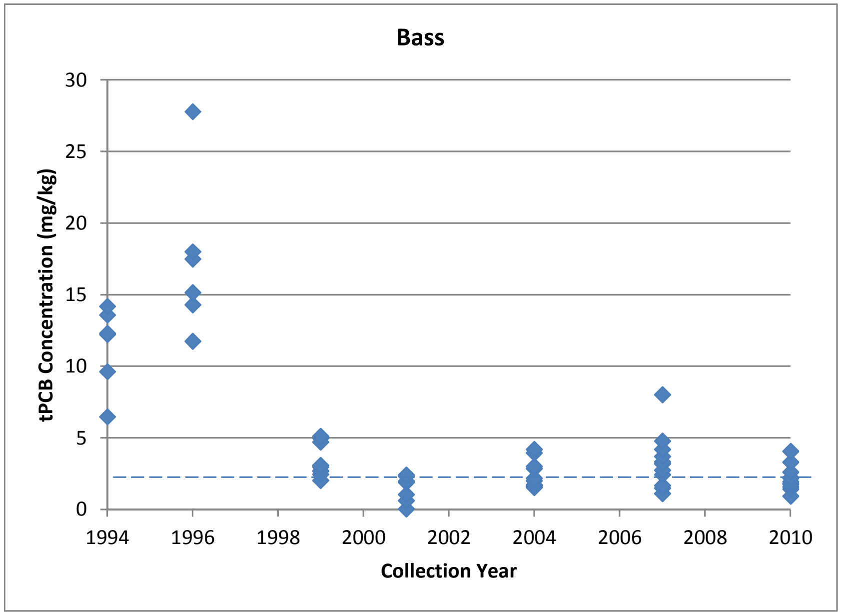
Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

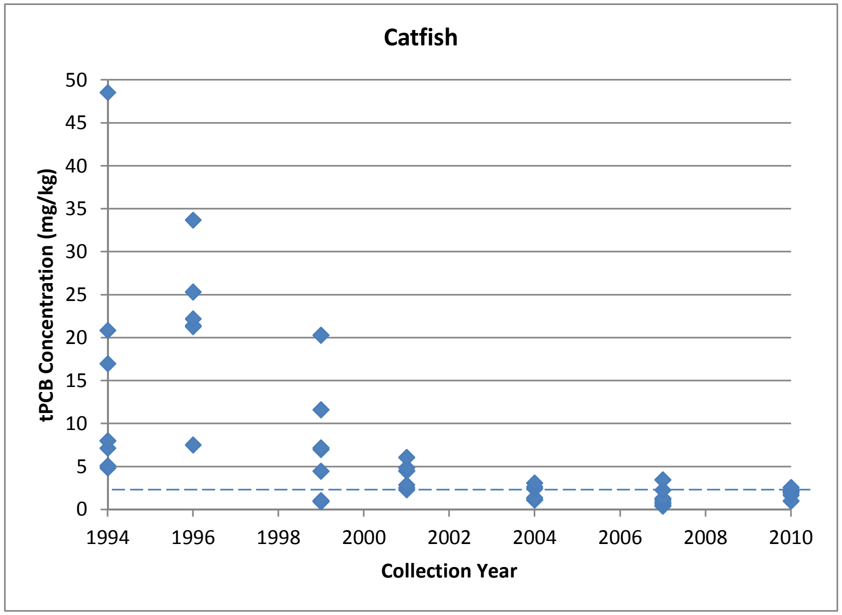
FIGURE 2-10
DIRECT CONTACT EXPOSURE UNITS C9N-EU1 AND C9S-EU1



Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 3-1
FISH SAMPLE LOCATIONS





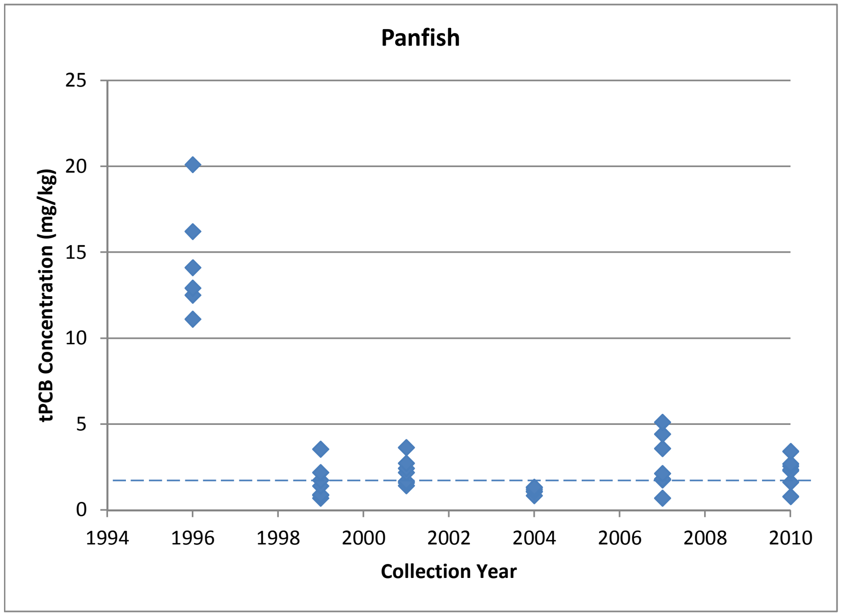
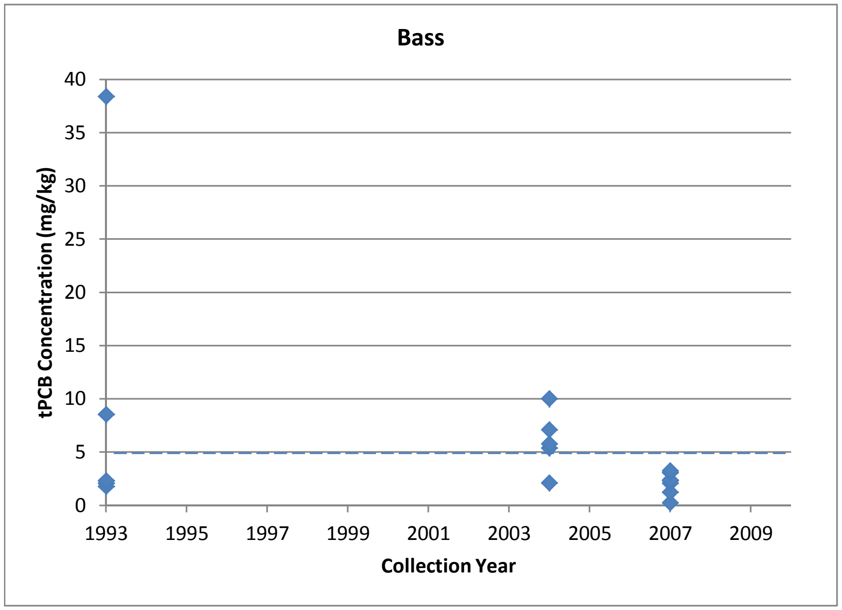
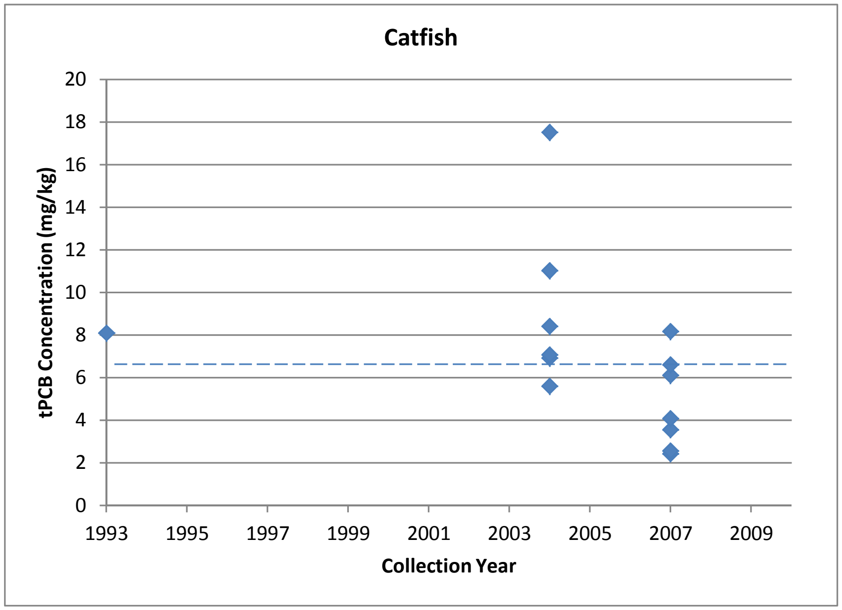


Figure 5-1

tPCB Concentration Trends
Pell City Collection Area
ADEM Data 1994 - 2010

Notes:
Pell City Collection Area falls within fish grouping A.
– – – – – – Indicates EPC used in HHRA.





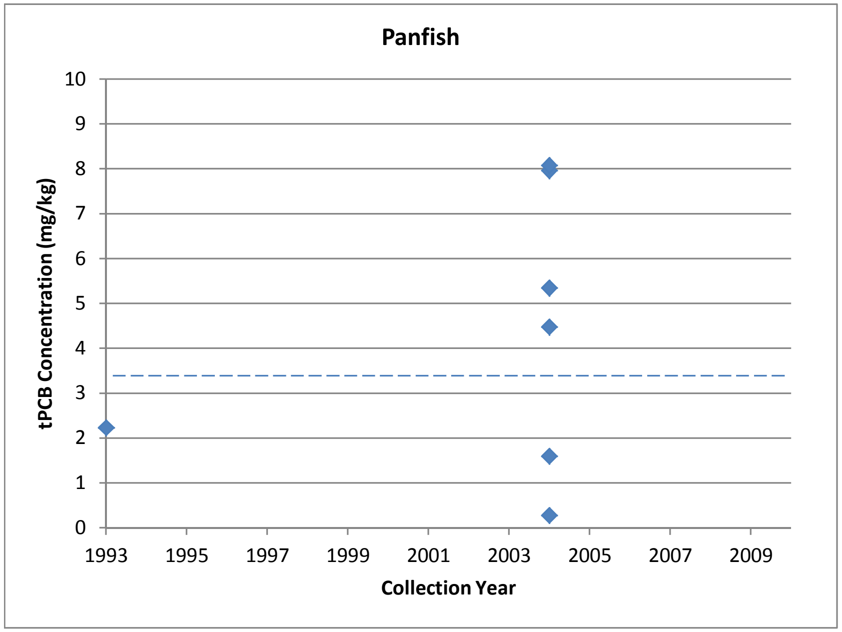
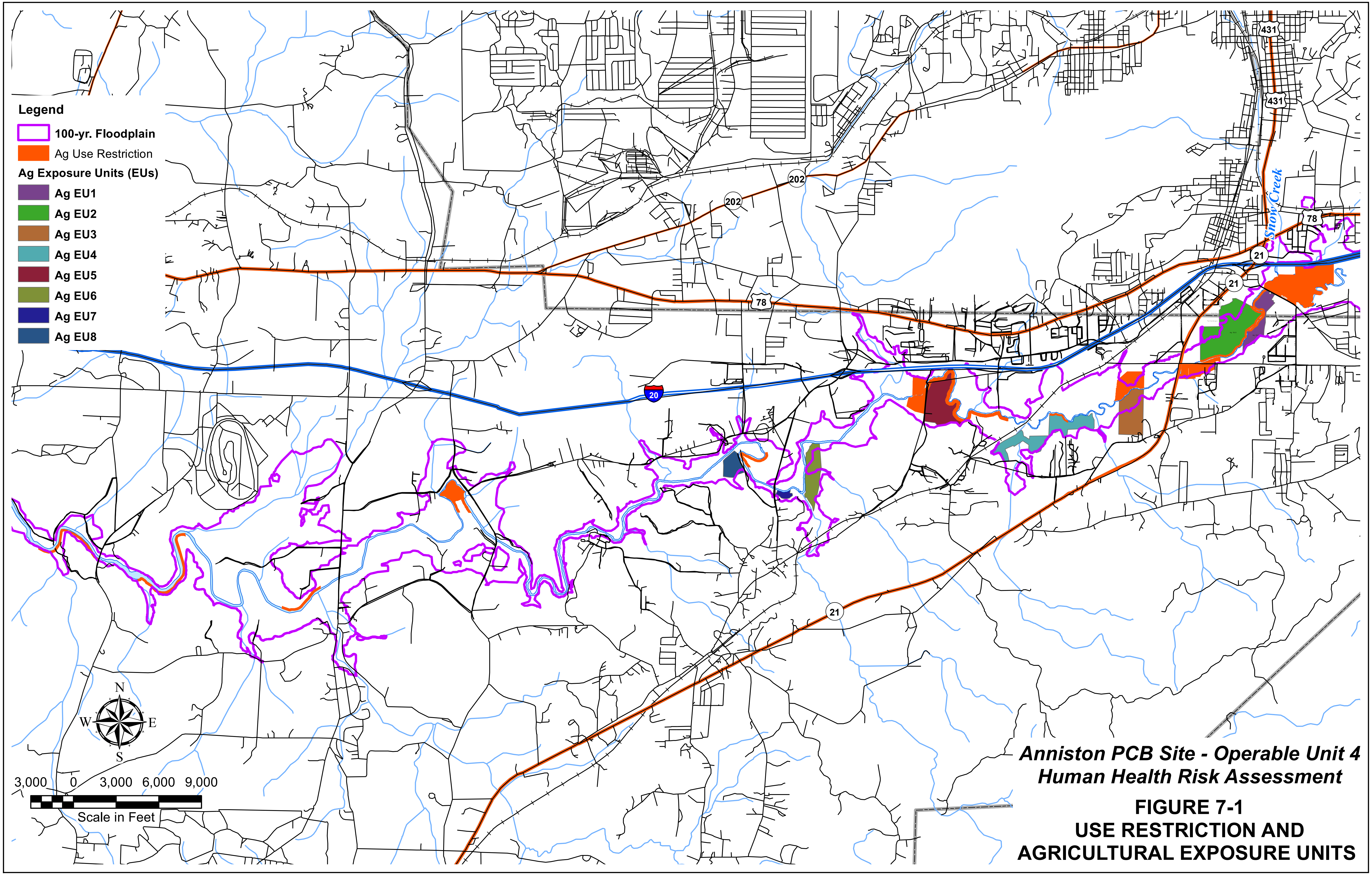


Figure 5-2

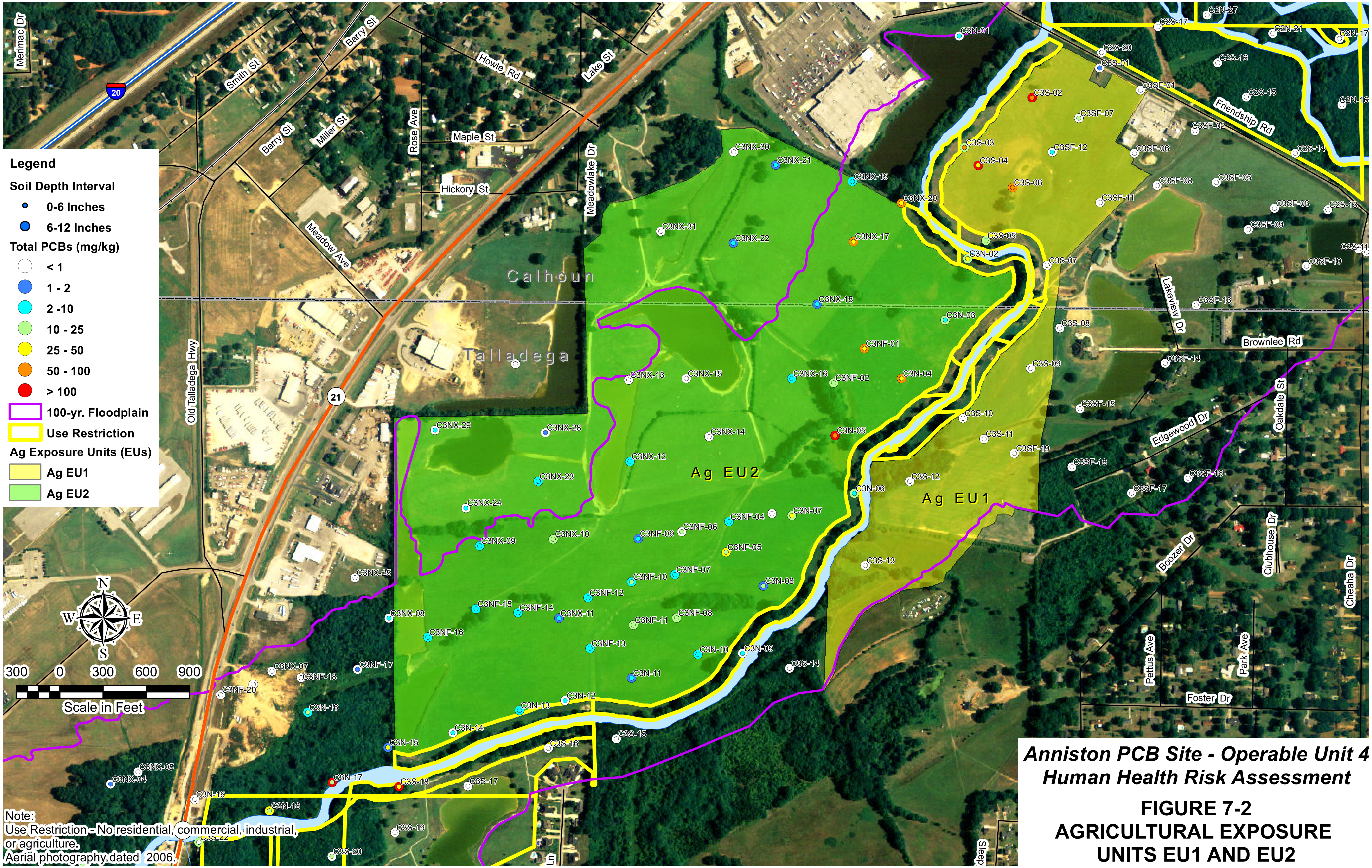
tPCB Concentration Trends
Eastaboga Collection Area
ADEM Data 1993 - 2010

Notes:
Eastaboga Collection Area falls within fish grouping C.
– – – – – – Indicates EPC used in HHRA.



Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

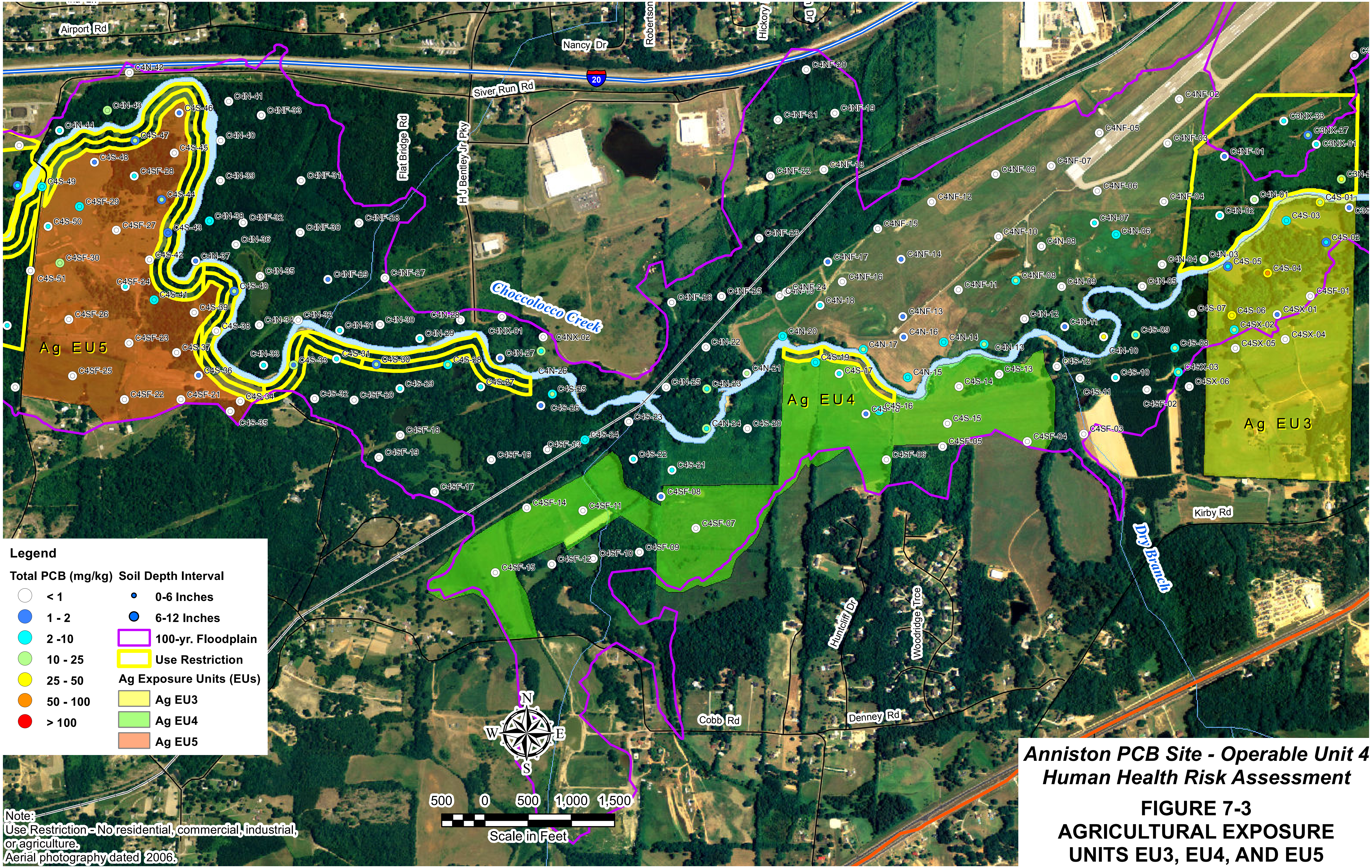
FIGURE 7-1
USE RESTRICTION AND
AGRICULTURAL EXPOSURE UNITS



Note:
Use Restriction - No residential, commercial, industrial, or agriculture.
Aerial photography dated 2006.

Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

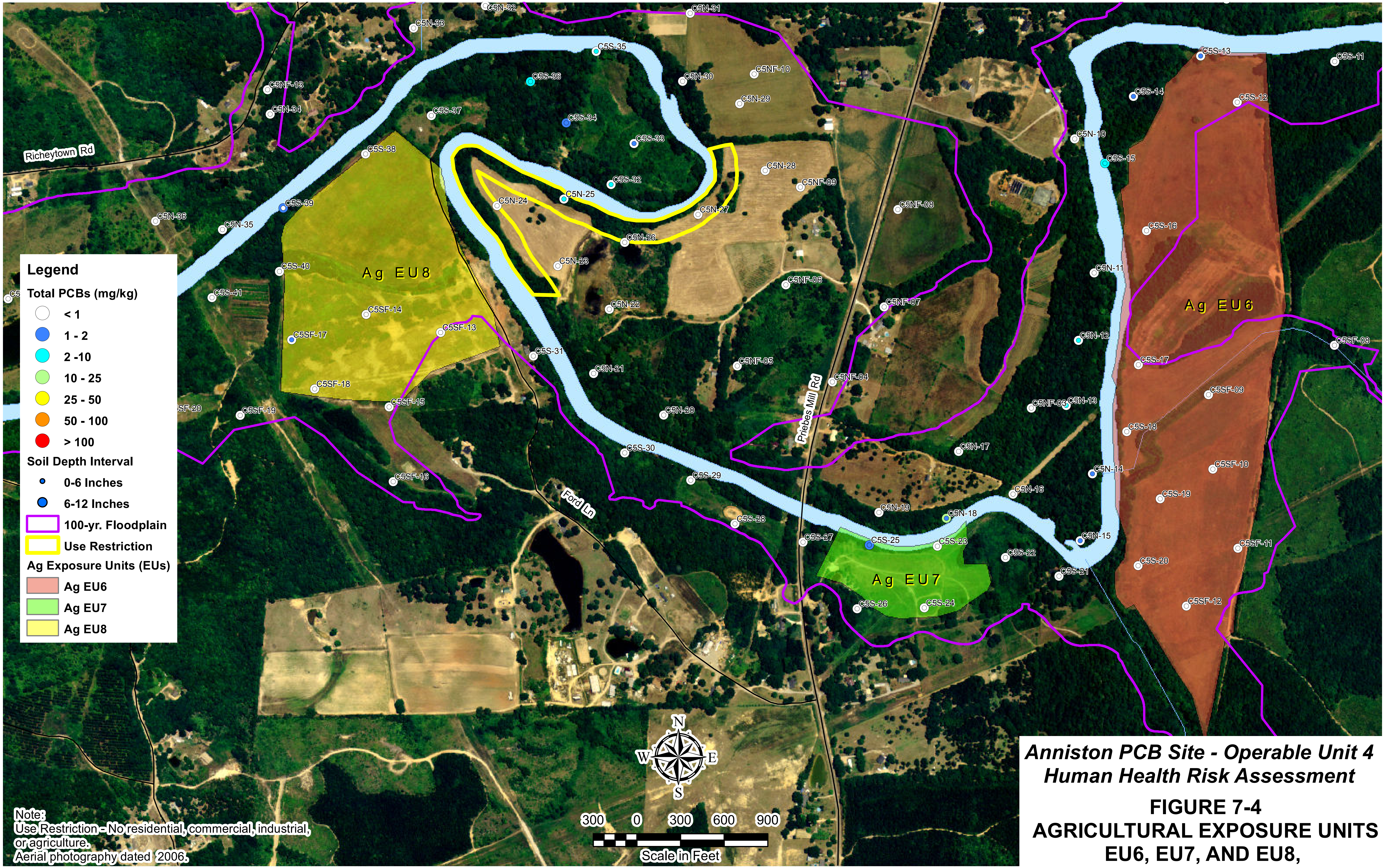
FIGURE 7-2
AGRICULTURAL EXPOSURE UNITS EU1 AND EU2



Note:
Use Restriction - No residential, commercial, industrial, or agriculture.
Aerial photography dated 2006.

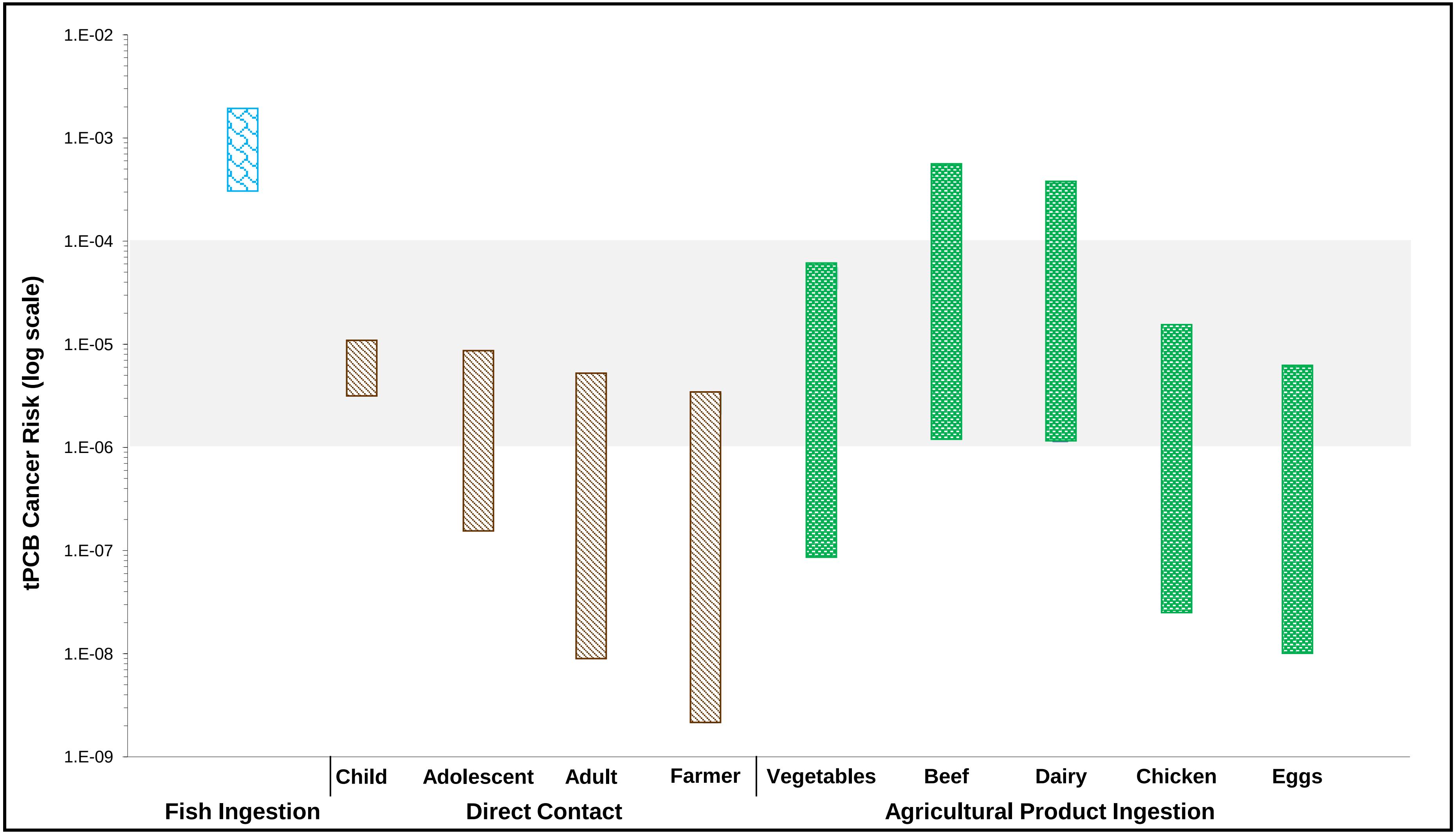
Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 7-3
AGRICULTURAL EXPOSURE UNITS EU3, EU4, AND EU5



Anniston PCB Site - Operable Unit 4
Human Health Risk Assessment

FIGURE 7-4
AGRICULTURAL EXPOSURE UNITS EU6, EU7, AND EU8,



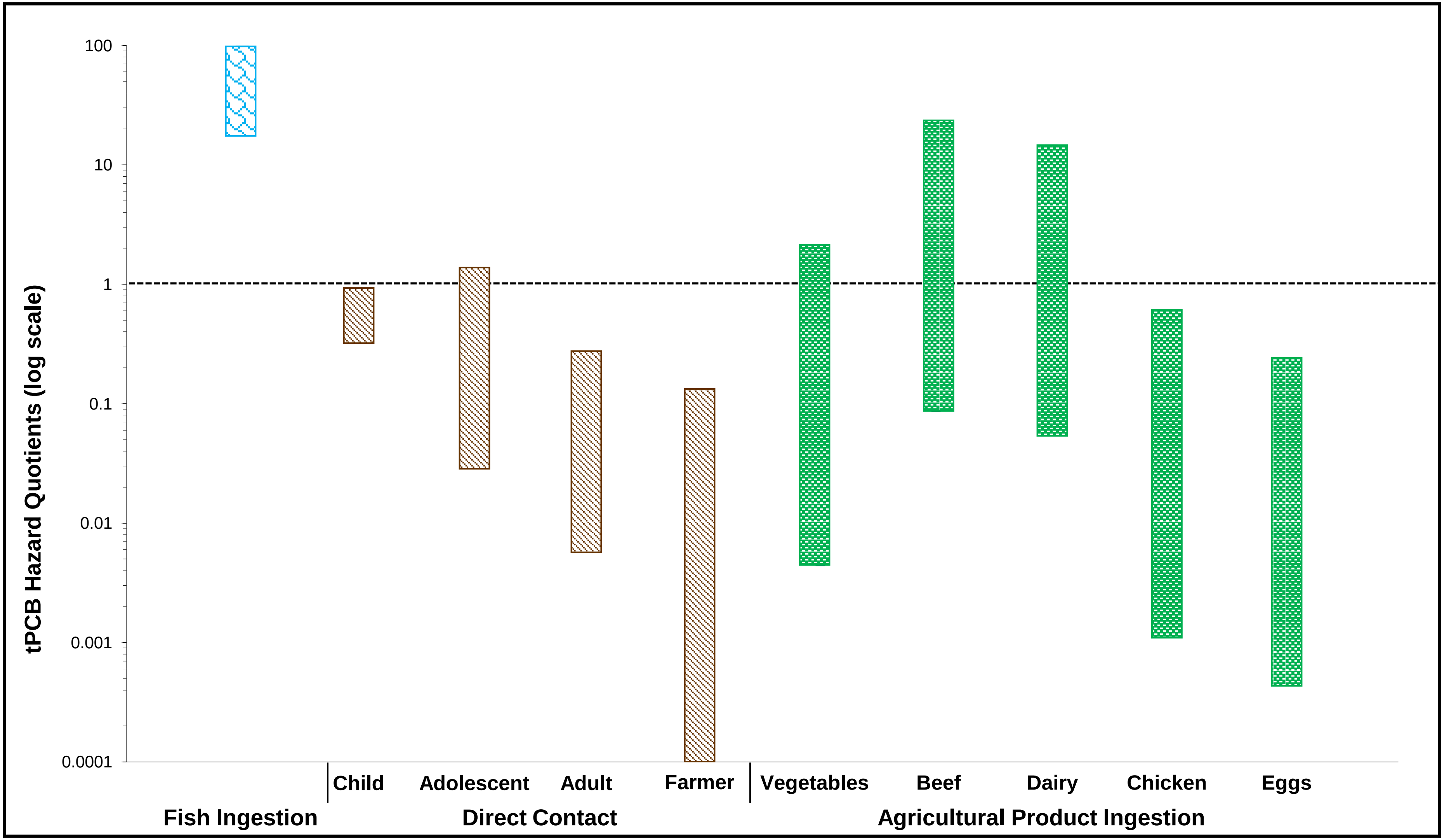
Legend:

Notes:

1) Fish ingestion risk range represents minimum to maximum RME tPCB risks including all fish species and location groupings.
2) Direct contact risk range represents minimum to maximum RME tPCB risks including all EUs at which the receptor was evaluated. Note the adult receptor range includes both recreational and worker exposure.
3) Agricultural product ingestion risk ranges represent the minimum to maximum RME tPCB risks calculated for 1 to 40 mg/kg in soil and 10 to 100% floodplain soil exposure, as appropriate for scenario.
4) Gray shaded area represents EPA’s cancer risk range (1E-06 to 1E-04).

FIGURE 8-1

tPCB RME Cancer Risks
ANNISTON PCB SITE – OU4



Legend:

Notes:

1) Fish ingestion HQ range represents minimum to maximum RME tPCB HQs including all fish species and location groupings.
2) Direct contact HQ ranges represent minimum to maximum RME tPCB HQs including all EUs at which the receptor was evaluated. Note the adult receptor range includes both recreational and worker exposure.
3) Agricultural product ingestion HQ ranges represent the minimum to maximum RME tPCB HQs calculated for 1 to 40 mg/kg in soil and 10 to 100% floodplain soil exposure, as appropriate for scenario.
4) Horizontal dashed line represents EPA's noncancer benchmark of one.

FIGURE 8-2

tPCB RME Hazard Quotients
ANNISTON PCB SITE – OU4

TABLES

SECTION 2 TABLES

TABLE 2-1
EXPOSURE SCENARIOS EVALUATED PER EXPOSURE UNIT
ANNISTON PCB SITE
OU-4

Exposure Unit	Exposure Scenario	Receptors
C1-EU1	High contact recreational	Young child, adolescent, adult
C1-EU2	Low contact recreational	Adolescent, adult
	Worker	Adult
C2N-EU1	Low contact recreational	Adolescent, adult
	Worker	Adult
C3N-EU1	Low contact recreational	Adolescent, adult
C3N-EU2	Low contact recreational	Adolescent, adult
C3S-EU1	High contact recreational	Young child, adolescent, adult
C3S-EU2	High contact recreational	Young child, adolescent, adult
C4N-EU1	Low contact recreational	Adolescent, adult
	Worker	Adult
C4N-EU2	Low contact recreational	Adolescent, adult
C4S-EU1	Low contact recreational	Adolescent, adult
C4S-EU2	Low contact recreational	Adolescent, adult
C4S-EU3	Low contact recreational	Adolescent, adult
C5N-EU1	Low contact recreational	Adolescent, adult
	Worker	Adult
C5S-EU1	Low contact recreational	Adolescent, adult
C6N-EU1	Low contact recreational	Adolescent, adult
C6S-EU1	Low contact recreational	Adolescent, adult
C7S-EU1	Low contact recreational	Adolescent, adult
C8N-EU1	Low contact recreational	Adolescent, adult

SECTION 3 TABLES

TABLE 3-1
SAMPLES USED IN HHRA - FISH
ANNISTON PCB SITE
OU-4

						Analyses				
Location Group	**Species Group**	**Species**	**Location**	**Sample ID**	**Date**	**PCBs**	**Mercury**	**PCB Congeners**	**Metals**	**Dioxins/ Furans**
A	Bass	Largemouth Bass	HHFL-01	C60058	11/14/2008	X	X	X	X	X
A	Bass	Largemouth Bass	HHFL-01	C60059	11/14/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-01	C60060	11/14/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-01	C60061	11/14/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-01	C60062	11/14/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-01	C60063	11/14/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-01	C60064	11/14/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-02	C60220	11/19/2008	X	X	X	X	X
A	Bass	Largemouth Bass	HHFL-02	C60221	11/19/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-02	C60222	11/19/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-02	C60223	11/19/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-02	C60224	11/19/2008	X	X		X	
A	Bass	Largemouth Bass	HHFL-02	C60225	11/19/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-01	C60051	11/14/2008	X	X	X	X	X
A	Bass	Spotted Bass	HHFL-01	C60052	11/14/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-01	C60053	11/14/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-01	C60054	11/14/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-01	C60055	11/14/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-01	C60056	11/14/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-01	C60057	11/14/2008	X	X	X	X	X
A	Bass	Spotted Bass	HHFL-02	C60226	11/19/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-02	C60227	11/19/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-02	C60228	11/19/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-02	C60229	11/19/2008	X	X	X	X	X
A	Bass	Spotted Bass	HHFL-02	C60230	11/19/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-02	C60231	11/19/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-02	C60232	11/19/2008	X	X		X	
A	Bass	Spotted Bass	HHFL-02	C60233	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60079	11/14/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60334	12/2/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60335	12/2/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60336	12/2/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60337	12/2/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60338	12/2/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60412	12/5/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60413	12/5/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60414	12/5/2008	X	X	X	X	X
A	Catfish	Channel Catfish	HHFL-01	C60415	12/6/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60416	12/6/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60417	12/6/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60418	12/7/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-01	C60419	12/7/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60234	11/19/2008	X	X	X	X	X
A	Catfish	Channel Catfish	HHFL-02	C60235	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60236	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60237	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60238	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60239	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60240	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60241	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60242	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60243	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60244	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60245	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60246	11/19/2008	X	X		X	
A	Catfish	Channel Catfish	HHFL-02	C60247	11/19/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-01	C60072	11/14/2008	X	X	X	X	X
A	Sunfish	Black Crappie	HHFL-01	C60073	11/14/2008	X	X	X	X	X
A	Sunfish	Black Crappie	HHFL-01	C60074	11/14/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-01	C60075	11/14/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-01	C60076	11/14/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-01	C60077	11/14/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-01	C60078	11/14/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-02	C60255	11/19/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-02	C60257	11/19/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-02	C60258	11/19/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-02	C60259	11/19/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-02	C60260	11/19/2008	X	X		X	
A	Sunfish	Black Crappie	HHFL-02	C60261	11/19/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-01	C60065	11/14/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-01	C60066	11/14/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-01	C60067	11/14/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-01	C60068	11/14/2008	X	X	X	X	X
A	Sunfish	Redear Sunfish	HHFL-01	C60069	11/14/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-01	C60070	11/14/2008	X	X	X	X	X

TABLE 3-1
SAMPLES USED IN HHRA - FISH
ANNISTON PCB SITE
OU-4

						Analyses				
Location Group	Species Group	Species	Location	Sample ID	Date	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans
A	Sunfish	Redear Sunfish	HHFL-01	C60071	11/14/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-02	C60248	11/19/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-02	C60249	11/19/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-02	C60250	11/19/2008	X	X	X	X	X
A	Sunfish	Redear Sunfish	HHFL-02	C60251	11/19/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-02	C60252	11/19/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-02	C60253	11/19/2008	X	X		X	
A	Sunfish	Redear Sunfish	HHFL-02	C60254	11/19/2008	X	X		X	
A	Sunfish	White Crappie	HHFL-02	C60256	11/19/2008	X	X		X	
B	Bass	Largemouth Bass	HHFL-03	C60369	12/3/2008	X	X		X	
B	Bass	Largemouth Bass	HHFL-04	C60177	11/17/2008	X	X		X	
B	Bass	Largemouth Bass	HHFL-04	C60178	11/17/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60361	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60362	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60363	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60364	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60365	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60366	12/3/2008	X	X	X	X	X
B	Bass	Spotted Bass	HHFL-03	C60367	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60368	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60370	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60371	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60372	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60373	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-03	C60374	12/3/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60179	11/17/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60180	11/17/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60181	11/17/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60182	11/17/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60183	11/17/2008	X	X	X	X	X
B	Bass	Spotted Bass	HHFL-04	C60184	11/17/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60185	11/17/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60408	12/4/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60409	12/4/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60410	12/4/2008	X	X		X	
B	Bass	Spotted Bass	HHFL-04	C60411	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60375	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60376	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60377	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60378	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60379	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60380	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60381	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60382	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60383	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60384	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60385	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60386	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60387	12/3/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-03	C60388	12/3/2008	X	X	X	X	X
B	Catfish	Channel Catfish	HHFL-04	C60148	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60149	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60150	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60151	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60152	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60153	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60154	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60155	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60156	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60157	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60158	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60159	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60160	11/17/2008	X	X		X	
B	Catfish	Channel Catfish	HHFL-04	C60161	11/17/2008	X	X		X	
B	Sunfish	Black Crappie	HHFL-04	C60162	11/17/2008	X	X	X	X	X
B	Sunfish	Black Crappie	HHFL-04	C60163	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-03	C60352	12/3/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-03	C60353	12/3/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-03	C60354	12/3/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-03	C60357	12/3/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-03	C60358	12/3/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-03	C60359	12/3/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-03	C60360	12/3/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60165	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60169	11/17/2008	X	X		X	

TABLE 3-1
SAMPLES USED IN HHRA - FISH
ANNISTON PCB SITE
OU-4

						Analyses				
Location Group	**Species Group**	**Species**	**Location**	**Sample ID**	**Date**	**PCBs**	**Mercury**	**PCB Congeners**	**Metals**	**Dioxins/ Furans**
B	Sunfish	Bluegill	HHFL-04	C60170	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60171	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60172	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60173	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60174	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60175	11/17/2008	X	X		X	
B	Sunfish	Bluegill	HHFL-04	C60176	11/17/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-03	C60347	12/3/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-03	C60348	12/3/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-03	C60349	12/3/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-03	C60350	12/3/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-03	C60351	12/3/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-03	C60355	12/3/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-03	C60356	12/3/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-04	C60164	11/17/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-04	C60166	11/17/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-04	C60167	11/17/2008	X	X		X	
B	Sunfish	Redear Sunfish	HHFL-04	C60168	11/17/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-07	C60285	11/20/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-07	C60287	11/20/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-07	C60289	11/20/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-07	C60296	11/20/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60325	12/2/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60326	12/2/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60327	12/2/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60328	12/2/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60329	12/2/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60330	12/2/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60331	12/2/2008	X	X		X	
C	Bass	Largemouth Bass	HHFL-09	C60332	12/2/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60200	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60201	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60202	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60203	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60204	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60205	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60206	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60207	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60208	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60209	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60210	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60211	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60212	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-05	C60213	11/18/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60094	11/15/2008	X	X	X	X	X
C	Bass	Spotted Bass	HHFL-06	C60095	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60096	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60097	11/15/2008	X	X	X	X	X
C	Bass	Spotted Bass	HHFL-06	C60098	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60099	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60100	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60101	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60102	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60103	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60104	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60105	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60106	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-06	C60107	11/15/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60286	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60288	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60290	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60291	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60292	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60293	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60294	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60295	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60297	11/20/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-07	C60298	11/20/2008	X	X	X	X	X
C	Bass	Spotted Bass	HHFL-08	C60120	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60121	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60122	11/16/2008	X	X	X	X	X
C	Bass	Spotted Bass	HHFL-08	C60123	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60124	11/16/2008	X	X	X	X	X
C	Bass	Spotted Bass	HHFL-08	C60125	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60126	11/16/2008	X	X		X	

TABLE 3-1
SAMPLES USED IN HHRA - FISH
ANNISTON PCB SITE
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						Analyses				
Location Group	Species Group	Species	Location	Sample ID	Date	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans
C	Bass	Spotted Bass	HHFL-08	C60127	11/16/2008	X	X	X	X	X
C	Bass	Spotted Bass	HHFL-08	C60128	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60129	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60130	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60131	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60132	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-08	C60133	11/16/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-09	C60333	12/2/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-09	C60397	11/19/2008	X	X		X	
C	Bass	Spotted Bass	HHFL-09	C60398	11/19/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60214	11/18/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60215	11/18/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60216	11/18/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60217	11/18/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60218	11/18/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60219	11/18/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60389	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60390	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60391	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60392	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60393	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60394	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60395	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-05	C60396	12/4/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60108	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60109	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60110	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60111	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60112	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60343	12/2/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60344	12/2/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60346	12/3/2008	X	X	X	X	X
C	Catfish	Channel Catfish	HHFL-06	C60403	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60404	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60405	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60406	11/15/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60407	11/15/2008		X		X	
C	Catfish	Channel Catfish	HHFL-06	C60420	12/8/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-06	C60421	12/8/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60299	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60300	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60301	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60302	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60303	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60304	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60305	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60306	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60307	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60308	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60309	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60310	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60311	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-07	C60312	11/20/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60134	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60135	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60136	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60137	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60138	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60139	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60140	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60141	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60142	11/16/2008	X	X	X	X	X
C	Catfish	Channel Catfish	HHFL-08	C60143	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60144	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60145	11/16/2008	X	X	X	X	X
C	Catfish	Channel Catfish	HHFL-08	C60146	11/16/2008	X	X		X	
C	Catfish	Channel Catfish	HHFL-08	C60147	11/16/2008	X	X	X	X	X
C	Sunfish	Bluegill	HHFL-05	C60187	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60188	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60190	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60191	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60192	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60193	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60194	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60195	11/18/2008	X	X		X	

TABLE 3-1
SAMPLES USED IN HHRA - FISH
ANNISTON PCB SITE
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Location Group	Species Group	Species	Location	Sample ID	Date	Analyses				
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans
C	Sunfish	Bluegill	HHFL-05	C60196	11/18/2008	X	X	X	X	X
C	Sunfish	Bluegill	HHFL-05	C60197	11/18/2008	X	X	X	X	X
C	Sunfish	Bluegill	HHFL-05	C60198	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-05	C60199	11/18/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60080	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60081	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60082	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60083	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60084	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60085	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60086	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60087	11/15/2008	X	X	X	X	X
C	Sunfish	Bluegill	HHFL-06	C60088	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-06	C60089	11/15/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60271	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60272	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60273	11/20/2008	X	X	X	X	X
C	Sunfish	Bluegill	HHFL-07	C60274	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60275	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60276	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60277	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60278	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60279	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60280	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-07	C60281	11/20/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60115	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60116	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60117	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60118	11/16/2008	X	X	X	X	X
C	Sunfish	Bluegill	HHFL-08	C60119	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60264	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60265	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60266	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-08	C60267	11/16/2008	X	X	X	X	X
C	Sunfish	Bluegill	HHFL-08	C60268	11/16/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60316	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60317	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60318	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60319	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60320	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60321	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60322	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60323	12/2/2008	X	X		X	
C	Sunfish	Bluegill	HHFL-09	C60324	12/2/2008	X	X		X	
C	Sunfish	Redbreasted Sunfish	HHFL-06	C60090	11/15/2008	X	X		X	
C	Sunfish	Redbreasted Sunfish	HHFL-06	C60091	11/15/2008	X	X		X	
C	Sunfish	Redbreasted Sunfish	HHFL-08	C60262	11/16/2008	X	X		X	
C	Sunfish	Redbreasted Sunfish	HHFL-08	C60263	11/16/2008	X	X		X	
C	Sunfish	Redbreasted Sunfish	HHFL-09	C60269	11/19/2008	X	X	X	X	X
C	Sunfish	Redbreasted Sunfish	HHFL-09	C60270	11/19/2008	X	X		X	
C	Sunfish	Redbreasted Sunfish	HHFL-09	C60313	12/2/2008	X	X	X	X	
C	Sunfish	Redbreasted Sunfish	HHFL-09	C60314	12/2/2008	X	X		X	
C	Sunfish	Redbreasted Sunfish	HHFL-09	C60315	12/2/2008	X	X		X	
C	Sunfish	Redear Sunfish	HHFL-05	C60186	11/18/2008	X	X	X	X	X
C	Sunfish	Redear Sunfish	HHFL-05	C60189	11/18/2008	X	X		X	
C	Sunfish	Redear Sunfish	HHFL-06	C60092	11/15/2008	X	X		X	
C	Sunfish	Redear Sunfish	HHFL-06	C60093	11/15/2008	X	X		X	
C	Sunfish	Redear Sunfish	HHFL-07	C60282	11/20/2008	X	X		X	
C	Sunfish	Redear Sunfish	HHFL-07	C60283	11/20/2008	X	X	X	X	X
C	Sunfish	Redear Sunfish	HHFL-07	C60284	11/20/2008	X	X		X	
C	Sunfish	Redear Sunfish	HHFL-08	C60113	11/16/2008	X	X		X	
C	Sunfish	Redear Sunfish	HHFL-08	C60114	11/16/2008	X	X		X	

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
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Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C1-EU1	OLGP-001	OLGP-001 (0-6)	N	8/8/2000	0-0.5	X							
C1-EU1	OLGP-001	OLGP-001 (12-18)	N	8/8/2000	1-1.5	X							
C1-EU1	OLGP-002	OLGP-002 (0-6)	N	8/8/2000	0-0.5	X							
C1-EU1	OLGP-002	OLGP-002 (12-18)	N	8/8/2000	1-1.5	X							
C1-EU1	OLGP-003	OLGP-003 (0-6)	N	8/8/2000	0-0.5	X							
C1-EU1	OLGP-003	OLGP-003 (12-18)	N	8/8/2000	1-1.5	X							
C1-EU1	OLGP-003	OLGP-003 (30-36)	N	8/8/2000	2.5-3	X							
C1-EU1	OLGP-023	OLGP-023 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU1	OLGP-023	OLGP-023 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU1	OLGP-024	OLGP-024 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU1	OLGP-024	OLGP-024 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU1	OLGP-024	OLGP-024 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU1	OLGP-024	OLGP-024 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU1	OLGP-026	OLGP-026 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU1	OLGP-026	OLGP-026 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU1	OLGP-027	OLGP-027 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU1	OLGP-027	OLGP-027 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU1	OLGP-027	OLGP-027 (24-32)	N	8/9/2000	2-2.67	X							
C1-EU1	OLGP-027	OLGP-027 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU1	OLGP-028	OLGP-028 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU1	OLGP-028	OLGP-028 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU1	OLGP-028	OLGP-028 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU1	OLGP-029	OLGP-029 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU1	OLGP-029	OLGP-029 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU1	OLGP-029	OLGP-029 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU1	OLGP-030	OLGP-030 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU1	OLGP-030	OLGP-030 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU1	OLGP-030	OLGP-030 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU1	OLGP-030	OLGP-030 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU1	OLGP-046	OLGP-046 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-047	OLGP-047 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-047	OLGP-047 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-048	OLGP-048 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-048	OLGP-048 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-048	OLGP-048 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-049	OLGP-049 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-049	OLGP-049 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-050	OLGP-050 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-050	OLGP-050 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-050	OLGP-050 (34-40)	N	8/10/2000	2.83-3.33	X							
C1-EU1	OLGP-051	OLGP-051 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-051	OLGP-051 (42-48)	N	8/10/2000	3.5-4	X							
C1-EU1	OLGP-054	OLGP-054 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-054	OLGP-054 (42-48)	N	8/10/2000	3.5-4	X							
C1-EU1	OLGP-055	OLGP-055 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-055	OLGP-055 (33-39)	N	8/10/2000	2.75-3.25	X							
C1-EU1	OLGP-056	OLGP-056 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-056	OLGP-056 (34-40)	N	8/10/2000	2.83-3.33	X							
C1-EU1	OLGP-057	OLGP-057 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-057	OLGP-057 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-057	OLGP-057 (32-38)	N	8/10/2000	2.67-3.17	X							
C1-EU1	OLGP-058	OLGP-058 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-058	OLGP-058 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-058	OLGP-058 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-058	OLGP-058 (42-48)	N	8/10/2000	3.5-4	X							
C1-EU1	OLGP-061	OLGP-061 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-061	OLGP-061 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-061	OLGP-061 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-061	OLGP-061 (42-48)	N	8/10/2000	3.5-4	X							
C1-EU1	OLGP-062	OLGP-062 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-062	OLGP-062 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-062	OLGP-062 (12-18) DUP	FD	8/10/2000	1-1.5	X							
C1-EU1	OLGP-062	OLGP-062 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-062	OLGP-062 (32-38)	N	8/10/2000	2.67-3.17	X							
C1-EU1	OLGP-063	OLGP-063 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-063	OLGP-063 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-063	OLGP-063 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-063	OLGP-063 (42-48)	N	8/10/2000	3.5-4	X							
C1-EU1	OLGP-064	OLGP-064 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-064	OLGP-064 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-064	OLGP-064 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-064	OLGP-064 (36-42)	N	8/10/2000	3-3.5	X							
C1-EU1	OLGP-065	OLGP-065 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-065	OLGP-065 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU1	OLGP-065	OLGP-065 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-065	OLGP-065 (30-36)	N	8/10/2000	2.5-3	X							
C1-EU1	OLGP-066	OLGP-066 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU1	OLGP-066	OLGP-066 (12-18)	N	8/10/2000	1-1.5	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
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						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C1-EU1	OLGP-066	OLGP-066 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU1	OLGP-066	OLGP-066 (42-48)	N	8/10/2000	3.5-4	X							
C1-EU1	OLGP-069	OLGP-069 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-069	OLGP-069 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-069	OLGP-069 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-069	OLGP-069 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-070	OLGP-070 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-070	OLGP-070 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-070	OLGP-070 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-070	OLGP-070 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-071	OLGP-071 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-071	OLGP-071 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-071	OLGP-071 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-071	OLGP-071 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-074	OLGP-074 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-074	OLGP-074 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-074	OLGP-074 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-074	OLGP-074 (42-44)	N	8/11/2000	3.5-3.67	X							
C1-EU1	OLGP-077	OLGP-077 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-077	OLGP-077 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-077	OLGP-077 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-077	OLGP-077 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-078	OLGP-078 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-078	OLGP-078 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-078	OLGP-078 (24-32)	N	8/11/2000	2-2.67	X							
C1-EU1	OLGP-078	OLGP-078 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-079	OLGP-079 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-079	OLGP-079 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-079	OLGP-079 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-079	OLGP-079 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-080	OLGP-080 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-080	OLGP-080 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-080	OLGP-080 (12-18) DUP	FD	8/11/2000	1-1.5	X							
C1-EU1	OLGP-080	OLGP-080 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-080	OLGP-080 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-083	OLGP-083 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-083	OLGP-083 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-083	OLGP-083 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-083	OLGP-083 (32-38)	N	8/11/2000	2.67-3.17	X							
C1-EU1	OLGP-084	OLGP-084 (0-6)	N	8/11/2000	0-0.5	X							
C1-EU1	OLGP-084	OLGP-084 (0-6) DUP	FD	8/11/2000	0-0.5	X							
C1-EU1	OLGP-084	OLGP-084 (12-18)	N	8/11/2000	1-1.5	X							
C1-EU1	OLGP-084	OLGP-084 (24-30)	N	8/11/2000	2-2.5	X							
C1-EU1	OLGP-084	OLGP-084 (42-48)	N	8/11/2000	3.5-4	X							
C1-EU1	OLGP-121	OLGP-121 (0-3)	N	8/25/2000	0-0.25	X							
C1-EU1	OLGP-141	OLGP-141 (0-3)	N	8/25/2000	0-0.25	X							
C1-EU1	OLGP-141	OLGP-141 (12-18)	N	8/25/2000	1-1.5	X							
C1-EU1	OLGP-143	OLGP-143 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-144	OLGP-144 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-144	OLGP-144 (24-30)	N	8/25/2000	2-2.5	X							
C1-EU1	OLGP-144	OLGP-144 (36-42)	N	8/25/2000	3-3.5	X							
C1-EU1	OLGP-145	OLGP-145 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-145	OLGP-145 (0-3) DUP	FD	8/28/2000	0-0.25	X							
C1-EU1	OLGP-146	OLGP-146 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-147	OLGP-147 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-147	OLGP-147 (24-30)	N	8/25/2000	2-2.5	X							
C1-EU1	OLGP-147	OLGP-147 (30-36)	N	8/25/2000	2.5-3	X							
C1-EU1	OLGP-148	OLGP-148 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-149	OLGP-149 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-150	OLGP-150 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLGP-150	OLGP-150 (30-36)	N	8/28/2000	2.5-3	X							
C1-EU1	OLGP-150	OLGP-150 (30-36) DUP	FD	8/28/2000	2.5-3	X							
C1-EU1	OLHA-001	OLHA-001 (0-6)	N	6/23/2000	0-0.5	X							
C1-EU1	OLHA-001	OLHA-001 (12-18)	N	6/23/2000	1-1.5	X							
C1-EU1	OLHA-002	OLHA-002 (0-6)	N	6/23/2000	0-0.5	X							
C1-EU1	OLHA-002	OLHA-002 (12-18)	N	6/23/2000	1-1.5	X							
C1-EU1	OLHA-003	OLHA-003 (0-6)	N	6/23/2000	0-0.5	X							
C1-EU1	OLHA-003	OLHA-003 (12-18)	N	6/23/2000	1-1.5	X							
C1-EU1	OLHA-004	OLHA-004 (0-6)	N	6/23/2000	0-0.5	X							
C1-EU1	OLHA-004	OLHA-004 (12-18)	N	6/23/2000	1-1.5	X							
C1-EU1	OLHA-006	OLHA-006 (0-6)	N	6/23/2000	0-0.5	X							
C1-EU1	OLHA-006	OLHA-006 (12-18)	N	6/29/2000	1-1.5	X							
C1-EU1	OLHA-010	OLHA-010 (0-6)	N	6/29/2000	0-0.5	X							
C1-EU1	OLHA-011	OLHA-011 (0-6)	N	6/29/2000	0-0.5	X							
C1-EU1	OLHA-016	OLHA-016 (0-6)	N	6/29/2000	0-0.5	X							
C1-EU1	OLHA-020	OLHA-020 (0-6)	N	6/29/2000	0-0.5	X							
C1-EU1	OLHA-020	OLHA-020 (12-18)	N	6/29/2000	1-1.5	X							
C1-EU1	OLHA-021	OLHA-021 (0-6)	N	6/29/2000	0-0.5	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
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						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C1-EU1	OLHA-022	OLHA-022 (0-6)	N	6/29/2000	0-0.5	X							
C1-EU1	OLHA-023	OLHA-023 (0-6)	N	6/30/2000	0-0.5	X							
C1-EU1	OLHA-023	OLHA-023 (12-18)	N	6/30/2000	1-1.5	X							
C1-EU1	OLHA-024	OLHA-024 (0-6)	N	6/30/2000	0-0.5	X							
C1-EU1	OLHA-025	OLHA-025 (0-6)	N	6/30/2000	0-0.5	X							
C1-EU1	OLHA-026	OLHA-026 (0-6)	N	6/30/2000	0-0.5	X							
C1-EU1	OLHA-026	OLHA-026 (12-18)	N	6/30/2000	1-1.5	X							
C1-EU1	OLHA-027	OLHA-027 (0-6)	N	6/30/2000	0-0.5	X							
C1-EU1	OLHA-028	OLHA-028 (0-6)	N	6/30/2000	0-0.5	X							
C1-EU1	OLHA-068	OLHA-068 (0-3)	N	8/25/2000	0-0.25	X							
C1-EU1	OLHA-071	OLHA-071 (0-3)	N	8/25/2000	0-0.25	X							
C1-EU1	OLHA-072	OLHA-072 (0-3)	N	8/25/2000	0-0.25	X							
C1-EU1	OLHA-091	OLHA-091 (0-3)	N	8/25/2000	0-0.25	X							
C1-EU1	OLHA-103	OLHA-103 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLHA-104	OLHA-104 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLHA-105	OLHA-105 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU1	OLHA-106	OLHA-106 (0-3)	N	8/28/2000	0-0.25	X							
C1-EU2	BP-1	BP-1	N	8/8/2001	0.5-1	X							
C1-EU2	BP-2	BP-2	N	8/8/2001	0.5-1	X							
C1-EU2	BP-7	BP-7	N	8/8/2001	0-0.5	X							
C1-EU2	BP-8	BP-8	N	8/8/2001	0-0.5	X							
C1-EU2	NHA-1	NHA-1	N	2/28/2001	0-0.5	X							
C1-EU2	NHA-1	NHA-1	N	2/28/2001	1-1.5	X							
C1-EU2	NHA-1	NHA-1	N	2/28/2001	2-2.5	X							
C1-EU2	NHA-2	NHA-2	N	2/28/2001	0-0.5	X							
C1-EU2	NHA-2	NHA-2	N	2/28/2001	1-1.5	X							
C1-EU2	NHA-2	NHA-2	N	2/28/2001	2-2.5	X							
C1-EU2	NHA-5	NHA-5	N	2/28/2001	0-0.5	X							
C1-EU2	NHA-5	NHA-5	N	2/28/2001	1-1.5	X							
C1-EU2	NHA-5	NHA-5 (DUP)	FD	2/28/2001	0-0.5	X							
C1-EU2	OLGP-009	OLGP-009 (0-6)	N	8/8/2000	0-0.5	X							
C1-EU2	OLGP-009	OLGP-009 (12-18)	N	8/8/2000	1-1.5	X							
C1-EU2	OLGP-009	OLGP-009 (30-36)	N	8/8/2000	2.5-3	X							
C1-EU2	OLGP-009	OLGP-009 (42-48)	N	8/8/2000	3.5-4	X							
C1-EU2	OLGP-010	OLGP-010 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-010	OLGP-010 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-010	OLGP-010 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-010	OLGP-010 (24-30) DUP	FD	8/9/2000	2-2.5	X							
C1-EU2	OLGP-010	OLGP-010 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-011	OLGP-011 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-011	OLGP-011 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-011	OLGP-011 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-011	OLGP-011 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-020	OLGP-020 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-020	OLGP-020 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-020	OLGP-020 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-021	OLGP-021 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-021	OLGP-021 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-021	OLGP-021 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-021	OLGP-021 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-022	OLGP-022 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-022	OLGP-022 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-022	OLGP-022 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-022	OLGP-022 (30-36)	N	8/9/2000	2.5-3	X							
C1-EU2	OLGP-031	OLGP-031 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-031	OLGP-031 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-031	OLGP-031 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-032	OLGP-032 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-032	OLGP-032 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-032	OLGP-032 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-032	OLGP-032 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-033	OLGP-033 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-033	OLGP-033 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-033	OLGP-033 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-033	OLGP-033 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-034	OLGP-034 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-034	OLGP-034 (0-6) DUP	FD	8/9/2000	0-0.5	X							
C1-EU2	OLGP-034	OLGP-034 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-034	OLGP-034 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-034	OLGP-034 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-035	OLGP-035 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-035	OLGP-035 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-035	OLGP-035 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-035	OLGP-035 (34-40)	N	8/9/2000	2.83-3.33	X							
C1-EU2	OLGP-036	OLGP-036 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-036	OLGP-036 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-036	OLGP-036 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-036	OLGP-036 (42-48)	N	8/9/2000	3.5-4	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

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SAMPLES USED IN HHRA - SOILS
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						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C1-EU2	OLGP-037	OLGP-037 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-037	OLGP-037 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-037	OLGP-037 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-037	OLGP-037 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-038	OLGP-038 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-038	OLGP-038 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-038	OLGP-038 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-038	OLGP-038 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-039	OLGP-039 (0-6)	N	8/9/2000	0-0.5	X							
C1-EU2	OLGP-039	OLGP-039 (12-18)	N	8/9/2000	1-1.5	X							
C1-EU2	OLGP-039	OLGP-039 (24-30)	N	8/9/2000	2-2.5	X							
C1-EU2	OLGP-039	OLGP-039 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-040	OLGP-040 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU2	OLGP-040	OLGP-040 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU2	OLGP-040	OLGP-040 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU2	OLGP-040	OLGP-040 (42-48)	N	8/9/2000	3.5-4	X							
C1-EU2	OLGP-041	OLGP-041 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU2	OLGP-041	OLGP-041 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU2	OLGP-041	OLGP-041 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU2	OLGP-042	OLGP-042 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU2	OLGP-042	OLGP-042 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU2	OLGP-042	OLGP-042 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU2	OLGP-042	OLGP-042 (33-35)	N	8/10/2000	2.75-2.97	X							
C1-EU2	OLGP-043	OLGP-043 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU2	OLGP-043	OLGP-043 (0-6) DUP	FD	8/10/2000	0-0.5	X							
C1-EU2	OLGP-043	OLGP-043 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU2	OLGP-043	OLGP-043 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU2	OLGP-044	OLGP-044 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU2	OLGP-044	OLGP-044 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU2	OLGP-044	OLGP-044 (24-30)	N	8/10/2000	2-2.5	X							
C1-EU2	OLGP-045	OLGP-045 (0-6)	N	8/10/2000	0-0.5	X							
C1-EU2	OLGP-045	OLGP-045 (12-18)	N	8/10/2000	1-1.5	X							
C1-EU2	OLGP-045	OLGP-045 (24-30)	N	8/10/2000	2-2.5	X							
C2N-EU1	C2N-03	C70755	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-03	C70756	N	2/18/2009	0.5-1	X	X						
C2N-EU1	C2N-06	C70764	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-06	C70765	N	2/18/2009	0.5-1	X	X						
C2N-EU1	C2N-11	C70782	N	2/18/2009	0-0.5	X	X		X				
C2N-EU1	C2N-11	C70783	N	2/18/2009	0.5-1	X	X		X				
C2N-EU1	C2N-15	C70794	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-15	C70795	N	2/18/2009	0.5-1	X	X						
C2N-EU1	C2N-19	C70806	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-19	C70807	N	2/18/2009	0.5-1	X	X						
C2N-EU1	C2N-20	C70809	N	2/19/2009	0-0.5	X	X						
C2N-EU1	C2N-20	C70810	N	2/19/2009	0.5-1	X	X						
C2N-EU1	C2N-23	C70818	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-23	C70819	N	2/18/2009	0.5-1	X	X						
C2N-EU1	C2N-24	C70821	N	2/18/2009	0-0.5	X	X	X		X			
C2N-EU1	C2N-24	C70822	N	2/18/2009	0.5-1	X	X	X		X			
C2N-EU1	C2N-25	C70824	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-25	C70825	N	2/18/2009	0.5-1	X	X						
C2N-EU1	C2N-25	C70826	N	2/18/2009	1-2	X							
C2N-EU1	C2N-28	C70833	N	2/19/2009	0-0.5	X	X						
C2N-EU1	C2N-28	C70834	N	2/19/2009	0.5-1	X	X						
C2N-EU1	C2N-28	C70835	N	2/19/2009	1-2	X							
C2N-EU1	C2N-29	C70836	N	2/19/2009	0-0.5	X	X						
C2N-EU1	C2N-29	C70837	FD	2/19/2009	0-0.5	X	X						
C2N-EU1	C2N-29	C70838	N	2/19/2009	0.5-1	X	X						
C2N-EU1	C2N-29	C70839	FD	2/19/2009	0.5-1	X	X						
C2N-EU1	C2N-30	C70842	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-30	C70843	N	2/18/2009	0.5-1	X	X						
C2N-EU1	C2N-31	C70845	N	2/18/2009	0-0.5	X	X	X	X	X			
C2N-EU1	C2N-31	C70846	N	2/18/2009	0.5-1	X	X	X	X	X			
C2N-EU1	C2N-32	C70848	N	2/18/2009	0-0.5	X	X						
C2N-EU1	C2N-32	C70849	N	2/18/2009	0.5-1	X	X						
C2N-EU2	C2N-01	C70746	N	2/18/2009	0-0.5	X	X		X				
C2N-EU2	C2N-01	C70747	FD	2/18/2009	0-0.5	X	X		X				
C2N-EU2	C2N-01	C70748	N	2/18/2009	0.5-1	X	X		X				
C2N-EU2	C2N-01	C70749	FD	2/18/2009	0.5-1	X	X		X				
C2N-EU2	C2N-02	C70752	N	2/18/2009	0-0.5	X	X						
C2N-EU2	C2N-02	C70753	N	2/18/2009	0.5-1	X	X						
C2N-EU2	C2N-04	C70758	N	2/18/2009	0-0.5	X	X						
C2N-EU2	C2N-04	C70759	N	2/18/2009	0.5-1	X	X						
C2N-EU2	C2N-05	C70761	N	2/18/2009	0-0.5	X	X						
C2N-EU2	C2N-05	C70762	N	2/18/2009	0.5-1	X	X						
C2N-EU2	C2N-07	C70767	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-07	C70768	FD	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-07	C70769	N	2/19/2009	0.5-1	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C2N-EU2	C2N-07	C70770	FD	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-08	C70773	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-08	C70774	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-09	C70776	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-09	C70777	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-10	C70779	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-10	C70780	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-12	C70785	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-12	C70786	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-13	C70788	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-13	C70789	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-14	C70791	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-14	C70792	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-16	C70797	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-16	C70798	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-17	C70800	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-17	C70801	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-18	C70803	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-18	C70804	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-21	C70812	N	2/19/2009	0-0.5	X	X		X				
C2N-EU2	C2N-21	C70813	N	2/19/2009	0.5-1	X	X		X				
C2N-EU2	C2N-22	C70815	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-22	C70816	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-26	C70827	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-26	C70828	N	2/19/2009	0.5-1	X	X						
C2N-EU2	C2N-27	C70830	N	2/19/2009	0-0.5	X	X						
C2N-EU2	C2N-27	C70831	N	2/19/2009	0.5-1	X	X	X		X			
C2N-EU2	C2S-18	C70902	N	2/19/2009	0-0.5	X	X	X		X			
C2N-EU2	C2S-18	C70903	N	2/19/2009	0.5-1	X	X	X		X			
C2S-EU1	C2S-01	C70851	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-01	C70852	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-02	C70854	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-02	C70855	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-03	C70857	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-03	C70858	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-04	C70860	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-04	C70861	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-05	C70863	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-05	C70864	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-06	C70866	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-06	C70867	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-07	C70869	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-07	C70870	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-08	C70872	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-08	C70873	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-09	C70875	N	2/20/2009	0-0.5	X	X		X				
C2S-EU1	C2S-09	C70876	N	2/20/2009	0.5-1	X	X		X				
C2S-EU1	C2S-12	C70884	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-12	C70885	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-14	C70890	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-14	C70891	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-15	C70893	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-15	C70894	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-16	C70896	N	2/20/2009	0-0.5	X	X						
C2S-EU1	C2S-16	C70897	N	2/20/2009	0.5-1	X	X						
C2S-EU1	C2S-17	C70899	N	2/19/2009	0-0.5	X	X						
C2S-EU1	C2S-17	C70900	N	2/19/2009	0.5-1	X	X						
C2S-EU1	C2S-19	C70905	N	2/19/2009	0-0.5	X	X		X				
C2S-EU1	C2S-19	C70906	N	2/19/2009	0.5-1	X	X		X				
C2S-EU1	C2S-20	C70908	N	2/19/2009	0-0.5	X	X						
C2S-EU1	C2S-20	C70909	FD	2/19/2009	0-0.5	X	X						
C2S-EU1	C2S-20	C70910	N	2/19/2009	0.5-1	X	X	X		X			
C2S-EU1	C2S-20	C70911	FD	2/19/2009	0.5-1	X	X	X		X			
C3N-EU1	C3N-01	C70914	N	3/31/2009	0-0.5	X	X	X		X			
C3N-EU1	C3N-01	C70915	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-02	C70917	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-02	C70918	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-02	C70919	N	3/31/2009	1-2	X							
C3N-EU1	C3N-03	C70920	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-03	C70921	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-03	C70922	N	3/31/2009	1-2	X							
C3N-EU1	C3N-04	C70923	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-04	C70924	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-04	C70925	N	3/31/2009	1-2	X							
C3N-EU1	C3N-05	C70926	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-05	C70927	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-05	C70928	N	3/31/2009	1-2	X							
C3N-EU1	C3N-06	C70929	N	3/31/2009	0-0.5	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C3N-EU1	C3N-06	C70930	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-06	C70931	N	3/31/2009	1-2	X							
C3N-EU1	C3N-07	C70932	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-07	C70933	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-07	C70934	N	3/31/2009	1-2	X							
C3N-EU1	C3N-08	C70935	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-08	C70936	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-09	C70938	N	3/31/2009	0-0.5	X	X	X	X	X			
C3N-EU1	C3N-09	C70939	N	3/31/2009	0.5-1	X	X		X				
C3N-EU1	C3N-10	C70941	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-10	C70942	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-10	C70943	N	3/31/2009	1-2	X							
C3N-EU1	C3N-11	C70944	N	3/31/2009	0-0.5	X	X	X		X			
C3N-EU1	C3N-11	C70945	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-12	C70947	N	3/31/2009	0-0.5	X	X	X		X			
C3N-EU1	C3N-12	C70948	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-13	C70950	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-13	C70951	N	3/31/2009	0.5-1	X	X						
C3N-EU1	C3N-14	C70953	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3N-14	C70954	N	3/31/2009	0.5-1	X	X	X		X			
C3N-EU1	C3NF-01	C70992	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-01	C70993	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-02	C70994	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-02	C70995	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-03	C70996	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-03	C70997	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-04	C70998	N	3/31/2009	0-0.5	X	X		X				
C3N-EU1	C3NF-04	C70999	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-05	C71000	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-05	C71001	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-06	C71002	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-06	C71003	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-07	C71004	N	3/31/2009	0-0.5	X	X	X		X			
C3N-EU1	C3NF-07	C71005	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-08	C71006	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-08	C71007	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-09	C71008	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-09	C71009	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-10	C71010	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-10	C71011	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-11	C71012	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-11	C71013	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-12	C71014	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-12	C71015	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-13	C71016	N	3/31/2009	0-0.5	X	X	X		X			
C3N-EU1	C3NF-13	C71017	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-14	C71018	N	3/31/2009	0-0.5	X	X		X				
C3N-EU1	C3NF-14	C71019	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-15	C71020	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-15	C71021	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NF-16	C71022	N	3/31/2009	0-0.5	X	X						
C3N-EU1	C3NF-16	C71023	N	3/31/2009	0.5-1	X							
C3N-EU1	C3NX-09	C72717	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-09	C72718	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-10	C72719	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-10	C72720	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-11	C72721	N	8/3/2011	0-0.5	X	X	X		X			
C3N-EU1	C3NX-11	C72721	FD	8/3/2011	0-0.5								
C3N-EU1	C3NX-11	C72722	N	8/3/2011	0.5-1	X	X	X		X			
C3N-EU1	C3NX-11	C72723	FD	8/3/2011	0.5-1	X	X	X		X			
C3N-EU1	C3NX-12	C72724	N	8/3/2011	0-0.5	X	X	X		X			
C3N-EU1	C3NX-12	C72724	FD	8/3/2011	0-0.5								
C3N-EU1	C3NX-12	C72725	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-13	C72726	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-13	C72727	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-14	C72728	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-14	C72729	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-15	C72730	N	8/3/2011	0-0.5	X	X		X				
C3N-EU1	C3NX-15	C72731	N	8/3/2011	0.5-1	X	X		X				
C3N-EU1	C3NX-16	C72732	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-16	C72733	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-17	C72734	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-17	C72735	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-18	C72736	N	8/3/2011	0-0.5	X	X	X		X			
C3N-EU1	C3NX-18	C72736	FD	8/3/2011	0-0.5								
C3N-EU1	C3NX-18	C72737	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-19	C72738	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-19	C72739	N	8/3/2011	0.5-1	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
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Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C3N-EU1	C3NX-20	C72740	N	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-20	C72741	FD	8/3/2011	0-0.5	X	X						
C3N-EU1	C3NX-20	C72742	N	8/3/2011	0.5-1	X	X						
C3N-EU1	C3NX-21	C72776	N	9/28/2011	0-0.5	X	X						
C3N-EU1	C3NX-21	C72777	N	9/28/2011	0.5-1	X	X						
C3N-EU1	C3NX-22	C72778	N	9/28/2011	0-0.5	X	X						
C3N-EU1	C3NX-22	C72779	N	9/28/2011	0.5-1	X	X						
C3N-EU1	C3NX-23	C72780	N	9/28/2011	0-0.5	X	X						
C3N-EU1	C3NX-23	C72781	FD	9/28/2011	0-0.5	X	X						
C3N-EU1	C3NX-23	C72782	N	9/28/2011	0.5-1	X	X						
C3N-EU1	C3NX-23	C72783	N	9/28/2011	0.5-1			X					
C3N-EU1	C3NX-23	C72783	FD	9/28/2011	0.5-1	X	X						
C3N-EU1	C3NX-24	C72784	N	9/28/2011	0-0.5	X	X						
C3N-EU1	C3NX-24	C72785	N	9/28/2011	0.5-1	X	X						
C3N-EU1	C3NX-28	C72792	N	9/28/2011	0-0.5	X	X						
C3N-EU1	C3NX-28	C72793	N	9/28/2011	0.5-1	X	X						
C3N-EU1	C3NX-29	C72794	N	9/28/2011	0-0.5	X	X						
C3N-EU1	C3NX-29	C72795	N	9/28/2011	0.5-1	X	X						
C3N-EU1	C3NX-30	C72812	N	11/15/2011	0-0.5	X	X		X				
C3N-EU1	C3NX-30	C72812	FD	11/15/2011	0-0.5								
C3N-EU1	C3NX-30	C72813	N	11/15/2011	0.5-1	X	X						
C3N-EU1	C3NX-31	C72814	N	11/15/2011	0-0.5	X	X						
C3N-EU1	C3NX-31	C72815	N	11/15/2011	0.5-1	X	X						
C3N-EU1	C3NX-32	C72816	N	11/15/2011	0-0.5	X	X						
C3N-EU1	C3NX-32	C72817	FD	11/15/2011	0-0.5	X	X						
C3N-EU1	C3NX-32	C72818	N	11/15/2011	0.5-1	X	X						
C3N-EU1	C3NX-32	C72819	FD	11/15/2011	0.5-1	X	X						
C3N-EU2	C3N-15	C70956	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3N-15	C70957	N	4/1/2009	0.5-1	X	X	X		X			
C3N-EU2	C3N-16	C70959	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3N-16	C70960	N	4/1/2009	0.5-1	X	X						
C3N-EU2	C3N-17	C70962	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3N-17	C70963	N	4/1/2009	0.5-1	X	X						
C3N-EU2	C3N-17	C70964	N	4/1/2009	1-2	X							
C3N-EU2	C3N-18	C70965	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3N-18	C70966	N	4/1/2009	0.5-1	X	X						
C3N-EU2	C3N-18	C70967	N	4/1/2009	1-2	X							
C3N-EU2	C3N-19	C70968	N	4/1/2009	0-0.5	X	X		X				
C3N-EU2	C3N-19	C70969	N	4/1/2009	0.5-1	X	X		X				
C3N-EU2	C3NF-17	C71024	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3NF-17	C71025	N	4/1/2009	0.5-1	X							
C3N-EU2	C3NF-18	C71026	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3NF-18	C71027	N	4/1/2009	0.5-1	X							
C3N-EU2	C3NF-19	C71028	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3NF-19	C71029	FD	4/1/2009	0-0.5	X	X						
C3N-EU2	C3NF-19	C71030	N	4/1/2009	0.5-1	X							
C3N-EU2	C3NF-19	C71031	FD	4/1/2009	0.5-1	X							
C3N-EU2	C3NF-20	C71032	N	4/1/2009	0-0.5	X	X						
C3N-EU2	C3NF-20	C71033	N	4/1/2009	0.5-1	X							
C3N-EU2	C3NX-07	C72713	N	8/2/2011	0-0.5	X	X						
C3N-EU2	C3NX-07	C72714	N	8/2/2011	0.5-1	X	X						
C3N-EU2	C3NX-08	C72715	N	8/3/2011	0-0.5	X	X						
C3N-EU2	C3NX-08	C72716	N	8/3/2011	0.5-1	X	X						
C3N-EU2	C3NX-25	C72786	N	9/29/2011	0-0.5	X	X		X				
C3N-EU2	C3NX-25	C72787	N	9/29/2011	0.5-1	X	X		X				
C3S-EU1	C2S-10	C70878	N	2/20/2009	0-0.5	X	X						
C3S-EU1	C2S-10	C70879	N	2/20/2009	0.5-1	X	X						
C3S-EU1	C2S-11	C70881	N	2/20/2009	0-0.5	X	X						
C3S-EU1	C2S-11	C70882	N	2/20/2009	0.5-1	X	X						
C3S-EU1	C2S-13	C70887	N	2/20/2009	0-0.5	X	X						
C3S-EU1	C2S-13	C70888	N	2/20/2009	0.5-1	X	X						
C3S-EU1	C3S-01	C71034	N	3/31/2009	0-0.5	X	X	X		X			
C3S-EU1	C3S-01	C71035	N	3/31/2009	0.5-1	X	X						
C3S-EU1	C3S-02	C71037	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3S-02	C71038	N	3/31/2009	0.5-1	X	X						
C3S-EU1	C3S-02	C71039	N	3/31/2009	1-2	X							
C3S-EU1	C3S-03	C71040	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3S-03	C71041	N	3/31/2009	0.5-1	X	X						
C3S-EU1	C3S-03	C71042	N	3/31/2009	1-2	X							
C3S-EU1	C3S-04	C71043	N	3/31/2009	0-0.5	X	X		X				
C3S-EU1	C3S-04	C71044	N	3/31/2009	0.5-1	X	X		X				
C3S-EU1	C3S-04	C71045	N	3/31/2009	1-2	X							
C3S-EU1	C3S-05	C71046	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3S-05	C71047	N	3/31/2009	0.5-1	X	X						
C3S-EU1	C3S-05	C71048	N	3/31/2009	1-2	X							
C3S-EU1	C3S-06	C71049	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3S-06	C71050	N	3/31/2009	0.5-1	X	X						
C3S-EU1	C3S-06	C71051	N	3/31/2009	1-2	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
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						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C3S-EU1	C3S-07	C71052	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3S-07	C71053	N	3/31/2009	0.5-1	X	X						
C3S-EU1	C3S-08	C71055	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3S-08	C71056	N	3/30/2009	0.5-1	X	X						
C3S-EU1	C3S-09	C71058	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3S-09	C71059	N	3/30/2009	0.5-1	X	X						
C3S-EU1	C3S-10	C71061	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3S-10	C71062	N	3/30/2009	0.5-1	X	X						
C3S-EU1	C3S-11	C71064	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3S-11	C71065	N	3/30/2009	0.5-1	X	X						
C3S-EU1	C3S-12	C71067	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3S-12	C71068	N	3/30/2009	0.5-1	X	X						
C3S-EU1	C3S-13	C71070	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3S-13	C71071	N	3/30/2009	0.5-1	X	X	X		X			
C3S-EU1	C3SF-01	C71134	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-01	C71135	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-02	C71136	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-02	C71137	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-03	C71138	N	3/31/2009	0-0.5	X	X		X				
C3S-EU1	C3SF-03	C71139	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-04	C71140	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-04	C71141	N	3/30/2009	0.5-1	X							
C3S-EU1	C3SF-05	C71142	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-05	C71143	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-06	C71144	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-06	C71145	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-07	C71146	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-07	C71147	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-08	C71148	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-08	C71149	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-09	C71150	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-09	C71151	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-10	C71152	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-10	C71153	N	3/30/2009	0.5-1	X							
C3S-EU1	C3SF-11	C71154	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-11	C71155	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-12	C71156	N	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-12	C71157	FD	3/31/2009	0-0.5	X	X						
C3S-EU1	C3SF-12	C71158	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-12	C71159	FD	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-13	C71160	N	3/31/2009	0-0.5	X	X		X				
C3S-EU1	C3SF-13	C71161	N	3/31/2009	0.5-1	X							
C3S-EU1	C3SF-14	C71162	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-14	C71163	N	3/30/2009	0.5-1	X							
C3S-EU1	C3SF-15	C71164	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-15	C71165	N	3/30/2009	0.5-1	X							
C3S-EU1	C3SF-16	C71166	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-16	C71167	N	3/30/2009	0.5-1	X							
C3S-EU1	C3SF-17	C71168	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-17	C71169	N	3/30/2009	0.5-1	X							
C3S-EU1	C3SF-18	C71170	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-18	C71171	N	3/30/2009	0.5-1	X							
C3S-EU1	C3SF-19	C71172	N	3/30/2009	0-0.5	X	X						
C3S-EU1	C3SF-19	C71173	N	3/30/2009	0.5-1	X							
C3S-EU2	C3S-14	C71073	N	3/30/2009	0-0.5	X	X		X				
C3S-EU2	C3S-14	C71074	N	3/30/2009	0.5-1	X	X		X				
C3S-EU2	C3S-15	C71076	N	3/30/2009	0-0.5	X	X						
C3S-EU2	C3S-15	C71077	N	3/30/2009	0.5-1	X	X						
C3S-EU2	C3S-16	C71079	N	3/30/2009	0-0.5	X	X						
C3S-EU2	C3S-16	C71080	N	3/30/2009	0.5-1	X	X						
C3S-EU2	C3S-17	C71082	N	3/30/2009	0-0.5	X	X	X		X			
C3S-EU2	C3S-17	C71083	N	3/30/2009	0.5-1	X	X						
C3S-EU2	C3S-18	C71085	N	3/30/2009	0-0.5	X	X						
C3S-EU2	C3S-18	C71086	N	3/30/2009	0.5-1	X	X						
C3S-EU2	C3S-18	C71087	N	3/30/2009	1-2	X							
C3S-EU2	C3S-19	C71088	N	3/30/2009	0-0.5	X	X	X		X			
C3S-EU2	C3S-19	C71089	N	3/30/2009	0.5-1	X	X						
C3S-EU2	C3S-20	C71091	N	3/30/2009	0-0.5	X	X						
C3S-EU2	C3S-20	C71092	N	3/30/2009	0.5-1	X	X						
C3S-EU2	C3S-21	C71094	N	3/30/2009	0-0.5	X	X						
C3S-EU2	C3S-21	C71095	FD	3/30/2009	0-0.5	X	X						
C3S-EU2	C3S-21	C71096	N	3/30/2009	0.5-1	X	X	X		X			
C3S-EU2	C3S-21	C71097	FD	3/30/2009	0.5-1	X	X						
C3S-EU2	C3S-22	C71100	N	3/25/2009	0-0.5	X	X						
C3S-EU2	C3S-22	C71101	N	3/25/2009	0.5-1	X	X						
C3S-EU2	C3S-22	C71102	N	3/25/2009	1-2	X							
C3S-EU2	C3S-23	C71103	N	3/25/2009	0-0.5	X	X						
C3S-EU2	C3S-23	C71104	N	3/25/2009	0.5-1	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
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Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C3S-EU2	C3S-23	C71105	N	3/25/2009	1-2	X							
C3S-EU2	C3SX-01	C72743	N	8/2/2011	0-0.5	X	X		X				
C3S-EU2	C3SX-01	C72744	N	8/2/2011	0.5-1	X	X		X				
C3S-EU2	C3SX-01	C72745	N	8/2/2011	1-2	X	X	X	X	X			
C3S-EU2	C3SX-01	C72745	FD	8/2/2011	1-2								
C3S-EU2	C3SX-01	C72746	N	8/2/2011	2-3	X							
C3S-EU2	C3SX-02	C72748	N	8/2/2011	0-0.5	X	X						
C3S-EU2	C3SX-02	C72749	N	8/2/2011	0.5-1	X	X						
C3S-EU2	C3SX-03	C72750	N	8/2/2011	0-0.5	X	X						
C3S-EU2	C3SX-03	C72751	N	8/2/2011	0.5-1	X	X						
C3S-EU2	C3SX-04	C72752	N	8/2/2011	0-0.5	X	X						
C3S-EU2	C3SX-04	C72753	N	8/2/2011	0.5-1	X	X						
C3S-EU2	C3SX-04	C72754	N	8/2/2011	1-2	X	X	X		X			
C3S-EU2	C3SX-04	C72754	FD	8/2/2011	1-2								
C3S-EU2	C3SX-04	C72755	N	8/2/2011	2-3	X							
C3S-EU2	C3SX-04	C72756	N	8/2/2011	3-4	X							
C3S-EU2	C3SX-05	C72796	N	9/28/2011	0-0.5	X	X						
C3S-EU2	C3SX-05	C72797	N	9/28/2011	0.5-1	X	X						
C3S-EU2	C3SX-06	C72798	N	9/28/2011	0-0.5	X	X						
C3S-EU2	C3SX-06	C72799	N	9/28/2011	0.5-1	X	X						
C3S-EU2	C3SX-07	C72800	N	9/29/2011	0-0.5	X	X						
C3S-EU2	C3SX-07	C72801	N	9/29/2011	0.5-1	X	X						
C3S-EU2	C3SX-08	C72802	N	9/29/2011	0-0.5	X	X						
C3S-EU2	C3SX-08	C72803	N	9/29/2011	0.5-1	X	X						
C3S-EU2	C3SX-09	C72804	N	9/29/2011	0-0.5	X	X						
C3S-EU2	C3SX-09	C72805	N	9/29/2011	0.5-1	X	X	X					
C3S-EU2	C3SX-10	C72822	N	11/14/2011	0-0.5	X	X		X				
C3S-EU2	C3SX-10	C72823	N	11/14/2011	0.5-1	X	X		X				
C3S-EU2	C3SX-11	C72824	N	11/14/2011	0-0.5	X	X						
C3S-EU2	C3SX-11	C72825	N	11/14/2011	0.5-1	X	X						
C3S-EU2	C3SX-12	C72826	N	11/14/2011	0-0.5	X	X						
C3S-EU2	C3SX-12	C72827	N	11/14/2011	0.5-1	X	X						
C3S-EU2	C3SX-13	C72828	N	11/14/2011	0-0.5	X	X	X		X			
C3S-EU2	C3SX-13	C72829	N	11/14/2011	0.5-1	X	X						
C4N-EU1	C3N-20	C70971	N	3/26/2009	0-0.5	X	X						
C4N-EU1	C3N-20	C70972	N	3/26/2009	0.5-1	X	X	X		X			
C4N-EU1	C3N-21	C70974	N	3/26/2009	0-0.5	X	X						
C4N-EU1	C3N-21	C70975	N	3/26/2009	0.5-1	X	X						
C4N-EU1	C3N-22	C70977	N	3/26/2009	0-0.5	X	X						
C4N-EU1	C3N-22	C70978	FD	3/26/2009	0-0.5	X	X						
C4N-EU1	C3N-22	C70979	N	3/26/2009	0.5-1	X	X						
C4N-EU1	C3N-22	C70980	FD	3/26/2009	0.5-1	X	X						
C4N-EU1	C3N-23	C70983	N	3/26/2009	0-0.5	X	X						
C4N-EU1	C3N-23	C70984	N	3/26/2009	0.5-1	X	X						
C4N-EU1	C3N-23	C70985	N	3/26/2009	1-2	X							
C4N-EU1	C3N-24	C70986	N	3/26/2009	0-0.5	X	X	X		X			
C4N-EU1	C3N-24	C70987	N	3/26/2009	0.5-1	X	X						
C4N-EU1	C3N-25	C70989	N	3/26/2009	0-0.5	X	X						
C4N-EU1	C3N-25	C70990	N	3/26/2009	0.5-1	X	X						
C4N-EU1	C3N-25	C70991	N	3/26/2009	1-2	X							
C4N-EU1	C3NX-01	C72700	N	8/3/2011	0-0.5	X	X						
C4N-EU1	C3NX-01	C72701	N	8/3/2011	0.5-1	X	X						
C4N-EU1	C3NX-02	C72702	N	8/2/2011	0-0.5	X	X						
C4N-EU1	C3NX-02	C72703	N	8/2/2011	0.5-1	X	X	X		X			
C4N-EU1	C3NX-02	C72703	FD	8/2/2011	0.5-1								
C4N-EU1	C3NX-03	C72704	N	8/2/2011	0-0.5	X	X						
C4N-EU1	C3NX-03	C72705	N	8/2/2011	0-0.5								
C4N-EU1	C3NX-03	C72705	FD	8/2/2011	0-0.5	X	X						
C4N-EU1	C3NX-03	C72706	N	8/2/2011	0.5-1	X	X						
C4N-EU1	C3NX-04	C72707	N	8/2/2011	0-0.5	X	X	X		X			
C4N-EU1	C3NX-04	C72707	FD	8/2/2011	0-0.5								
C4N-EU1	C3NX-04	C72708	N	8/2/2011	0.5-1	X	X						
C4N-EU1	C3NX-05	C72709	N	8/2/2011	0-0.5	X	X						
C4N-EU1	C3NX-05	C72710	N	8/2/2011	0.5-1	X	X						
C4N-EU1	C3NX-06	C72711	N	8/2/2011	0-0.5	X	X		X				
C4N-EU1	C3NX-06	C72712	N	8/2/2011	0.5-1	X	X		X				
C4N-EU1	C3NX-26	C72788	N	9/28/2011	0-0.5	X	X	X					
C4N-EU1	C3NX-26	C72789	N	9/28/2011	0.5-1	X	X						
C4N-EU1	C3NX-27	C72790	N	9/28/2011	0-0.5	X	X						
C4N-EU1	C3NX-27	C72791	N	9/28/2011	0.5-1	X	X	X					
C4N-EU1	C3NX-33	C72820	N	11/15/2011	0-0.5	X	X	X		X			
C4N-EU1	C3NX-33	C72820	FD	11/15/2011	0-0.5								
C4N-EU1	C3NX-33	C72821	N	11/15/2011	0.5-1	X	X						
C4N-EU1	C4N-01	C71176	N	3/25/2009	0-0.5	X	X						
C4N-EU1	C4N-01	C71177	N	3/25/2009	0.5-1	X	X						
C4N-EU1	C4N-01	C71178	N	3/25/2009	1-2	X	X						
C4N-EU1	C4N-02	C71181	N	3/25/2009	0-0.5	X	X						
C4N-EU1	C4N-02	C71182	N	3/25/2009	0.5-1	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
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						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C4N-EU1	C4N-02	C71183	N	3/25/2009	1-2	X	X						
C4N-EU1	C4N-03	C71186	N	3/25/2009	0-0.5	X	X		X				
C4N-EU1	C4N-03	C71187	N	3/25/2009	0.5-1	X	X	X	X	X			
C4N-EU1	C4N-03	C71188	N	3/25/2009	1-2	X	X		X				
C4N-EU1	C4N-04	C71191	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-04	C71192	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-04	C71193	N	3/23/2009	1-2	X	X						
C4N-EU1	C4N-05	C71196	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-05	C71197	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-05	C71198	N	3/23/2009	1-2	X	X						
C4N-EU1	C4N-06	C71201	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-06	C71202	N	3/23/2009	0.5-1	X	X	X		X			
C4N-EU1	C4N-06	C71203	N	3/23/2009	1-2	X	X	X		X			
C4N-EU1	C4N-06	C71204	N	3/23/2009	2-3	X							
C4N-EU1	C4N-07	C71206	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-07	C71207	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-08	C71209	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-08	C71210	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-09	C71212	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-09	C71213	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-10	C71215	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-10	C71216	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-11	C71218	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-11	C71219	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-12	C71221	N	3/23/2009	0-0.5	X	X	X		X			
C4N-EU1	C4N-12	C71222	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-13	C71224	N	3/24/2009	0-0.5	X	X		X				
C4N-EU1	C4N-13	C71225	N	3/24/2009	0.5-1	X	X		X				
C4N-EU1	C4N-13	C71226	N	3/24/2009	1-2	X							
C4N-EU1	C4N-14	C71227	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-14	C71228	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-15	C71230	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-15	C71231	FD	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-15	C71232	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-15	C71233	N	3/23/2009	0.5-1			X		X			
C4N-EU1	C4N-15	C71233	FD	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-16	C71236	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-16	C71237	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-17	C71239	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-17	C71240	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-18	C71242	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-18	C71243	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-19	C71245	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4N-19	C71246	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4N-20	C71248	N	3/23/2009	0-0.5	X	X	X		X			
C4N-EU1	C4N-20	C71249	N	3/23/2009	0.5-1	X	X						
C4N-EU1	C4NF-01	C71362	N	3/25/2009	0-0.5	X	X						
C4N-EU1	C4NF-01	C71363	N	3/25/2009	0.5-1	X							
C4N-EU1	C4NF-02	C71364	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4NF-02	C71365	N	3/23/2009	0.5-1	X							
C4N-EU1	C4NF-03	C71366	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4NF-03	C71367	N	3/23/2009	0.5-1	X							
C4N-EU1	C4NF-04	C71368	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4NF-04	C71369	FD	3/23/2009	0-0.5	X	X						
C4N-EU1	C4NF-04	C71370	N	3/23/2009	0.5-1	X							
C4N-EU1	C4NF-04	C71371	FD	3/23/2009	0.5-1	X							
C4N-EU1	C4NF-05	C71372	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-05	C71373	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-06	C71374	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4NF-06	C71375	N	3/23/2009	0.5-1	X							
C4N-EU1	C4NF-07	C71376	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-07	C71377	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-08	C71378	N	3/23/2009	0-0.5	X	X		X				
C4N-EU1	C4NF-08	C71379	N	3/23/2009	0.5-1	X							
C4N-EU1	C4NF-09	C71380	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-09	C71381	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-10	C71382	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-10	C71383	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-11	C71384	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4NF-11	C71385	N	3/23/2009	0.5-1	X							
C4N-EU1	C4NF-12	C71386	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-12	C71387	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-13	C71388	N	3/24/2009	0-0.5	X	X	X		X			
C4N-EU1	C4NF-13	C71389	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-14	C71390	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-14	C71391	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-15	C71392	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-15	C71393	N	3/24/2009	0.5-1	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
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Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C4N-EU1	C4NF-16	C71394	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-16	C71395	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-17	C71396	N	3/24/2009	0-0.5	X	X						
C4N-EU1	C4NF-17	C71397	N	3/24/2009	0.5-1	X							
C4N-EU1	C4NF-24	C71410	N	3/23/2009	0-0.5	X	X						
C4N-EU1	C4NF-24	C71411	N	3/23/2009	0.5-1	X							
C4N-EU2	C4N-21	C71251	N	3/23/2009	0-0.5	X	X						
C4N-EU2	C4N-21	C71252	N	3/23/2009	0.5-1	X	X						
C4N-EU2	C4N-22	C71254	N	3/24/2009	0-0.5	X	X						
C4N-EU2	C4N-22	C71255	N	3/24/2009	0.5-1	X	X						
C4N-EU2	C4N-23	C71257	N	3/23/2009	0-0.5	X	X		X				
C4N-EU2	C4N-23	C71258	N	3/23/2009	0.5-1	X	X		X				
C4N-EU2	C4N-23	C71259	N	3/23/2009	1-2	X							
C4N-EU2	C4N-24	C71260	N	3/24/2009	0-0.5	X	X						
C4N-EU2	C4N-24	C71261	N	3/24/2009	0.5-1	X	X						
C4N-EU2	C4N-24	C71262	N	3/24/2009	1-2	X							
C4N-EU2	C4N-25	C71263	N	3/14/2009	0-0.5	X	X						
C4N-EU2	C4N-25	C71264	N	3/14/2009	0.5-1	X	X						
C4N-EU2	C4N-26	C71266	N	3/14/2009	0-0.5	X	X						
C4N-EU2	C4N-26	C71267	N	3/14/2009	0.5-1	X	X						
C4N-EU2	C4N-26	C71268	N	3/14/2009	1-2	X							
C4N-EU2	C4N-27	C71269	N	3/14/2009	0-0.5	X	X	X		X			
C4N-EU2	C4N-27	C71270	N	3/14/2009	0.5-1	X	X						
C4N-EU2	C4N-28	C71272	N	3/14/2009	0-0.5	X	X						
C4N-EU2	C4N-28	C71273	N	3/14/2009	0.5-1	X	X						
C4N-EU2	C4N-29	C71275	N	3/14/2009	0-0.5	X	X						
C4N-EU2	C4N-29	C71276	N	3/14/2009	0.5-1	X	X						
C4N-EU2	C4N-30	C71278	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-30	C71279	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-31	C71281	N	3/13/2009	0-0.5	X	X	X		X			
C4N-EU2	C4N-31	C71282	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-32	C71284	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-32	C71285	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-33	C71287	N	3/13/2009	0-0.5	X	X	X	X	X			
C4N-EU2	C4N-33	C71288	N	3/13/2009	0.5-1	X	X		X				
C4N-EU2	C4N-34	C71290	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-34	C71291	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-35	C71293	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-35	C71294	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-36	C71296	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-36	C71297	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-37	C71299	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-37	C71300	N	3/13/2009	0-0.5			X		X			
C4N-EU2	C4N-37	C71300	FD	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-37	C71301	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-37	C71302	FD	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-38	C71305	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-38	C71306	N	3/13/2009	0.5-1	X	X	X		X			
C4N-EU2	C4N-39	C71308	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-39	C71309	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-40	C71311	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-40	C71312	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-41	C71314	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4N-41	C71315	N	3/13/2009	0.5-1	X	X						
C4N-EU2	C4N-42	C71317	N	3/9/2009	0-0.5	X	X						
C4N-EU2	C4N-42	C71318	N	3/9/2009	0.5-1	X	X						
C4N-EU2	C4N-43	C71320	N	3/9/2009	0-0.5	X	X		X				
C4N-EU2	C4N-43	C71321	N	3/9/2009	0.5-1	X	X		X				
C4N-EU2	C4N-43	C71322	N	3/9/2009	1-2	X							
C4N-EU2	C4N-44	C71323	N	3/9/2009	0-0.5	X	X						
C4N-EU2	C4N-44	C71324	N	3/9/2009	0.5-1	X	X						
C4N-EU2	C4NF-18	C71398	N	3/15/2009	0-0.5	X	X		X				
C4N-EU2	C4NF-18	C71399	N	3/15/2009	0.5-1	X							
C4N-EU2	C4NF-19	C71400	N	3/15/2009	0-0.5	X	X						
C4N-EU2	C4NF-19	C71401	N	3/15/2009	0.5-1	X							
C4N-EU2	C4NF-20	C71402	N	3/15/2009	0-0.5	X	X						
C4N-EU2	C4NF-20	C71403	N	3/15/2009	0.5-1	X							
C4N-EU2	C4NF-21	C71404	N	3/15/2009	0-0.5	X	X						
C4N-EU2	C4NF-21	C71405	N	3/15/2009	0.5-1	X							
C4N-EU2	C4NF-22	C71406	N	3/15/2009	0-0.5	X	X						
C4N-EU2	C4NF-22	C71407	N	3/15/2009	0.5-1	X							
C4N-EU2	C4NF-23	C71408	N	3/15/2009	0-0.5	X	X						
C4N-EU2	C4NF-23	C71409	N	3/15/2009	0.5-1	X							
C4N-EU2	C4NF-25	C71412	N	3/14/2009	0-0.5	X	X						
C4N-EU2	C4NF-25	C71413	N	3/14/2009	0.5-1	X							
C4N-EU2	C4NF-26	C71414	N	3/14/2009	0-0.5	X	X						
C4N-EU2	C4NF-26	C71415	FD	3/14/2009	0-0.5	X	X						
C4N-EU2	C4NF-26	C71416	N	3/14/2009	0.5-1	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C4N-EU2	C4NF-26	C71417	FD	3/14/2009	0.5-1	X							
C4N-EU2	C4NF-27	C71418	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4NF-27	C71419	N	3/13/2009	0.5-1	X							
C4N-EU2	C4NF-28	C71420	N	3/13/2009	0-0.5	X	X		X				
C4N-EU2	C4NF-28	C71421	N	3/13/2009	0.5-1	X							
C4N-EU2	C4NF-29	C71422	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4NF-29	C71423	N	3/13/2009	0.5-1	X							
C4N-EU2	C4NF-30	C71424	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4NF-30	C71425	N	3/13/2009	0.5-1	X							
C4N-EU2	C4NF-31	C71426	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4NF-31	C71427	N	3/13/2009	0.5-1	X							
C4N-EU2	C4NF-32	C71428	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4NF-32	C71429	N	3/13/2009	0.5-1	X							
C4N-EU2	C4NF-33	C71430	N	3/13/2009	0-0.5	X	X						
C4N-EU2	C4NF-33	C71431	N	3/13/2009	0.5-1	X							
C4N-EU2	C4NX-01	C72757	N	8/3/2011	0-0.5	X	X						
C4N-EU2	C4NX-01	C72758	N	8/3/2011	0.5-1	X	X						
C4N-EU2	C4NX-02	C72759	N	8/3/2011	0-0.5	X	X						
C4N-EU2	C4NX-02	C72760	N	8/3/2011	0.5-1	X	X						
C4S-EU1	C3S-24	C71106	N	3/25/2009	0-0.5	X	X		X				
C4S-EU1	C3S-24	C71107	N	3/25/2009	0.5-1	X	X		X				
C4S-EU1	C3S-25	C71109	N	3/25/2009	0-0.5	X	X						
C4S-EU1	C3S-25	C71110	N	3/25/2009	0.5-1	X	X						
C4S-EU1	C3S-25	C71111	N	3/25/2009	1-2	X							
C4S-EU1	C3S-26	C71112	N	3/25/2009	0-0.5	X	X	X		X			
C4S-EU1	C3S-26	C71113	N	3/25/2009	0.5-1	X	X	X		X			
C4S-EU1	C3S-27	C71115	N	3/25/2009	0-0.5	X	X						
C4S-EU1	C3S-27	C71116	N	3/25/2009	0.5-1	X	X						
C4S-EU1	C3S-28	C71118	N	3/25/2009	0-0.5	X	X						
C4S-EU1	C3S-28	C71119	N	3/25/2009	0.5-1	X	X						
C4S-EU1	C3S-28	C71120	N	3/25/2009	1-2	X							
C4S-EU1	C3S-29	C71121	N	3/25/2009	0-0.5	X	X						
C4S-EU1	C3S-29	C71122	N	3/25/2009	0.5-1	X	X						
C4S-EU1	C3S-30	C71124	N	3/26/2009	0-0.5	X	X						
C4S-EU1	C3S-30	C71125	N	3/26/2009	0.5-1	X	X						
C4S-EU1	C3S-30	C71126	N	3/26/2009	1-2	X	X						
C4S-EU1	C3S-31	C71129	N	3/25/2009	0-0.5	X	X						
C4S-EU1	C3S-31	C71130	N	3/25/2009	0.5-1	X	X						
C4S-EU1	C3S-31	C71131	N	3/25/2009	1-2	X	X						
C4S-EU1	C3SF-20	C71174	N	3/25/2009	0-0.5	X	X						
C4S-EU1	C3SF-20	C71175	N	3/25/2009	0.5-1	X							
C4S-EU1	C3SX-14	C72830	N	11/15/2011	0-0.5	X	X						
C4S-EU1	C3SX-14	C72831	N	11/15/2011	0.5-1	X	X						
C4S-EU1	C4S-01	C71454	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-01	C71455	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-01	C71456	N	3/16/2009	1-2	X							
C4S-EU1	C4S-01	C72600	N	2/24/2010	2-3	X	X		X				
C4S-EU1	C4S-01	C72601	N	2/24/2010	3-4	X	X						
C4S-EU1	C4S-02	C71457	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-02	C71458	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-02	C71459	N	3/16/2009	1-2	X							
C4S-EU1	C4S-02	C72602	N	2/24/2010	2-3	X	X						
C4S-EU1	C4S-02	C72603	N	2/24/2010	3-4	X	X						
C4S-EU1	C4S-03	C71460	N	3/16/2009	0-0.5	X	X	X		X			
C4S-EU1	C4S-03	C71461	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-03	C71462	N	3/16/2009	1-2	X							
C4S-EU1	C4S-03	C72604	N	2/24/2010	2-3	X	X	X					
C4S-EU1	C4S-03	C72605	FD	2/24/2010	2-3	X	X						
C4S-EU1	C4S-03	C72606	N	2/24/2010	3-4	X	X						
C4S-EU1	C4S-04	C71463	N	3/16/2009	0-0.5	X	X		X				
C4S-EU1	C4S-04	C71464	N	3/16/2009	0.5-1	X	X		X				
C4S-EU1	C4S-04	C71465	N	3/16/2009	1-2	X							
C4S-EU1	C4S-04	C72607	N	2/24/2010	2-3	X	X						
C4S-EU1	C4S-04	C72608	N	2/24/2010	3-4	X	X						
C4S-EU1	C4S-05	C71466	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-05	C71467	FD	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-05	C71468	N	3/16/2009	0.5-1	X	X	X		X			
C4S-EU1	C4S-05	C71469	FD	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-05	C71470	N	3/16/2009	1-2	X							
C4S-EU1	C4S-05	C71471	FD	3/16/2009	1-2	X							
C4S-EU1	C4S-05	C72609	N	2/24/2010	2-3	X	X						
C4S-EU1	C4S-05	C72610	N	2/24/2010	3-4	X	X						
C4S-EU1	C4S-06	C71472	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-06	C71473	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-06	C71474	N	3/16/2009	1-2	X							
C4S-EU1	C4S-06	C72611	N	2/24/2010	2-3	X	X						
C4S-EU1	C4S-06	C72612	N	2/24/2010	3-4	X	X						
C4S-EU1	C4S-07	C71475	N	3/16/2009	0-0.5	X	X						

*Sample Types:
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N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C4S-EU1	C4S-07	C71476	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-08	C71478	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-08	C71479	N	3/16/2009	0.5-1	X	X	X		X			
C4S-EU1	C4S-09	C71481	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-09	C71482	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-09	C71483	N	3/16/2009	1-2	X							
C4S-EU1	C4S-10	C71484	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-10	C71485	N	3/16/2009	0.5-1	X	X	X		X			
C4S-EU1	C4S-11	C71487	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-11	C71488	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4S-12	C71490	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4S-12	C71491	N	3/16/2009	0.5-1	X	X						
C4S-EU1	C4SF-01	C71637	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4SF-01	C71638	N	3/16/2009	0.5-1	X							
C4S-EU1	C4SF-02	C71639	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4SF-02	C71640	N	3/16/2009	0.5-1	X							
C4S-EU1	C4SF-03	C71641	N	3/16/2009	0-0.5	X	X						
C4S-EU1	C4SF-03	C71642	N	3/16/2009	0.5-1	X							
C4S-EU1	C4SX-01	C72761	N	8/2/2011	0-0.5	X	X						
C4S-EU1	C4SX-01	C72762	N	8/2/2011	0.5-1	X	X						
C4S-EU1	C4SX-02	C72763	N	8/2/2011	0-0.5	X	X						
C4S-EU1	C4SX-02	C72764	N	8/2/2011	0.5-1	X	X	X		X			
C4S-EU1	C4SX-02	C72764	FD	8/2/2011	0.5-1								
C4S-EU1	C4SX-03	C72765	N	8/2/2011	0-0.5	X	X						
C4S-EU1	C4SX-03	C72766	N	8/2/2011	0.5-1	X	X						
C4S-EU1	C4SX-04	C72806	N	9/29/2011	0-0.5	X	X						
C4S-EU1	C4SX-04	C72807	N	9/29/2011	0.5-1	X	X						
C4S-EU1	C4SX-05	C72808	N	9/29/2011	0-0.5	X	X		X				
C4S-EU1	C4SX-05	C72809	N	9/29/2011	0.5-1	X	X		X				
C4S-EU1	C4SX-06	C72810	N	9/29/2011	0-0.5	X	X						
C4S-EU1	C4SX-06	C72811	N	9/29/2011	0.5-1	X	X						
C4S-EU2	C4S-13	C71493	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4S-13	C71494	N	3/16/2009	0.5-1	X	X						
C4S-EU2	C4S-14	C71496	N	3/16/2009	0-0.5	X	X		X				
C4S-EU2	C4S-14	C71497	N	3/16/2009	0.5-1	X	X		X				
C4S-EU2	C4S-15	C71499	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4S-15	C71500	N	3/16/2009	0.5-1	X	X						
C4S-EU2	C4S-16	C71502	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4S-16	C71503	N	3/16/2009	0.5-1	X	X						
C4S-EU2	C4S-17	C71505	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4S-17	C71506	N	3/16/2009	0.5-1	X	X						
C4S-EU2	C4S-18	C71508	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4S-18	C71509	N	3/16/2009	0.5-1	X	X						
C4S-EU2	C4S-19	C71511	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4S-19	C71512	N	3/16/2009	0.5-1	X	X	X		X			
C4S-EU2	C4S-20	C71514	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4S-20	C71515	N	3/16/2009	0.5-1	X	X						
C4S-EU2	C4S-21	C71517	N	3/16/2009	0-0.5	X	X	X		X			
C4S-EU2	C4S-21	C71518	N	3/16/2009	0.5-1	X	X						
C4S-EU2	C4S-22	C71520	N	3/26/2009	0-0.5	X	X	X		X			
C4S-EU2	C4S-22	C71521	N	3/26/2009	0.5-1	X	X						
C4S-EU2	C4S-23	C71523	N	3/24/2009	0-0.5	X	X						
C4S-EU2	C4S-23	C71524	N	3/24/2009	0.5-1	X	X						
C4S-EU2	C4S-24	C71526	N	3/24/2009	0-0.5	X	X		X				
C4S-EU2	C4S-24	C71527	N	3/24/2009	0.5-1	X	X	X	X	X			
C4S-EU2	C4S-25	C71529	N	3/24/2009	0-0.5	X	X						
C4S-EU2	C4S-25	C71530	N	3/24/2009	0.5-1	X	X						
C4S-EU2	C4S-26	C71532	N	3/24/2009	0-0.5	X	X						
C4S-EU2	C4S-26	C71533	N	3/24/2009	0.5-1	X	X						
C4S-EU2	C4S-27	C71535	N	3/25/2009	0-0.5	X	X	X		X			
C4S-EU2	C4S-27	C71536	FD	3/25/2009	0-0.5	X	X	X		X			
C4S-EU2	C4S-27	C71537	N	3/25/2009	0.5-1	X	X						
C4S-EU2	C4S-27	C71538	FD	3/25/2009	0.5-1	X	X						
C4S-EU2	C4S-28	C71541	N	3/25/2009	0-0.5	X	X						
C4S-EU2	C4S-28	C71542	N	3/25/2009	0.5-1	X	X						
C4S-EU2	C4S-29	C71544	N	3/25/2009	0-0.5	X	X						
C4S-EU2	C4S-29	C71545	N	3/25/2009	0.5-1	X	X						
C4S-EU2	C4S-30	C71547	N	3/25/2009	0-0.5	X	X						
C4S-EU2	C4S-30	C71548	N	3/25/2009	0.5-1	X	X						
C4S-EU2	C4S-31	C71550	N	3/26/2009	0-0.5	X	X	X		X			
C4S-EU2	C4S-31	C71551	N	3/26/2009	0.5-1	X	X						
C4S-EU2	C4S-32	C71553	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4S-32	C71554	N	3/26/2009	0.5-1	X	X						
C4S-EU2	C4S-33	C71556	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4S-33	C71557	N	3/26/2009	0.5-1	X	X						
C4S-EU2	C4S-33	C71558	N	3/26/2009	1-2	X							
C4S-EU2	C4SF-04	C71643	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4SF-04	C71644	N	3/16/2009	0.5-1	X							

*Sample Types:
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N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C4S-EU2	C4SF-05	C71645	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4SF-05	C71646	N	3/16/2009	0.5-1	X							
C4S-EU2	C4SF-06	C71647	N	3/16/2009	0-0.5	X	X		X				
C4S-EU2	C4SF-06	C71648	N	3/16/2009	0.5-1	X							
C4S-EU2	C4SF-07	C71649	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4SF-07	C71650	N	3/16/2009	0.5-1	X							
C4S-EU2	C4SF-08	C71651	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4SF-08	C71652	N	3/16/2009	0.5-1	X							
C4S-EU2	C4SF-09	C71653	N	3/16/2009	0-0.5	X	X						
C4S-EU2	C4SF-09	C71654	N	3/16/2009	0.5-1	X							
C4S-EU2	C4SF-10	C71655	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4SF-10	C71656	N	3/26/2009	0.5-1	X							
C4S-EU2	C4SF-11	C71657	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4SF-11	C71658	N	3/26/2009	0.5-1	X							
C4S-EU2	C4SF-12	C71659	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4SF-12	C71660	N	3/26/2009	0.5-1	X							
C4S-EU2	C4SF-13	C71661	N	3/25/2009	0-0.5	X	X						
C4S-EU2	C4SF-13	C71662	FD	3/25/2009	0-0.5	X	X						
C4S-EU2	C4SF-13	C71663	N	3/25/2009	0.5-1	X							
C4S-EU2	C4SF-13	C71664	FD	3/25/2009	0.5-1	X							
C4S-EU2	C4SF-14	C71665	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4SF-14	C71666	N	3/26/2009	0.5-1	X							
C4S-EU2	C4SF-15	C71667	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4SF-15	C71668	N	3/26/2009	0.5-1	X							
C4S-EU2	C4SF-16	C71669	N	3/24/2009	0-0.5	X	X		X				
C4S-EU2	C4SF-16	C71670	N	3/24/2009	0.5-1	X							
C4S-EU2	C4SF-17	C71671	N	3/25/2009	0-0.5	X	X						
C4S-EU2	C4SF-17	C71672	N	3/25/2009	0.5-1	X							
C4S-EU2	C4SF-18	C71673	N	3/24/2009	0-0.5	X	X						
C4S-EU2	C4SF-18	C71674	N	3/24/2009	0.5-1	X							
C4S-EU2	C4SF-19	C71675	N	3/24/2009	0-0.5	X	X						
C4S-EU2	C4SF-19	C71676	N	3/24/2009	0.5-1	X							
C4S-EU2	C4SF-20	C71677	N	3/26/2009	0-0.5	X	X						
C4S-EU2	C4SF-20	C71678	N	3/26/2009	0.5-1	X							
C4S-EU3	C4S-34	C71559	N	3/11/2009	0-0.5	X	X		X				
C4S-EU3	C4S-34	C71560	N	3/11/2009	0.5-1	X	X		X				
C4S-EU3	C4S-35	C71562	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-35	C71563	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-36	C71565	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-36	C71566	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-37	C71568	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-37	C71569	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-38	C71571	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-38	C71572	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-39	C71574	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-39	C71575	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-40	C71577	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-40	C71578	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-41	C71580	N	3/11/2009	0-0.5	X	X	X		X			
C4S-EU3	C4S-41	C71581	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-42	C71583	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-42	C71584	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-43	C71586	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-43	C71587	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-44	C71589	N	3/11/2009	0-0.5	X	X		X				
C4S-EU3	C4S-44	C71590	N	3/11/2009	0.5-1	X	X		X				
C4S-EU3	C4S-45	C71592	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-45	C71593	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-46	C71595	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-46	C71596	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-47	C71598	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-47	C71599	N	3/11/2009	0.5-1	X	X	X		X			
C4S-EU3	C4S-48	C71601	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-48	C71602	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4S-49	C71604	N	3/12/2009	0-0.5	X	X						
C4S-EU3	C4S-49	C71605	N	3/12/2009	0-0.5			X		X			
C4S-EU3	C4S-49	C71605	FD	3/12/2009	0-0.5	X	X						
C4S-EU3	C4S-49	C71606	N	3/12/2009	0.5-1	X	X						
C4S-EU3	C4S-49	C71607	FD	3/12/2009	0.5-1	X	X						
C4S-EU3	C4S-49	C71608	N	3/12/2009	1-2	X							
C4S-EU3	C4S-49	C71609	N	3/12/2009	1-2	X							
C4S-EU3	C4S-49	C71609	FD	3/12/2009	1-2	X							
C4S-EU3	C4S-50	C71610	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4S-50	C71611	N	3/11/2009	0.5-1	X	X						
C4S-EU3	C4SF-21	C71679	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-21	C71680	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-22	C71681	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-22	C71682	N	3/11/2009	0.5-1	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C4S-EU3	C4SF-23	C71683	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-23	C71684	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-24	C71685	N	3/11/2009	0-0.5	X	X	X		X			
C4S-EU3	C4SF-24	C71686	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-25	C71687	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-25	C71688	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-26	C71689	N	3/11/2009	0-0.5	X	X		X				
C4S-EU3	C4SF-26	C71690	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-27	C71691	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-27	C71692	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-28	C71693	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-28	C71694	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-29	C71695	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-29	C71696	N	3/11/2009	0.5-1	X							
C4S-EU3	C4SF-30	C71697	N	3/11/2009	0-0.5	X	X						
C4S-EU3	C4SF-30	C71698	N	3/11/2009	0.5-1	X							
C5N-EU1	C4N-45	C71326	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4N-45	C71327	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4N-46	C71329	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4N-46	C71330	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4N-47	C71332	N	3/12/2009	0-0.5	X	X	X		X			
C5N-EU1	C4N-47	C71333	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4N-48	C71335	N	3/12/2009	0-0.5	X	X	X		X			
C5N-EU1	C4N-48	C71336	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4N-48	C71337	N	3/12/2009	1-2	X							
C5N-EU1	C4N-49	C71338	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4N-49	C71339	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4N-50	C71341	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4N-50	C71342	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4N-51	C71344	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4N-51	C71345	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4N-52	C71347	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4N-52	C71348	N	3/12/2009	0.5-1	X	X						
C5N-EU1	C4NF-34	C71432	N	3/12/2009	0-0.5	X	X	X		X			
C5N-EU1	C4NF-34	C71433	N	3/12/2009	0.5-1	X							
C5N-EU1	C4NF-35	C71434	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4NF-35	C71435	N	3/12/2009	0.5-1	X							
C5N-EU1	C4NF-36	C71436	N	3/12/2009	0-0.5	X	X						
C5N-EU1	C4NF-36	C71437	N	3/12/2009	0.5-1	X							
C5N-EU1	C4NF-38	C71440	N	3/12/2009	0-0.5	X	X		X				
C5N-EU1	C4NF-38	C71441	N	3/12/2009	0.5-1	X							
C5N-EU2	C4N-53	C71350	N	3/12/2009	0-0.5	X	X		X				
C5N-EU2	C4N-53	C71351	N	3/12/2009	0-0.5			X		X			
C5N-EU2	C4N-53	C71351	FD	3/12/2009	0-0.5	X	X		X				
C5N-EU2	C4N-53	C71352	N	3/12/2009	0.5-1	X	X		X				
C5N-EU2	C4N-53	C71353	FD	3/12/2009	0.5-1	X	X		X				
C5N-EU2	C4N-54	C71356	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4N-54	C71357	N	3/12/2009	0.5-1	X	X						
C5N-EU2	C4N-55	C71359	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4N-55	C71360	N	3/12/2009	0.5-1	X	X						
C5N-EU2	C4NF-37	C71438	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4NF-37	C71439	N	3/12/2009	0.5-1	X							
C5N-EU2	C4NF-39	C71442	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4NF-39	C71443	N	3/12/2009	0.5-1	X							
C5N-EU2	C4NF-40	C71444	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4NF-40	C71445	N	3/12/2009	0.5-1	X							
C5N-EU2	C4NF-41	C71446	N	3/12/2009	0-0.5	X	X	X		X			
C5N-EU2	C4NF-41	C71447	N	3/12/2009	0.5-1	X							
C5N-EU2	C4NF-42	C71448	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4NF-42	C71449	N	3/12/2009	0.5-1	X							
C5N-EU2	C4NF-43	C71450	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4NF-43	C71451	N	3/12/2009	0.5-1	X							
C5N-EU2	C4NF-44	C71452	N	3/12/2009	0-0.5	X	X						
C5N-EU2	C4NF-44	C71453	N	3/12/2009	0.5-1	X							
C5N-EU2	C5N-01	C71705	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-01	C71706	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-02	C71708	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-02	C71709	FD	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-02	C71710	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-02	C71711	FD	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-03	C71714	N	3/3/2009	0-0.5	X	X		X				
C5N-EU2	C5N-03	C71715	N	3/3/2009	0.5-1	X	X		X				
C5N-EU2	C5N-04	C71717	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-04	C71718	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-05	C71720	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-05	C71721	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-06	C71723	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-06	C71724	N	3/3/2009	0.5-1	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
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Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C5N-EU2	C5N-07	C71726	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-07	C71727	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-08	C71729	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-08	C71730	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-09	C71732	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-09	C71733	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-10	C71735	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5N-10	C71736	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-11	C71738	N	3/4/2009	0-0.5	X	X	X		X			
C5N-EU2	C5N-11	C71739	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-12	C71741	N	3/4/2009	0-0.5	X	X	X		X			
C5N-EU2	C5N-12	C71742	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-13	C71744	N	3/4/2009	0-0.5	X	X	X	X	X			
C5N-EU2	C5N-13	C71745	N	3/4/2009	0.5-1	X	X		X				
C5N-EU2	C5N-14	C71747	N	3/5/2009	0-0.5	X	X	X		X			
C5N-EU2	C5N-14	C71748	N	3/5/2009	0.5-1	X	X						
C5N-EU2	C5N-15	C71750	N	3/5/2009	0-0.5	X	X	X		X			
C5N-EU2	C5N-15	C71751	N	3/5/2009	0.5-1	X	X						
C5N-EU2	C5N-16	C71753	N	3/5/2009	0-0.5	X	X						
C5N-EU2	C5N-16	C71754	N	3/5/2009	0.5-1	X	X						
C5N-EU2	C5N-17	C71756	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5N-17	C71757	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-18	C71759	N	3/5/2009	0-0.5	X	X	X		X			
C5N-EU2	C5N-18	C71760	N	3/5/2009	0.5-1	X	X						
C5N-EU2	C5N-18	C71761	N	3/5/2009	1-2	X							
C5N-EU2	C5N-19	C71762	N	3/5/2009	0-0.5	X	X						
C5N-EU2	C5N-19	C71763	N	3/5/2009	0.5-1	X	X						
C5N-EU2	C5N-20	C71765	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-20	C71766	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-21	C71768	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-21	C71769	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-22	C71771	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-22	C71772	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-23	C71774	N	2/24/2009	0-0.5	X	X		X				
C5N-EU2	C5N-23	C71775	N	2/24/2009	0.5-1	X	X		X				
C5N-EU2	C5N-24	C71777	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-24	C71778	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-25	C71780	N	2/24/2009	0-0.5	X	X	X		X			
C5N-EU2	C5N-25	C71781	FD	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-25	C71782	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-25	C71783	FD	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-26	C71786	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-26	C71787	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-27	C71789	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-27	C71790	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-28	C71792	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-28	C71793	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-29	C71795	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-29	C71796	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-30	C71798	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-30	C71799	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-31	C71801	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5N-31	C71802	N	2/24/2009	0.5-1	X	X						
C5N-EU2	C5N-32	C71804	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-32	C71805	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-33	C71807	N	3/4/2009	0-0.5	X	X		X				
C5N-EU2	C5N-33	C71808	N	3/4/2009	0.5-1	X	X		X				
C5N-EU2	C5N-34	C71810	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-34	C71811	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-35	C71813	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-35	C71814	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-36	C71816	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-36	C71817	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-37	C71819	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-37	C71820	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-38	C71822	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5N-38	C71823	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-39	C71825	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5N-39	C71826	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-40	C71828	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5N-40	C71829	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-41	C71831	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5N-41	C71832	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5N-42	C71834	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-42	C71835	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-43	C71837	N	3/3/2009	0-0.5	X	X		X				
C5N-EU2	C5N-43	C71838	N	3/3/2009	0.5-1	X	X		X				
C5N-EU2	C5N-44	C71840	N	3/3/2009	0-0.5	X	X						

*Sample Types:
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N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C5N-EU2	C5N-44	C71841	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-45	C71843	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5N-45	C71844	N	3/3/2009	0.5-1	X	X						
C5N-EU2	C5N-46	C71846	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5N-46	C71847	N	3/4/2009	0.5-1	X	X						
C5N-EU2	C5NF-01	C71849	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-01	C71850	FD	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-01	C71851	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-01	C71852	FD	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-02	C71853	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-02	C71854	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-03	C71855	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5NF-03	C71856	N	3/4/2009	0.5-1	X							
C5N-EU2	C5NF-04	C71857	N	3/5/2009	0-0.5	X	X						
C5N-EU2	C5NF-04	C71858	N	3/5/2009	0.5-1	X							
C5N-EU2	C5NF-05	C71859	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5NF-05	C71860	N	2/24/2009	0.5-1	X							
C5N-EU2	C5NF-06	C71861	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5NF-06	C71862	N	2/24/2009	0.5-1	X							
C5N-EU2	C5NF-07	C71863	N	3/5/2009	0-0.5	X	X		X				
C5N-EU2	C5NF-07	C71864	N	3/5/2009	0.5-1	X							
C5N-EU2	C5NF-08	C71865	N	3/5/2009	0-0.5	X	X						
C5N-EU2	C5NF-08	C71866	N	3/5/2009	0.5-1	X							
C5N-EU2	C5NF-09	C71867	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5NF-09	C71868	N	2/24/2009	0.5-1	X							
C5N-EU2	C5NF-10	C71869	N	2/24/2009	0-0.5	X	X						
C5N-EU2	C5NF-10	C71870	N	2/24/2009	0.5-1	X							
C5N-EU2	C5NF-11	C71871	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-11	C71872	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-12	C71873	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-12	C71874	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-13	C71875	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-13	C71876	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-14	C71877	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5NF-14	C71878	N	3/4/2009	0.5-1	X							
C5N-EU2	C5NF-15	C71879	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-15	C71880	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-16	C71881	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-16	C71882	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-17	C71883	N	3/4/2009	0-0.5	X	X		X				
C5N-EU2	C5NF-17	C71884	FD	3/4/2009	0-0.5	X	X		X				
C5N-EU2	C5NF-17	C71885	N	3/4/2009	0.5-1	X							
C5N-EU2	C5NF-17	C71886	FD	3/4/2009	0.5-1	X							
C5N-EU2	C5NF-18	C71887	N	3/3/2009	0-0.5	X	X						
C5N-EU2	C5NF-18	C71888	N	3/3/2009	0.5-1	X							
C5N-EU2	C5NF-19	C71889	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5NF-19	C71890	N	3/4/2009	0.5-1	X							
C5N-EU2	C5NF-20	C71891	N	3/4/2009	0-0.5	X	X						
C5N-EU2	C5NF-20	C71892	N	3/4/2009	0.5-1	X							
C5S-EU1	C4S-51	C71613	N	3/17/2009	0-0.5	X	X						
C5S-EU1	C4S-51	C71614	N	3/17/2009	0.5-1	X	X						
C5S-EU1	C4S-52	C71616	N	3/17/2009	0-0.5	X	X						
C5S-EU1	C4S-52	C71617	N	3/17/2009	0.5-1	X	X						
C5S-EU1	C4S-53	C71619	N	3/17/2009	0-0.5	X	X						
C5S-EU1	C4S-53	C71620	N	3/17/2009	0.5-1	X	X						
C5S-EU1	C4S-54	C71622	N	3/18/2009	0-0.5	X	X		X				
C5S-EU1	C4S-54	C71623	N	3/18/2009	0.5-1	X	X		X				
C5S-EU1	C4S-55	C71625	N	3/18/2009	0-0.5	X	X						
C5S-EU1	C4S-55	C71626	N	3/18/2009	0.5-1	X	X						
C5S-EU1	C4S-56	C71628	N	3/18/2009	0-0.5	X	X						
C5S-EU1	C4S-56	C71629	N	3/18/2009	0.5-1	X	X						
C5S-EU1	C4S-57	C71631	N	3/18/2009	0-0.5	X	X						
C5S-EU1	C4S-57	C71632	N	3/18/2009	0.5-1	X	X						
C5S-EU1	C4S-57	C71633	N	3/18/2009	1-2	X							
C5S-EU1	C4S-58	C71634	N	3/18/2009	0-0.5	X	X						
C5S-EU1	C4S-58	C71635	N	3/18/2009	0.5-1	X	X						
C5S-EU1	C4SF-31	C71699	N	3/17/2009	0-0.5	X	X						
C5S-EU1	C4SF-31	C71700	N	3/17/2009	0.5-1	X							
C5S-EU1	C4SF-32	C71701	N	3/17/2009	0-0.5	X	X						
C5S-EU1	C4SF-32	C71702	N	3/17/2009	0.5-1	X							
C5S-EU1	C4SF-33	C71703	N	3/17/2009	0-0.5	X	X	X		X			
C5S-EU1	C4SF-33	C71704	N	3/17/2009	0.5-1	X							
C5S-EU1	C5S-01	C71893	N	2/24/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-01	C71894	N	2/24/2009	0.5-1	X	X						
C5S-EU1	C5S-02	C71896	N	2/24/2009	0-0.5	X	X						
C5S-EU1	C5S-02	C71897	N	2/24/2009	0.5-1	X	X						
C5S-EU1	C5S-03	C71899	N	2/24/2009	0-0.5	X	X						
C5S-EU1	C5S-03	C71900	FD	2/24/2009	0-0.5	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
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						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C5S-EU1	C5S-03	C71901	N	2/24/2009	0.5-1	X	X						
C5S-EU1	C5S-03	C71902	FD	2/24/2009	0.5-1	X	X						
C5S-EU1	C5S-04	C71905	N	2/24/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-04	C71906	N	2/24/2009	0.5-1	X	X						
C5S-EU1	C5S-05	C71908	N	2/24/2009	0-0.5	X	X						
C5S-EU1	C5S-05	C71909	N	2/24/2009	0.5-1	X	X						
C5S-EU1	C5S-06	C71911	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-06	C71912	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-07	C71914	N	2/23/2009	0-0.5	X	X		X				
C5S-EU1	C5S-07	C71915	N	2/23/2009	0.5-1	X	X		X				
C5S-EU1	C5S-07	C71916	N	2/23/2009	1-2	X							
C5S-EU1	C5S-08	C71917	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-08	C71918	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-09	C71920	N	2/23/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-09	C71921	N	2/23/2009	0.5-1	X	X	X		X			
C5S-EU1	C5S-10	C71923	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-10	C71924	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-11	C71926	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-11	C71927	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-12	C71929	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-12	C71930	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-13	C71932	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-13	C71933	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-14	C71935	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-14	C71936	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-15	C71938	N	2/23/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-15	C71939	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-16	C71941	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-16	C71942	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-17	C71944	N	2/23/2009	0-0.5	X	X		X				
C5S-EU1	C5S-17	C71945	N	2/23/2009	0.5-1	X	X		X				
C5S-EU1	C5S-18	C71947	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-18	C71948	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-19	C71950	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-19	C71951	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-20	C71953	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-20	C71954	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-21	C71956	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-21	C71957	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-22	C71959	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-22	C71960	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-23	C71962	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-23	C71963	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-24	C71965	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-24	C71966	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-25	C71968	N	3/5/2009	0-0.5	X	X	X					
C5S-EU1	C5S-25	C71969	FD	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-25	C71970	N	3/5/2009	0.5-1	X	X	X					
C5S-EU1	C5S-25	C71971	FD	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-26	C71974	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-26	C71975	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-27	C71977	N	2/23/2009	0-0.5	X	X		X				
C5S-EU1	C5S-27	C71978	N	2/23/2009	0.5-1	X	X		X				
C5S-EU1	C5S-28	C71980	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-28	C71981	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-29	C71983	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-29	C71984	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-30	C71986	N	3/5/2009	0-0.5	X	X						
C5S-EU1	C5S-30	C71987	N	3/5/2009	0.5-1	X	X						
C5S-EU1	C5S-31	C71989	N	2/21/2009	0-0.5	X	X						
C5S-EU1	C5S-31	C71990	N	2/21/2009	0.5-1	X	X						
C5S-EU1	C5S-32	C71992	N	2/22/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-32	C71993	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-33	C71995	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5S-33	C71996	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-34	C71998	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5S-34	C71999	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-35	C72001	N	2/22/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-35	C72002	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-36	C72004	N	2/22/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-36	C72005	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-37	C72007	N	2/22/2009	0-0.5	X	X		X				
C5S-EU1	C5S-37	C72008	N	2/22/2009	0.5-1	X	X		X				
C5S-EU1	C5S-38	C72010	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5S-38	C72011	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-39	C72013	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5S-39	C72014	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-40	C72016	N	2/22/2009	0-0.5	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
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						Analyses							
Exposure Unit	**Location**	**Sample ID**	**Sample Type***	**Collection Date**	**Depth Interval (ft)**	**PCBs**	**Mercury**	**PCB Congeners**	**Metals**	**Dioxins/ Furans**	**VOCs**	**SVOCs**	**Pesticides/ Herbicides**
C5S-EU1	C5S-40	C72017	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-41	C72019	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5S-41	C72020	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-42	C72022	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5S-42	C72023	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-43	C72025	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-43	C72026	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-44	C72028	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5S-44	C72029	N	2/23/2009	0.5-1	X	X						
C5S-EU1	C5S-45	C72031	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5S-45	C72032	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-46	C72034	N	2/22/2009	0-0.5	X	X	X		X			
C5S-EU1	C5S-46	C72035	N	2/22/2009	0.5-1	X	X						
C5S-EU1	C5S-47	C72037	N	2/22/2009	0-0.5	X	X		X				
C5S-EU1	C5S-47	C72038	N	2/22/2009	0.5-1	X	X		X				
C5S-EU1	C5SF-01	C72040	N	2/24/2009	0-0.5	X	X						
C5S-EU1	C5SF-01	C72041	FD	2/24/2009	0-0.5	X	X						
C5S-EU1	C5SF-01	C72042	N	2/24/2009	0.5-1	X							
C5S-EU1	C5SF-01	C72043	FD	2/24/2009	0.5-1	X							
C5S-EU1	C5SF-02	C72044	N	2/24/2009	0-0.5	X	X						
C5S-EU1	C5SF-02	C72045	N	2/24/2009	0.5-1	X							
C5S-EU1	C5SF-03	C72046	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-03	C72047	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-04	C72048	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-04	C72049	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-05	C72050	N	2/24/2009	0-0.5	X	X						
C5S-EU1	C5SF-05	C72051	N	2/24/2009	0.5-1	X							
C5S-EU1	C5SF-06	C72052	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-06	C72053	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-07	C72054	N	2/24/2009	0-0.5	X	X						
C5S-EU1	C5SF-07	C72055	N	2/24/2009	0.5-1	X							
C5S-EU1	C5SF-08	C72056	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-08	C72057	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-09	C72058	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-09	C72059	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-10	C72060	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-10	C72061	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-11	C72062	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-11	C72063	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-12	C72064	N	2/23/2009	0-0.5	X	X						
C5S-EU1	C5SF-12	C72065	N	2/23/2009	0.5-1	X							
C5S-EU1	C5SF-13	C72066	N	2/21/2009	0-0.5	X	X						
C5S-EU1	C5SF-13	C72067	N	2/21/2009	0.5-1	X							
C5S-EU1	C5SF-14	C72068	N	2/21/2009	0-0.5	X	X						
C5S-EU1	C5SF-14	C72069	N	2/21/2009	0.5-1	X							
C5S-EU1	C5SF-15	C72070	N	2/21/2009	0-0.5	X	X						
C5S-EU1	C5SF-15	C72071	N	2/21/2009	0.5-1	X							
C5S-EU1	C5SF-16	C72072	N	2/21/2009	0-0.5	X	X						
C5S-EU1	C5SF-16	C72073	N	2/21/2009	0.5-1	X							
C5S-EU1	C5SF-17	C72074	N	2/21/2009	0-0.5	X	X						
C5S-EU1	C5SF-17	C72075	N	2/21/2009	0.5-1	X							
C5S-EU1	C5SF-18	C72076	N	2/21/2009	0-0.5	X	X						
C5S-EU1	C5SF-18	C72077	N	2/21/2009	0.5-1	X							
C5S-EU1	C5SF-19	C72078	N	2/22/2009	0-0.5	X	X						
C5S-EU1	C5SF-19	C72079	N	2/22/2009	0.5-1	X							
C5S-EU1	C5SF-20	C72080	N	2/22/2009	0-0.5	X	X		X				
C5S-EU1	C5SF-20	C72081	N	2/22/2009	0.5-1	X							
C6N-EU1	C6N-01	C72082	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-01	C72083	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-02	C72085	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-02	C72086	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-03	C72088	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-03	C72089	FD	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-03	C72090	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-03	C72091	FD	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-04	C72094	N	3/9/2009	0-0.5	X	X						
C6N-EU1	C6N-04	C72095	N	3/9/2009	0.5-1	X	X						
C6N-EU1	C6N-05	C72097	N	3/9/2009	0-0.5	X	X	X		X			
C6N-EU1	C6N-05	C72098	N	3/9/2009	0.5-1	X	X	X		X			
C6N-EU1	C6N-06	C72100	N	3/9/2009	0-0.5	X	X						
C6N-EU1	C6N-06	C72101	N	3/9/2009	0.5-1	X	X						
C6N-EU1	C6N-07	C72103	N	3/10/2009	0-0.5	X	X	X		X			
C6N-EU1	C6N-07	C72104	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-08	C72106	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-08	C72107	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-09	C72109	N	3/10/2009	0-0.5	X	X	X		X			
C6N-EU1	C6N-09	C72110	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-10	C72112	N	3/10/2009	0-0.5	X	X		X				

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C6N-EU1	C6N-10	C72113	N	3/10/2009	0.5-1	X	X		X				
C6N-EU1	C6N-11	C72115	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-11	C72116	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-12	C72118	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-12	C72119	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-13	C72121	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-13	C72122	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-14	C72124	N	3/10/2009	0-0.5	X	X	X		X			
C6N-EU1	C6N-14	C72125	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-15	C72127	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-15	C72128	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-16	C72130	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-16	C72131	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-17	C72133	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-17	C72134	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-18	C72136	N	3/10/2009	0-0.5	X	X						
C6N-EU1	C6N-18	C72137	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-19	C72139	N	3/10/2009	0-0.5	X	X	X		X			
C6N-EU1	C6N-19	C72140	N	3/10/2009	0.5-1	X	X						
C6N-EU1	C6N-19	C72141	N	3/10/2009	1-2	X							
C6N-EU1	C6N-20	C72142	N	3/10/2009	0-0.5	X	X	X	X	X			
C6N-EU1	C6N-20	C72143	N	3/10/2009	0.5-1	X	X		X				
C6S-EU1	C6S-01	C72145	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-01	C72146	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-02	C72148	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-02	C72149	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-02	C72150	N	2/21/2009	1-2	X							
C6S-EU1	C6S-03	C72151	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-03	C72152	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-04	C72154	N	2/21/2009	0-0.5	X	X	X		X			
C6S-EU1	C6S-04	C72155	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-05	C72157	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-05	C72158	FD	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-05	C72159	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-05	C72160	FD	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-06	C72163	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-06	C72164	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-07	C72166	N	2/21/2009	0-0.5	X	X	X		X			
C6S-EU1	C6S-07	C72167	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-08	C72169	N	4/2/2009	0-0.5	X	X						
C6S-EU1	C6S-08	C72170	N	4/2/2009	0.5-1	X	X						
C6S-EU1	C6S-09	C72172	N	4/2/2009	0-0.5	X	X	X		X			
C6S-EU1	C6S-09	C72173	N	4/2/2009	0.5-1	X	X						
C6S-EU1	C6S-10	C72175	N	4/2/2009	0-0.5	X	X		X				
C6S-EU1	C6S-10	C72176	N	4/2/2009	0.5-1	X	X		X				
C6S-EU1	C6S-11	C72178	N	4/2/2009	0-0.5	X	X						
C6S-EU1	C6S-11	C72179	N	4/2/2009	0.5-1	X	X						
C6S-EU1	C6S-12	C72181	N	4/2/2009	0-0.5	X	X						
C6S-EU1	C6S-12	C72182	N	4/2/2009	0.5-1	X	X						
C6S-EU1	C6S-13	C72184	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-13	C72185	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-14	C72187	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-14	C72188	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-15	C72190	N	2/21/2009	0-0.5	X	X						
C6S-EU1	C6S-15	C72191	N	2/21/2009	0.5-1	X	X						
C6S-EU1	C6S-16	C72193	N	2/20/2009	0-0.5	X	X						
C6S-EU1	C6S-16	C72194	N	2/20/2009	0.5-1	X	X						
C6S-EU1	C6S-17	C72196	N	2/20/2009	0-0.5	X	X						
C6S-EU1	C6S-17	C72197	N	2/20/2009	0.5-1	X	X						
C6S-EU1	C6S-18	C72199	N	2/20/2009	0-0.5	X	X						
C6S-EU1	C6S-18	C72200	N	2/20/2009	0.5-1	X	X						
C6S-EU1	C6S-19	C72202	N	2/20/2009	0-0.5	X	X						
C6S-EU1	C6S-19	C72203	N	2/20/2009	0.5-1	X	X						
C6S-EU1	C6S-20	C72205	N	2/12/2009	0-0.5	X	X		X				
C6S-EU1	C6S-20	C72206	N	2/12/2009	0.5-1	X	X		X				
C6S-EU1	C6S-21	C72208	N	2/12/2009	0-0.5	X	X	X		X			
C6S-EU1	C6S-21	C72209	N	2/12/2009	0.5-1	X	X	X		X			
C7N-EU1	C7N-01	C70500	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-01	C70501	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-02	C70502	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-02	C72463	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-03	C70503	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-03	C70504	FD	6/21/2007	0-0.5	X							
C7N-EU1	C7N-03	C70505	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-04	C70506	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-04	C72464	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-05	C70507	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-05	C70508	N	6/19/2007	0.5-1	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C7N-EU1	C7N-06	C70509	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-06	C72453	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-07	C70510	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-07	C70511	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-08	C70512	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-08	C72465	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-09	C70513	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-09	C70514	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-10	C70515	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-10	C72457	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-11	C70516	N	6/21/2007	0-0.5	X	X	X	X	X	X	X	X
C7N-EU1	C7N-11	C70517	N	6/21/2007	0.5-1	X	X	X	X	X	X	X	X
C7N-EU1	C7N-12	C70518	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-12	C72462	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-13	C70519	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-13	C70520	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-14	C70521	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-14	C72466	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-15	C70522	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-15	C70523	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-15	C70739	N	6/19/2007	1-2	X							
C7N-EU1	C7N-16	C70524	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-16	C70525	FD	6/19/2007	0-0.5	X							
C7N-EU1	C7N-16	C72467	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-17	C70526	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-17	C70527	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-18	C70528	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-18	C72468	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-19	C70529	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-19	C70530	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-20	C70531	N	6/20/2007	0-0.5	X	X	X	X	X	X	X	X
C7N-EU1	C7N-20	C72470	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-21	C70532	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-21	C70533	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-22	C70534	N	6/19/2007	0-0.5	X							
C7N-EU1	C7N-22	C72471	N	6/19/2007	0.5-1	X							
C7N-EU1	C7N-23	C70535	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-23	C70536	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-24	C70537	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-24	C72472	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-25	C70538	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-25	C70539	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-26	C70540	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-26	C72439	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-27	C70541	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-27	C70542	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-28	C70543	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-28	C72473	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-29	C70544	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-29	C70545	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-29	C70546	FD	6/20/2007	0.5-1	X							
C7N-EU1	C7N-30	C70547	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-30	C72474	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-31	C70548	N	6/20/2007	0-0.5	X	X	X	X	X	X	X	X
C7N-EU1	C7N-31	C70549	N	6/20/2007	0.5-1	X	X	X	X	X	X	X	X
C7N-EU1	C7N-32	C70550	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-32	C72475	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-33	C70551	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-33	C70552	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-34	C70553	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-34	C72455	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-35	C70554	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-35	C70555	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-36	C70556	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-36	C72421	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-37	C70557	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-37	C70558	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-38	C70559	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-38	C72447	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-39	C70560	N	6/26/2007	0-0.5	X							
C7N-EU1	C7N-39	C70561	N	6/26/2007	0.5-1	X							
C7N-EU1	C7N-39	C70741	N	6/26/2007	1-2	X							
C7N-EU1	C7N-40	C70562	N	6/26/2007	0-0.5	X	X	X	X	X	X	X	X
C7N-EU1	C7N-40	C72476	N	6/26/2007	0.5-1	X							
C7N-EU1	C7N-41	C70563	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-41	C70564	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-42	C70565	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-42	C72477	N	6/20/2007	0.5-1	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C7N-EU1	C7N-43	C70566	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-43	C70567	FD	6/20/2007	0-0.5	X							
C7N-EU1	C7N-43	C70568	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-44	C70569	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-44	C72446	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-45	C70570	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-45	C70571	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-46	C70572	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-46	C72456	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-47	C70573	N	6/20/2007	0-0.5	X							
C7N-EU1	C7N-47	C70574	N	6/20/2007	0.5-1	X							
C7N-EU1	C7N-48	C70575	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-48	C72451	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-49	C70576	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-49	C70577	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-50	C70578	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-50	C72461	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-51	C70579	N	6/21/2007	0-0.5	X	X	X	X	X	X	X	X
C7N-EU1	C7N-51	C70580	N	6/21/2007	0.5-1	X	X	X	X	X	X	X	X
C7N-EU1	C7N-52	C70581	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-52	C72437	N	6/21/2007	0.5-1	X							
C7N-EU1	C7N-53	C70582	N	6/21/2007	0-0.5	X							
C7N-EU1	C7N-53	C70583	N	6/21/2007	0.5-1	X							
C7N-EU1	C7NF-01	C72211	N	2/12/2009	0-0.5	X	X						
C7N-EU1	C7NF-01	C72212	N	2/12/2009	0.5-1	X							
C7N-EU1	C7NF-02	C72213	N	2/12/2009	0-0.5	X	X						
C7N-EU1	C7NF-02	C72214	N	2/12/2009	0.5-1	X							
C7N-EU1	C7NF-03	C72215	N	2/12/2009	0-0.5	X	X	X		X			
C7N-EU1	C7NF-03	C72216	N	2/12/2009	0.5-1	X							
C7N-EU1	C7NF-04	C72217	N	2/12/2009	0-0.5	X	X						
C7N-EU1	C7NF-04	C72218	N	2/12/2009	0.5-1	X							
C7N-EU1	C7NF-05	C72219	N	2/12/2009	0-0.5	X	X						
C7N-EU1	C7NF-05	C72220	N	2/12/2009	0.5-1	X							
C7N-EU1	C7NF-06	C72221	N	2/12/2009	0-0.5	X	X		X				
C7N-EU1	C7NF-06	C72222	N	2/12/2009	0.5-1	X							
C7N-EU1	C7NF-07	C72223	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-07	C72224	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-08	C72225	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-08	C72226	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-09	C72227	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-09	C72228	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-10	C72229	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-10	C72230	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-11	C72231	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-11	C72232	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-12	C72233	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-12	C72234	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-13	C72235	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-13	C72236	N	2/17/2009	0.5-1								
C7N-EU1	C7NF-14	C72237	N	2/17/2009	0-0.5	X	X	X		X			
C7N-EU1	C7NF-14	C72238	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-15	C72239	N	2/17/2009	0-0.5	X	X						
C7N-EU1	C7NF-15	C72240	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-16	C72241	N	2/17/2009	0-0.5	X	X		X				
C7N-EU1	C7NF-16	C72242	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-17	C72243	N	2/17/2009	0-0.5	X	X	X		X			
C7N-EU1	C7NF-17	C72244	N	2/17/2009	0.5-1	X							
C7N-EU1	C7NF-18	C72247	N	2/11/2009	0-0.5	X	X						
C7N-EU1	C7NF-18	C72248	N	2/11/2009	0.5-1	X							
C7N-EU1	C7NF-19	C72245	N	2/11/2009	0-0.5	X	X						
C7N-EU1	C7NF-19	C72246	N	2/11/2009	0.5-1	X							
C7N-EU1	C7NF-20	C72249	N	2/11/2009	0-0.5	X	X	X		X			
C7N-EU1	C7NF-20	C72250	FD	2/11/2009	0-0.5	X	X	X		X			
C7N-EU1	C7NF-20	C72251	N	2/11/2009	0.5-1	X							
C7N-EU1	C7NF-20	C72252	FD	2/11/2009	0.5-1	X							
C7S-EU1	C7S-01	C70584	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-01	C70585	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-02	C70586	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-02	C72478	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-03	C70587	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-03	C70588	FD	6/28/2007	0-0.5	X							
C7S-EU1	C7S-03	C70589	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-04	C70590	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-04	C72479	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-05	C70591	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-05	C70592	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-06	C70593	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-06	C72480	N	6/27/2007	0.5-1	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
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Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C7S-EU1	C7S-07	C70594	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-07	C70595	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-08	C70596	N	6/27/2007	0-0.5	X	X	X	X	X	X	X	X
C7S-EU1	C7S-08	C72436	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-09	C70597	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-09	C70598	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-10	C70599	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-10	C72481	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-11	C70600	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-11	C70601	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-12	C70602	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-12	C72482	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-13	C70603	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-13	C70604	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-14	C70605	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-14	C72422	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-15	C70606	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-15	C70607	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-16	C70608	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-16	C70609	FD	6/27/2007	0-0.5	X							
C7S-EU1	C7S-16	C72432	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-17	C70610	N	6/27/2007	0-0.5	X	X	X	X	X	X	X	X
C7S-EU1	C7S-17	C70611	N	6/27/2007	0.5-1	X	X	X	X	X	X	X	X
C7S-EU1	C7S-18	C70612	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-18	C72433	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-19	C70613	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-19	C70614	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-20	C70615	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-20	C72483	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-21	C70616	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-21	C70617	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-22	C70618	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-22	C72484	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-23	C70619	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-23	C70620	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-24	C70621	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-24	C72485	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-25	C70622	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-25	C70623	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-26	C70624	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-26	C72423	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-27	C70625	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-27	C70626	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-28	C70627	N	6/26/2007	0-0.5	X	X	X	X	X	X	X	X
C7S-EU1	C7S-28	C72452	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-29	C70628	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-29	C70629	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-29	C70630	FD	6/26/2007	0.5-1	X							
C7S-EU1	C7S-30	C70631	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-30	C72486	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-31	C70632	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-31	C70633	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-32	C70634	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-32	C72487	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-33	C70635	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-33	C70636	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-34	C70637	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-34	C72444	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-35	C70638	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-35	C70639	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-36	C70640	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-36	C72488	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-37	C70641	N	6/27/2007	0-0.5	X	X	X	X	X	X	X	X
C7S-EU1	C7S-37	C70642	N	6/27/2007	0.5-1	X	X	X	X	X	X	X	X
C7S-EU1	C7S-37	C70745	N	6/27/2007	1-2	X	X		X				
C7S-EU1	C7S-38	C70643	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-38	C72489	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-39	C70644	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-39	C70645	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-40	C70646	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-40	C72491	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-41	C70647	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-41	C70648	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-42	C70649	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-42	C72424	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-43	C70650	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-43	C70651	FD	6/27/2007	0-0.5	X							
C7S-EU1	C7S-43	C70652	N	6/27/2007	0.5-1	X							

*Sample Types:
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N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
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						Analyses							
Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C7S-EU1	C7S-44	C70653	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-44	C72425	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-45	C70654	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-45	C70655	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-46	C70656	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-46	C72434	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-47	C70657	N	6/27/2007	0-0.5	X							
C7S-EU1	C7S-47	C70658	N	6/27/2007	0.5-1	X							
C7S-EU1	C7S-48	C70659	N	6/28/2007	0-0.5	X	X	X	X	X	X	X	X
C7S-EU1	C7S-48	C72492	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-49	C70660	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-49	C70661	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-50	C70662	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-50	C72493	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-51	C70663	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-51	C70664	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-52	C70665	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-52	C72460	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-53	C70666	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-53	C70667	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-54	C70668	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-54	C72459	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-55	C70669	N	6/26/2007	0-0.5	X							
C7S-EU1	C7S-55	C70670	N	6/26/2007	0.5-1	X							
C7S-EU1	C7S-56	C70671	N	6/28/2007	0-0.5	X							
C7S-EU1	C7S-56	C70672	FD	6/28/2007	0-0.5	X							
C7S-EU1	C7S-56	C72440	N	6/28/2007	0.5-1	X							
C7S-EU1	C7S-57	C70673	N	6/28/2007	0-0.5	X	X	X	X	X	X	X	X
C7S-EU1	C7S-57	C70674	N	6/28/2007	0.5-1	X	X	X	X	X	X	X	X
C7S-EU1	C7SF-01	C72253	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-01	C72254	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-02	C72255	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-02	C72256	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-03	C72257	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-03	C72258	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-04	C72259	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-04	C72260	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-05	C72261	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-05	C72262	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-06	C72263	N	4/7/2009	0-0.5	X	X						
C7S-EU1	C7SF-06	C72264	N	4/7/2009	0.5-1	X							
C7S-EU1	C7SF-07	C72265	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-07	C72266	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-08	C72267	N	4/7/2009	0-0.5	X	X						
C7S-EU1	C7SF-08	C72268	N	4/7/2009	0.5-1	X							
C7S-EU1	C7SF-09	C72269	N	4/7/2009	0-0.5	X	X		X				
C7S-EU1	C7SF-09	C72270	N	4/7/2009	0.5-1	X							
C7S-EU1	C7SF-10	C72271	N	4/7/2009	0-0.5	X	X						
C7S-EU1	C7SF-10	C72272	FD	4/7/2009	0-0.5	X	X						
C7S-EU1	C7SF-10	C72273	N	4/7/2009	0.5-1	X							
C7S-EU1	C7SF-10	C72274	FD	4/7/2009	0.5-1	X							
C7S-EU1	C7SF-11	C72275	N	4/7/2009	0-0.5	X	X						
C7S-EU1	C7SF-11	C72276	N	4/7/2009	0.5-1	X							
C7S-EU1	C7SF-12	C72277	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-12	C72278	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-13	C72279	N	2/12/2009	0-0.5	X	X	X		X			
C7S-EU1	C7SF-13	C72280	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-14	C72281	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-14	C72282	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-15	C72283	N	2/12/2009	0-0.5	X	X	X		X			
C7S-EU1	C7SF-15	C72284	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-16	C72285	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-16	C72286	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-17	C72287	N	2/12/2009	0-0.5	X	X						
C7S-EU1	C7SF-17	C72288	N	2/12/2009	0.5-1	X							
C7S-EU1	C7SF-18	C72289	N	2/11/2009	0-0.5	X	X						
C7S-EU1	C7SF-18	C72290	N	2/11/2009	0.5-1	X							
C7S-EU1	C7SF-19	C72291	N	2/11/2009	0-0.5	X	X		X				
C7S-EU1	C7SF-19	C72292	N	2/11/2009	0.5-1	X							
C7S-EU1	C7SF-20	C72293	N	2/11/2009	0-0.5	X	X						
C7S-EU1	C7SF-20	C72294	N	2/11/2009	0.5-1	X							
C8N-EU1	C8N-01	C70675	N	6/21/2007	0-0.5	X							
C8N-EU1	C8N-01	C70676	N	6/21/2007	0.5-1	X							
C8N-EU1	C8N-02	C70677	N	6/21/2007	0-0.5	X							
C8N-EU1	C8N-02	C72443	N	6/21/2007	0.5-1	X							
C8N-EU1	C8N-03	C70678	N	6/21/2007	0-0.5	X							
C8N-EU1	C8N-03	C70679	N	6/21/2007	0.5-1	X							
C8N-EU1	C8N-04	C70680	N	6/25/2007	0-0.5	X							

*Sample Types:
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N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
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Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C8N-EU1	C8N-04	C72442	N	6/25/2007	0.5-1	X							
C8N-EU1	C8N-05	C70681	N	6/25/2007	0-0.5	X							
C8N-EU1	C8N-05	C70682	N	6/25/2007	0.5-1	X							
C8N-EU1	C8N-06	C70683	N	6/25/2007	0-0.5	X							
C8N-EU1	C8N-06	C72435	N	6/25/2007	0.5-1	X							
C8N-EU1	C8N-07	C70684	N	6/25/2007	0-0.5	X							
C8N-EU1	C8N-07	C70685	N	6/25/2007	0.5-1	X							
C8N-EU1	C8N-08	C70686	N	6/26/2007	0-0.5	X							
C8N-EU1	C8N-08	C72441	N	6/26/2007	0.5-1	X							
C8N-EU1	C8N-09	C70687	N	6/26/2007	0-0.5	X							
C8N-EU1	C8N-09	C70688	N	6/26/2007	0.5-1	X							
C8N-EU1	C8N-09	C70744	N	6/26/2007	1-2	X							
C8N-EU1	C8N-10	C70689	N	6/26/2007	0-0.5	X							
C8N-EU1	C8N-10	C72426	N	6/26/2007	0.5-1	X							
C8N-EU1	C8N-11	C70690	N	6/26/2007	0-0.5	X							
C8N-EU1	C8N-11	C70691	N	6/26/2007	0.5-1	X							
C8N-EU1	C8N-11	C70738	N	6/26/2007	1-2	X							
C8N-EU1	C8N-12	C70692	N	6/26/2007	0-0.5	X	X	X	X	X	X	X	X
C8N-EU1	C8N-12	C70693	FD	6/26/2007	0-0.5	X	X	X	X	X	X	X	X
C8N-EU1	C8N-12	C72427	N	6/26/2007	0.5-1	X							
C8N-EU1	C8N-13	C70694	N	6/25/2007	0-0.5	X							
C8N-EU1	C8N-13	C70695	N	6/25/2007	0.5-1	X							
C8N-EU1	C8N-14	C70696	N	6/25/2007	0-0.5	X							
C8N-EU1	C8N-14	C72431	N	6/25/2007	0.5-1	X							
C8N-EU1	C8N-15	C70697	N	6/25/2007	0-0.5	X							
C8N-EU1	C8N-15	C70698	N	6/25/2007	0.5-1	X							
C8N-EU1	C8N-16	C70699	N	6/29/2007	0-0.5	X							
C8N-EU1	C8N-16	C72429	N	6/29/2007	0.5-1	X							
C8N-EU1	C8N-17	C70700	N	6/29/2007	0-0.5	X							
C8N-EU1	C8N-17	C70701	N	6/29/2007	0.5-1	X							
C8N-EU1	C8N-17	C70742	N	6/29/2007	1-2	X							
C8N-EU1	C8N-18	C70702	N	6/29/2007	0-0.5	X							
C8N-EU1	C8N-18	C72458	N	6/29/2007	0.5-1	X							
C8N-EU1	C8N-19	C70703	N	6/29/2007	0-0.5	X	X	X	X	X	X	X	X
C8N-EU1	C8N-19	C70704	N	6/29/2007	0.5-1	X	X	X	X	X	X	X	X
C8N-EU1	C8N-19	C70743	N	6/29/2007	1-2	X	X		X				
C8N-EU1	C8N-20	C70705	N	6/29/2007	0-0.5	X							
C8N-EU1	C8N-20	C72430	N	6/29/2007	0.5-1	X							
C8N-EU1	C8NX-01	C72767	N	8/4/2011	0-0.5	X	X						
C8N-EU1	C8NX-01	C72768	N	8/4/2011	0.5-1	X	X						
C8N-EU1	C8NX-02	C72769	N	8/4/2011	0-0.5	X	X						
C8N-EU1	C8NX-02	C72770	N	8/4/2011	0.5-1	X	X						
C8N-EU1	C8NX-03	C72771	N	8/4/2011	0-0.5	X	X						
C8N-EU1	C8NX-03	C72772	N	8/4/2011	0.5-1	X	X						
C8N-EU1	C8NX-04	C72773	N	8/4/2011	0-0.5	X	X		X				
C8N-EU1	C8NX-04	C72774	N	8/4/2011	0.5-1	X	X		X				
C8N-EU1	C8NX-04	C72775	N	8/4/2011	0.5-1								
C8N-EU1	C8NX-04	C72775	FD	8/4/2011	0.5-1	X	X		X				
C8S-EU1	C8S-01	C70706	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-01	C70707	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-02	C70708	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-02	C72494	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-03	C70709	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-03	C70710	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-04	C70711	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-04	C72495	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-05	C70712	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-05	C70713	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-05	C70714	FD	6/28/2007	0.5-1	X							
C8S-EU1	C8S-06	C70715	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-06	C72450	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-07	C70716	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-07	C70717	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-08	C70718	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-08	C72496	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-09	C70719	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-09	C70720	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-10	C70721	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-10	C72449	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-11	C70722	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-11	C70723	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-12	C70724	N	6/29/2007	0-0.5	X	X	X	X	X	X	X	X
C8S-EU1	C8S-12	C72438	N	6/29/2007	0.5-1	X							
C8S-EU1	C8S-13	C70725	N	6/29/2007	0-0.5	X							
C8S-EU1	C8S-13	C70726	N	6/29/2007	0.5-1	X							
C8S-EU1	C8S-13	C70740	N	6/29/2007	1-2	X							
C8S-EU1	C8S-14	C70727	N	6/29/2007	0-0.5	X							
C8S-EU1	C8S-14	C72454	N	6/29/2007	0.5-1	X							

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

Exposure Unit	Location	Sample ID	Sample Type*	Collection Date	Depth Interval (ft)	Analyses							
						PCBs	Mercury	PCB Congeners	Metals	Dioxins/ Furans	VOCs	SVOCs	Pesticides/ Herbicides
C8S-EU1	C8S-15	C70728	N	6/29/2007	0-0.5	X							
C8S-EU1	C8S-15	C70729	N	6/29/2007	0.5-1	X							
C8S-EU1	C8S-16	C70730	N	6/29/2007	0-0.5	X							
C8S-EU1	C8S-16	C72445	N	6/29/2007	0.5-1	X							
C8S-EU1	C8S-17	C70731	N	6/29/2007	0-0.5	X							
C8S-EU1	C8S-17	C70732	N	6/29/2007	0.5-1	X							
C8S-EU1	C8S-18	C70733	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-18	C72497	N	6/28/2007	0.5-1	X							
C8S-EU1	C8S-19	C70734	N	6/29/2007	0-0.5	X	X	X	X	X	X	X	X
C8S-EU1	C8S-19	C70735	N	6/29/2007	0-0.5						X	X	
C8S-EU1	C8S-19	C70735	FD	6/29/2007	0-0.5	X	X	X	X	X	X	X	X
C8S-EU1	C8S-19	C70736	N	6/29/2007	0.5-1	X	X	X	X	X	X	X	X
C8S-EU1	C8S-20	C70737	N	6/28/2007	0-0.5	X							
C8S-EU1	C8S-20	C72498	N	6/28/2007	0.5-1	X							
C9N-EU1	C9N-01	C72295	N	2/16/2009	0-0.5	X	X	X		X			
C9N-EU1	C9N-01	C72296	N	2/16/2009	0.5-1	X	X	X		X			
C9N-EU1	C9N-02	C72298	N	2/16/2009	0-0.5	X	X	X		X			
C9N-EU1	C9N-02	C72299	N	2/16/2009	0.5-1	X	X	X		X			
C9N-EU1	C9N-03	C72301	N	2/16/2009	0-0.5	X	X						
C9N-EU1	C9N-03	C72302	N	2/16/2009	0.5-1	X	X						
C9N-EU1	C9N-04	C72304	N	2/16/2009	0-0.5	X	X						
C9N-EU1	C9N-04	C72305	N	2/16/2009	0.5-1	X	X						
C9N-EU1	C9N-05	C72307	N	2/16/2009	0-0.5	X	X						
C9N-EU1	C9N-05	C72308	N	2/16/2009	0.5-1	X	X						
C9N-EU1	C9N-06	C72310	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-06	C72311	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-07	C72313	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-07	C72314	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-08	C72316	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-08	C72317	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-09	C72319	N	2/10/2009	0-0.5	X	X		X				
C9N-EU1	C9N-09	C72320	N	2/10/2009	0.5-1	X	X		X				
C9N-EU1	C9N-10	C72322	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-10	C72323	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-11	C72325	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-11	C72326	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-12	C72328	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-12	C72329	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-13	C72331	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-13	C72332	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-14	C72334	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-14	C72335	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-15	C72337	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-15	C72338	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-16	C72340	N	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-16	C72341	FD	2/10/2009	0-0.5	X	X						
C9N-EU1	C9N-16	C72342	N	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-16	C72343	FD	2/10/2009	0.5-1	X	X						
C9N-EU1	C9N-17	C72346	N	2/9/2009	0-0.5	X	X						
C9N-EU1	C9N-17	C72347	N	2/9/2009	0.5-1	X	X						
C9N-EU1	C9N-18	C72349	N	2/9/2009	0-0.5	X	X						
C9N-EU1	C9N-18	C72350	N	2/9/2009	0.5-1	X	X						
C9N-EU1	C9N-19	C72352	N	2/9/2009	0-0.5	X	X	X	X	X			
C9N-EU1	C9N-19	C72353	N	2/9/2009	0.5-1	X	X	X	X	X			
C9N-EU1	C9N-20	C72355	N	2/9/2009	0-0.5	X	X						
C9N-EU1	C9N-20	C72356	N	2/9/2009	0.5-1	X	X						
C9S-EU1	C9S-01	C72358	N	2/17/2009	0-0.5	X	X						
C9S-EU1	C9S-01	C72359	N	2/17/2009	0.5-1	X	X						
C9S-EU1	C9S-02	C72361	N	2/17/2009	0-0.5	X	X						
C9S-EU1	C9S-02	C72362	N	2/17/2009	0.5-1	X	X						
C9S-EU1	C9S-03	C72364	N	2/17/2009	0-0.5	X	X	X		X			
C9S-EU1	C9S-03	C72365	N	2/17/2009	0.5-1	X	X						
C9S-EU1	C9S-04	C72367	N	2/10/2009	0-0.5	X	X						
C9S-EU1	C9S-04	C72368	N	2/10/2009	0.5-1	X	X						
C9S-EU1	C9S-05	C72370	N	2/10/2009	0-0.5	X	X						
C9S-EU1	C9S-05	C72371	N	2/10/2009	0.5-1	X	X						
C9S-EU1	C9S-06	C72373	N	2/10/2009	0-0.5	X	X						
C9S-EU1	C9S-06	C72374	N	2/10/2009	0.5-1	X	X						
C9S-EU1	C9S-07	C72376	N	2/10/2009	0-0.5	X	X						
C9S-EU1	C9S-07	C72377	N	2/10/2009	0.5-1	X	X						
C9S-EU1	C9S-08	C72379	N	2/10/2009	0-0.5	X	X						
C9S-EU1	C9S-08	C72380	N	2/10/2009	0.5-1	X	X						
C9S-EU1	C9S-09	C72382	N	2/11/2009	0-0.5	X	X		X				
C9S-EU1	C9S-09	C72383	N	2/11/2009	0.5-1	X	X		X				
C9S-EU1	C9S-10	C72385	N	2/10/2009	0-0.5	X	X						
C9S-EU1	C9S-10	C72386	N	2/10/2009	0.5-1	X	X						
C9S-EU1	C9S-11	C72388	N	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-11	C72389	N	2/11/2009	0.5-1	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-2
SAMPLES USED IN HHRA - SOILS
ANNISTON PCB SITE
OU-4

						Analyses							
Exposure Unit	**Location**	**Sample ID**	**Sample Type***	**Collection Date**	**Depth Interval (ft)**	**PCBs**	**Mercury**	**PCB Congeners**	**Metals**	**Dioxins/ Furans**	**VOCs**	**SVOCs**	**Pesticides/ Herbicides**
C9S-EU1	C9S-12	C72391	N	2/11/2009	0-0.5	X	X	X		X			
C9S-EU1	C9S-12	C72392	N	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-13	C72394	N	2/11/2009	0-0.5	X	X	X		X			
C9S-EU1	C9S-13	C72395	N	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-14	C72397	N	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-14	C72398	N	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-15	C72400	N	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-15	C72401	N	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-16	C72403	N	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-16	C72404	N	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-17	C72406	N	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-17	C72407	N	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-18	C72409	N	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-18	C72410	FD	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-18	C72411	N	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-18	C72412	FD	2/11/2009	0.5-1	X	X						
C9S-EU1	C9S-19	C72415	N	2/11/2009	0-0.5	X	X		X				
C9S-EU1	C9S-19	C72416	N	2/11/2009	0.5-1	X	X		X				
C9S-EU1	C9S-20	C72418	N	2/11/2009	0-0.5	X	X						
C9S-EU1	C9S-20	C72419	N	2/11/2009	0.5-1	X	X						

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE 3-3
2006 NUMBER OF ALABAMA ANGLERS BY TYPE OF FISH TARGETED*
ANNISTON PCB SITE
OU-4

Type of Fish Targeted	Number of Anglers (thousands)
Crappie	252
Panfish	115
White Bass, Striped Bass, Striped Bass Hybrids	149
Black Bass	312
Catfish, Bullheads	229
Anything	105
Other freshwater fish	52
Total	567

*Source: DOI/DC, 2006.

Note – Details do not add to total because of multiple responses and non-responses.

TABLE 3-4
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP A
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
All Species									
53469219	Aroclor-1242	5.00E-02	4.70E-01	mg/kg	C60231	36/84	2.00E-02 - 4.00E-01	1.79E-01	1.04E-01
11097691	Aroclor-1254	9.30E-02	4.80E+00	mg/kg	C60231	84/84	NA	1.02E+00	7.00E-01
11096825	Aroclor-1260	1.30E-01	4.20E+00	mg/kg	C60231	84/84	NA	9.98E-01	7.47E-01
11100144	Aroclor-1268	1.20E-01	1.20E-01	mg/kg	C60056	1/84	2.00E-02 - 4.00E-01	1.51E-01	8.07E-02
32598144	BZ#105	1.00E-02	5.30E-02	mg/kg	C60073	12/12	NA	2.66E-02	1.48E-02
31508006	BZ#118	2.80E-02	1.50E-01	mg/kg	C60073	12/12	NA	7.80E-02	4.20E-02
57465288	BZ#126	1.90E-02	1.90E-02	mg/kg	C60414	1/12	1.60E-03 - 1.60E-02	7.25E-03	5.35E-03
35065271	BZ#153	5.50E-02	3.20E-01	mg/kg	C60073	12/12	NA	1.78E-01	9.80E-02
38380084	BZ#156	3.40E-03	2.30E-02	mg/kg	C60414	12/12	NA	1.25E-02	7.11E-03
32598133	BZ#77	1.30E-02	2.50E-01	mg/kg	C60073	9/12	4.00E-03 - 8.00E-03	8.07E-02	8.27E-02
2051243	Decachlorobiphenyl	2.00E-03	1.80E-02	mg/kg	C60414	12/12	NA	5.75E-03	4.50E-03
---	Total Homolog PCB	4.80E-01	2.60E+00	mg/kg	C60058	12/12	NA	1.58E+00	7.64E-01
1336363	Total PCBs	2.23E-01	9.47E+00	mg/kg	C60231	84/84	NA	2.11E+00	1.45E+00
---	PCB Dioxin-like Congener TEQ	1.96E-06	1.91E-03	mg/kg	C60414	12/12	NA	1.90E-04	5.44E-04
35822469	1,2,3,4,6,7,8-HpCDD	2.24E-07	2.40E-06	mg/kg	C60073	5/12	1.51E-07 - 6.31E-07	5.62E-07	6.42E-07
67562394	1,2,3,4,6,7,8-HpCDF	1.39E-07	5.29E-07	mg/kg	C60073	5/12	1.15E-07 - 2.71E-07	2.20E-07	1.09E-07
70648269	1,2,3,4,7,8-HxCDF	1.09E-07	3.35E-07	mg/kg	C60073	4/12	1.07E-07 - 3.47E-07	1.85E-07	8.39E-08
57117449	1,2,3,6,7,8-HxCDF	1.30E-07	2.40E-07	mg/kg	C60073	3/12	1.24E-07 - 2.82E-07	1.74E-07	5.57E-08
19408743	1,2,3,7,8,9-HxCDD	2.61E-07	2.61E-07	mg/kg	C60220	1/12	1.02E-07 - 2.09E-07	1.59E-07	4.92E-08
40321764	1,2,3,7,8-PeCDD	1.56E-07	2.01E-07	mg/kg	C60229	3/12	1.07E-07 - 1.99E-07	1.46E-07	3.18E-08
57117416	1,2,3,7,8-PeCDF	2.13E-07	2.15E-06	mg/kg	C60073	7/12	1.69E-07 - 6.08E-07	6.66E-07	5.88E-07
57117314	2,3,4,7,8-PeCDF	4.19E-07	3.99E-06	mg/kg	C60073	10/12	2.13E-07 - 8.19E-07	1.46E-06	1.07E-06
51207319	2,3,7,8-TCDF	7.32E-07	9.61E-05	mg/kg	C60073	12/12	NA	2.25E-05	2.77E-05
3268879	Octa CDD	1.18E-06	1.56E-05	mg/kg	C60073	7/12	5.46E-07 - 1.67E-06	3.29E-06	4.32E-06
39001020	Octa CDF	2.86E-07	1.93E-06	mg/kg	C60073	6/12	2.10E-07 - 3.82E-07	5.07E-07	4.87E-07
---	2,3,7,8-TCDD TEQ	5.11E-07	1.11E-05	mg/kg	C60073	12/12	NA	2.94E-06	3.06E-06
7440382	Arsenic	6.50E-02	3.80E-01	mg/kg	C60250	8/12	1.80E-02 - 1.10E-01	1.20E-01	9.78E-02
7440417	Beryllium	9.00E-03	9.60E-03	mg/kg	C60051	2/12	9.30E-03 - 1.50E-02	1.08E-02	1.85E-03
7440439	Cadmium	9.30E-03	9.30E-03	mg/kg	C60051	1/12	2.20E-03 - 9.00E-03	5.21E-03	2.78E-03
7440473	Chromium	1.10E-01	1.90E-01	mg/kg	C60072	7/12	1.60E-01 - 2.00E-01	1.63E-01	3.37E-02
7439921	Lead	9.00E-03	2.30E-02	mg/kg	C60072	3/12	8.60E-03 - 1.10E-02	1.14E-02	4.32E-03
7439965	Manganese	6.30E-02	7.50E-01	mg/kg	C60068	10/12	7.70E-02 - 9.50E-02	2.68E-01	2.47E-01
7439976	Mercury	3.10E-02	8.70E-01	mg/kg	C60233	84/84	NA	2.81E-01	1.91E-01
7440622	Vanadium	1.90E-02	3.10E-02	mg/kg	C60070	5/12	3.60E-02 - 6.80E-02	3.84E-02	1.42E-02
Bass									
53469219	Aroclor-1242	1.10E-01	4.70E-01	mg/kg	C60231	17/28	2.00E-02 - 4.00E-01	1.94E-01	1.01E-01
11097691	Aroclor-1254	9.30E-02	4.80E+00	mg/kg	C60231	28/28	NA	1.06E+00	8.83E-01
11096825	Aroclor-1260	1.30E-01	4.20E+00	mg/kg	C60231	28/28	NA	1.01E+00	7.82E-01
11100144	Aroclor-1268	1.20E-01	1.20E-01	mg/kg	C60056	1/28	2.00E-02 - 4.00E-01	1.61E-01	8.64E-02
32598144	BZ#105	1.40E-02	5.00E-02	mg/kg	C60229	5/5	NA	3.18E-02	1.31E-02
31508006	BZ#118	4.00E-02	1.40E-01	mg/kg	C60229	5/5	NA	9.04E-02	3.63E-02
35065271	BZ#153	9.00E-02	2.80E-01	mg/kg	C60229	5/5	NA	2.00E-01	7.28E-02
38380084	BZ#156	6.50E-03	1.90E-02	mg/kg	C60229	5/5	NA	1.45E-02	4.97E-03
32598133	BZ#77	7.50E-02	1.70E-01	mg/kg	C60058	4/5	8.00E-03 - 8.00E-03	1.11E-01	6.82E-02
2051243	Decachlorobiphenyl	3.80E-03	1.00E-02	mg/kg	C60058	5/5	NA	6.00E-03	2.39E-03
---	Total Homolog PCB	1.10E+00	2.60E+00	mg/kg	C60058, C60229	5/5	NA	2.02E+00	6.26E-01
1336363	Total PCBs	2.23E-01	9.47E+00	mg/kg	C60231	28/28	NA	2.21E+00	1.73E+00
---	PCB Dioxin-like Congener TEQ	7.55E-06	2.18E-05	mg/kg	C60058	5/5	NA	1.57E-05	6.72E-06
35822469	1,2,3,4,6,7,8-HpCDD	2.74E-07	2.74E-07	mg/kg	C60220	1/5	2.34E-07 - 3.31E-07	2.95E-07	4.04E-08
67562394	1,2,3,4,6,7,8-HpCDF	2.09E-07	2.09E-07	mg/kg	C60220	1/5	1.15E-07 - 1.98E-07	1.75E-07	3.65E-08
70648269	1,2,3,4,7,8-HxCDF	1.09E-07	1.86E-07	mg/kg	C60058	2/5	1.20E-07 - 3.47E-07	2.01E-07	9.81E-08
57117449	1,2,3,6,7,8-HxCDF	1.30E-07	1.54E-07	mg/kg	C60058	2/5	1.25E-07 - 2.82E-07	1.87E-07	7.11E-08
19408743	1,2,3,7,8,9-HxCDD	2.61E-07	2.61E-07	mg/kg	C60220	1/5	1.08E-07 - 2.02E-07	1.63E-07	6.59E-08
40321764	1,2,3,7,8-PeCDD	2.01E-07	2.01E-07	mg/kg	C60229	1/5	1.14E-07 - 1.99E-07	1.51E-07	4.48E-08

TABLE 3-4
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP A
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
57117416	1,2,3,7,8-PeCDF	6.28E-07	1.37E-06	mg/kg	C60229	3/5	5.12E-07 - 6.08E-07	7.55E-07	3.48E-07
57117314	2,3,4,7,8-PeCDF	1.09E-06	2.61E-06	mg/kg	C60229	4/5	8.19E-07 - 8.19E-07	1.39E-06	7.03E-07
51207319	2,3,7,8-TCDF	1.00E-05	3.69E-05	mg/kg	C60229	5/5	NA	2.45E-05	1.09E-05
3268879	Octa CDD	1.18E-06	5.22E-06	mg/kg	C60058	3/5	6.34E-07 - 1.26E-06	1.92E-06	1.87E-06
39001020	Octa CDF	2.86E-07	3.61E-07	mg/kg	C60229	3/5	2.27E-07 - 3.60E-07	3.04E-07	5.68E-08
---	2,3,7,8-TCDD TEQ	1.59E-06	4.84E-06	mg/kg	C60229	5/5	NA	3.13E-06	1.27E-06
7440382	Arsenic	1.40E-01	1.90E-01	mg/kg	C60058	3/5	5.50E-02 - 1.10E-01	1.33E-01	5.31E-02
7440417	Beryllium	9.60E-03	9.60E-03	mg/kg	C60051	1/5	9.30E-03 - 1.20E-02	1.03E-02	1.16E-03
7440439	Cadmium	9.30E-03	9.30E-03	mg/kg	C60051	1/5	2.50E-03 - 7.80E-03	5.66E-03	3.00E-03
7440473	Chromium	1.10E-01	1.30E-01	mg/kg	C60229	2/5	1.80E-01 - 2.00E-01	1.62E-01	3.96E-02
7439965	Manganese	6.30E-02	8.50E-02	mg/kg	C60058	3/5	7.70E-02 - 9.50E-02	7.80E-02	1.25E-02
7439976	Mercury	2.00E-01	8.70E-01	mg/kg	C60233	28/28	NA	4.16E-01	1.91E-01
7440622	Vanadium	1.90E-02	2.90E-02	mg/kg	C60058	3/5	3.60E-02 - 4.20E-02	2.96E-02	9.56E-03
Catfish									
53469219	Aroclor-1242	1.00E-01	2.30E-01	mg/kg	C60235	5/28	4.00E-02 - 4.00E-01	1.72E-01	8.56E-02
11097691	Aroclor-1254	1.20E-01	2.60E+00	mg/kg	C60243	28/28	NA	1.14E+00	6.03E-01
11096825	Aroclor-1260	2.90E-01	3.20E+00	mg/kg	C60243	28/28	NA	1.27E+00	8.62E-01
32598144	BZ#105	1.00E-02	3.30E-02	mg/kg	C60414	2/2	NA	2.15E-02	1.63E-02
31508006	BZ#118	2.80E-02	1.10E-01	mg/kg	C60414	2/2	NA	6.90E-02	5.80E-02
57465288	BZ#126	1.90E-02	1.90E-02	mg/kg	C60414	1/2	2.40E-03 - 2.40E-03	1.07E-02	1.17E-02
35065271	BZ#153	5.50E-02	3.20E-01	mg/kg	C60414	2/2	NA	1.88E-01	1.87E-01
38380084	BZ#156	3.40E-03	2.30E-02	mg/kg	C60414	2/2	NA	1.32E-02	1.39E-02
32598133	BZ#77	1.30E-02	1.30E-02	mg/kg	C60234	1/2	8.00E-03 - 8.00E-03	1.05E-02	3.54E-03
2051243	Decachlorobiphenyl	2.20E-03	1.80E-02	mg/kg	C60414	2/2	NA	1.01E-02	1.12E-02
---	Total Homolog PCB	4.80E-01	2.10E+00	mg/kg	C60414	2/2	NA	1.29E+00	1.15E+00
1336363	Total PCBs	4.20E-01	5.80E+00	mg/kg	C60243	28/28	NA	2.44E+00	1.40E+00
---	PCB Dioxin-like Congener TEQ	2.43E-04	1.91E-03	mg/kg	C60414	2/2	NA	1.07E-03	1.18E-03
35822469	1,2,3,4,6,7,8-HpCDD	2.24E-07	2.88E-07	mg/kg	C60234	2/2	NA	2.56E-07	4.53E-08
67562394	1,2,3,4,6,7,8-HpCDF	1.39E-07	1.39E-07	mg/kg	C60414	1/2	2.64E-07 - 2.64E-07	2.02E-07	8.84E-08
40321764	1,2,3,7,8-PeCDD	1.56E-07	1.69E-07	mg/kg	C60234	2/2	NA	1.63E-07	9.19E-09
57117314	2,3,4,7,8-PeCDF	1.63E-06	1.96E-06	mg/kg	C60414	2/2	NA	1.80E-06	2.33E-07
51207319	2,3,7,8-TCDF	7.32E-07	1.62E-06	mg/kg	C60234	2/2	NA	1.18E-06	6.28E-07
---	2,3,7,8-TCDD TEQ	8.87E-07	9.34E-07	mg/kg	C60234	2/2	NA	9.10E-07	3.33E-08
7440473	Chromium	1.20E-01	1.90E-01	mg/kg	C60414	2/2	NA	1.55E-01	4.95E-02
7439965	Manganese	1.50E-01	2.70E-01	mg/kg	C60414	2/2	NA	2.10E-01	8.49E-02
7439976	Mercury	3.10E-02	4.30E-01	mg/kg	C60244	28/28	NA	1.56E-01	9.44E-02
Panfish									
53469219	Aroclor-1242	5.00E-02	4.60E-01	mg/kg	C60258	14/28	2.00E-02 - 2.00E-01	1.72E-01	1.23E-01
11097691	Aroclor-1254	1.20E-01	2.20E+00	mg/kg	C60257	28/28	NA	8.48E-01	5.62E-01
11096825	Aroclor-1260	1.50E-01	1.90E+00	mg/kg	C60257	28/28	NA	7.13E-01	4.44E-01
32598144	BZ#105	1.00E-02	5.30E-02	mg/kg	C60073	5/5	NA	2.34E-02	1.75E-02
31508006	BZ#118	2.90E-02	1.50E-01	mg/kg	C60073	5/5	NA	6.92E-02	4.85E-02
35065271	BZ#153	5.90E-02	3.20E-01	mg/kg	C60073	5/5	NA	1.52E-01	1.04E-01
38380084	BZ#156	3.80E-03	2.20E-02	mg/kg	C60073	5/5	NA	1.01E-02	7.34E-03
32598133	BZ#77	1.80E-02	2.50E-01	mg/kg	C60073	4/5	4.00E-03 - 4.00E-03	7.88E-02	1.03E-01
2051243	Decachlorobiphenyl	2.00E-03	7.00E-03	mg/kg	C60073	5/5	NA	3.76E-03	2.05E-03
---	Total Homolog PCB	6.60E-01	2.40E+00	mg/kg	C60073	5/5	NA	1.26E+00	6.90E-01
1336363	Total PCBs	2.70E-01	4.40E+00	mg/kg	C60257	28/28	NA	1.69E+00	1.10E+00
---	PCB Dioxin-like Congener TEQ	1.96E-06	3.18E-05	mg/kg	C60073	5/5	NA	1.10E-05	1.23E-05
35822469	1,2,3,4,6,7,8-HpCDD	1.19E-06	2.40E-06	mg/kg	C60073	2/5	1.51E-07 - 6.31E-07	9.51E-07	8.97E-07
67562394	1,2,3,4,6,7,8-HpCDF	1.89E-07	5.29E-07	mg/kg	C60073	3/5	1.36E-07 - 2.71E-07	2.72E-07	1.52E-07
70648269	1,2,3,4,7,8-HxCDF	1.35E-07	3.35E-07	mg/kg	C60073	2/5	1.26E-07 - 1.83E-07	1.82E-07	8.87E-08
57117449	1,2,3,6,7,8-HxCDF	2.40E-07	2.40E-07	mg/kg	C60073	1/5	1.24E-07 - 1.96E-07	1.65E-07	5.08E-08
57117416	1,2,3,7,8-PeCDF	2.13E-07	2.15E-06	mg/kg	C60073	4/5	1.69E-07 - 1.69E-07	7.47E-07	8.48E-07
57117314	2,3,4,7,8-PeCDF	4.19E-07	3.99E-06	mg/kg	C60073	4/5	2.13E-07 - 2.13E-07	1.40E-06	1.60E-06

TABLE 3-4
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP A
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
51207319	2,3,7,8-TCDF	1.98E-06	9.61E-05	mg/kg	C60073	5/5	NA	2.90E-05	4.13E-05
3268879	Octa CDD	1.63E-06	1.56E-05	mg/kg	C60073	4/5	5.46E-07 - 5.46E-07	5.52E-06	6.06E-06
39001020	Octa CDF	5.96E-07	1.93E-06	mg/kg	C60073	3/5	2.10E-07 - 2.68E-07	7.80E-07	6.99E-07
---	2,3,7,8-TCDD TEQ	5.11E-07	1.11E-05	mg/kg	C60073	5/5	NA	3.55E-06	4.64E-06
7440382	Arsenic	6.50E-02	3.80E-01	mg/kg	C60250	5/5	NA	1.47E-01	1.31E-01
7440417	Beryllium	9.00E-03	9.00E-03	mg/kg	C60068	1/5	9.30E-03 - 1.30E-02	1.02E-02	1.60E-03
7440473	Chromium	1.20E-01	1.90E-01	mg/kg	C60072	3/5	1.60E-01 - 1.90E-01	1.68E-01	2.95E-02
7439921	Lead	9.00E-03	2.30E-02	mg/kg	C60072	3/5	9.20E-03 - 9.20E-03	1.35E-02	6.32E-03
7439965	Manganese	2.10E-01	7.50E-01	mg/kg	C60068	5/5	NA	4.80E-01	2.49E-01
7439976	Mercury	5.30E-02	7.00E-01	mg/kg	C60253	28/28	NA	2.70E-01	1.78E-01
7440622	Vanadium	2.70E-02	3.10E-02	mg/kg	C60070	2/5	4.20E-02 - 5.40E-02	4.08E-02	1.17E-02

[a] Number of sampling locations at which analyte was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on nondetected samples.

[c] Nondetects were included at the full detection limit.

mg/kg = Milligrams per kilogram.

NA = Not applicable.

TABLE 3-5
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP B
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
All Species									
53469219	Aroclor-1242	2.40E-02	2.70E-01	mg/kg	C60183	32/84	2.00E-02 - 6.00E-01	1.80E-01	1.09E-01
11097691	Aroclor-1254	8.60E-02	6.10E+00	mg/kg	C60185	78/84	2.00E-01 - 4.00E-01	1.12E+00	1.06E+00
11096825	Aroclor-1260	1.10E-01	5.70E+00	mg/kg	C60185	84/84	NA	1.35E+00	1.19E+00
32598144	BZ#105	1.00E-02	7.00E-02	mg/kg	C60183	4/4	NA	2.98E-02	2.83E-02
31508006	BZ#118	3.00E-02	1.90E-01	mg/kg	C60183	4/4	NA	8.40E-02	7.45E-02
35065271	BZ#153	6.40E-02	4.00E-01	mg/kg	C60183	4/4	NA	1.83E-01	1.53E-01
38380084	BZ#156	4.20E-03	3.00E-02	mg/kg	C60183	4/4	NA	1.30E-02	1.18E-02
32598133	BZ#77	3.60E-02	5.10E-02	mg/kg	C60366	2/4	4.00E-03 - 1.60E-02	2.68E-02	2.09E-02
2051243	Decachlorobiphenyl	1.30E-03	1.10E-02	mg/kg	C60183	4/4	NA	5.18E-03	4.15E-03
---	Total Homolog PCB	6.40E-01	3.90E+00	mg/kg	C60183	4/4	NA	1.65E+00	1.55E+00
1336363	Total PCBs	2.36E-01	1.18E+01	mg/kg	C60185	84/84	NA	2.51E+00	2.08E+00
---	PCB Dioxin-like Congener TEQ	4.09E-06	3.25E-04	mg/kg	C60388	4/4	NA	8.68E-05	1.59E-04
35822469	1,2,3,4,6,7,8-HpCDD	2.27E-07	2.27E-07	mg/kg	C60388	1/4	1.57E-07 - 3.76E-07	2.45E-07	9.27E-08
67562394	1,2,3,4,6,7,8-HpCDF	1.82E-07	1.82E-07	mg/kg	C60388	1/4	1.48E-07 - 1.89E-07	1.72E-07	1.81E-08
55673897	1,2,3,4,7,8,9-HpCDF	1.56E-07	1.80E-07	mg/kg	C60388	2/4	1.15E-07 - 1.89E-07	1.60E-07	3.31E-08
70648269	1,2,3,4,7,8-HxCDF	1.20E-07	1.86E-07	mg/kg	C60183	2/4	1.60E-07 - 1.68E-07	1.59E-07	2.79E-08
57117449	1,2,3,6,7,8-HxCDF	1.03E-07	1.03E-07	mg/kg	C60162	1/4	1.76E-07 - 2.34E-07	1.79E-07	5.57E-08
19408743	1,2,3,7,8,9-HxCDD	2.08E-07	2.08E-07	mg/kg	C60366	1/4	1.07E-07 - 1.28E-07	1.40E-07	4.61E-08
57117416	1,2,3,7,8-PeCDF	4.58E-07	8.07E-07	mg/kg	C60183	2/4	2.90E-07 - 3.12E-07	4.67E-07	2.39E-07
57117314	2,3,4,7,8-PeCDF	9.09E-07	1.78E-06	mg/kg	C60183	2/4	5.56E-07 - 1.16E-06	1.10E-06	5.16E-07
51207319	2,3,7,8-TCDF	2.92E-06	1.64E-05	mg/kg	C60183	4/4	NA	8.98E-06	5.84E-06
3268879	Octa CDD	3.91E-06	3.91E-06	mg/kg	C60162	1/4	4.60E-07 - 7.33E-07	1.43E-06	1.65E-06
39001020	Octa CDF	5.35E-07	5.35E-07	mg/kg	C60162	1/4	2.03E-07 - 3.81E-07	3.33E-07	1.58E-07
---	2,3,7,8-TCDD TEQ	8.69E-07	2.43E-06	mg/kg	C60183	4/4	NA	1.44E-06	7.10E-07
7440382	Arsenic	1.80E-02	6.90E-02	mg/kg	C60366	3/4	3.10E-02 - 3.10E-02	3.48E-02	2.35E-02
7440473	Chromium	1.30E-01	2.20E-01	mg/kg	C60366	4/4	NA	1.73E-01	3.77E-02
7439921	Lead	6.10E-02	6.10E-02	mg/kg	C60366	1/4	9.30E-03 - 1.10E-02	2.28E-02	2.55E-02
7439965	Manganese	1.80E-01	1.80E-01	mg/kg	C60183	1/4	9.90E-02 - 1.90E-01	1.52E-01	4.16E-02
7439976	Mercury	1.10E-01	1.30E+00	mg/kg	C60371	84/84	NA	4.26E-01	2.78E-01
Bass									
53469219	Aroclor-1242	6.10E-02	2.70E-01	mg/kg	C60183	10/27	6.00E-02 - 6.00E-01	1.97E-01	1.19E-01
11097691	Aroclor-1254	1.50E-01	6.10E+00	mg/kg	C60185	27/27	NA	1.42E+00	1.14E+00
11096825	Aroclor-1260	1.10E-01	5.70E+00	mg/kg	C60185	27/27	NA	1.45E+00	1.07E+00
32598144	BZ#105	1.00E-02	7.00E-02	mg/kg	C60183	2/2	NA	4.00E-02	4.24E-02
31508006	BZ#118	3.00E-02	1.90E-01	mg/kg	C60183	2/2	NA	1.10E-01	1.13E-01
35065271	BZ#153	6.40E-02	4.00E-01	mg/kg	C60183	2/2	NA	2.32E-01	2.38E-01
38380084	BZ#156	4.20E-03	3.00E-02	mg/kg	C60183	2/2	NA	1.71E-02	1.82E-02
32598133	BZ#77	5.10E-02	5.10E-02	mg/kg	C60366	1/2	1.60E-02 - 1.60E-02	3.35E-02	2.47E-02
2051243	Decachlorobiphenyl	1.30E-03	1.10E-02	mg/kg	C60183	2/2	NA	6.15E-03	6.86E-03
---	Total Homolog PCB	6.40E-01	3.90E+00	mg/kg	C60058, C60229	2/2	NA	2.27E+00	2.31E+00
1336363	Total PCBs	3.29E-01	1.18E+01	mg/kg	C60185	27/27	NA	2.94E+00	2.19E+00
---	PCB Dioxin-like Congener TEQ	6.62E-06	1.13E-05	mg/kg	C60183	2/2	NA	8.94E-06	3.28E-06
55673897	1,2,3,4,7,8,9-HpCDF	1.56E-07	1.56E-07	mg/kg	C60183	1/2	1.89E-07 - 1.89E-07	1.73E-07	2.33E-08
70648269	1,2,3,4,7,8-HxCDF	1.86E-07	1.86E-07	mg/kg	C60183	1/2	1.68E-07 - 1.68E-07	1.77E-07	1.27E-08
19408743	1,2,3,7,8,9-HxCDD	2.08E-07	2.08E-07	mg/kg	C60366	1/2	1.17E-07 - 1.17E-07	1.63E-07	6.43E-08
57117416	1,2,3,7,8-PeCDF	8.07E-07	8.07E-07	mg/kg	C60183	1/2	2.90E-07 - 2.90E-07	5.49E-07	3.66E-07
57117314	2,3,4,7,8-PeCDF	1.78E-06	1.78E-06	mg/kg	C60183	1/2	5.56E-07 - 5.56E-07	1.17E-06	8.65E-07
51207319	2,3,7,8-TCDF	6.10E-06	1.64E-05	mg/kg	C60183	2/2	NA	1.13E-05	7.28E-06
---	2,3,7,8-TCDD TEQ	9.84E-07	2.43E-06	mg/kg	C60183	2/2	NA	1.71E-06	1.02E-06
7440382	Arsenic	6.90E-02	6.90E-02	mg/kg	C60366	1/2	3.10E-02 - 3.10E-02	5.00E-02	2.69E-02
7440473	Chromium	1.30E-01	2.20E-01	mg/kg	C60366	2/2	NA	1.75E-01	6.36E-02
7439921	Lead	6.10E-02	6.10E-02	mg/kg	C60366	1/2	1.10E-02 - 1.10E-02	3.60E-02	3.54E-02
7439965	Manganese	1.80E-01	1.80E-01	mg/kg	C60183	1/2	1.40E-01 - 1.40E-01	1.60E-01	2.83E-02
7439976	Mercury	1.20E-01	1.30E+00	mg/kg	C60371	27/27	NA	6.84E-01	2.55E-01

TABLE 3-5
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP B
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
Catfish									
53469219	Aroclor-1242	1.30E-01	1.30E-01	mg/kg	C60377	1/28	2.00E-02 - 4.00E-01	2.06E-01	1.25E-01
11097691	Aroclor-1254	8.60E-02	5.50E+00	mg/kg	C60384	22/28	2.00E-01 - 4.00E-01	1.18E+00	1.33E+00
11096825	Aroclor-1260	1.50E-01	5.60E+00	mg/kg	C60376	28/28	NA	1.97E+00	1.47E+00
32598144	BZ#105	1.00E-02	1.00E-02	mg/kg	C60388	1/1	NA	1.00E-02	
31508006	BZ#118	3.40E-02	3.40E-02	mg/kg	C60388	1/1	NA	3.40E-02	
35065271	BZ#153	8.70E-02	8.70E-02	mg/kg	C60388	1/1	NA	8.70E-02	
38380084	BZ#156	5.70E-03	5.70E-03	mg/kg	C60388	1/1	NA	5.70E-03	
32598133	BZ#77	3.60E-02	3.60E-02	mg/kg	C60388	1/1	NA	3.60E-02	
2051243	Decachlorobiphenyl	4.80E-03	4.80E-03	mg/kg	C60388	1/1	NA	4.80E-03	
---	Total Homolog PCB	6.40E-01	6.40E-01	mg/kg	C60388	1/1	NA	6.40E-01	
1336363	Total PCBs	2.36E-01	1.08E+01	mg/kg	C60384	28/28	NA	3.09E+00	2.52E+00
---	PCB Dioxin-like Congener TEQ	3.25E-04	3.25E-04	mg/kg	C60388	1/1	NA	3.25E-04	
35822469	1,2,3,4,6,7,8-HpCDD	2.27E-07	2.27E-07	mg/kg	C60388	1/1	NA	2.27E-07	
67562394	1,2,3,4,6,7,8-HpCDF	1.82E-07	1.82E-07	mg/kg	C60388	1/1	NA	1.82E-07	
55673897	1,2,3,4,7,8,9-HpCDF	1.80E-07	1.80E-07	mg/kg	C60388	1/1	NA	1.80E-07	
51207319	2,3,7,8-TCDF	2.92E-06	2.92E-06	mg/kg	C60388	1/1	NA	2.92E-06	
---	2,3,7,8-TCDD TEQ	8.69E-07	8.69E-07	mg/kg	C60388	1/1	NA	8.69E-07	
7440382	Arsenic	1.80E-02	1.80E-02	mg/kg	C60388	1/1	NA	1.80E-02	
7440473	Chromium	1.80E-01	1.80E-01	mg/kg	C60388	1/1	NA	1.80E-01	
7439976	Mercury	1.10E-01	1.30E+00	mg/kg	C60384	28/28	NA	3.62E-01	2.44E-01
Panfish									
53469219	Aroclor-1242	2.40E-02	2.50E-01	mg/kg	C60163	21/29	6.00E-02 - 2.00E-01	1.39E-01	6.61E-02
11097691	Aroclor-1254	1.00E-01	2.30E+00	mg/kg	C60163	29/29	NA	7.82E-01	4.76E-01
11096825	Aroclor-1260	1.20E-01	1.80E+00	mg/kg	C60163	29/29	NA	6.57E-01	3.69E-01
32598144	BZ#105	2.90E-02	2.90E-02	mg/kg	C60162	1/1	NA	2.90E-02	
31508006	BZ#118	8.20E-02	8.20E-02	mg/kg	C60162	1/1	NA	8.20E-02	
35065271	BZ#153	1.80E-01	1.80E-01	mg/kg	C60162	1/1	NA	1.80E-01	
38380084	BZ#156	1.20E-02	1.20E-02	mg/kg	C60162	1/1	NA	1.20E-02	
2051243	Decachlorobiphenyl	3.60E-03	3.60E-03	mg/kg	C60162	1/1	NA	3.60E-03	
---	Total Homolog PCB	1.40E+00	1.40E+00	mg/kg	C60162	1/1	NA	1.40E+00	
1336363	Total PCBs	2.44E-01	4.35E+00	mg/kg	C60163	29/29	NA	1.55E+00	8.95E-01
---	PCB Dioxin-like Congener TEQ	4.09E-06	4.09E-06	mg/kg	C60162	1/1	NA	4.09E-06	
70648269	1,2,3,4,7,8-HxCDF	1.20E-07	1.20E-07	mg/kg	C60162	1/1	NA	1.20E-07	
57117449	1,2,3,6,7,8-HxCDF	1.03E-07	1.03E-07	mg/kg	C60162	1/1	NA	1.03E-07	
57117416	1,2,3,7,8-PeCDF	4.58E-07	4.58E-07	mg/kg	C60162	1/1	NA	4.58E-07	
57117314	2,3,4,7,8-PeCDF	9.09E-07	9.09E-07	mg/kg	C60162	1/1	NA	9.09E-07	
51207319	2,3,7,8-TCDF	1.05E-05	1.05E-05	mg/kg	C60162	1/1	NA	1.05E-05	
3268879	Octa CDD	3.91E-06	3.91E-06	mg/kg	C60162	1/1	NA	3.91E-06	
39001020	Octa CDF	5.35E-07	5.35E-07	mg/kg	C60162	1/1	NA	5.35E-07	
---	2,3,7,8-TCDD TEQ	1.49E-06	1.49E-06	mg/kg	C60162	1/1	NA	1.49E-06	
7440382	Arsenic	2.10E-02	2.10E-02	mg/kg	C60162	1/1	NA	2.10E-02	
7440473	Chromium	1.60E-01	1.60E-01	mg/kg	C60162	1/1	NA	1.60E-01	
7439976	Mercury	1.10E-01	5.10E-01	mg/kg	C60166	29/29	NA	2.49E-01	1.02E-01

[a] Number of sampling locations at which analyte was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on nondetected samples.

[c] Nondetects were included at the full detection limit.

mg/kg = Milligrams per kilogram.

NA = Not applicable.

TABLE 3-6
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP C
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
All Species									
53469219	Aroclor-1242	6.10E-02	2.80E+00	mg/kg	C60286	118/193	4.00E-02 - 2.00E+00	4.06E-01	3.23E-01
12672296	Aroclor-1248	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	2.67E-01	1.87E-01
11097691	Aroclor-1254	1.90E-01	1.20E+01	mg/kg	C60389	187/193	4.00E-02 - 1.00E+00	2.02E+00	1.51E+00
11096825	Aroclor-1260	1.20E-01	2.20E+01	mg/kg	C60389	193/193	NA	2.05E+00	2.00E+00
37324235	Aroclor-1262	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	2.67E-01	1.87E-01
11100144	Aroclor-1268	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	2.67E-01	1.87E-01
32598144	BZ#105	6.90E-03	8.60E-02	mg/kg	C60145	20/20	NA	3.77E-02	1.92E-02
74472370	BZ#114	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	8.96E-03	3.92E-03
31508006	BZ#118	2.30E-02	2.20E-01	mg/kg	C60145	20/20	NA	1.08E-01	5.15E-02
65510443	BZ#123	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	8.96E-03	3.92E-03
57465288	BZ#126	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	8.96E-03	3.92E-03
35065271	BZ#153	6.40E-02	4.40E-01	mg/kg	C60145	20/20	NA	2.35E-01	1.12E-01
38380084	BZ#156	4.50E-03	3.40E-02	mg/kg	C60122	19/20	8.00E-03 - 8.00E-03	1.76E-02	8.63E-03
69782907	BZ#157	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	8.96E-03	3.92E-03
52663726	BZ#167	1.70E-02	1.70E-02	mg/kg	C60097	1/20	6.40E-03 - 3.20E-02	1.80E-02	7.84E-03
32774166	BZ#169	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	8.96E-03	3.92E-03
39635319	BZ#189	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	8.96E-03	3.92E-03
32598133	BZ#77	3.80E-02	1.50E-01	mg/kg	C60313	3/20	3.20E-03 - 1.60E-02	2.02E-02	3.27E-02
70362504	BZ#81	ND	ND	ND	-	ND	6.40E-03 - 3.20E-02	1.79E-02	7.85E-03
2051243	Decachlorobiphenyl	3.00E-03	1.80E-02	mg/kg	C60346	20/20	NA	7.04E-03	3.58E-03
25512429	Total Dichlorobiphenyl	7.10E-03	6.70E-02	mg/kg	C60145	19/20	5.00E-03 - 5.00E-03	1.86E-02	1.37E-02
28655712	Total Heptachlorobiphenyl	9.80E-02	6.80E-01	mg/kg	C60145	20/20	NA	3.73E-01	1.85E-01
26601649	Total Hexachlorobiphenyl	2.10E-01	1.40E+00	mg/kg	C60145	20/20	NA	6.45E-01	3.17E-01
27323188	Total Monochlorobiphenyl	1.00E-03	1.90E-02	mg/kg	C60145	19/20	2.00E-03 - 2.00E-03	4.12E-03	4.28E-03
53742077	Total Nonachlorobiphenyl	1.00E-02	8.40E-02	mg/kg	C60346	20/20	NA	3.24E-02	1.74E-02
31472830	Total Octachlorobiphenyl	3.40E-02	2.90E-01	mg/kg	C60346	20/20	NA	1.23E-01	6.66E-02
25429292	Total Pentachlorobiphenyl	9.40E-02	9.60E-01	mg/kg	C60145	20/20	NA	4.20E-01	2.21E-01
26914330	Total Tetrachlorobiphenyl	5.60E-02	6.50E-01	mg/kg	C60145	20/20	NA	2.88E-01	1.59E-01
25323686	Total Trichlorobiphenyl	3.40E-02	2.90E-01	mg/kg	C60298	20/20	NA	1.21E-01	6.80E-02
---	Total Homolog PCB	7.00E-01	4.20E+00	mg/kg	C60145	20/20	NA	2.03E+00	9.29E-01
1336363	Total PCBs	2.30E-01	3.40E+01	mg/kg	C60389	193/193	NA	4.35E+00	3.45E+00
---	Dioxin/furan and PCB Dioxin-like Congener TEQ	2.42E-06	1.61E-03	mg/kg	C60145	19/19	NA	2.60E-04	5.38E-04
---	PCB Dioxin-like Congener TEQ	1.96E-06	1.61E-03	mg/kg	C60145	20/20	NA	2.47E-04	5.26E-04
35822469	1,2,3,4,6,7,8-HpCDD	1.93E-07	4.09E-06	mg/kg	C60122	5/19	1.32E-07 - 7.40E-07	5.44E-07	8.77E-07
67562394	1,2,3,4,6,7,8-HpCDF	1.51E-07	9.42E-07	mg/kg	C60122	5/19	9.85E-08 - 1.95E-07	1.97E-07	1.88E-07
55673897	1,2,3,4,7,8,9-HpCDF	1.95E-07	2.71E-07	mg/kg	C60196	2/19	9.35E-08 - 2.11E-07	1.55E-07	4.37E-08
39227286	1,2,3,4,7,8-HxCDD	1.22E-07	2.09E-07	mg/kg	C60196	2/19	1.00E-07 - 2.13E-07	1.45E-07	3.35E-08
70648269	1,2,3,4,7,8-HxCDF	1.45E-07	3.21E-07	mg/kg	C60145	5/19	1.10E-07 - 3.65E-07	1.87E-07	7.15E-08
57653857	1,2,3,6,7,8-HxCDD	2.07E-07	4.08E-07	mg/kg	C60145	4/19	8.54E-08 - 2.31E-07	1.86E-07	7.02E-08
57117449	1,2,3,6,7,8-HxCDF	1.30E-07	2.00E-07	mg/kg	C60145	4/19	1.15E-07 - 2.94E-07	1.76E-07	4.78E-08
19408743	1,2,3,7,8,9-HxCDD	1.77E-07	2.29E-07	mg/kg	C60196	2/19	1.05E-07 - 2.33E-07	1.65E-07	4.26E-08
72918219	1,2,3,7,8,9-HxCDF	ND	ND	ND	-	ND	8.31E-08 - 2.50E-07	1.51E-07	4.65E-08
40321764	1,2,3,7,8-PeCDD	2.36E-07	4.97E-07	mg/kg	C60145	4/19	1.00E-07 - 2.05E-07	2.04E-07	1.01E-07
57117416	1,2,3,7,8-PeCDF	2.18E-07	7.65E-07	mg/kg	C60094	5/19	1.05E-07 - 6.26E-07	2.91E-07	1.82E-07
60851345	2,3,4,6,7,8-HxCDF	1.39E-07	1.54E-07	mg/kg	C60145	2/19	8.94E-08 - 2.15E-07	1.52E-07	3.83E-08
57117314	2,3,4,7,8-PeCDF	2.84E-07	2.22E-06	mg/kg	C60145	9/19	1.66E-07 - 8.61E-07	6.96E-07	5.35E-07
1746016	2,3,7,8-TCDD	ND	ND	ND	-	ND	9.47E-08 - 3.35E-07	1.60E-07	5.58E-08
51207319	2,3,7,8-TCDF	3.29E-07	3.05E-06	mg/kg	C60283	15/19	7.31E-07 - 4.75E-06	1.71E-06	1.27E-06
3268879	Octa CDD	1.48E-06	1.14E-04	mg/kg	C60122	10/19	3.80E-07 - 1.84E-06	7.61E-06	2.58E-05
39001020	Octa CDF	2.31E-07	3.72E-06	mg/kg	C60122	3/19	2.02E-07 - 6.33E-07	4.98E-07	7.95E-07
37871004	Total Hepta CDD	1.93E-07	8.30E-06	mg/kg	C60122	6/19	1.32E-07 - 7.66E-07	8.15E-07	1.83E-06
38998753	Total Hepta CDF	2.89E-07	3.37E-06	mg/kg	C60122	5/19	1.05E-07 - 2.03E-07	3.83E-07	7.40E-07
34465468	Total Hexa CDD	2.07E-07	7.07E-07	mg/kg	C60145	4/19	1.18E-07 - 6.69E-07	2.27E-07	1.67E-07
55684941	Total Hexa CDF	3.07E-07	7.30E-07	mg/kg	C60122	5/19	1.13E-07 - 8.19E-07	3.35E-07	2.34E-07
36088229	Total Penta CDD	3.64E-07	4.97E-07	mg/kg	C60145	3/19	1.00E-07 - 2.36E-07	2.04E-07	1.01E-07

TABLE 3-6
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP C
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
30402154	Total Penta CDF	6.89E-07	2.34E-06	mg/kg	C60145	9/19	1.70E-07 - 1.49E-06	1.07E-06	6.40E-07
419003575	Total Tetra CDD	ND	ND	ND	-	ND	9.47E-08 - 3.35E-07	1.60E-07	5.58E-08
55722275	Total Tetra CDF	2.41E-07	4.78E-06	mg/kg	C60298	16/19	1.03E-06 - 5.41E-06	2.15E-06	1.68E-06
---	2,3,7,8-TCDD TEQ	2.98E-07	1.37E-06	mg/kg	C60145	19/19	NA	6.83E-07	2.59E-07
7440382	Arsenic	1.70E-02	2.40E-01	mg/kg	C60283	11/20	1.70E-02 - 1.40E-01	4.48E-02	5.33E-02
7440393	Barium	1.60E-01	1.70E-01	mg/kg	C60145	2/20	1.50E-01 - 1.00E+00	3.07E-01	2.13E-01
7440417	Beryllium	ND	ND	ND	-	ND	1.00E-02 - 1.70E-02	1.24E-02	1.73E-03
7440439	Cadmium	ND	ND	ND	-	ND	2.70E-03 - 1.30E-02	5.90E-03	3.14E-03
7440473	Chromium	1.30E-01	2.50E-01	mg/kg	C60313	20/20	NA	1.73E-01	2.97E-02
7440484	Cobalt	ND	ND	ND	-	ND	3.40E-02 - 1.10E-01	5.40E-02	1.86E-02
7439921	Lead	1.10E-02	3.20E-02	mg/kg	C60313	6/20	9.40E-03 - 1.20E-02	1.36E-02	6.23E-03
7439965	Manganese	1.60E-01	1.90E+00	mg/kg	C60313	14/20	8.90E-02 - 2.80E-01	3.61E-01	4.18E-01
7439976	Mercury	2.60E-02	1.90E+00	mg/kg	C60096	192/194	7.10E-02 - 7.30E-02	3.91E-01	2.95E-01
7440020	Nickel	ND	ND	ND	-	ND	5.30E-02 - 6.80E-02	6.17E-02	4.56E-03
7440622	Vanadium	ND	ND	ND	-	ND	3.80E-02 - 1.60E-01	5.49E-02	2.64E-02
---	%Lipids Determination	2.00E-01	3.40E+00	%	C60135	192/193	1.00E-01 - 1.00E-01	7.31E-01	5.89E-01
---	Solids, Percent	1.27E+01	2.41E+01	%	C60109	192/192	NA	2.00E+01	1.66E+00
Bass									
12674112	Aroclor-1016	ND	ND	ND	-	ND	1.00E-01 - 6.00E-01	2.78E-01	1.24E-01
11104282	Aroclor-1221	ND	ND	ND	-	ND	1.00E-01 - 6.00E-01	2.78E-01	1.24E-01
11141165	Aroclor-1232	ND	ND	ND	-	ND	1.00E-01 - 6.00E-01	2.78E-01	1.24E-01
53469219	Aroclor-1242	2.10E-01	2.80E+00	mg/kg	C60286	54/67	2.00E-01 - 6.00E-01	5.01E-01	3.79E-01
12672296	Aroclor-1248	ND	ND	ND	-	ND	1.00E-01 - 6.00E-01	2.78E-01	1.24E-01
11097691	Aroclor-1254	6.30E-01	6.70E+00	mg/kg	C60100	67/67	NA	2.19E+00	1.23E+00
11096825	Aroclor-1260	6.60E-01	8.20E+00	mg/kg	C60100	67/67	NA	2.11E+00	1.16E+00
37324235	Aroclor-1262	ND	ND	ND	-	ND	1.00E-01 - 6.00E-01	2.78E-01	1.24E-01
11100144	Aroclor-1268	ND	ND	ND	-	ND	1.00E-01 - 6.00E-01	2.78E-01	1.24E-01
32598144	BZ#105	2.80E-02	6.10E-02	mg/kg	C60122	6/6	NA	4.68E-02	1.17E-02
74472370	BZ#114	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	9.33E-03	3.27E-03
31508006	BZ#118	8.20E-02	1.70E-01	mg/kg	C60122	6/6	NA	1.39E-01	3.30E-02
65510443	BZ#123	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	9.33E-03	3.27E-03
57465288	BZ#126	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	9.33E-03	3.27E-03
35065271	BZ#153	1.80E-01	4.00E-01	mg/kg	C60097	6/6	NA	3.18E-01	8.11E-02
38380084	BZ#156	1.40E-02	3.40E-02	mg/kg	C60122	6/6	NA	2.60E-02	6.69E-03
69782907	BZ#157	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	9.33E-03	3.27E-03
52663726	BZ#167	1.70E-02	1.70E-02	mg/kg	C60097	1/6	1.60E-02 - 3.20E-02	1.88E-02	6.46E-03
32774166	BZ#169	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	9.33E-03	3.27E-03
39635319	BZ#189	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	9.33E-03	3.27E-03
32598133	BZ#77	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	9.33E-03	3.27E-03
70362504	BZ#81	ND	ND	ND	-	ND	1.60E-02 - 3.20E-02	1.87E-02	6.53E-03
2051243	Decachlorobiphenyl	3.60E-03	1.10E-02	mg/kg	C60298	6/6	NA	7.03E-03	2.36E-03
25512429	Total Dichlorobiphenyl	1.00E-02	3.10E-02	mg/kg	C60298	6/6	NA	1.87E-02	7.69E-03
28655712	Total Heptachlorobiphenyl	2.50E-01	6.10E-01	mg/kg	C60122	6/6	NA	4.88E-01	1.31E-01
26601649	Total Hexachlorobiphenyl	4.00E-01	9.80E-01	mg/kg	C60298	6/6	NA	8.15E-01	2.15E-01
27323188	Total Monochlorobiphenyl	1.70E-03	5.00E-03	mg/kg	C60298	6/6	NA	3.10E-03	1.29E-03
53742077	Total Nonachlorobiphenyl	1.80E-02	4.70E-02	mg/kg	C60298	6/6	NA	3.67E-02	1.02E-02
31472830	Total Octachlorobiphenyl	7.80E-02	2.00E-01	mg/kg	C60122	6/6	NA	1.60E-01	4.41E-02
25429292	Total Pentachlorobiphenyl	2.60E-01	6.10E-01	mg/kg	C60298	6/6	NA	4.88E-01	1.19E-01
26914330	Total Tetrachlorobiphenyl	2.10E-01	5.20E-01	mg/kg	C60298	6/6	NA	3.38E-01	1.13E-01
25323686	Total Trichlorobiphenyl	4.90E-02	2.90E-01	mg/kg	C60298	6/6	NA	1.65E-01	8.02E-02
---	Total Homolog PCB	1.40E+00	3.30E+00	mg/kg	C60058, C60229	6/6	NA	2.53E+00	6.19E-01
1336363	Total PCBs	1.63E+00	1.49E+01	mg/kg	C60100	67/67	NA	4.75E+00	2.54E+00
---	Dioxin/furan and PCB Dioxin-like Congener TEQ	6.07E-06	1.13E-05	mg/kg	C60122	6/6	NA	8.61E-06	1.76E-06
---	PCB Dioxin-like Congener TEQ	5.00E-06	1.05E-05	mg/kg	C60122	6/6	NA	7.84E-06	1.85E-06
35822469	1,2,3,4,6,7,8-HpCDD	4.09E-06	4.09E-06	mg/kg	C60122	1/6	1.69E-07 - 4.70E-07	9.38E-07	1.55E-06
67562394	1,2,3,4,6,7,8-HpCDF	9.42E-07	9.42E-07	mg/kg	C60122	1/6	1.08E-07 - 1.29E-07	2.55E-07	3.37E-07

TABLE 3-6
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP C
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
55673897	1,2,3,4,7,8,9-HpCDF	ND	ND	ND	-	ND	1.23E-07 - 1.44E-07	1.31E-07	9.74E-09
39227286	1,2,3,4,7,8-HxCDD	ND	ND	ND	-	ND	1.12E-07 - 1.72E-07	1.30E-07	2.25E-08
70648269	1,2,3,4,7,8-HxCDF	2.41E-07	2.41E-07	mg/kg	C60094	1/6	1.10E-07 - 1.32E-07	1.41E-07	4.99E-08
57653857	1,2,3,6,7,8-HxCDD	2.52E-07	2.52E-07	mg/kg	C60122	1/6	1.21E-07 - 1.78E-07	1.57E-07	5.12E-08
57117449	1,2,3,6,7,8-HxCDF	1.79E-07	1.79E-07	mg/kg	C60094	1/6	1.15E-07 - 1.64E-07	1.42E-07	2.49E-08
19408743	1,2,3,7,8,9-HxCDD	ND	ND	ND	-	ND	1.17E-07 - 2.10E-07	1.49E-07	4.01E-08
72918219	1,2,3,7,8,9-HxCDF	ND	ND	ND	-	ND	1.14E-07 - 1.38E-07	1.24E-07	1.10E-08
40321764	1,2,3,7,8-PeCDD	ND	ND	ND	-	ND	1.12E-07 - 1.81E-07	1.40E-07	2.85E-08
57117416	1,2,3,7,8-PeCDF	2.18E-07	7.65E-07	mg/kg	C60094	5/6	2.77E-07 - 2.77E-07	3.89E-07	2.13E-07
60851345	2,3,4,6,7,8-HxCDF	1.39E-07	1.39E-07	mg/kg	C60094	1/6	1.14E-07 - 1.37E-07	1.27E-07	1.17E-08
57117314	2,3,4,7,8-PeCDF	6.23E-07	1.22E-06	mg/kg	C60094	5/6	4.92E-07 - 4.92E-07	7.71E-07	2.50E-07
1746016	2,3,7,8-TCDD	ND	ND	ND	-	ND	1.18E-07 - 1.67E-07	1.32E-07	1.83E-08
51207319	2,3,7,8-TCDF	1.72E-06	2.90E-06	mg/kg	C60298	4/6	3.35E-06 - 4.75E-06	2.95E-06	1.04E-06
3268879	Octa CDD	1.48E-06	1.14E-04	mg/kg	C60122	5/6	1.12E-06 - 1.12E-06	2.05E-05	4.58E-05
39001020	Octa CDF	3.72E-06	3.72E-06	mg/kg	C60122	1/6	2.02E-07 - 3.60E-07	8.41E-07	1.41E-06
37871004	Total Hepta CDD	8.30E-06	8.30E-06	mg/kg	C60122	1/6	1.69E-07 - 6.71E-07	1.68E-06	3.25E-06
38998753	Total Hepta CDF	3.37E-06	3.37E-06	mg/kg	C60122	1/6	1.15E-07 - 1.46E-07	6.67E-07	1.32E-06
34465468	Total Hexa CDD	2.52E-07	2.52E-07	mg/kg	C60122	1/6	1.18E-07 - 1.83E-07	1.56E-07	5.30E-08
55684941	Total Hexa CDF	5.60E-07	7.30E-07	mg/kg	C60122	2/6	1.13E-07 - 1.64E-07	3.04E-07	2.71E-07
36088229	Total Penta CDD	ND	ND	ND	-	ND	1.12E-07 - 1.81E-07	1.40E-07	2.85E-08
30402154	Total Penta CDF	1.20E-06	1.98E-06	mg/kg	C60094	5/6	1.15E-06 - 1.15E-06	1.43E-06	3.05E-07
419003575	Total Tetra CDD	ND	ND	ND	-	ND	1.18E-07 - 1.67E-07	1.32E-07	1.83E-08
55722275	Total Tetra CDF	1.72E-06	4.78E-06	mg/kg	C60298	4/6	4.09E-06 - 5.41E-06	3.63E-06	1.38E-06
---	2,3,7,8-TCDD TEQ	6.41E-07	1.07E-06	mg/kg	C60094	6/6	NA	7.69E-07	1.55E-07
7440382	Arsenic	2.00E-02	3.10E-02	mg/kg	C60124	6/6	NA	2.55E-02	3.99E-03
7440393	Barium	ND	ND	ND	-	ND	1.50E-01 - 5.30E-01	2.28E-01	1.48E-01
7440417	Beryllium	ND	ND	ND	-	ND	1.00E-02 - 1.70E-02	1.27E-02	2.34E-03
7440439	Cadmium	ND	ND	ND	-	ND	2.70E-03 - 6.80E-03	3.72E-03	1.53E-03
7440473	Chromium	1.70E-01	2.10E-01	mg/kg	C60298	6/6	NA	1.85E-01	1.52E-02
7440484	Cobalt	ND	ND	ND	-	ND	4.50E-02 - 8.70E-02	5.77E-02	1.48E-02
7439921	Lead	2.10E-02	2.60E-02	mg/kg	C60298	2/6	9.70E-03 - 1.10E-02	1.50E-02	6.83E-03
7439965	Manganese	ND	ND	ND	-	ND	8.90E-02 - 2.80E-01	1.37E-01	7.22E-02
7439976	Mercury	9.00E-02	1.90E+00	mg/kg	C60096	67/67	NA	6.38E-01	3.34E-01
7440020	Nickel	ND	ND	ND	-	ND	5.50E-02 - 6.70E-02	6.30E-02	4.29E-03
7440622	Vanadium	ND	ND	ND	-	ND	4.00E-02 - 7.40E-02	5.48E-02	1.13E-02
---	%Lipids Determination	2.00E-01	1.70E+00	%	C60094	66/67	1.00E-01 - 1.00E-01	5.24E-01	3.13E-01
---	Solids, Percent	1.87E+01	2.32E+01	%	C60286	67/67	NA	2.08E+01	9.62E-01
Catfish									
12674112	Aroclor-1016	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	3.39E-01	2.81E-01
11104282	Aroclor-1221	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	3.39E-01	2.81E-01
11141165	Aroclor-1232	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	3.39E-01	2.81E-01
53469219	Aroclor-1242	6.10E-02	1.80E+00	mg/kg	C60109	20/56	4.00E-02 - 2.00E+00	4.23E-01	3.65E-01
12672296	Aroclor-1248	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	3.39E-01	2.81E-01
11097691	Aroclor-1254	2.50E-01	1.20E+01	mg/kg	C60389	50/56	4.00E-02 - 1.00E+00	2.49E+00	2.05E+00
11096825	Aroclor-1260	2.30E-01	2.20E+01	mg/kg	C60389	56/56	NA	2.97E+00	3.09E+00
37324235	Aroclor-1262	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	3.39E-01	2.81E-01
11100144	Aroclor-1268	ND	ND	ND	-	ND	4.00E-02 - 2.00E+00	3.39E-01	2.81E-01
32598144	BZ#105	2.40E-02	8.60E-02	mg/kg	C60145	4/4	NA	5.05E-02	2.71E-02
74472370	BZ#114	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	1.20E-02	4.62E-03
31508006	BZ#118	8.10E-02	2.20E-01	mg/kg	C60145	4/4	NA	1.39E-01	6.40E-02
65510443	BZ#123	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	1.20E-02	4.62E-03
57465288	BZ#126	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	1.20E-02	4.62E-03
35065271	BZ#153	1.80E-01	4.40E-01	mg/kg	C60145	4/4	NA	3.08E-01	1.07E-01
38380084	BZ#156	1.20E-02	2.60E-02	mg/kg	C60145	4/4	NA	2.03E-02	6.24E-03
69782907	BZ#157	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	1.20E-02	4.62E-03
52663726	BZ#167	ND	ND	ND	-	ND	1.60E-02 - 3.20E-02	2.40E-02	9.24E-03

TABLE 3-6
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP C
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
32774166	BZ#169	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	1.20E-02	4.62E-03
39635319	BZ#189	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	1.20E-02	4.62E-03
32598133	BZ#77	ND	ND	ND	-	ND	8.00E-03 - 1.60E-02	1.20E-02	4.62E-03
70362504	BZ#81	ND	ND	ND	-	ND	1.60E-02 - 3.20E-02	2.40E-02	9.24E-03
2051243	Decachlorobiphenyl	3.10E-03	1.80E-02	mg/kg	C60346	4/4	NA	9.10E-03	6.49E-03
25512429	Total Dichlorobiphenyl	2.10E-02	6.70E-02	mg/kg	C60145	4/4	NA	3.70E-02	2.05E-02
28655712	Total Heptachlorobiphenyl	2.10E-01	6.80E-01	mg/kg	C60145	4/4	NA	5.00E-01	2.23E-01
26601649	Total Hexachlorobiphenyl	4.30E-01	1.40E+00	mg/kg	C60145	4/4	NA	8.68E-01	4.06E-01
27323188	Total Monochlorobiphenyl	4.90E-03	1.90E-02	mg/kg	C60145	4/4	NA	1.09E-02	5.89E-03
53742077	Total Nonachlorobiphenyl	1.50E-02	8.40E-02	mg/kg	C60346	4/4	NA	4.43E-02	2.97E-02
31472830	Total Octachlorobiphenyl	6.00E-02	2.90E-01	mg/kg	C60346	4/4	NA	1.70E-01	9.83E-02
25429292	Total Pentachlorobiphenyl	2.00E-01	9.60E-01	mg/kg	C60145	4/4	NA	5.50E-01	3.42E-01
26914330	Total Tetrachlorobiphenyl	8.30E-02	6.50E-01	mg/kg	C60145	4/4	NA	3.43E-01	2.42E-01
25323686	Total Trichlorobiphenyl	5.70E-02	1.70E-01	mg/kg	C60145	4/4	NA	9.65E-02	5.09E-02
---	Total Homolog PCB	1.40E+00	4.20E+00	mg/kg	C60145	4/4	NA	2.63E+00	1.18E+00
1336363	Total PCBs	2.30E-01	3.40E+01	mg/kg	C60389	56/56	NA	5.61E+00	4.97E+00
---	Dioxin/furan and PCB Dioxin-like Congener TEQ	8.06E-04	1.61E-03	mg/kg	C60145	4/4	NA	1.21E-03	4.63E-04
---	PCB Dioxin-like Congener TEQ	8.05E-04	1.61E-03	mg/kg	C60145	4/4	NA	1.21E-03	4.63E-04
35822469	1,2,3,4,6,7,8-HpCDD	ND	ND	ND	-	ND	1.59E-07 - 6.68E-07	4.57E-07	2.37E-07
67562394	1,2,3,4,6,7,8-HpCDF	1.51E-07	1.51E-07	mg/kg	C60145	1/4	9.85E-08 - 1.42E-07	1.24E-07	2.65E-08
55673897	1,2,3,4,7,8,9-HpCDF	ND	ND	ND	-	ND	1.12E-07 - 1.53E-07	1.26E-07	1.84E-08
39227286	1,2,3,4,7,8-HxCDD	1.22E-07	1.22E-07	mg/kg	C60145	1/4	1.00E-07 - 1.53E-07	1.20E-07	2.37E-08
70648269	1,2,3,4,7,8-HxCDF	1.78E-07	3.21E-07	mg/kg	C60145	3/4	1.22E-07 - 1.22E-07	2.06E-07	8.38E-08
57653857	1,2,3,6,7,8-HxCDD	2.07E-07	4.08E-07	mg/kg	C60145	3/4	1.59E-07 - 1.59E-07	2.56E-07	1.08E-07
57117449	1,2,3,6,7,8-HxCDF	1.30E-07	2.00E-07	mg/kg	C60145	3/4	1.31E-07 - 1.31E-07	1.55E-07	3.29E-08
19408743	1,2,3,7,8,9-HxCDD	1.77E-07	1.77E-07	mg/kg	C60145	1/4	1.05E-07 - 1.67E-07	1.40E-07	3.73E-08
72918219	1,2,3,7,8,9-HxCDF	ND	ND	ND	-	ND	1.05E-07 - 1.23E-07	1.14E-07	8.41E-09
40321764	1,2,3,7,8-PeCDD	3.64E-07	4.97E-07	mg/kg	C60145	3/4	1.81E-07 - 1.81E-07	3.53E-07	1.30E-07
57117416	1,2,3,7,8-PeCDF	ND	ND	ND	-	ND	1.05E-07 - 2.03E-07	1.33E-07	4.70E-08
60851345	2,3,4,6,7,8-HxCDF	1.54E-07	1.54E-07	mg/kg	C60145	1/4	1.04E-07 - 1.57E-07	1.31E-07	2.84E-08
57117314	2,3,4,7,8-PeCDF	1.32E-06	2.22E-06	mg/kg	C60145	3/4	3.60E-07 - 3.60E-07	1.35E-06	7.65E-07
1746016	2,3,7,8-TCDD	ND	ND	ND	-	ND	1.06E-07 - 1.75E-07	1.29E-07	3.13E-08
51207319	2,3,7,8-TCDF	3.29E-07	5.48E-07	mg/kg	C60145	4/4	NA	4.32E-07	1.05E-07
3268879	Octa CDD	1.75E-06	2.69E-06	mg/kg	C60145	3/4	5.09E-07 - 5.09E-07	1.89E-06	1.02E-06
39001020	Octa CDF	2.31E-07	2.31E-07	mg/kg	C60145	1/4	2.18E-07 - 3.05E-07	2.47E-07	3.94E-08
37871004	Total Hepta CDD	9.45E-07	9.45E-07	mg/kg	C60145	1/4	1.59E-07 - 6.25E-07	5.68E-07	3.23E-07
38998753	Total Hepta CDF	2.89E-07	2.89E-07	mg/kg	C60145	1/4	1.05E-07 - 1.47E-07	1.63E-07	8.60E-08
34465468	Total Hexa CDD	2.07E-07	7.07E-07	mg/kg	C60145	3/4	1.63E-07 - 1.63E-07	3.32E-07	2.53E-07
55684941	Total Hexa CDF	3.07E-07	6.75E-07	mg/kg	C60145	3/4	1.57E-07 - 1.57E-07	3.75E-07	2.18E-07
36088229	Total Penta CDD	3.64E-07	4.97E-07	mg/kg	C60145	3/4	1.81E-07 - 1.81E-07	3.53E-07	1.30E-07
30402154	Total Penta CDF	1.32E-06	2.34E-06	mg/kg	C60145	3/4	3.60E-07 - 3.60E-07	1.45E-06	8.38E-07
419003575	Total Tetra CDD	ND	ND	ND	-	ND	1.06E-07 - 1.75E-07	1.29E-07	3.13E-08
55722275	Total Tetra CDF	3.29E-07	8.85E-07	mg/kg	C60346	4/4	NA	6.05E-07	3.01E-07
---	2,3,7,8-TCDD TEQ	4.32E-07	1.37E-06	mg/kg	C60145	4/4	NA	9.09E-07	3.82E-07
7440382	Arsenic	1.70E-02	1.70E-02	mg/kg	C60142	1/4	1.70E-02 - 2.00E-02	1.80E-02	1.41E-03
7440393	Barium	1.60E-01	1.70E-01	mg/kg	C60145	2/4	1.50E-01 - 1.00E+00	3.70E-01	4.20E-01
7440417	Beryllium	ND	ND	ND	-	ND	1.10E-02 - 1.50E-02	1.25E-02	1.91E-03
7440439	Cadmium	ND	ND	ND	-	ND	2.80E-03 - 5.60E-03	3.73E-03	1.27E-03
7440473	Chromium	1.60E-01	2.00E-01	mg/kg	C60346	4/4	NA	1.78E-01	1.71E-02
7440484	Cobalt	ND	ND	ND	-	ND	4.60E-02 - 8.40E-02	5.83E-02	1.76E-02
7439921	Lead	1.10E-02	1.10E-02	mg/kg	C60346	1/4	9.80E-03 - 1.20E-02	1.07E-02	1.01E-03
7439965	Manganese	1.60E-01	2.50E-01	mg/kg	C60346	4/4	NA	1.88E-01	4.27E-02
7439976	Mercury	4.70E-02	8.90E-01	mg/kg	C60219	55/57	7.10E-02 - 7.30E-02	2.89E-01	1.93E-01
7440020	Nickel	ND	ND	ND	-	ND	5.50E-02 - 6.70E-02	6.05E-02	5.20E-03
7440622	Vanadium	ND	ND	ND	-	ND	4.80E-02 - 6.40E-02	5.28E-02	7.54E-03
---	%Lipids Determination	2.00E-01	3.40E+00	%	C60135	56/56	NA	1.18E+00	8.54E-01

TABLE 3-6
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP C
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
---	Solids, Percent	1.27E+01	2.41E+01	%	C60109	56/56	NA	1.87E+01	2.04E+00
Panfish									
12674112	Aroclor-1016	ND	ND	ND	-	ND	4.00E-02 - 6.00E-01	1.98E-01	1.02E-01
11104282	Aroclor-1221	ND	ND	ND	-	ND	4.00E-02 - 6.00E-01	1.98E-01	1.02E-01
11141165	Aroclor-1232	ND	ND	ND	-	ND	4.00E-02 - 6.00E-01	1.98E-01	1.02E-01
53469219	Aroclor-1242	1.20E-01	7.70E-01	mg/kg	C60279	44/70	6.00E-02 - 6.00E-01	3.00E-01	1.59E-01
12672296	Aroclor-1248	ND	ND	ND	-	ND	4.00E-02 - 6.00E-01	1.98E-01	1.02E-01
11097691	Aroclor-1254	1.90E-01	5.90E+00	mg/kg	C60265	70/70	NA	1.49E+00	1.03E+00
11096825	Aroclor-1260	1.20E-01	5.40E+00	mg/kg	C60280	70/70	NA	1.24E+00	9.59E-01
37324235	Aroclor-1262	ND	ND	ND	-	ND	4.00E-02 - 6.00E-01	1.98E-01	1.02E-01
11100144	Aroclor-1268	ND	ND	ND	-	ND	4.00E-02 - 6.00E-01	1.98E-01	1.02E-01
32598144	BZ#105	6.90E-03	5.50E-02	mg/kg	C60269	10/10	NA	2.72E-02	1.44E-02
74472370	BZ#114	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	7.52E-03	3.60E-03
31508006	BZ#118	2.30E-02	1.40E-01	mg/kg	C60269	10/10	NA	7.64E-02	3.81E-02
65510443	BZ#123	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	7.52E-03	3.60E-03
57465288	BZ#126	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	7.52E-03	3.60E-03
35065271	BZ#153	6.40E-02	2.70E-01	mg/kg	C60118	10/10	NA	1.55E-01	7.22E-02
38380084	BZ#156	4.50E-03	1.90E-02	mg/kg	C60118	9/10	8.00E-03 - 8.00E-03	1.16E-02	5.33E-03
69782907	BZ#157	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	7.52E-03	3.60E-03
52663726	BZ#167	ND	ND	ND	-	ND	6.40E-03 - 3.20E-02	1.50E-02	7.20E-03
32774166	BZ#169	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	7.52E-03	3.60E-03
39635319	BZ#189	ND	ND	ND	-	ND	3.20E-03 - 1.60E-02	7.52E-03	3.60E-03
32598133	BZ#77	3.80E-02	1.50E-01	mg/kg	C60313	3/10	3.20E-03 - 1.60E-02	2.99E-02	4.51E-02
70362504	BZ#81	ND	ND	ND	-	ND	6.40E-03 - 3.20E-02	1.50E-02	7.20E-03
2051243	Decachlorobiphenyl	3.00E-03	1.10E-02	mg/kg	C60186	10/10	NA	6.22E-03	2.70E-03
25512429	Total Dichlorobiphenyl	7.10E-03	1.60E-02	mg/kg	C60269	9/10	5.00E-03 - 5.00E-03	1.13E-02	3.58E-03
28655712	Total Heptachlorobiphenyl	9.80E-02	4.80E-01	mg/kg	C60269	10/10	NA	2.53E-01	1.20E-01
26601649	Total Hexachlorobiphenyl	2.10E-01	9.30E-01	mg/kg	C60269	10/10	NA	4.54E-01	2.24E-01
27323188	Total Monochlorobiphenyl	1.00E-03	3.20E-03	mg/kg	C60118	9/10	2.00E-03 - 2.00E-03	2.03E-03	6.60E-04
53742077	Total Nonachlorobiphenyl	1.00E-02	4.70E-02	mg/kg	C60087	10/10	NA	2.50E-02	1.22E-02
31472830	Total Octachlorobiphenyl	3.40E-02	1.40E-01	mg/kg	C60087	10/10	NA	8.24E-02	3.66E-02
25429292	Total Pentachlorobiphenyl	9.40E-02	7.40E-01	mg/kg	C60269	10/10	NA	3.27E-01	1.90E-01
26914330	Total Tetrachlorobiphenyl	5.60E-02	5.50E-01	mg/kg	C60269	10/10	NA	2.37E-01	1.44E-01
25323686	Total Trichlorobiphenyl	3.40E-02	2.20E-01	mg/kg	C60283	10/10	NA	1.05E-01	5.92E-02
---	Total Homolog PCB	7.00E-01	3.00E+00	mg/kg	C60269	10/10	NA	1.49E+00	7.03E-01
1336363	Total PCBs	4.30E-01	1.04E+01	mg/kg	C60280	70/70	NA	2.94E+00	1.96E+00
---	Dioxin/furan and PCB Dioxin-like Congener TEQ	2.42E-06	8.71E-06	mg/kg	C60269	9/9	NA	5.64E-06	1.91E-06
---	PCB Dioxin-like Congener TEQ	1.96E-06	1.84E-05	mg/kg	C60313	10/10	NA	6.45E-06	4.55E-06
35822469	1,2,3,4,6,7,8-HpCDD	1.93E-07	3.13E-07	mg/kg	C60269	4/9	1.32E-07 - 7.40E-07	3.21E-07	1.88E-07
67562394	1,2,3,4,6,7,8-HpCDF	2.17E-07	2.78E-07	mg/kg	C60196	3/9	1.09E-07 - 1.95E-07	1.91E-07	5.39E-08
55673897	1,2,3,4,7,8,9-HpCDF	1.95E-07	2.71E-07	mg/kg	C60196	2/9	9.35E-08 - 2.11E-07	1.84E-07	4.83E-08
39227286	1,2,3,4,7,8-HxCDD	2.09E-07	2.09E-07	mg/kg	C60196	1/9	1.18E-07 - 2.13E-07	1.66E-07	3.20E-08
70648269	1,2,3,4,7,8-HxCDF	1.45E-07	1.45E-07	mg/kg	C60186	1/9	1.55E-07 - 3.65E-07	2.09E-07	7.06E-08
57653857	1,2,3,6,7,8-HxCDD	ND	ND	ND	-	ND	8.54E-08 - 2.31E-07	1.74E-07	4.27E-08
57117449	1,2,3,6,7,8-HxCDF	ND	ND	ND	-	ND	1.47E-07 - 2.94E-07	2.07E-07	4.67E-08
19408743	1,2,3,7,8,9-HxCDD	2.29E-07	2.29E-07	mg/kg	C60196	1/9	1.24E-07 - 2.33E-07	1.88E-07	3.83E-08
72918219	1,2,3,7,8,9-HxCDF	ND	ND	ND	-	ND	8.31E-08 - 2.50E-07	1.85E-07	4.69E-08
40321764	1,2,3,7,8-PeCDD	2.36E-07	2.36E-07	mg/kg	C60196	1/9	1.00E-07 - 2.05E-07	1.80E-07	3.78E-08
57117416	1,2,3,7,8-PeCDF	ND	ND	ND	-	ND	1.63E-07 - 6.26E-07	2.97E-07	1.59E-07
60851345	2,3,4,6,7,8-HxCDF	ND	ND	ND	-	ND	8.94E-08 - 2.15E-07	1.78E-07	3.84E-08
57117314	2,3,4,7,8-PeCDF	2.84E-07	2.84E-07	mg/kg	C60118	1/9	1.66E-07 - 8.61E-07	3.56E-07	1.99E-07
1746016	2,3,7,8-TCDD	ND	ND	ND	-	ND	9.47E-08 - 3.35E-07	1.92E-07	6.49E-08
51207319	2,3,7,8-TCDF	6.53E-07	3.05E-06	mg/kg	C60283	7/9	7.31E-07 - 1.03E-06	1.46E-06	9.59E-07
3268879	Octa CDD	2.02E-06	6.46E-06	mg/kg	C60087	2/9	3.80E-07 - 1.84E-06	1.53E-06	1.94E-06
39001020	Octa CDF	7.96E-07	7.96E-07	mg/kg	C60087	1/9	2.13E-07 - 6.33E-07	3.80E-07	2.02E-07
37871004	Total Hepta CDD	1.93E-07	3.13E-07	mg/kg	C60269	4/9	1.32E-07 - 7.66E-07	3.48E-07	2.29E-07

TABLE 3-6
SUMMARY OF ANALYTES DETECTED IN FISH TISSUE - GROUP C
ANNISTON PCB SITE
OU-4

CAS Number	Analyte	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Standard Deviation[c]
38998753	Total Hepta CDF	4.12E-07	6.62E-07	mg/kg	C60087	3/9	1.09E-07 - 2.03E-07	2.91E-07	1.99E-07
34465468	Total Hexa CDD	ND	ND	ND	-	ND	1.24E-07 - 6.69E-07	2.29E-07	1.68E-07
55684941	Total Hexa CDF	ND	ND	ND	-	ND	1.60E-07 - 8.19E-07	3.38E-07	2.40E-07
36088229	Total Penta CDD	ND	ND	ND	-	ND	1.00E-07 - 2.36E-07	1.80E-07	3.78E-08
30402154	Total Penta CDF	6.89E-07	6.89E-07	mg/kg	C60118	1/9	1.70E-07 - 1.49E-06	6.64E-07	4.96E-07
419003575	Total Tetra CDD	ND	ND	ND	-	ND	9.47E-08 - 3.35E-07	1.92E-07	6.49E-08
55722275	Total Tetra CDF	2.41E-07	4.48E-06	mg/kg	C60283	8/9	1.03E-06 - 1.03E-06	1.86E-06	1.47E-06
---	2,3,7,8-TCDD TEQ	2.98E-07	7.17E-07	mg/kg	C60196	9/9	NA	5.26E-07	1.50E-07
7440382	Arsenic	3.10E-02	2.40E-01	mg/kg	C60283	4/10	2.40E-02 - 1.40E-01	6.70E-02	6.98E-02
7440393	Barium	ND	ND	ND	-	ND	1.80E-01 - 6.60E-01	3.28E-01	1.36E-01
7440417	Beryllium	ND	ND	ND	-	ND	1.00E-02 - 1.50E-02	1.21E-02	1.37E-03
7440439	Cadmium	ND	ND	ND	-	ND	3.10E-03 - 1.30E-02	8.08E-03	2.91E-03
7440473	Chromium	1.30E-01	2.50E-01	mg/kg	C60313	10/10	NA	1.63E-01	3.77E-02
7440484	Cobalt	ND	ND	ND	-	ND	3.40E-02 - 1.10E-01	5.01E-02	2.16E-02
7439921	Lead	1.10E-02	3.20E-02	mg/kg	C60313	3/10	9.40E-03 - 1.20E-02	1.40E-02	7.10E-03
7439965	Manganese	1.80E-01	1.90E+00	mg/kg	C60313	10/10	NA	5.64E-01	5.23E-01
7439976	Mercury	2.60E-02	5.30E-01	mg/kg	C60282	70/70	NA	2.38E-01	1.21E-01
7440020	Nickel	ND	ND	ND	-	ND	5.30E-02 - 6.80E-02	6.13E-02	4.76E-03
7440622	Vanadium	ND	ND	ND	-	ND	3.80E-02 - 1.60E-01	5.57E-02	3.71E-02
---	%Lipids Determination	2.00E-01	1.20E+00	%	C60188	70/70	NA	5.73E-01	2.48E-01
---	Solids, Percent	1.71E+01	2.34E+01	%	C60283	69/69	NA	2.02E+01	1.16E+00

[a] Number of sampling locations at which analyte was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on nondetected samples.

[c] Nondetects were included at the full detection limit.

mg/kg = Milligrams per kilogram.

NA = Not applicable.

TABLE 3-7
SUMMARY OF ANALYTES DETECTED IN FISH AND COMPARISON TO FISH RSLS
ANNISTON PCB SITE
OU-4

Analyte	Frequency of Detection	Range of Detected Concentrations (mg/kg)	Location of Maximum Detected Concentration	Average Concentration (mg/kg)	Screening Toxicity Value [a]	COPC Flag
Aroclors						
Aroclor-1242	186 / 361	2.40E-02 - 2.80E+00	HHFL-07	3.01E-01	Evaluated as tPCBs	
Aroclor-1254	349 / 361	8.60E-02 - 1.20E+01	HHFL-05	1.58E+00	Evaluated as tPCBs	
Aroclor-1260	361 / 361	1.10E-01 - 2.20E+01	HHFL-05	1.64E+00	Evaluated as tPCBs	
Aroclor-1268	1 / 361	1.20E-01 - 1.20E-01	HHFL-01	2.15E-01	Evaluated as tPCBs	
Total PCBs (sum of Aroclors)	361 / 361	2.23E-01 - 3.40E+01	HHFL-05	3.40E+00	1.60E-03 C	Yes
PCB Dioxin-like Congeners						
PCB-77	14 / 36	1.30E-02 - 2.50E-01	HHFL-01	4.11E-02	Evaluated as PCB TEQ	
PCB-105	36 / 36	6.90E-03 - 8.60E-02	HHFL-08	3.31E-02	Evaluated as PCB TEQ	
PCB-118	36 / 36	2.30E-02 - 2.20E-01	HHFL-08	9.51E-02	Evaluated as PCB TEQ	
PCB-126	1 / 36	1.90E-02 - 1.90E-02	HHFL-01	8.13E-03	Evaluated as PCB TEQ	
PCB-153	36 / 36	5.50E-02 - 4.40E-01	HHFL-08	2.10E-01	Evaluated as PCB TEQ	
PCB-156	35 / 36	3.40E-03 - 3.40E-02	HHFL-08	1.54E-02	Evaluated as PCB TEQ	
PCB-167	1 / 36	1.70E-02 - 1.70E-02	HHFL-06	1.57E-02	Evaluated as PCB TEQ	
PCB Dioxin-like Congener TEQ	36 / 36	1.96E-06 - 1.91E-03	HHFL-01	2.10E-04	2.40E-08 C	Yes
Dioxin/Furan Congeners						
1,2,3,7,8-PeCDD	7 / 35	1.56E-07 - 4.97E-07	HHFL-08	1.75E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8,9-HxCDD	4 / 35	1.77E-07 - 2.61E-07	HHFL-02	1.60E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8-HxCDD	2 / 35	1.22E-07 - 2.09E-07	HHFL-05	1.37E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDD	4 / 35	2.07E-07 - 4.08E-07	HHFL-08	1.69E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,6,7,8-HpCDD	11 / 35	1.93E-07 - 4.09E-06	HHFL-08	5.16E-07	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDD	18 / 35	1.18E-06 - 1.14E-04	HHFL-08	5.42E-06	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDF	31 / 35	3.29E-07 - 9.61E-05	HHFL-01	9.66E-06	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,7,8-PeCDF	21 / 35	2.84E-07 - 3.99E-06	HHFL-01	1.00E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8-PeCDF	14 / 35	2.13E-07 - 2.15E-06	HHFL-01	4.40E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDF	8 / 35	1.03E-07 - 2.40E-07	HHFL-01	1.75E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8-HxCDF	11 / 35	1.09E-07 - 3.35E-07	HHFL-01	1.83E-07	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,6,7,8-HxCDF	2 / 35	1.39E-07 - 1.54E-07	HHFL-08	1.43E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,6,7,8-HpCDF	11 / 35	1.39E-07 - 9.42E-07	HHFL-08	2.02E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8,9-HpCDF	4 / 35	1.56E-07 - 2.71E-07	HHFL-05	1.55E-07	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDF	10 / 35	2.31E-07 - 3.72E-06	HHFL-08	4.82E-07	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDD TEQ	35 / 35	2.98E-07 - 1.11E-05	HHFL-01	1.54E-06	2.40E-08 C	Yes
Inorganics						
Arsenic	22 / 36	1.70E-02 - 3.80E-01	HHFL-02	6.86E-02	2.10E-03 C	No
Barium	2 / 36	1.60E-01 - 1.70E-01	HHFL-08	2.85E-01	2.70E+01 NC	No
Beryllium	2 / 36	9.00E-03 - 9.60E-03	HHFL-01	1.20E-02	2.70E-01 NC	No
Cadmium	1 / 36	9.30E-03 - 9.30E-03	HHFL-01	5.61E-03	1.40E-01 NC	No
Chromium	31 / 36	1.10E-01 - 2.50E-01	HHFL-09	1.69E-01	6.30E-03 C	No
Lead	10 / 36	9.00E-03 - 6.10E-02	HHFL-03	1.39E-02	1.10E-02 C	No
Manganese	25 / 36	6.30E-02 - 1.90E+00	HHFL-09	3.06E-01	1.90E+01 NC	No
Mercury	360 / 362	2.60E-02 - 1.90E+00	HHFL-06	3.74E-01	1.40E-02 NC	Yes
Vanadium	5 / 36	1.90E-02 - 3.10E-02	HHFL-01	4.97E-02	6.80E-01 NC	No

[a] Fish RSLs (May, 2012).

C = cancer based, target risk equals 1E-06.

NC = noncancer based, hazard index equals 0.1.

Chromium assumed to be in the hexavalent form.

Methyl mercury RSL used for mercury.

TABLE 3-8
SUMMARY OF ANALYTES DETECTED IN FLOODPLAIN SOIL (0 TO 1 FT BGS) AND COMPARISON TO RESIDENTIAL SOIL RSLS
ANNISTON PCB SITE
OU-4

Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Average Concentration (mg/kg)	Screening Toxicity Value [a]	COPC Flag
Aroclors								
Aroclor-1242	4.70E-02	1.10E+01	mg/kg	C3S-02	111/1601	2.25E-01	Evaluated as tPCBs	
Aroclor-1248	2.60E-01	1.50E+00	mg/kg	C3NX-27, C3SX-05	5/1601	1.93E-01	Evaluated as tPCBs	
Aroclor-1254	3.70E-02	1.20E+02	mg/kg	C3S-04	647/1601	1.49E+00	Evaluated as tPCBs	
Aroclor-1260	3.60E-02	8.10E+01	mg/kg	C3S-02	852/1601	1.26E+00	Evaluated as tPCBs	
Aroclor-1268	3.70E-02	4.70E+00	mg/kg	C3N-05	407/1601	2.26E-01	Evaluated as tPCBs	
Total PCBs (sum of Aroclors)	3.60E-02	2.28E+02	mg/kg	NHA-5	931/1696	3.51E+00	1.10E-01 NC	Yes
PCB Dioxin-like Congeners								
PCB-77	1.90E-03	3.20E-01	mg/kg	C8N-12	11/137	1.22E-02	Evaluated as PCB TEQ	
PCB-105	2.10E-03	1.40E-01	mg/kg	C3NF-07	127/137	4.24E-02	Evaluated as PCB TEQ	
PCB-114	8.90E-03	8.90E-03	mg/kg	C4S-41	1/137	6.44E-03	Evaluated as PCB TEQ	
PCB-118	1.90E-03	2.80E-01	mg/kg	C3NF-07	131/137	8.05E-02	Evaluated as PCB TEQ	
PCB-123	4.10E-03	2.30E-02	mg/kg	C8N-12	2/137	6.52E-03	Evaluated as PCB TEQ	
PCB-126	2.00E-03	4.40E-02	mg/kg	C7S-37	17/137	7.51E-03	Evaluated as PCB TEQ	
PCB-153	3.20E-03	4.40E-01	mg/kg	C9N-01	132/137	1.36E-01	Evaluated as PCB TEQ	
PCB-156	1.60E-03	4.80E-02	mg/kg	C3NF-07	121/137	1.50E-02	Evaluated as PCB TEQ	
PCB-157	1.80E-03	1.70E-02	mg/kg	C3NF-07	35/137	6.62E-03	Evaluated as PCB TEQ	
PCB-167	2.70E-03	1.50E-02	mg/kg	C4S-31	20/137	1.16E-02	Evaluated as PCB TEQ	
PCB-189	1.50E-03	1.50E-03	mg/kg	C9N-01	1/137	5.94E-03	Evaluated as PCB TEQ	
PCB Dioxin-like Congener TEQ	1.41E-04	4.42E-03	mg/kg	C7S-37	132/137	7.58E-04	4.50E-06 C	Yes
Dioxin/Furan Congeners								
2,3,7,8-TCDD	1.21E-07	7.50E-07	mg/kg	C8N-12	12/131	5.05E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8-PeCDD	1.70E-07	1.56E-06	mg/kg	C4SF-33	35/131	6.58E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8-HxCDD	1.90E-07	3.19E-06	mg/kg	C6N-14	99/131	1.12E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDD	1.95E-07	1.76E-05	mg/kg	C4NF-41	110/131	3.01E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8,9-HxCDD	3.16E-07	8.40E-06	mg/kg	C4N-06	106/131	2.93E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,6,7,8-HpCDD	1.18E-05	4.25E-04	mg/kg	C4NF-41	131/131	8.59E-05	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDD	4.41E-04	9.38E-03	mg/kg	C3NX-11	131/131	2.46E-03	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDF	7.70E-07	7.86E-04	mg/kg	C8N-12	120/131	6.16E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8-PeCDF	4.00E-07	1.21E-03	mg/kg	C8N-19	78/131	4.55E-05	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,7,8-PeCDF	4.70E-07	7.37E-05	mg/kg	C5S-15	118/131	1.12E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8-HxCDF	5.90E-07	1.83E-04	mg/kg	C5N-12	122/131	2.51E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDF	1.10E-06	3.76E-04	mg/kg	C8N-12	119/131	4.07E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8,9-HxCDF	2.20E-07	4.73E-06	mg/kg	C2S-18	41/131	1.14E-06	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,6,7,8-HxCDF	3.10E-07	1.63E-05	mg/kg	C5S-15	99/131	4.07E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,6,7,8-HpCDF	1.68E-06	1.56E-04	mg/kg	C6S-04	92/131	3.17E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8,9-HpCDF	1.80E-07	5.45E-05	mg/kg	C5S-15	115/131	7.22E-06	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDF	2.20E-06	2.52E-04	mg/kg	C4NF-41	127/131	6.03E-05	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDD TEQ	9.24E-07	1.74E-04	mg/kg	C6S-04	131/131	2.18E-05	4.50E-06 C	Yes
Volatile and Semi-Volatile Organic Compounds								
1,2,4-Trichlorobenzene	1.50E-03	3.00E-02	mg/kg	C8S-19	3/23	6.22E-03	6.20E+00 NC	No
1,2-Dichlorobenzene	8.10E-03	8.10E-03	mg/kg	C8S-19	1/21	5.59E-03	1.90E+02 NC	No
1,4-Dichlorobenzene	9.60E-03	9.60E-03	mg/kg	C8S-19	1/21	5.66E-03	2.40E+00 C	No
2-Butanone	5.10E-03	1.30E+00	mg/kg	C8S-19	23/23	8.21E-02	2.80E+03 NC	No
Acetone	7.80E-02	1.50E+01	mg/kg	C8S-19	23/23	9.03E-01	6.10E+03 NC	No
Acetophenone	2.00E-02	5.60E-02	mg/kg	C8S-19	16/23	1.32E-01	7.80E+02 NC	No
Benzaldehyde	5.80E-02	6.70E-02	mg/kg	C7N-31	3/23	3.25E-01	7.80E+02 NC	No
Benzene	1.10E-03	7.90E-03	mg/kg	C8S-19	2/23	5.38E-03	1.10E+00 C	No
Bis(2-Ethylhexyl)phthalate	1.90E-02	9.80E-02	mg/kg	C7S-57	15/23	1.55E-01	3.50E+01 C	No
Bromomethane	5.50E-02	5.50E-02	mg/kg	C8S-19	1/23	7.79E-03	7.30E-01 NC	No
Carbon Disulfide	1.10E-03	1.10E-02	mg/kg	C8S-19	2/23	5.51E-03	8.20E+01 NC	No
Chloromethane	4.40E-03	3.60E-02	mg/kg	C8S-19	2/23	6.75E-03	1.20E+01 NC	No
Methyl Acetate	1.20E-02	8.80E-01	mg/kg	C8S-19	23/23	1.26E-01	7.80E+03 NC	No
Methylene Chloride	2.50E-02	2.50E-02	mg/kg	C8S-19	1/23	6.32E-03	3.60E+01 NC	No
Toluene	1.30E-03	2.50E-02	mg/kg	C8S-19	3/23	6.03E-03	5.00E+02 NC	No
Pesticides								
4,4'-DDE	3.10E-02	4.60E-02	mg/kg	C7S-28	2/23	1.69E-01	1.40E+00 C	No
4,4'-DDT	2.20E-02	2.20E-02	mg/kg	C8N-12	1/23	1.75E-01	1.70E+00 C	No
Caprolactam	2.70E-02	4.70E-02	mg/kg	C7S-57	4/23	3.08E-01	3.10E+03 NC	No
PAHs								
Benzo(a)anthracene	1.70E-02	8.40E-02	mg/kg	C7S-37	10/23	2.22E-01	1.50E-01 C	Yes
Benzo(a)pyrene	2.00E-02	8.30E-02	mg/kg	C7S-37	9/23	2.38E-01	1.50E-02 C	Yes
Benzo(b)fluoranthene	1.80E-02	9.90E-02	mg/kg	C7S-37	10/23	2.26E-01	1.50E-01 C	Yes
Benzo(g,h,i)perylene	3.10E-02	5.70E-02	mg/kg	C7S-37	6/23	2.81E-01	1.40E+01 NC	No
Benzo(k)fluoranthene	1.90E-02	1.20E-01	mg/kg	C7S-37	9/23	2.40E-01	1.50E+00 C	Yes
Chrysene	1.80E-02	1.30E-01	mg/kg	C7S-37	12/23	2.00E-01	1.50E+01 C	Yes
Fluoranthene	2.20E-02	1.90E-01	mg/kg	C7S-37	12/23	2.11E-01	2.30E+02 NC	No
Indeno(1,2,3-cd)pyrene	3.10E-02	6.30E-02	mg/kg	C7S-37	6/23	2.79E-01	1.50E-01 C	Yes
Phenanthrene	2.60E-02	6.70E-02	mg/kg	C7S-37	6/23	2.79E-01	1.40E+01 NC	No
Pyrene	1.90E-02	1.50E-01	mg/kg	C7S-37	12/23	2.05E-01	1.70E+02 NC	No

TABLE 3-8
SUMMARY OF ANALYTES DETECTED IN FLOODPLAIN SOIL (0 TO 1 FT BGS) AND COMPARISON TO RESIDENTIAL SOIL RSLS
ANNISTON PCB SITE
OU-4

Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Average Concentration (mg/kg)	Screening Toxicity Value [a]	COPC Flag
Inorganics								
Aluminum	5.95E+03	2.08E+04	mg/kg	C8S-19	23/23	1.09E+04	7.70E+03 NC	Yes
Antimony	6.20E-01	1.50E+00	mg/kg	C7N-40	12/23	7.07E-01	3.10E+00 NC	No
Arsenic	2.60E+00	1.85E+01	mg/kg	C7S-28	138/138	6.64E+00	3.90E-01 C	Yes
Barium	5.60E+00	2.81E+02	mg/kg	C6N-10	138/138	1.02E+02	1.50E+03 NC	No
Beryllium	2.10E-01	1.30E+00	mg/kg	C4S-04	138/138	6.47E-01	1.60E+01 NC	No
Cadmium	5.80E-02	2.10E+00	mg/kg	C8N-19	104/138	3.31E-01	7.00E+00 NC	No
Calcium	2.66E+02	1.43E+03	mg/kg	C8S-19	23/23	7.57E+02	NA	No
Chromium	4.60E+00	7.97E+01	mg/kg	C3S-04	138/138	1.68E+01	2.90E-01 C	Yes
Cobalt	2.70E+00	3.51E+01	mg/kg	C6N-10	138/138	8.62E+00	2.30E+00 NC	Yes
Copper	4.80E+00	2.33E+01	mg/kg	C8N-19	23/23	1.21E+01	3.10E+02 NC	No
Cyanide	1.60E-01	6.60E-01	mg/kg	C7S-28	11/23	1.85E-01	4.70E+00 NC	No
Iron	9.54E+03	4.28E+04	mg/kg	C7S-28	23/23	1.77E+04	5.50E+03 NC	Yes
Lead	5.40E+00	1.30E+02	mg/kg	C3S-04	138/138	2.77E+01	4.00E+02	No
Magnesium	3.84E+02	1.50E+03	mg/kg	C8S-19	23/23	7.90E+02	NA	No
Manganese	9.85E+01	4.31E+03	mg/kg	C7S-28	138/138	8.30E+02	1.80E+02 NC	Yes
Mercury	4.80E-03	3.34E+01	mg/kg	C3S-02	1120/1128	1.05E+00	2.30E+00 NC	Yes
Nickel	3.10E+00	1.83E+01	mg/kg	C7N-40	138/138	7.25E+00	1.50E+02 NC	No
Potassium	3.64E+02	1.75E+03	mg/kg	C7N-40	23/23	6.62E+02	NA	No
Thallium	5.40E-01	1.50E+00	mg/kg	C7N-40, C8S-12	16/23	1.35E+00	7.80E-02 NC	No
Vanadium	7.90E+00	4.54E+01	mg/kg	C7SF-09	138/138	2.05E+01	3.90E+01 NC	No
Zinc	1.80E+01	1.27E+02	mg/kg	C8N-19	23/23	5.36E+01	2.30E+03 NC	No

[a] Residential soil RSLs (April 2012).

NC = noncancer based, hazard index equals 0.1.

C = cancer based, target risk equals 1E-06.

Chromium assumed to be in the hexavalent form.

TABLE 3-9
SUMMARY OF ANALYTES DETECTED IN FLOODPLAIN SOIL (1 TO 4 FT BGS) AND COMPARISON TO RESIDENTIAL SOIL RSLS
ANNISTON PCB SITE
OU-4

Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Average Concentration (mg/kg)	Screening Toxicity Value [a]	COPC Flag
Aroclors								
Aroclor-1242	2.50E-01	1.20E+00	mg/kg	C3S-22	2/77	2.07E+00	Evaluated as tPCBs	
Aroclor-1248	3.80E-01	3.80E-01	mg/kg	C3SX-04	1/77	2.07E+00	Evaluated as tPCBs	
Aroclor-1254	4.50E-02	2.20E+02	mg/kg	C4S-01	69/77	1.08E+01	Evaluated as tPCBs	
Aroclor-1260	4.10E-02	1.10E+02	mg/kg	C2N-28	72/77	7.66E+00	Evaluated as tPCBs	
Aroclor-1268	4.50E-02	3.80E+00	mg/kg	C4S-04	28/77	2.28E+00	Evaluated as tPCBs	
Total PCBs (sum of Aroclors)	8.60E-02	3.53E+02	mg/kg	OLGP-065	212/240	3.05E+01	1.10E-01 NC	Yes
PCB Dioxin-like Congeners								
PCB-105	4.50E-02	7.60E-02	mg/Kg	C4S-03	4/4	5.95E-02	Evaluated as PCB TEQ	
PCB-118	1.20E-01	1.40E-01	mg/Kg	C4S-03	4/4	1.25E-01	Evaluated as PCB TEQ	
PCB-126	2.10E-02	2.60E-02	mg/kg	C3SX-01	2/4	1.54E-02	Evaluated as PCB TEQ	
PCB-153	1.70E-01	2.10E-01	mg/Kg	C3SX-01	4/4	1.95E-01	Evaluated as PCB TEQ	
PCB-156	1.90E-02	2.60E-02	mg/Kg	C4S-03	4/4	2.23E-02	Evaluated as PCB TEQ	
PCB-157	7.00E-03	7.00E-03	mg/Kg	C4N-06	1/4	1.10E-02	Evaluated as PCB TEQ	
PCB-167	8.70E-03	1.10E-02	mg/kg	C3SX-01	2/4	1.24E-02	Evaluated as PCB TEQ	
PCB Dioxin-like Congener TEQ	6.88E-04	7.99E-04	mg/Kg	C4S-03	4/4	1.55E-03	4.50E-06 C	Yes
Dioxin/Furan Congeners								
1,2,3,7,8-PeCDD	1.70E-07	8.38E-07	mg/kg	C4N-06	3/3	5.03E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8-HxCDD	3.10E-07	1.39E-06	mg/kg	C4N-06	3/3	8.23E-07	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDD	7.60E-07	5.34E-06	mg/kg	C4N-06	3/3	2.58E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8,9-HxCDD	8.80E-07	4.23E-06	mg/kg	C4N-06	3/3	2.59E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,6,7,8-HpCDD	2.31E-05	1.30E-04	mg/kg	C4N-06	3/3	7.11E-05	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDD	1.17E-03	2.90E-03	mg/kg	C3SX-01	3/3	2.04E-03	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDF	1.20E-05	1.70E-05	mg/kg	C4N-06	3/3	1.46E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8-PeCDF	4.73E-06	5.79E-06	mg/kg	C4N-06	3/3	5.27E-06	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,7,8-PeCDF	6.21E-06	1.44E-05	mg/kg	C4N-06	3/3	9.36E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8-HxCDF	1.68E-05	2.40E-05	mg/kg	C3SX-01	3/3	2.13E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDF	3.49E-06	1.03E-05	mg/kg	C3SX-01	3/3	6.76E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8,9-HxCDF	4.80E-07	7.60E-07	mg/kg	C3SX-01	3/3	6.49E-07	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,6,7,8-HxCDF	1.90E-06	4.10E-06	mg/kg	C4N-06	3/3	3.26E-06	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,6,7,8-HpCDF	1.08E-05	8.20E-05	mg/kg	C3SX-01	3/3	4.35E-05	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8,9-HpCDF	3.28E-06	8.82E-06	mg/kg	C4N-06	3/3	6.50E-06	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDF	2.18E-05	1.15E-04	mg/kg	C3SX-01	3/3	7.93E-05	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDD TEQ	1.42E-05	1.42E-05	mg/kg	C4N-06	3/3	1.07E-05	4.50E-06 C	Yes
Inorganics								
Aluminum	1.02E+04	1.47E+04	mg/kg	C7S-37	2/2	1.25E+04	7.70E+03 NC	Yes
Antimony	6.90E-01	8.80E-01	mg/kg	C8N-19	2/2	7.85E-01	3.10E+00 NC	No
Arsenic	4.60E+00	8.50E+00	mg/kg	C3SX-01	5/5	6.64E+00	3.90E-01 C	Yes
Barium	9.26E+01	1.99E+02	mg/kg	C4S-01	5/5	1.41E+02	1.50E+03 NC	No
Beryllium	5.60E-01	1.00E+00	mg/kg	C4N-03	5/5	8.18E-01	1.60E+01 NC	No
Cadmium	2.60E-01	2.50E+00	mg/kg	C8N-19	3/5	8.06E-01	7.00E+00 NC	No
Calcium	5.52E+02	1.22E+03	mg/kg	C8N-19	2/2	8.86E+02	NA	No
Chromium	1.07E+01	5.17E+01	mg/kg	C4S-01	5/5	2.64E+01	2.90E-01 C	Yes
Cobalt	9.70E+00	1.25E+01	mg/kg	C3SX-01	5/5	1.08E+01	2.30E+00 NC	Yes
Copper	1.28E+01	2.99E+01	mg/kg	C8N-19	2/2	2.14E+01	3.10E+02 NC	No
Iron	1.81E+04	2.00E+04	mg/kg	C7S-37	2/2	1.91E+04	5.50E+03 NC	Yes
Lead	1.40E+01	1.11E+02	mg/kg	C4S-01	5/5	4.59E+01	4.00E+02	No
Magnesium	9.39E+02	9.92E+02	mg/kg	C7S-37	2/2	9.66E+02	NA	No
Manganese	7.22E+02	8.99E+02	mg/kg	C7S-37	5/5	8.27E+02	1.80E+02 NC	Yes
Mercury	1.80E-02	5.90E+00	mg/kg	C8N-19	23/24	8.79E-01	2.30E+00 NC	Yes
Nickel	7.70E+00	1.61E+01	mg/kg	C4S-01	5/5	1.09E+01	1.50E+02 NC	No
Potassium	6.29E+02	7.25E+02	mg/kg	C7S-37	2/2	6.77E+02	NA	No
Thallium	5.50E-01	6.20E-01	mg/kg	C7S-37	2/2	5.85E-01	7.80E-02 NC	No
Vanadium	1.42E+01	2.41E+01	mg/kg	C7S-37	5/5	2.01E+01	3.90E+01 NC	No
Zinc	7.01E+01	1.79E+02	mg/kg	C8N-19	2/2	1.25E+02	2.30E+03 NC	No

[a] Residential soil RSLs (April 2012).

NC = noncancer based, hazard index equals 0.1.

C = cancer based, target risk equals 1E-06.

Chromium assumed to be in the hexavalent form.

TABLE 3-10

SUMMARY OF METALS DETECTED IN BACKGROUND SOIL (0 TO 1 FT BGS) FROM FORT MCCLELLAN

ANNISTON PCB SITE

OU-4

Analyte	Frequency of Detection	Range of Detected Concentrations (mg/kg)	Average Concentration (mg/kg)	Standard Deviation (mg/kg)	Average plus 2 SDs (mg/kg)	2X Average Concentration (mg/kg)
Aluminum	70 / 70	2.40E+03 - 3.99E+04	8.15E+03	6.10E+03	2.03E+04	1.63E+04
Antimony	47 / 69	1.10E-01 - 2.60E+00	9.90E-01	1.30E+00	3.59E+00	1.98E+00
Arsenic	66 / 66	8.20E-01 - 4.90E+01	6.86E+00	8.00E+00	2.29E+01	1.37E+01
Barium	70 / 70	1.10E+01 - 2.88E+02	6.20E+01	5.40E+01	1.70E+02	1.24E+02
Beryllium	54 / 54	6.20E-02 - 8.70E-01	4.00E-01	2.20E-01	8.40E-01	8.00E-01
Cadmium	45 / 70	2.40E-02 - 2.10E-01	1.40E-01	1.60E-01	4.60E-01	2.80E-01
Calcium	66 / 70	6.30E+01 - 1.79E+04	8.61E+02	2.27E+03	5.39E+03	1.72E+03
Chromium	70 / 70	2.00E+00 - 1.34E+02	1.85E+01	2.00E+01	5.85E+01	3.70E+01
Cobalt	68 / 70	3.90E-01 - 7.10E+01	7.57E+00	1.20E+01	3.16E+01	1.51E+01
Copper	69 / 70	1.30E+00 - 2.40E+01	6.36E+00	4.40E+00	1.52E+01	1.27E+01
Iron	70 / 70	2.51E+03 - 5.63E+04	1.71E+04	1.16E+04	4.02E+04	3.42E+04
Lead	70 / 70	2.90E+00 - 8.30E+01	2.00E+01	1.50E+01	5.00E+01	4.00E+01
Magnesium	70 / 70	6.00E+01 - 9.60E+03	5.16E+02	1.27E+03	3.05E+03	1.03E+03
Manganese	70 / 70	8.00E+00 - 6.85E+03	7.89E+02	1.19E+03	3.17E+03	1.58E+03
Mercury	23 / 70	3.10E-02 - 3.20E-01	4.00E-02	4.60E-02	1.32E-01	8.00E-02
Nickel	56 / 70	1.80E+00 - 2.20E+01	5.17E+00	4.20E+00	1.36E+01	1.03E+01
Potassium	60 / 70	1.04E+02 - 6.01E+03	4.00E+02	9.46E+02	2.29E+03	8.00E+02
Thallium	55 / 68	1.50E-02 - 3.40E+01	1.71E+00	5.90E+00	1.35E+01	3.42E+00
Vanadium	70 / 70	4.70E+00 - 1.58E+02	2.94E+01	2.60E+01	8.14E+01	5.88E+01
Zinc	64 / 70	4.60E+00 - 2.09E+02	2.03E+01	2.60E+01	7.23E+01	4.06E+01

Source of background: Background Metals Survey Report, Fort McClellan, Anniston, Alabama (SAIC, 1998).

TABLE 3-11
COMPARISONS OF SITE SURFACE SOIL METALS CONCENTRATIONS WITH BACKGROUND SOIL LEVELS
ANNISTON PCB SITE
OU-4

Analyte	Site		Fort McClellan Background			Ratio of Site Maximum to Background Level of 2X Average
	Maximum (mg/kg)	Average (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	2X Average (mg/kg)	
Aluminum *	2.08E+04	1.09E+04	3.99E+04	8.15E+03	1.63E+04	1.3
Antimony	1.50E+00	7.07E-01	2.60E+00	9.90E-01	1.98E+00	0.76
Arsenic *	1.85E+01	6.70E+00	4.90E+01	6.86E+00	1.37E+01	1.3
Barium	2.81E+02	1.00E+02	2.88E+02	6.20E+01	1.24E+02	2.3
Beryllium	1.30E+00	6.50E-01	8.70E-01	4.00E-01	8.00E-01	1.6
Cadmium	2.10E+00	3.21E-01	2.10E-01	1.40E-01	2.80E-01	7.5
Calcium	1.43E+03	7.57E+02	1.79E+04	8.61E+02	1.72E+03	0.83
Chromium *	7.97E+01	1.69E+01	1.34E+02	1.85E+01	3.70E+01	2.2
Cobalt *	3.51E+01	8.74E+00	7.10E+01	7.57E+00	1.51E+01	2.3
Copper	2.33E+01	1.21E+01	2.40E+01	6.36E+00	1.27E+01	1.8
Iron *	4.28E+04	1.77E+04	5.63E+04	1.71E+04	3.42E+04	1.3
Lead	1.30E+02	2.71E+01	8.30E+01	2.00E+01	4.00E+01	3.2
Magnesium	1.50E+03	7.90E+02	9.60E+03	5.16E+02	1.03E+03	1.5
Manganese *	4.31E+03	8.25E+02	6.85E+03	7.89E+02	1.58E+03	2.7
Mercury *	3.34E+01	9.95E-01	3.20E-01	4.00E-02	8.00E-02	418
Nickel	1.83E+01	7.32E+00	2.20E+01	5.17E+00	1.03E+01	1.8
Potassium	1.75E+03	6.62E+02	6.01E+03	4.00E+02	8.00E+02	2.2
Thallium *	1.50E+00	1.35E+00	3.40E+01	1.71E+00	3.42E+00	0.44
Vanadium *	4.54E+01	2.04E+01	1.58E+02	2.94E+01	5.88E+01	0.77
Zinc	1.27E+02	5.36E+01	2.09E+02	2.03E+01	4.06E+01	3.1

* Maximum detected site concentration exceeded the residential soil RSL (see Table 3-8).

SECTION 4 TABLES

TABLE 4-1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
ANNISTON PCB SITE
OU-4

Contaminant of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD: Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Dates (2)
Total PCBs (3)	Chronic	2.0E-05	(mg/kg-day)	1.0	2.0E-05	(mg/kg-day)	Eyes, Immune system	300	IRIS	4/2/2012
PCB Dioxin-like Congener TEQ	Chronic	7.0E-10	(mg/kg-day)	1.0	7.0E-10	(mg/kg-day)	Developmental	30	IRIS	3/27/2012
Mercury (4)	Chronic	3.0E-04	(mg/kg-day)	1.0	3.0E-04	(mg/kg-day)	Immune system	1,000	IRIS	4/2/2012
Methylmercury (5)	Chronic	1.0E-04	(mg/kg-day)	1.0	1.0E-04	(mg/kg-day)	Nervous system	10	IRIS	4/2/2012
Total PCBs (3)	Subchronic	6.0E-05	(mg/kg-day)	1.0	6.0E-05	(mg/kg-day)	Eyes, Immune system	100	IRIS (7)	6/13/2012
PCB Dioxin-like Congener TEQ	Subchronic	7.0E-10	(mg/kg-day)	1.0	7.0E-10	(mg/kg-day)	Developmental	30	IRIS (8)	6/13/2012
Mercury (4)	Subchronic	3.0E-03	(mg/kg-day)	1.0	3.0E-03	(mg/kg-day)	Immune system	100	IRIS (9)	6/13/2012
2,3,7,8-TCDD TEQ	Chronic	7.0E-10	(mg/kg-day)	1.0	7.0E-10	(mg/kg-day)	Developmental	30	IRIS	3/27/2012
Benzo(a)anthracene	---	NA	---	---	NA	---	---	---	---	---
Benzo(a)pyrene	---	NA	---	---	NA	---	---	---	---	---
Benzo(b)fluoranthene	---	NA	---	---	NA	---	---	---	---	---
Benzo(k)fluoranthene	---	NA	---	---	NA	---	---	---	---	---
Chrysene	---	NA	---	---	NA	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	---	NA	---	---	NA	---	---	---	---	---
Aluminum	Chronic	1.0E+00	(mg/kg-day)	1.0	1.0E+00	(mg/kg-day)	Nervous system	100	PPRTV	4/2/2012
Arsenic	Chronic	3.0E-04	(mg/kg-day)	1.0	3.0E-04	(mg/kg-day)	Skin	3	IRIS	4/2/2012
Chromium, Total (6)	Chronic	3.0E-03	(mg/kg-day)	0.025	7.5E-05	(mg/kg-day)	None observed	900	IRIS	4/2/2012
Cobalt	Chronic	3.0E-04	(mg/kg-day)	1.0	3.0E-04	(mg/kg-day)	Thyroid	3,000	PPRTV	4/2/2012
Iron	Chronic	7.0E-01	(mg/kg-day)	1.0	7.0E-01	(mg/kg-day)	Gastrointestinal	1.5	PPRTV	4/2/2012
Manganese	Chronic	2.4E-02	(mg/kg-day)	0.04	9.6E-04	(mg/kg-day)	Nervous system	3	IRIS	4/2/2012
2,3,7,8-TCDD TEQ	Subchronic	7.0E-10	(mg/kg-day)	1.0	7.0E-10	(mg/kg-day)	Developmental	30	IRIS (8)	6/13/2012
Benzo(a)anthracene	---	NA	(mg/kg-day)	---	NA	(mg/kg-day)	---	---	---	---
Benzo(a)pyrene	---	NA	(mg/kg-day)	---	NA	(mg/kg-day)	---	---	---	---
Benzo(b)fluoranthene	---	NA	(mg/kg-day)	---	NA	(mg/kg-day)	---	---	---	---
Benzo(k)fluoranthene	---	NA	(mg/kg-day)	---	NA	(mg/kg-day)	---	---	---	---
Chrysene	---	NA	(mg/kg-day)	---	NA	(mg/kg-day)	---	---	---	---
Indeno(1,2,3-cd)pyrene	---	NA	(mg/kg-day)	---	NA	(mg/kg-day)	---	---	---	---
Aluminum	Subchronic	1.0E+00	(mg/kg-day)	1.0	1.0E+00	(mg/kg-day)	Nervous system	100	PPRTV (8)	6/13/2012
Arsenic	Subchronic	3.0E-04	(mg/kg-day)	1.0	3.0E-04	(mg/kg-day)	Skin	3	Chronic value	6/13/2012
Chromium, Total (6)	Subchronic	9.0E-03	(mg/kg-day)	0.025	2.3E-04	(mg/kg-day)	None observed	300	IRIS (7)	6/13/2012
Cobalt	Subchronic	3.0E-03	(mg/kg-day)	1.0	3.0E-03	(mg/kg-day)	Thyroid	300	PPTRV (9)	6/13/2012
Iron	Subchronic	7.0E-01	(mg/kg-day)	1.0	7.0E-01	(mg/kg-day)	Gastrointestinal	1.5	PPRTV	6/13/2012
Manganese	Subchronic	2.4E-02	(mg/kg-day)	0.04	9.6E-04	(mg/kg-day)	Nervous system	3	Chronic value	6/13/2012

(1) Source: RAGS Part E Guidance (EPA, 2004)

Definitions: IRIS = Integrated Risk Information System

TABLE 4-1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
ANNISTON PCB SITE
OU-4

Contaminant of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD: Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Dates (2)

(2) Represents date source was searched.

(3) Aroclor 1254 toxicity criteria used.

(4) Mercuric chloride toxicity criteria used. Applicable to soil-mediated exposures.

(5) Methylmercury toxicity values applicable to fish-mediated exposure only. Subchronic RfDs not presented because an age-adjusted approach (resulting in chronic exposure) was used for this pathway.

(6) Chromium VI toxicity criteria used.

(7) Chronic RfD times subchronic to chronic modifying factor of 3.

(8) Chronic RfD times subchronic to chronic modifying factor of 1.

(9) Chronic RfD times subchronic to chronic modifying factor of 10.

NA = Not available

PPRTV = Provisional peer-reviewed toxicity value

TABLE 4-2
CANCER TOXICITY DATA -- ORAL/DERMAL
ANNISTON PCB SITE
OU-4

Contaminant of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (1)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Dates (2)
Total PCBs (3)	2.00E+00	(mg/kg-day)$^{-1}$	1.0	2.00E+00	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
Total PCBs (4)	1.00E+00	(mg/kg-day)$^{-1}$	1.0	1.00E+00	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
PCB Dioxin-like Congener TEQ	1.30E+05	(mg/kg-day)$^{-1}$	1.0	1.30E+05	(mg/kg-day)$^{-1}$	B2	CalEPA	4/2/2012
Mercury	NA	---	---	NA	---	D	IRIS	4/2/2012
2,3,7,8-TCDD TEQ	1.30E+05	(mg/kg-day)$^{-1}$	1.0	1.30E+05	(mg/kg-day)$^{-1}$	B2	CalEPA	4/2/2012
Benzo(a)anthracene	7.30E-01	(mg/kg-day)$^{-1}$	1.0	7.30E-01	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
Benzo(a)pyrene	7.30E+00	(mg/kg-day)$^{-1}$	1.0	7.30E+00	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
Benzo(b)fluoranthene	7.30E-01	(mg/kg-day)$^{-1}$	1.0	7.30E-01	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
Benzo(k)fluoranthene	7.30E-02	(mg/kg-day)$^{-1}$	1.0	7.30E-02	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
Chrysene	7.30E-03	(mg/kg-day)$^{-1}$	1.0	7.30E-03	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
Indeno(1,2,3-cd)pyrene	7.30E-01	(mg/kg-day)$^{-1}$	1.0	7.30E-01	(mg/kg-day)$^{-1}$	B2	IRIS	4/2/2012
Aluminum	NA	---	---	NA	---	No information	---	---
Arsenic	1.50E+00	(mg/kg-day)$^{-1}$	1.0	1.50E+00	(mg/kg-day)$^{-1}$	A	IRIS	4/2/2012
Chromium, Total (5)	5.00E-01	(mg/kg-day)$^{-1}$	0.025	2.00E+01	(mg/kg-day)$^{-1}$	Likely to be carcinogenic	NJDEP	4/2/2012
Cobalt	NA	---	---	NA	---	No information	---	---
Iron	NA	---	---	NA	---	No information	---	---
Lead	NA	---	---	NA	---	B2	IRIS	4/2/2012
Manganese	NA	---	---	NA	---	D	IRIS	4/2/2012

(1) Source: RAGS Part E Guidance (EPA, 2004)

(2) Represents date source was searched.

(3) The IRIS upper bound slope factor for high risk and persistence used for RME scenario.

(4) The IRIS central-estimate slope factor used for CTE scenario.

(5) Chromium VI toxicity criteria used.

Definitions: CalEPA=California Environmental Protection Agency

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

D = Not classifiable as a human carcinogen.

IRIS = Integrated Risk Information System

NA = Not available.

NJDEP = New Jersey Department of Environmental Protection

SECTION 5 TABLES

TABLE 5-1
EXPOSURE POINT CONCENTRATION SUMMARY - LOCATION A FISH
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Location A Fish Tissue

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Group A	**All Species**								
	Total PCBs	mg/kg	2.11	2.38	9.47	2.38	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000012	0.000016	0.000032	0.000016	mg/kg	95% Student's-t UCL - Normal	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.0000029	0.0000051	0.000011	0.0000051	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	Mercury	mg/kg	0.28	0.32	0.87	0.32	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	Bass								
	Total PCBs	mg/kg	2.2	2.75	9.5	2.75	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000015	NC	0.000021	0.000021	mg/kg	75th Percentile*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.0000031	NC	0.0000048	0.0000039	mg/kg	75th Percentile*	See Text
	Mercury	mg/kg	0.42	0.48	0.87	0.48	mg/kg	95% H-UCL - Lognormal	ProUCL Recommendation
	Catfish								
	Total PCBs	mg/kg	2.44	2.97	5.8	2.97	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000042	NC	0.0000058	0.0000058	mg/kg	Maximum*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.00000091	NC	0.00000093	0.00000093	mg/kg	Maximum*	See Text
	Mercury	mg/kg	0.16	0.19	0.43	0.19	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	Panfish								
	Total PCBs	mg/kg	1.69	2.1	4.4	2.11	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000011	NC	0.000032	0.000013	mg/kg	75th Percentile*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.0000036	NC	0.000011	0.0000050	mg/kg	75th Percentile*	See Text
	Mercury	mg/kg	0.27	0.34	0.70	0.34	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation

NC = Not calculated due to insufficient sample size.

* The maximum concentration used for EPC due to less than 3 samples collected; the 75th percentile used for EPC when 3-7 samples collected.

TABLE 5-2
EXPOSURE POINT CONCENTRATION SUMMARY - LOCATION B FISH
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Location B Fish Tissue

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic - Data Distribution	Rationale
Group B	**All Species**								
	Total PCBs	mg/kg	2.51	2.88	11.8	2.88	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000065	NC	0.000010	0.0000074	mg/kg	75th Percentile*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.0000014	NC	0.0000024	0.0000017	mg/kg	75th Percentile*	See Text
	Mercury	mg/kg	0.43	0.48	1.3	0.48	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	Bass								
	Total PCBs	mg/kg	2.9	4.77	11.8	4.77	mg/kg	95% Chebyshev (Mean, Sd) UCL - Not Discernable	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000084	NC	0.000010	0.000010	mg/kg	Maximum*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.0000017	NC	0.0000024	0.0000024	mg/kg	Maximum*	See Text
	Mercury	mg/kg	0.68	0.77	1.3	0.77	mg/kg	95% Student's-t UCL - Normal	ProUCL Recommendation
	Catfish								
	Total PCBs	mg/kg	3.09	4.01	10.8	4.01	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000051	NC	0.0000051	0.0000051	mg/kg	Maximum*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.00000087	NC	0.00000087	0.00000087	mg/kg	Maximum*	See Text
	Mercury	mg/kg	0.36	0.44	1.3	0.44	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	Panfish								
	Total PCBs	mg/kg	1.55	1.86	4.4	1.86	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000041	NC	0.0000041	0.0000041	mg/kg	Maximum*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.0000015	NC	0.0000015	0.0000015	mg/kg	Maximum*	See Text
	Mercury	mg/kg	0.25	0.28	0.51	0.28	mg/kg	95% Student's-t UCL - Normal	ProUCL Recommendation

NC = Not calculated due to insufficient sample size.

* The maximum concentration used for EPC due to less than 3 samples collected; the 75th percentile used for EPC when 3-7 samples collected.

TABLE 5-3
EXPOSURE POINT CONCENTRATION SUMMARY - LOCATION C FISH
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Location C Fish Tissue

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Group C	**All Species**								
	Total PCBs	mg/kg	4.35	5.43	34	5.43	mg/kg	95% Chebyshev (Mean, Sd) UCL - Not Discernable	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000069	0.0000083	0.000018	0.0000083	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.00000068	0.00000079	0.0000014	0.00000079	mg/kg	95% Student's-t UCL - Normal	ProUCL Recommendation
	Mercury	mg/kg	0.39	0.43	1.9	0.43	mg/kg	95% KM (BCA) UCL - Lognormal	ProUCL Recommendation
	Bass								
	Total PCBs	mg/kg	4.75	5.24	14.9	5.24	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000073	NC	0.000010	0.0000081	mg/kg	75th Percentile*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.00000077	NC	0.0000011	0.00000077	mg/kg	75th Percentile*	See Text
	Mercury	mg/kg	0.64	0.71	1.9	0.71	mg/kg	95% Student's-t UCL - Normal	ProUCL Recommendation
	Catfish								
	Total PCBs	mg/kg	5.61	6.68	34	6.68	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000075	NC	0.000012	0.0000088	mg/kg	75th Percentile*	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.00000091	NC	0.0000014	0.0000010	mg/kg	75th Percentile*	See Text
	Mercury	mg/kg	0.29	0.33	0.89	0.33	mg/kg	95% KM (BCA) UCL - Gamma	ProUCL Recommendation
	Panfish								
	Total PCBs	mg/kg	2.94	3.32	10.4	3.32	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000064	0.0000094	0.000018	0.0000094	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.00000053	0.00000062	0.00000072	0.00000062	mg/kg	95% Student's-t UCL - Normal	ProUCL Recommendation
	Mercury	mg/kg	0.24	0.27	0.53	0.27	mg/kg	95% Approximate Gamma UCL - Gamma	ProUCL Recommendation

NC = Not calculated due to insufficient sample size.

* The maximum concentration used for EPC due to less than 3 samples collected; the 75th percentile used for EPC when 3-7 samples collected.

TABLE 5-4
FISH INGESTION EXPOSURE PARAMETERS
ANNISTON PCB SITE
OU-4

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

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Fishermen	Young Child (1 to 6 years) and Adult (age-adjusted)	Fish Tissue	C_f	Concentration in Fish	mg/kg	Group- and COPC-specific	See Tables 5-1 through 5-3	Group- and COPC-specific	See Tables 5-1 through 5-3	Chronic daily intake - cancer (mg/kg-day) = C_f x IRFadj x FI x CF x IAF x EF x 1/AT-C Chronic daily intake - noncancer (mg/kg-day) = C_f x IRFadj x FI x CF x IAF x EF x 1/AT-NC where: IRFadj = (IRFc x EDc x 1/BWc)+(IRFa x EDa x 1/BWa)
				IRFadj	Age-adjusted fish ingestion rate	g-yr/kg-day	16.3	Calculated	1.5	Calculated	
				IRFc	Fish Ingestion Rate - child	g/day	15	one-half the adult ingestion rate	1.41	one-half the adult ingestion rate	
				IRFa	Fish Ingestion Rate - adult	g/day	30	ADEM, 1993	2.83	Arcadis, 2009	
				FI	Fraction of Ingested Fish from Choccolocco Creek	unitless	River mile 0-10 = 1 River mile 10-37 = 0.5	See Section 5.2.2.2	River mile 0-10 = 1 River mile 10-37 = 0.5	See Section 5.2.2.2	
				CF	Conversion Factor	kg/g	1.00E-03	Unit conversion factor	1.00E-03	Unit conversion factor	
				IAF	Gastrointestinal Absorption Factor	unitless	1	tPCBs = EPA, 1986; rest = default	1	tPCBs = EPA, 1986; rest = default	
				EF	Exposure Frequency	days/year	350	Professional judgment	350	Professional judgment	
				EDc	Exposure Duration - child	years	6	Calculated based on young child's age	6	Calculated based on young child's age	
				EDa	Exposure Duration - adult	years	24	Professional judgment	24	Professional judgment	
				BWc	Body Weight - child	kg	15	EPA, 2008	15	EPA, 2008	
				BWa	Body Weight - adult	kg	70	EPA, 1989	70	EPA, 1989	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	10,950	Total ED (30 years) x 365 days/year	10,950	ED x 365 days/year	

TABLE 5-5
SUMMARY OF CANCER RISKS AND HAZARD INDICES - RME SCENARIO - PRIMARY COPCS
ANNISTON PCB SITE
OU-4

Location Grouping	Species	Cancer Risk	Hazard Index	PCB Dioxin-like Congener TEQ	
		Total PCBs	Total PCBs and Mercury	Cancer Risk	Hazard Quotient
A	All Fish	1E-03	64	5E-04	12
	Bass	1E-03	74	6E-04	15
	Catfish	1E-03	78	2E-04	4
	Panfish	9E-04	57	4E-04	9
B	All Fish	6E-04	39	1E-04	3
	Bass	1E-03	64	1E-04	4
	Catfish	9E-04	53	7E-05	2
	Panfish	4E-04	25	6E-05	2
C	All Fish	1E-03	72	1E-04	3
	Bass	1E-03	70	1E-04	3
	Catfish	1E-03	88	1E-04	3
	Panfish	7E-04	44	1E-04	4

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.

🟨 = cancer risk between 1E-06 and 1E-04.

🟥 = cancer risk greater than 1E-04 or hazard index greater than 1.0.

TABLE 5-6
SUMMARY OF CANCER RISKS AND HAZARD INDICES - RME SCENARIO - TEQS
ANNISTON PCB SITE
OU-4

Location Grouping	Species	Cancer Risk			Contribution of PCB Dioxin-like Congener to Total TEQ Risk	Hazard Quotient			Contribution of PCB Dioxin-like Congener to Total TEQ HQ
		PCB Dioxin-like Congener TEQ	2,3,7,8-TCDD TEQ	Total		PCB Dioxin-like Congener TEQ	2,3,7,8-TCDD TEQ	Total	
A	All Fish	5E-04	1E-04	6E-04	76%	12	4	16	76%
	Bass	6E-04	1E-04	7E-04	84%	15	3	18	84%
	Catfish	2E-04	3E-05	2E-04	86%	4	0.7	5	86%
	Panfish	4E-04	1E-04	5E-04	71%	9	4	13	71%
B	All Fish	1E-04	3E-05	1E-04	81%	3	0.6	3	81%
	Bass	1E-04	4E-05	2E-04	81%	4	0.9	5	81%
	Catfish	7E-05	1E-05	9E-05	85%	2	0.3	2	85%
	Panfish	6E-05	2E-05	8E-05	73%	2	0.6	2	73%
C	All Fish	1E-04	1E-05	1E-04	91%	3	0.3	3	91%
	Bass	1E-04	1E-05	1E-04	91%	3	0.3	3	91%
	Catfish	1E-04	2E-05	1E-04	89%	3	0.4	4	89%
	Panfish	1E-04	9E-06	1E-04	94%	4	0.2	4	94%

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.
🟨 = cancer risk between 1E-06 and 1E-04.
🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

TABLE 5-7
SUMMARY OF CANCER RISKS AND HAZARD INDICES - CTE SCENARIO - PRIMARY COPCS
ANNISTON PCB SITE
OU-4

Location Grouping	Species	Cancer Risk	Hazard Index	PCB Dioxin-like Congener TEQ	
		Total PCBs	Total PCBs and Mercury	Cancer Risk	Hazard Quotient
A	All Fish	5E-05	6	4E-05	1
	Bass	6E-05	7	6E-05	1
	Catfish	6E-05	7	2E-05	0.4
	Panfish	4E-05	5	3E-05	0.9
B	All Fish	6E-05	7	2E-05	0.5
	Bass	1E-04	12	3E-05	0.7
	Catfish	8E-05	10	1E-05	0.4
	Panfish	4E-05	5	1E-05	0.3
C	All Fish	1E-04	14	2E-05	0.6
	Bass	1E-04	13	2E-05	0.6
	Catfish	1E-04	17	2E-05	0.6
	Panfish	7E-05	8	3E-05	0.7

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.
🟨 = cancer risk between 1E-06 and 1E-04.
🟥 = cancer risk greater than 1E-04 or hazard index greater than 1.0.

TABLE 5-8
SUMMARY OF CANCER RISKS AND HAZARD INDICES - CTE SCENARIO - TEQS
ANNISTON PCB SITE
OU-4

Location Grouping	Species	Cancer Risk			Contribution of PCB Dioxin-like Congener to Total TEQ Risk	Hazard Quotient			Contribution of PCB Dioxin-like Congener to Total TEQ HQ
		PCB Dioxin-like Congener TEQ	2,3,7,8-TCDD TEQ	Total		PCB Dioxin-like Congener TEQ	2,3,7,8-TCDD TEQ	Total	
A	All Fish	4E-05	1E-05	6E-05	76%	1	0.4	2	76%
	Bass	6E-05	1E-05	7E-05	84%	1	0.3	2	84%
	Catfish	2E-05	3E-06	2E-05	86%	0.4	0.07	0.5	86%
	Panfish	3E-05	1E-05	5E-05	71%	0.9	0.4	1	71%
B	All Fish	2E-05	5E-06	2E-05	81%	0.5	0.1	0.6	81%
	Bass	3E-05	7E-06	3E-05	81%	0.7	0.2	0.9	81%
	Catfish	1E-05	2E-06	2E-05	85%	0.4	0.06	0.4	85%
	Panfish	1E-05	4E-06	2E-05	73%	0.3	0.1	0.4	73%
C	All Fish	2E-05	2E-06	2E-05	91%	0.6	0.06	0.6	91%
	Bass	2E-05	2E-06	2E-05	91%	0.6	0.05	0.6	91%
	Catfish	2E-05	3E-06	3E-05	89%	0.6	0.07	0.7	89%
	Panfish	3E-05	2E-06	3E-05	94%	0.7	0.04	0.7	94%

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.
🟨 = cancer risk between 1E-06 and 1E-04.
🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

SECTION 6 TABLES

TABLE 6-1

COMPARISON OF EXPOSURE UNIT tPCB CONCENTRATIONS TO 1 MG/KG tPCBS - SURFACE SOIL

ANNISTON PCB SITE

OU-4

Exposure Unit	Units	tPCB 95% UCL*	tPCB Maximum Detected Concentration	tPCB EPC	tPCB EPC > 1 mg/kg
C1-EU1	mg/kg	1.05E+01	5.46E+01	1.05E+01	yes
C1-EU2	mg/kg	4.61E+01	2.28E+02	4.61E+01	yes
C2N-EU1	mg/kg	1.63E+01	7.25E+01	1.63E+01	yes
C2N-EU2	mg/kg	4.82E-01	2.68E+00	4.82E-01	no
C2S-EU1	mg/kg	1.58E-01	5.05E-01	1.58E-01	no
C3N-EU1	mg/kg	2.32E+01	8.95E+01	2.32E+01	yes
C3N-EU2	mg/kg	3.69E+01	7.09E+01	3.69E+01	yes
C3S-EU1	mg/kg	1.95E+01	1.27E+02	1.95E+01	yes
C3S-EU2	mg/kg	2.36E+01	6.94E+01	2.36E+01	yes
C4N-EU1	mg/kg	8.12E+00	2.53E+01	8.12E+00	yes
C4N-EU2	mg/kg	8.50E+00	1.99E+01	8.50E+00	yes
C4S-EU1	mg/kg	1.63E+01	4.29E+01	1.63E+01	yes
C4S-EU2	mg/kg	2.51E+00	1.01E+01	2.51E+00	yes
C4S-EU3	mg/kg	5.50E+00	1.63E+01	5.50E+00	yes
C5N-EU1	mg/kg	6.05E+00	9.01E+00	6.05E+00	yes
C5N-EU2	mg/kg	5.62E-01	8.01E+00	5.62E-01	no
C5S-EU1	mg/kg	1.33E+00	1.45E+01	1.33E+00	yes
C6N-EU1	mg/kg	2.14E+00	7.90E+00	2.14E+00	yes
C6S-EU1	mg/kg	2.88E+00	1.64E+01	2.88E+00	yes
C7N-EU1	mg/kg	3.72E-01	5.02E+00	3.72E-01	no
C7S-EU1	mg/kg	1.32E+00	9.85E+00	1.32E+00	yes
C8N-EU1	mg/kg	3.09E+00	8.13E+00	3.09E+00	yes
C8S-EU1	mg/kg	7.58E-01	3.64E+00	7.58E-01	no
C9N-EU1	mg/kg	9.85E-01	4.46E+00	9.85E-01	no
C9S-EU1	mg/kg	2.52E-01	4.40E-01	2.52E-01	no

Note: Shading Indicates that the EU had a tPCB EPC in exceedance of 1.0 mg/kg. See text for explanation.

* ProUCL was used to calculate the 95% UCLs. Section 6.2.2 presents the approach that was used to calculate the 95% UCLs.

TABLE 6-2

COMPARISONS OF EXPOSURE UNIT tPCB CONCENTRATIONS TO 1 MG/KG tPCBS - TOTAL SOIL

ANNISTON PCB SITE

OU-4

Exposure Unit	Units	tPCB 95% UCL*	tPCB Maximum Detected Concentration	tPCB EPC	tPCB EPC > 1 mg/kg
C1-EU2	mg/kg	6.69E+01	1.72E+02	6.69E+01	yes
C2N-EU1	mg/kg	3.62E+01	1.71E+02	3.62E+01	yes
C4N-EU1	mg/kg	6.08E+00	1.60E+01	6.08E+00	yes
C5N-EU1	mg/kg	1.19E+01	2.26E+01	1.19E+01	yes

Note: Shading Indicates that the EU had a tPCB EPC in exceedance of 1.0 mg/kg. See text for explanation.

* ProUCL was used to calculate the 95% UCLs. Section 6.2.2 presents the approach that was used to calculate the 95% UCLs.

TABLE 6-3
OCCURRENCE AND DISTRIBUTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE SOIL - PRIMARY COPCS
ANNISTON PCB SITE
OU-4

Exposure Point	Primary COPC	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Range of Detection Limits
C1-EU1	Total PCBs	3.70E-02	5.46E+01	mg/kg	OLGP-048	47/67	4.00E-02 - 4.00E-02
C1-EU2	Total PCBs	1.15E-01	2.28E+02	mg/kg	NHA-5	28/28	NA
C2N-EU1	Total PCBs	4.35E-02	7.25E+01	mg/kg	C2N-28	7/14	3.75E-02 - 4.70E-02
	PCB Dioxin-like Congener TEQ	4.64E-04	9.43E-04	mg/kg	C2N-24	2/2	NA
	Mercury	1.94E-02	1.65E+00	mg/kg	C2N-28	14/14	NA
C2N-EU2	Total PCBs	4.55E-02	2.68E+00	mg/kg	C2S-18	4/19	4.20E-02 - 4.85E-02
	PCB Dioxin-like Congener TEQ	3.62E-04	7.49E-04	mg/kg	C2S-18	2/2	NA
	Mercury	2.00E-02	6.40E-01	mg/kg	C2S-18	19/19	NA
C2S-EU1	Total PCBs	5.15E-02	5.05E-01	mg/kg	C2S-20	4/16	4.00E-02 - 4.55E-02
	PCB Dioxin-like Congener TEQ	1.72E-04	1.72E-04	mg/kg	C2S-20	1/1	NA
	Mercury	1.25E-02	1.26E-01	mg/kg	C2S-17, C2S-20	16/16	NA
C3N-EU1	Total PCBs	7.15E-02	8.95E+01	mg/kg	C3N-05	50/51	3.90E-02 - 3.90E-02
	PCB Dioxin-like Congener TEQ	3.58E-04	2.81E-03	mg/kg	C3NX-12	11/11	NA
	Mercury	6.45E-02	1.44E+01	mg/kg	C3NX-20	51/51	NA
C3N-EU2	Total PCBs	4.20E-02	7.09E+01	mg/kg	C3N-17	11/12	4.00E-02 - 4.00E-02
	PCB Dioxin-like Congener TEQ	3.43E-04	3.43E-04	mg/kg	C3N-15	1/1	NA
	Mercury	3.30E-02	6.14E+00	mg/kg	C3N-15	12/12	NA
C3S-EU1	Total PCBs	4.50E-02	1.27E+02	mg/kg	C3S-02	15/35	3.85E-02 - 4.40E-02
	PCB Dioxin-like Congener TEQ	1.63E-04	3.23E-04	mg/kg	C3S-13	2/2	NA
	Mercury	1.20E-02	1.89E+01	mg/kg	C3S-02	34/35	8.30E-03 - 8.30E-03
C3S-EU2	Total PCBs	1.40E-01	6.94E+01	mg/kg	C3S-18	21/23	3.70E-02 - 3.85E-02
	PCB Dioxin-like Congener TEQ	1.82E-04	8.09E-04	mg/kg	C3SX-09	5/5	NA
	Mercury	3.50E-02	1.35E+01	mg/kg	C3S-18	23/23	NA
C4N-EU1	Total PCBs	4.30E-02	2.53E+01	mg/kg	C3N-23	50/53	3.95E-02 - 4.20E-02
	PCB Dioxin-like Congener TEQ	1.52E-04	2.41E-03	mg/kg	C4N-15	13/13	NA
	Mercury	3.95E-02	8.95E+00	mg/kg	C4N-13	53/53	NA
C4N-EU2	Total PCBs	3.95E-02	1.99E+01	mg/kg	C4N-43	30/41	3.65E-02 - 7.10E-02
	PCB Dioxin-like Congener TEQ	5.05E-04	1.72E-03	mg/kg	C4N-33	5/5	NA
	Mercury	2.80E-02	1.38E+01	mg/kg	C4N-43	41/41	NA
C4S-EU1	Total PCBs	4.20E-02	4.29E+01	mg/kg	C4S-04	28/31	3.50E-02 - 4.25E-02
	PCB Dioxin-like Congener TEQ	1.82E-04	2.81E-03	mg/kg	C4SX-02	6/6	NA
	Mercury	6.15E-03	9.15E+00	mg/kg	C4S-04	31/31	NA
C4S-EU2	Total PCBs	4.70E-02	1.01E+01	mg/kg	C4S-25	25/38	4.05E-02 - 4.80E-02
	PCB Dioxin-like Congener TEQ	5.16E-04	1.71E-03	mg/kg	C4S-19	6/6	NA
	Mercury	1.50E-02	4.95E+00	mg/kg	C4S-25	38/38	NA
C4S-EU3	Total PCBs	5.10E-02	1.63E+01	mg/kg	C4SF-30	23/27	3.95E-02 - 4.25E-02
	PCB Dioxin-like Congener TEQ	4.94E-04	8.58E-04	mg/kg	C4SF-24	4/4	NA
	Mercury	3.70E-02	4.25E+00	mg/kg	C4S-44	27/27	NA
C5N-EU1	Total PCBs	5.65E-02	9.01E+00	mg/kg	C4NF-34	12/12	NA
	PCB Dioxin-like Congener TEQ	9.59E-04	1.71E-03	mg/kg	C4N-48	3/3	NA
	Mercury	3.80E-02	2.20E+00	mg/kg	C4N-48	12/12	NA
C5N-EU2	Total PCBs	4.00E-02	8.01E+00	mg/kg	C5N-18	37/76	3.65E-02 - 4.40E-02
	PCB Dioxin-like Congener TEQ	3.12E-04	9.18E-04	mg/kg	C5N-12	9/9	NA
	Mercury	2.00E-02	4.20E+00	mg/kg	C5N-18	76/76	NA
C5S-EU1	Total PCBs	4.10E-02	1.45E+01	mg/kg	C5S-07	36/78	3.65E-02 - 4.40E-02
	PCB Dioxin-like Congener TEQ	1.82E-04	9.61E-04	mg/kg	C4SF-33	10/10	NA
	Mercury	1.80E-02	4.65E+00	mg/kg	C4S-57	78/78	NA
C6N-EU1	Total PCBs	3.90E-02	7.90E+00	mg/kg	C6N-19	14/20	3.70E-02 - 3.90E-02
	PCB Dioxin-like Congener TEQ	3.63E-04	1.62E-03	mg/kg	C6N-14	6/6	NA
	Mercury	3.00E-02	4.40E+00	mg/kg	C6N-19	20/20	NA
C6S-EU1	Total PCBs	4.05E-02	1.64E+01	mg/kg	C6S-02	13/21	3.70E-02 - 4.45E-02
	PCB Dioxin-like Congener TEQ	4.43E-04	1.81E-03	mg/kg	C6S-04	4/4	NA
	Mercury	2.60E-02	9.35E+00	mg/kg	C6S-02	21/21	NA

TABLE 6-3

OCCURRENCE AND DISTRIBUTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE SOIL - PRIMARY COPCS

ANNISTON PCB SITE

OU-4

Exposure Point	Primary COPC	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Range of Detection Limits
C7N-EU1	Total PCBs	3.60E-02	5.02E+00	mg/kg	C7N-15	33/73	3.45E-02 - 5.70E-02
	PCB Dioxin-like Congener TEQ	1.51E-04	3.43E-04	mg/kg	C7NF-17	7/9	1.41E-04 - 1.51E-04
	Mercury	1.10E-02	1.40E+00	mg/kg	C7NF-17	24/25	6.80E-03 - 6.80E-03
C7S-EU1	Total PCBs	4.15E-02	9.85E+00	mg/kg	C7S-26	31/77	3.45E-02 - 4.05E-02
	PCB Dioxin-like Congener TEQ	1.46E-04	3.32E-03	mg/kg	C7S-37	7/8	1.41E-04 - 1.41E-04
	Mercury	7.50E-03	2.98E+00	mg/kg	C7S-37	26/26	NA
C8N-EU1	Total PCBs	3.65E-02	8.13E+00	mg/kg	C8N-16	18/24	3.50E-02 - 3.85E-02
	PCB Dioxin-like Congener TEQ	2.42E-03	4.14E-03	mg/kg	C8N-12	2/2	NA
	Mercury	1.90E-02	5.20E+00	mg/kg	C8N-12	6/6	NA
C8S-EU1	Total PCBs	4.60E-02	3.64E+00	mg/kg	C8S-13	10/20	3.50E-02 - 5.10E-02
	PCB Dioxin-like Congener TEQ	1.62E-04	2.32E-04	mg/kg	C8S-19	2/2	NA
	Mercury	4.35E-01	7.50E-01	mg/kg	C8S-12	2/2	NA
C9N-EU1	Total PCBs	5.75E-02	4.46E+00	mg/kg	C9N-01	7/20	3.70E-02 - 4.15E-02
	PCB Dioxin-like Congener TEQ	4.03E-04	9.62E-04	mg/kg	C9N-02	3/3	NA
	Mercury	3.15E-02	2.79E+00	mg/kg	C9N-02	20/20	NA
C9S-EU1	Total PCBs	1.26E-01	4.40E-01	mg/kg	C9S-07	11/20	3.85E-02 - 4.10E-02
	PCB Dioxin-like Congener TEQ	3.22E-04	3.32E-04	mg/kg	C9S-12	3/3	NA
	Mercury	3.95E-02	7.00E-01	mg/kg	C9S-03	20/20	NA

NA = Not available

TABLE 6-4
OCCURRENCE AND DISTRIBUTION OF CONTAMINANTS OF POTENTIAL CONCERN - TOTAL SOIL - PRIMARY COPCS
ANNISTON PCB SITE
OU-4

Exposure Point	Primary COPC	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Range of Detection Limits
C1-EU1	Total PCBs	3.70E-02	1.19E+02	mg/kg	OLHA-004	55/72	4.00E-02 - 4.00E-02
C1-EU2	Total PCBs	1.15E-01	1.72E+02	mg/kg	NHA-2	28/28	NA
C2N-EU1	Total PCBs	4.35E-02	1.71E+02	mg/kg	C2N-28	7/14	3.75E-02 - 4.70E-02
	PCB Dioxin-like Congener TEQ	4.64E-04	9.43E-04	mg/kg	C2N-24	2/2	NA
	Mercury	1.94E-02	1.65E+00	mg/kg	C2N-28	14/14	NA
C2N-EU2	Total PCBs	4.55E-02	2.68E+00	mg/kg	C2S-18	4/19	4.20E-02 - 4.85E-02
	PCB Dioxin-like Congener TEQ	3.62E-04	7.49E-04	mg/kg	C2S-18	2/2	NA
	Mercury	2.00E-02	6.40E-01	mg/kg	C2S-18	19/19	NA
C2S-EU1	Total PCBs	5.15E-02	5.05E-01	mg/kg	C2S-20	4/16	4.00E-02 - 4.55E-02
	PCB Dioxin-like Congener TEQ	1.72E-04	1.72E-04	mg/kg	C2S-20	1/1	NA
	Mercury	1.25E-02	1.26E-01	mg/kg	C2S-20, C2S-17	16/16	NA
C3N-EU1	Total PCBs	7.15E-02	6.70E+01	mg/kg	C3NX-20	50/51	3.90E-02 - 3.90E-02
	PCB Dioxin-like Congener TEQ	3.58E-04	2.81E-03	mg/kg	C3NX-12	11/11	NA
	Mercury	6.45E-02	1.44E+01	mg/kg	C3NX-20	51/51	NA
C3N-EU2	Total PCBs	4.20E-02	5.05E+01	mg/kg	C3N-17	11/12	4.00E-02 - 4.00E-02
	PCB Dioxin-like Congener TEQ	3.43E-04	3.43E-04	mg/kg	C3N-15	1/1	NA
	Mercury	3.30E-02	6.14E+00	mg/kg	C3N-15	12/12	NA
C3S-EU1	Total PCBs	4.50E-02	8.73E+01	mg/kg	C3S-02	15/35	3.85E-02 - 4.40E-02
	PCB Dioxin-like Congener TEQ	1.63E-04	3.23E-04	mg/kg	C3S-13	2/2	NA
	Mercury	1.20E-02	1.89E+01	mg/kg	C3S-02	34/35	8.30E-03 - 8.30E-03
C3S-EU2	Total PCBs	1.40E-01	3.83E+01	mg/kg	C3S-18	21/23	3.70E-02 - 3.85E-02
	PCB Dioxin-like Congener TEQ	1.82E-04	2.61E-03	mg/kg	C3SX-01	7/7	NA
	Mercury	3.50E-02	1.35E+01	mg/kg	C3S-18	23/23	NA
C4N-EU1	Total PCBs	4.30E-02	1.60E+01	mg/kg	C4N-10	50/53	3.95E-02 - 4.15E-02
	PCB Dioxin-like Congener TEQ	1.52E-04	2.41E-03	mg/kg	C4N-15	13/13	NA
	Mercury	2.93E-02	8.95E+00	mg/kg	C4N-13	53/53	NA
C4N-EU2	Total PCBs	3.95E-02	1.08E+01	mg/kg	C4N-43	30/41	3.65E-02 - 7.10E-02
	PCB Dioxin-like Congener TEQ	5.05E-04	1.72E-03	mg/kg	C4N-33	5/5	NA
	Mercury	2.80E-02	1.38E+01	mg/kg	C4N-43	41/41	NA
C4S-EU1	Total PCBs	4.20E-02	9.77E+01	mg/kg	C4S-01	28/31	3.50E-02 - 4.25E-02
	PCB Dioxin-like Congener TEQ	1.82E-04	2.81E-03	mg/kg	C4SX-02	6/6	NA
	Mercury	6.15E-03	6.85E+00	mg/kg	C3S-25	31/31	NA
C4S-EU2	Total PCBs	4.70E-02	1.25E+01	mg/kg	C4S-33	25/38	4.05E-02 - 4.80E-02
	PCB Dioxin-like Congener TEQ	5.16E-04	1.71E-03	mg/kg	C4S-19	6/6	NA
	Mercury	1.50E-02	4.95E+00	mg/kg	C4S-25	38/38	NA
C4S-EU3	Total PCBs	5.10E-02	1.63E+01	mg/kg	C4SF-30	23/27	3.95E-02 - 4.25E-02
	PCB Dioxin-like Congener TEQ	4.94E-04	8.58E-04	mg/kg	C4SF-24	4/4	NA
	Mercury	3.70E-02	4.25E+00	mg/kg	C4S-44	27/27	NA
C5N-EU1	Total PCBs	5.65E-02	2.26E+01	mg/kg	C4N-48	12/12	NA
	PCB Dioxin-like Congener TEQ	9.59E-04	1.71E-03	mg/kg	C4N-48	3/3	NA
	Mercury	3.80E-02	2.20E+00	mg/kg	C4N-48	12/12	NA
C5N-EU2	Total PCBs	4.00E-02	5.11E+00	mg/kg	C5N-18	37/76	3.65E-02 - 4.40E-02
	PCB Dioxin-like Congener TEQ	3.12E-04	9.18E-04	mg/kg	C5N-12	9/9	NA
	Mercury	2.00E-02	4.20E+00	mg/kg	C5N-18	76/76	NA
C5S-EU1	Total PCBs	4.10E-02	2.40E+01	mg/kg	C4S-57	36/78	3.65E-02 - 4.40E-02
	PCB Dioxin-like Congener TEQ	1.82E-04	9.61E-04	mg/kg	C4SF-33	10/10	NA
	Mercury	1.80E-02	4.65E+00	mg/kg	C4S-57	78/78	NA
C6N-EU1	Total PCBs	3.90E-02	4.87E+00	mg/kg	C6N-20	14/20	3.70E-02 - 3.90E-02
	PCB Dioxin-like Congener TEQ	3.63E-04	1.62E-03	mg/kg	C6N-14	6/6	NA
	Mercury	3.00E-02	4.40E+00	mg/kg	C6N-19	20/20	NA
C6S-EU1	Total PCBs	4.05E-02	9.78E+00	mg/kg	C6S-02	13/21	3.70E-02 - 4.45E-02
	PCB Dioxin-like Congener TEQ	4.43E-04	1.81E-03	mg/kg	C6S-04	4/4	NA
	Mercury	2.60E-02	9.35E+00	mg/kg	C6S-02	21/21	NA

TABLE 6-4

OCCURRENCE AND DISTRIBUTION OF CONTAMINANTS OF POTENTIAL CONCERN - TOTAL SOIL - PRIMARY COPCS

ANNISTON PCB SITE

OU-4

Exposure Point	Primary COPC	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Range of Detection Limits
C7N-EU1	Total PCBs	3.60E-02	7.54E+00	mg/kg	C7N-39	33/73	3.45E-02 - 5.70E-02
	PCB Dioxin-like Congener TEQ	1.51E-04	3.43E-04	mg/kg	C7NF-17	7/9	1.41E-04 - 1.51E-04
	Mercury	1.10E-02	1.40E+00	mg/kg	C7NF-17	24/25	6.80E-03 - 6.80E-03
C7S-EU1	Total PCBs	4.15E-02	9.85E+00	mg/kg	C7S-26	31/77	3.45E-02 - 4.05E-02
	PCB Dioxin-like Congener TEQ	1.46E-04	3.32E-03	mg/kg	C7S-37	7/8	1.41E-04 - 1.41E-04
	Mercury	7.50E-03	1.89E+00	mg/kg	C7S-37	26/26	NA
C8N-EU1	Total PCBs	3.65E-02	8.13E+00	mg/kg	C8N-16	18/24	3.50E-02 - 3.85E-02
	PCB Dioxin-like Congener TEQ	2.42E-03	4.14E-03	mg/kg	C8N-12	2/2	NA
	Mercury	1.90E-02	5.20E+00	mg/kg	C8N-12	6/6	NA
C8S-EU1	Total PCBs	4.60E-02	5.96E+00	mg/kg	C8S-13	10/20	3.50E-02 - 5.10E-02
	PCB Dioxin-like Congener TEQ	1.62E-04	2.32E-04	mg/kg	C8S-19	2/2	NA
	Mercury	4.35E-01	7.50E-01	mg/kg	C8S-12	2/2	NA
C9N-EU1	Total PCBs	5.75E-02	4.46E+00	mg/kg	C9N-01	7/20	3.70E-02 - 4.15E-02
	PCB Dioxin-like Congener TEQ	4.03E-04	9.62E-04	mg/kg	C9N-02	3/3	NA
	Mercury	3.15E-02	2.79E+00	mg/kg	C9N-02	20/20	NA
C9S-EU1	Total PCBs	1.26E-01	4.40E-01	mg/kg	C9S-07	11/20	3.85E-02 - 4.10E-02
	PCB Dioxin-like Congener TEQ	3.22E-04	3.32E-04	mg/kg	C9S-12	3/3	NA
	Mercury	3.95E-02	7.00E-01	mg/kg	C9S-03	20/20	NA

NA = Not available

TABLE 6-5

OCCURRENCE AND DISTRIBUTION OF CONTAMINANTS OF POTENTIAL CONCERN IN AGRICULTURAL EXPOSURE UNITS - SURFACE SOIL - PRIMARY COPCS

ANNISTON PCB SITE

OU-4

Exposure Point	Primary COPC	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Range of Detection Limits
Ag-EU1	Total PCBs	1.10E-01	1.27E+02	mg/kg	C3S-02	10/15	4.15E-02 - 4.40E-02
	PCB Dioxin-like Congener TEQ	3.23E-04	3.23E-04	mg/kg	C3S-13	1/1	NA
	Mercury	3.05E-02	1.89E+01	mg/kg	C3S-02	15/15	NA
Ag-EU2	Total PCBs	7.15E-02	8.95E+01	mg/kg	C3N-05	44/45	3.90E-02 - 3.90E-02
	PCB Dioxin-like Congener TEQ	3.58E-04	2.81E-03	mg/kg	C3NX-12	9/9	NA
	Mercury	6.45E-02	1.15E+01	mg/kg	C3NX-17	45/45	NA
Ag-EU3	Total PCBs	1.65E-01	4.29E+01	mg/kg	C4S-04	12/12	NA
	PCB Dioxin-like Congener TEQ	6.65E-04	2.81E-03	mg/kg	C4SX-02	3/3	NA
	Mercury	1.77E-01	9.15E+00	mg/kg	C4S-04	12/12	NA
Ag-EU4	Total PCBs	5.40E-02	4.63E+00	mg/kg	C4S-16	7/14	4.05E-02 - 4.70E-02
	PCB Dioxin-like Congener TEQ	1.71E-03	1.71E-03	mg/kg	C4S-19	1/1	NA
	Mercury	1.50E-02	2.30E+00	mg/kg	C4S-16	14/14	NA
Ag-EU5	Total PCBs	5.10E-02	1.63E+01	mg/kg	C4SF-30	18/22	3.95E-02 - 4.25E-02
	PCB Dioxin-like Congener TEQ	8.43E-04	8.58E-04	mg/kg	C4SF-24	2/2	NA
	Mercury	3.70E-02	4.25E+00	mg/kg	C4S-44	22/22	NA
Ag-EU6	Total PCBs	4.10E-02	1.15E+00	mg/kg	C5S-13	3/11	3.65E-02 - 4.05E-02
	Mercury	2.95E-02	3.75E-01	mg/kg	C5S-13	11/11	NA
Ag-EU7	Total PCBs	1.84E-01	1.41E+00	mg/kg	C5S-25	2/3	4.00E-02 - 4.00E-02
	PCB Dioxin-like Congener TEQ	3.14E-04	3.14E-04	mg/kg	C5S-25	1/1	NA
	Mercury	1.05E-01	7.05E-01	mg/kg	C5S-25	3/3	NA
Ag-EU8	Total PCBs	1.08E-01	1.37E+00	mg/kg	C5SF-17	3/5	3.75E-02 - 4.05E-02
	Mercury	3.10E-02	1.40E+00	mg/kg	C5SF-14	5/5	NA

NA = Not available

TABLE 6-6
EXPOSURE POINT CONCENTRATION SUMMARY - tPCBs AND MERCURY - SURFACE SOIL
ANNISTON PCB SITE
OU-4

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

Exposure Unit	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
C1-EU1	Total PCBs	mg/kg	5.69E+00	1.05E+01	5.46E+01	1.05E+01	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
C1-EU2	Total PCBs	mg/kg	3.16E+01	4.61E+01	2.28E+02	4.61E+01	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C2N-EU1	Total PCBs	mg/kg	6.72E+00	1.63E+01	7.25E+01	1.63E+01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Mercury	mg/kg	3.74E-01	1.33E+00	1.65E+00	1.33E+00	mg/kg	97.5% Chebyshev(Mean, Sd) UCL	See Text
C3N-EU1	Total PCBs	mg/kg	1.20E+01	2.32E+01	8.95E+01	2.32E+01	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	2.58E+00	3.32E+00	1.44E+01	3.32E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C3N-EU2	Total PCBs	mg/kg	1.07E+01	3.69E+01	7.09E+01	3.69E+01	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.49E+00	4.62E+00	6.14E+00	4.62E+00	mg/kg	95% Adjusted Gamma UCL	ProUCL Recommendation
C3S-EU1	Total PCBs	mg/kg	1.07E+01	1.95E+01	1.27E+02	1.95E+01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.63E+00	8.96E+00	1.89E+01	8.96E+00	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
C3S-EU2	Total PCBs	mg/kg	9.40E+00	2.36E+01	6.94E+01	2.36E+01	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	2.34E+00	3.90E+00	1.35E+01	3.90E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C4N-EU1	Total PCBs	mg/kg	3.42E+00	8.12E+00	2.53E+01	8.12E+00	mg/kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.32E+00	2.28E+00	8.95E+00	2.28E+00	mg/kg	95% H-UCL	ProUCL Recommendation
C4N-EU2	Total PCBs	mg/kg	1.94E+00	8.50E+00	1.99E+01	8.50E+00	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.04E+00	2.74E+00	1.38E+01	2.74E+00	mg/kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
C4S-EU1	Total PCBs	mg/kg	7.49E+00	1.63E+01	4.29E+01	1.63E+01	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	2.27E+00	3.47E+00	9.15E+00	3.47E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C4S-EU2	Total PCBs	mg/kg	1.71E+00	2.51E+00	1.01E+01	2.51E+00	mg/kg	95% KM (BCA) UCL	ProUCL Recommendation
	Mercury	mg/kg	8.45E-01	1.27E+00	4.95E+00	1.27E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C4S-EU3	Total PCBs	mg/kg	2.33E+00	5.50E+00	1.63E+01	5.50E+00	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.09E+00	1.69E+00	4.25E+00	1.69E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C5N-EU1	Total PCBs	mg/kg	2.54E+00	6.05E+00	9.01E+00	6.05E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Mercury	mg/kg	1.06E+00	1.51E+00	2.20E+00	1.51E+00	mg/kg	95% Student's-t UCL	ProUCL Recommendation
C5S-EU1	Total PCBs	mg/kg	8.85E-01	1.33E+00	1.45E+01	1.33E+00	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Mercury	mg/kg	4.72E-01	8.86E-01	4.65E+00	8.86E-01	mg/kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
C6N-EU1	Total PCBs	mg/kg	1.31E+00	2.14E+00	7.90E+00	2.14E+00	mg/kg	95% KM (BCA) UCL	ProUCL Recommendation
	Mercury	mg/kg	7.84E-01	1.41E+00	4.40E+00	1.41E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C6S-EU1	Total PCBs	mg/kg	1.38E+00	2.88E+00	1.64E+01	2.88E+00	mg/kg	95% KM (BCA) UCL	ProUCL Recommendation
	Mercury	mg/kg	9.66E-01	2.95E+00	9.35E+00	2.95E+00	mg/kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
C7S-EU1	Total PCBs	mg/kg	5.20E-01	1.32E+00	9.85E+00	1.32E+00	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.85E-01	6.77E-01	2.98E+00	6.77E-01	mg/kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
C8N-EU1	Total PCBs	mg/kg	1.31E+00	3.09E+00	8.13E+00	3.09E+00	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.23E+00	1.57E+00	5.20E+00	1.57E+00	mg/kg	75th Percentile	See Text

TABLE 6-7

EXPOSURE POINT CONCENTRATION SUMMARY - tPCBs AND MERCURY - TOTAL SOIL

ANNISTON PCB SITE

OU-4

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

Exposure Unit	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
C1-EU2	Total PCBs	mg/kg	4.79E+01	6.69E+01	1.72E+02	6.69E+01	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
C2N-EU1	Total PCBs	mg/kg	1.38E+01	3.62E+01	1.71E+02	3.62E+01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Mercury	mg/kg	3.74E-01	1.33E+00	1.65E+00	1.33E+00	mg/kg	97.5% Chebyshev(Mean, Sd) UCL	See Text
C4N-EU1	Total PCBs	mg/kg	2.71E+00	6.08E+00	1.60E+01	6.08E+00	mg/kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	1.26E+00	2.12E+00	8.95E+00	2.12E+00	mg/kg	95% H-UCL	ProUCL Recommendation
C5N-EU1	Total PCBs	mg/kg	3.83E+00	1.19E+01	2.26E+01	1.19E+01	mg/kg	95% Adjusted Gamma UCL	ProUCL Recommendation
	Mercury	mg/kg	1.06E+00	1.51E+00	2.20E+00	1.51E+00	mg/kg	95% Student's-t UCL	ProUCL Recommendation

TABLE 6-8
EXPOSURE POINT CONCENTRATION SUMMARY - tPCBs AND MERCURY IN AGRICULTURAL EXPOSURE UNITS- SURFACE SOIL
ANNISTON PCB SITE
OU-4

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

Exposure Unit	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Ag-EU1	Total PCBs	mg/kg	2.14E+01	4.25E+01	1.27E+02	4.25E+01	mg/kg	95% KM (BCA) UCL	ProUCL Recommendation
	Mercury	mg/kg	3.30E+00	1.34E+01	1.89E+01	1.34E+01	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	See Text
Ag-EU2	Total PCBs	mg/kg	1.11E+01	2.23E+01	8.95E+01	2.23E+01	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	2.44E+00	3.15E+00	1.15E+01	3.15E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
Ag-EU3	Total PCBs	mg/kg	9.57E+00	2.87E+01	4.29E+01	2.87E+01	mg/kg	95% Adjusted Gamma UCL	ProUCL Recommendation
	Mercury	mg/kg	2.60E+00	4.97E+00	9.15E+00	4.97E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
Ag-EU4	Total PCBs	mg/kg	9.64E-01	1.74E+00	4.63E+00	1.74E+00	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Mercury	mg/kg	4.99E-01	1.66E+00	2.30E+00	1.66E+00	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	See Text
Ag-EU5	Total PCBs	mg/kg	1.83E+00	5.29E+00	1.63E+01	5.29E+00	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Mercury	mg/kg	9.71E-01	1.65E+00	4.25E+00	1.65E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
Ag-EU6	Total PCBs	mg/kg	1.41E-01	4.08E-02	1.15E+00	4.08E-02	mg/kg	75th Percentile	See Text
	Mercury	mg/kg	8.34E-02	2.14E-01	3.75E-01	2.14E-01	mg/kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
Ag-EU7	Total PCBs	mg/kg	5.45E-01	7.97E-01	1.41E+00	7.97E-01	mg/kg	75th Percentile	See Text
	Mercury	mg/kg	3.85E-01	5.25E-01	7.05E-01	5.25E-01	mg/kg	75th Percentile	See Text
Ag-EU8	Total PCBs	mg/kg	4.00E-01	4.44E-01	1.37E+00	4.44E-01	mg/kg	75th Percentile	See Text
	Mercury	mg/kg	6.07E-01	1.20E+00	1.40E+00	1.20E+00	mg/kg	75th Percentile	See Text

TABLE 6-9
PCB CONGENER TEQ SUMMARY - SURFACE SOIL
ANNISTON PCB SITE
OU-4

Linear Regression Equation
PCB-105 = 0.021(tPCB) - 0.0015
PCB-118 = 0.0394(tPCB) - 0.0011
PCB-156 = 0.007(tPCB) + 0.0005

Exposure Unit	**Total PCBs EPC[a] (mg/kg)**	**PCB Congener**	**Predicted PCB Congener Concentration Based on Linear Regression Equation (mg/kg)**	**TEF[b]**	**Predicted PCB Congener TEQ[c] (mg/kg)**
C1-EU1	1.05E+01	PCB-105	2.19E-01	0.00003	6.56E-06
		PCB-118	4.12E-01	0.00003	1.24E-05
		PCB-156	7.39E-02	0.00003	2.22E-06
		PCB Dioxin-like Congener TEQ			**2.11E-05**
C1-EU2	4.61E+01	PCB-105	9.67E-01	0.00003	2.90E-05
		PCB-118	1.82E+00	0.00003	5.45E-05
		PCB-156	3.23E-01	0.00003	9.70E-06
		PCB Dioxin-like Congener TEQ			**9.32E-05**
C2N-EU1	1.63E+01	PCB-105	3.41E-01	0.00003	1.02E-05
		PCB-118	6.41E-01	0.00003	1.92E-05
		PCB-156	1.15E-01	0.00003	3.44E-06
		PCB Dioxin-like Congener TEQ			**3.29E-05**
C3N-EU1	2.05E+01	PCB-105	4.29E-01	0.00003	1.29E-05
		PCB-118	8.06E-01	0.00003	2.42E-05
		PCB-156	1.44E-01	0.00003	4.32E-06
		PCB Dioxin-like Congener TEQ			**4.14E-05**
C3N-EU2	4.80E+01	PCB-105	1.01E+00	0.00003	3.02E-05
		PCB-118	1.89E+00	0.00003	5.67E-05
		PCB-156	3.36E-01	0.00003	1.01E-05
		PCB Dioxin-like Congener TEQ			**9.70E-05**
C3S-EU1	1.95E+01	PCB-105	4.07E-01	0.00003	1.22E-05
		PCB-118	7.66E-01	0.00003	2.30E-05
		PCB-156	1.37E-01	0.00003	4.10E-06
		PCB Dioxin-like Congener TEQ			**3.93E-05**
C3S-EU2	5.31E+01	PCB-105	1.11E+00	0.00003	3.34E-05
		PCB-118	2.09E+00	0.00003	6.27E-05
		PCB-156	3.72E-01	0.00003	1.12E-05
		PCB Dioxin-like Congener TEQ			**1.07E-04**
C4N-EU1	9.13E+00	PCB-105	1.90E-01	0.00003	5.71E-06
		PCB-118	3.59E-01	0.00003	1.08E-05
		PCB-156	6.44E-02	0.00003	1.93E-06
		PCB Dioxin-like Congener TEQ			**1.84E-05**
C4N-EU2	8.90E+00	PCB-105	1.85E-01	0.00003	5.56E-06
		PCB-118	3.50E-01	0.00003	1.05E-05
		PCB-156	6.28E-02	0.00003	1.88E-06
		PCB Dioxin-like Congener TEQ			**1.79E-05**
C4S-EU1	1.97E+01	PCB-105	4.13E-01	0.00003	1.24E-05
		PCB-118	7.76E-01	0.00003	2.33E-05
		PCB-156	1.39E-01	0.00003	4.16E-06
		PCB Dioxin-like Congener TEQ			**3.98E-05**
C4S-EU2	2.57E+00	PCB-105	5.24E-02	0.00003	1.57E-06
		PCB-118	1.00E-01	0.00003	3.00E-06
		PCB-156	1.85E-02	0.00003	5.54E-07
		PCB Dioxin-like Congener TEQ			**5.12E-06**

TABLE 6-9
PCB CONGENER TEQ SUMMARY - SURFACE SOIL
ANNISTON PCB SITE
OU-4

Linear Regression Equation
PCB-105 = 0.021(tPCB) - 0.0015
PCB-118 = 0.0394(tPCB) - 0.0011
PCB-156 = 0.007(tPCB) + 0.0005

Exposure Unit	**Total PCBs EPC[a] (mg/kg)**	**PCB Congener**	**Predicted PCB Congener Concentration Based on Linear Regression Equation (mg/kg)**	**TEF[b]**	**Predicted PCB Congener TEQ[c] (mg/kg)**
C4S-EU3	5.50E+00	PCB-105	1.14E-01	0.00003	3.42E-06
		PCB-118	2.16E-01	0.00003	6.47E-06
		PCB-156	3.90E-02	0.00003	1.17E-06
		PCB Dioxin-like Congener TEQ			**1.11E-05**
C5N-EU1	6.05E+00	PCB-105	1.25E-01	0.00003	3.76E-06
		PCB-118	2.37E-01	0.00003	7.11E-06
		PCB-156	4.28E-02	0.00003	1.28E-06
		PCB Dioxin-like Congener TEQ			**1.22E-05**
C5S-EU1	1.33E+00	PCB-105	2.65E-02	0.00003	7.95E-07
		PCB-118	5.14E-02	0.00003	1.54E-06
		PCB-156	9.83E-03	0.00003	2.95E-07
		PCB Dioxin-like Congener TEQ			**2.63E-06**
C6N-EU1	2.08E+00	PCB-105	4.21E-02	0.00003	1.26E-06
		PCB-118	8.08E-02	0.00003	2.42E-06
		PCB-156	1.50E-02	0.00003	4.51E-07
		PCB Dioxin-like Congener TEQ			**4.14E-06**
C6S-EU1	2.92E+00	PCB-105	5.98E-02	0.00003	1.79E-06
		PCB-118	1.14E-01	0.00003	3.41E-06
		PCB-156	2.09E-02	0.00003	6.28E-07
		PCB Dioxin-like Congener TEQ			**5.84E-06**
C7S-EU1	1.32E+00	PCB-105	2.63E-02	0.00003	7.88E-07
		PCB-118	5.10E-02	0.00003	1.53E-06
		PCB-156	9.76E-03	0.00003	2.93E-07
		PCB Dioxin-like Congener TEQ			**2.61E-06**
C8N-EU1	3.60E+00	PCB-105	7.42E-02	0.00003	2.23E-06
		PCB-118	1.41E-01	0.00003	4.23E-06
		PCB-156	2.57E-02	0.00003	7.72E-07
		PCB Dioxin-like Congener TEQ			**7.22E-06**

Note: Appendix D presents the statistical analysis used to generate the linear regression equations.

[a] See Table 6-6.

[b] Van den Berg et al., 2006.

[c] Predicted PCB congener TEQ = predicted PCB congener concentration x TEF.

TABLE 6-10
PCB CONGENER TEQ SUMMARY - TOTAL SOIL
ANNISTON PCB SITE
OU-4

Linear Regression Equation
PCB-105 = 0.021(tPCB) - 0.0015
PCB-118 = 0.0394(tPCB) - 0.0011
PCB-156 = 0.007(tPCB) + 0.0005

Exposure Unit	Total PCBs EPC[a] (mg/kg)	PCB Congener	Predicted PCB Congener Concentration Based on Linear Regression Equation (mg/kg)	TEF[b]	Predicted PCB Congener TEQ[c] (mg/kg)
C1-EU2	6.69E+01	PCB-105	1.40E+00	0.00003	4.21E-05
		PCB-118	2.63E+00	0.00003	7.90E-05
		PCB-156	4.69E-01	0.00003	1.41E-05
				PCB Dioxin-like Congener TEQ	**1.35E-04**
C2N-EU1	3.62E+01	PCB-105	7.58E-01	0.00003	2.28E-05
		PCB-118	1.42E+00	0.00003	4.27E-05
		PCB-156	2.54E-01	0.00003	7.61E-06
				PCB Dioxin-like Congener TEQ	**7.31E-05**
C4N-EU1	6.62E+00	PCB-105	1.38E-01	0.00003	4.13E-06
		PCB-118	2.60E-01	0.00003	7.79E-06
		PCB-156	4.68E-02	0.00003	1.41E-06
				PCB Dioxin-like Congener TEQ	**1.33E-05**
C5N-EU1	1.19E+01	PCB-105	2.48E-01	0.00003	7.43E-06
		PCB-118	4.67E-01	0.00003	1.40E-05
		PCB-156	8.36E-02	0.00003	2.51E-06
				PCB Dioxin-like Congener TEQ	**2.39E-05**

Note: Appendix D presents the statistical analysis used to generate the linear regression equations.

[a] See Table 6-7.

[b] Van den Berg et al., 2006.

[c] Predicted PCB congener TEQ = predicted PCB congener concentration x TEF.

TABLE 6-11
PCB CONGENER TEQ SUMMARY IN AGRICULTURAL EXPOSURE UNITS - SURFACE SOIL
ANNISTON PCB SITE
OU-4

Linear Regression Equation

PCB-105 = 0.021(tPCB) - 0.0015

PCB-118 = 0.0394(tPCB) - 0.0011

PCB-156 = 0.007(tPCB) + 0.0005

Exposure Unit	Total PCBs EPC[a] (mg/kg)	PCB Congener	Predicted PCB Congener Concentration Based on Linear Regression Equation (mg/kg)	TEF[b]	Predicted PCB Congener TEQ[c] (mg/kg)
Ag-EU1	4.25E+01	PCB-105	8.91E-01	0.00003	2.67E-05
		PCB-118	1.67E+00	0.00003	5.02E-05
		PCB-156	2.98E-01	0.00003	8.94E-06
		PCB Dioxin-like Congener TEQ			**8.59E-05**
Ag-EU2	2.23E+01	PCB-105	4.67E-01	0.00003	1.40E-05
		PCB-118	8.78E-01	0.00003	2.63E-05
		PCB-156	1.57E-01	0.00003	4.70E-06
		PCB Dioxin-like Congener TEQ			**4.50E-05**
Ag-EU3	2.87E+01	PCB-105	6.00E-01	0.00003	1.80E-05
		PCB-118	1.13E+00	0.00003	3.38E-05
		PCB-156	2.01E-01	0.00003	6.03E-06
		PCB Dioxin-like Congener TEQ			**5.79E-05**
Ag-EU4	1.74E+00	PCB-105	3.49E-02	0.00003	1.05E-06
		PCB-118	6.73E-02	0.00003	2.02E-06
		PCB-156	1.26E-02	0.00003	3.79E-07
		PCB Dioxin-like Congener TEQ			**3.45E-06**
Ag-EU5	5.29E+00	PCB-105	1.09E-01	0.00003	3.28E-06
		PCB-118	2.07E-01	0.00003	6.21E-06
		PCB-156	3.75E-02	0.00003	1.12E-06
		PCB Dioxin-like Congener TEQ			**1.06E-05**
Ag-EU6	4.08E-02	PCB-105	-6.44E-04	0.00003	-1.93E-08
		PCB-118	5.06E-04	0.00003	1.52E-08
		PCB-156	7.85E-04	0.00003	2.36E-08
		PCB Dioxin-like Congener TEQ			**1.94E-08**
Ag-EU7	7.97E-01	PCB-105	1.52E-02	0.00003	4.57E-07
		PCB-118	3.03E-02	0.00003	9.09E-07
		PCB-156	6.08E-03	0.00003	1.82E-07
		PCB Dioxin-like Congener TEQ			**1.55E-06**
Ag-EU8	4.44E-01	PCB-105	7.81E-03	0.00003	2.34E-07
		PCB-118	1.64E-02	0.00003	4.91E-07
		PCB-156	3.60E-03	0.00003	1.08E-07
		PCB Dioxin-like Congener TEQ			**8.34E-07**

Note: Appendix D presents the statistical analysis used to generate the linear regression equations.

[a] See Table 6-8.

[b] Van den Berg et al., 2006.

[c] Predicted PCB congener TEQ = predicted PCB congener concentration x TEF.

TABLE 6-12
EXPOSURE POINT CONCENTRATION SUMMARY - OTHER COPCs - SURFACE SOIL
ANNISTON PCB SITE
OU-4

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

COPC	Units	Arithmetic Mean	95% UCL	Maximum Concentration	Exposure Point Concentration			
					Value	Units	Statistic	Rationale
Dioxin/Furan Congener								
2,3,7,8-TCDD TEQ	mg/kg	2.12E-05	2.50E-05	1.74E-04	2.50E-05	mg/kg	95% KM (BCA) UCL	ProUCL Recommendation
PAHs								
Benzo(a)anthracene	mg/kg	2.32E-01	1.37E-01	2.05E-01	1.37E-01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
Benzo(a)pyrene	mg/kg	2.45E-01	1.20E-01	2.07E-01	1.20E-01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
Benzo(b)fluoranthene	mg/kg	2.36E-01	6.37E-02	8.25E-02	6.37E-02	mg/kg	95% KM (t) UCL	ProUCL Recommendation
Benzo(k)fluoranthene	mg/kg	2.47E-01	1.25E-01	2.06E-01	1.25E-01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
Chrysene	mg/kg	2.17E-01	1.32E-01	1.92E-01	1.32E-01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
Indeno(1,2,3-cd)pyrene	mg/kg	2.88E-01	1.51E-01	2.00E-01	1.51E-01	mg/kg	95% KM (t) UCL	ProUCL Recommendation
Inorganics								
Aluminum	mg/kg	1.12E+04	1.27E+04	1.72E+04	1.27E+04	mg/kg	95% Student's-t UCL	ProUCL Recommendation
Arsenic	mg/kg	6.86E+00	7.46E+00	1.85E+01	7.46E+00	mg/kg	95% Student's-t UCL	ProUCL Recommendation
Chromium	mg/kg	1.69E+01	1.87E+01	6.75E+01	1.87E+01	mg/kg	95% H-UCL	ProUCL Recommendation
Cobalt	mg/kg	8.81E+00	9.47E+00	2.52E+01	9.47E+00	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
Iron	mg/kg	1.92E+04	2.43E+04	4.28E+04	2.43E+04	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
Manganese	mg/kg	8.57E+02	9.64E+02	4.31E+03	9.64E+02	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation

TABLE 6-13
SOIL CONTACT EXPOSURE PARAMETERS
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface/Total Soils

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational Users	Young Child	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Tables 6-6 and 6-12	EU-Specific	See Tables 6-6 and 6-12	Chronic daily intake (mg/kg-day) =
		(1 to 6 years)		IRS	Ingestion Rate of Soil	mg/day	200	EPA, 1991, 1997	100	EPA, 1991, 1997	EPC x IRS x CF x FI x IAF x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	unitless	1	EPA, 1989	0.5	Professional judgment	
				IAF	Gastrointestinal Absorption Factor	unitless	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	
				EF	Exposure Frequency	days/year	Varies from 104 to 52 depending of accessibility	Professional judgment	Varies from 52 to 26 depending of accessibility	Professional judgment	
				ED	Exposure Duration	years	6	Calculated based on young child's age	6	Calculated based on young child's age	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	15	EPA, 2008	15	EPA, 2008	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	2,190	ED x 365 days/year	2,190	ED x 365 days/year	
		Adolescent	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Tables 6-6 and 6-12	EU-Specific	See Tables 6-6 and 6-12	Chronic daily intake (mg/kg-day) =
		(7 to 16 years)		IRS	Ingestion Rate of Soil	mg/day	100	EPA, 1991, 1997	50	EPA, 1991, 1997	EPC x IRS x CF x FI x IAF x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	unitless	1	EPA, 1989	0.5	Professional judgment	
				IAF	Gastrointestinal Absorption Factor	unitless	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	
				EF	Exposure Frequency	days/year	Varies from 104 to 52 depending of accessibility	Professional judgment	Varies from 52 to 26 depending of accessibility	Professional judgment	
				ED	Exposure Duration	years	10	Calculated based on adolescent's age	10	Calculated based on adolescent's age	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	45	EPA, 1997, 2000	45	EPA, 1997, 2000	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	3,650	ED x 365 days/year	3,650	ED x 365 days/year	
		Adult	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Tables 6-6 and 6-12	EU-Specific	See Tables 6-6 and 6-12	Chronic daily intake (mg/kg-day) =
				IRS	Ingestion Rate of Soil	mg/day	100	EPA, 1991, 1997	50	EPA, 1991, 1997	EPC x IRS x CF x FI x IAF x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	unitless	1	EPA, 1989	0.5	Professional judgment	
				IAF	Gastrointestinal Absorption Factor	unitless	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	
				EF	Exposure Frequency	days/year	Varies from 104 to 52 depending of accessibility	Professional judgment	Varies from 52 to 26 depending of accessibility	Professional judgment	
				ED	Exposure Duration	years	30	Professional judgment; U.S. Census Bureau, 2007a, 2007b	30	Professional judgment; U.S. Census Bureau, 2007a, 2007b	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	70	EPA, 1989	70	EPA, 1989	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	10,950	ED x 365 days/year	10,950	ED x 365 days/year	

TABLE 6-13
SOIL CONTACT EXPOSURE PARAMETERS
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface/Total Soils

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Utility Worker	Adult	Total Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Table 6-7	EU-Specific	See Table 6-7	Chronic daily intake (mg/kg-day) =
(continued)				IRS	Ingestion Rate of Soil	mg/day	330	EPA, 2002	100	EPA, 2003b	EPC x IRS x CF x FI x IAF x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	unitless	1	EPA, 1989	0.5	Professional judgment	
				IAF	`	unitless	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	
				EF	Exposure Frequency	days/year	10	Professional judgment	5	Professional judgment	
				ED	Exposure Duration	years	1	Professional judgment	1	Professional judgment	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	70	EPA, 1989	70	EPA, 1989	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	365	ED x 365 days/year	
	Farmer	Adult	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Table 6-8	EU-Specific	See Table 6-8	Chronic daily intake (mg/kg-day) =
				IRS	Ingestion Rate of Soil	mg/day	200	90th percentile value from Stanek et al (1997)	100	EPA, 2003b	EPC x IRS x CF x FI x IAF x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	unitless	1	EPA, 1989	0.5	Professional Judgment	
				IAF	Gastrointestinal Absorption Factor	unitless	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	0.3 (PCBs); 1.0 (other COPCs)	PCBs - Solutia, 2002	
				EF	Exposure Frequency	days/year	10	Professional judgment	5	Professional judgment	
				ED	Exposure Duration	years	40	EPA, 2005	40	EPA, 2005	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	70	EPA, 1989	70	EPA, 1989	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	ED x 365 days/year	14,600	ED x 365 days/year	
Dermal Contact	Recreational Users	Young Child	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Tables 6-6 and 6-12	EU-Specific	See Tables 6-6 and 6-12	Dermally Absorbed Dose (mg/kg-day) =
		(1 to 6 years)		SA	Exposed Skin Surface Area	cm^2/day	2,800	EPA, 2004	2,800	EPA, 2004	EPC x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
				AF	Soil to Skin Adherence Factor	mg/cm^2	0.3	EPA, 2004	0.04	EPA, 2004	
				ABS	Dermal Absorption Factor	unitless	COPC-specific	See Section 6.3.1.3	COPC-specific	See Section 6.3.1.3	
				EF	Exposure Frequency	days/year	Varies from 104 to 52 depending of accessibility	Professional judgment	Varies from 52 to 26 depending of accessibility	Professional judgment	
				ED	Exposure Duration	years	6	Calculated based on young child's age	6	Calculated based on young child's age	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	15	EPA, 2008	15	EPA, 2008	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	2,190	ED x 365 days/year	2,190	ED x 365 days/year	
		Adolescent	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Tables 6-6 and 6-12	EU-Specific	See Tables 6-6 and 6-12	Dermally Absorbed Dose (mg/kg-day) =
		(7 to 16 years)		SA	Exposed Skin Surface Area	cm^2/day	5,300	EPA, 2004	5,300	EPA, 2004	EPC x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
				AF	Soil to Skin Adherence Factor	mg/cm^2	0.4	EPA, 2004	0.04	EPA, 2004	
				ABS	Dermal Absorption Factor	unitless	COPC-specific	See Section 6.3.1.3	COPC-specific	See Section 6.3.1.3	
				EF	Exposure Frequency	days/year	Varies from 104 to 52 depending of accessibility	Professional judgment	Varies from 52 to 26 depending of accessibility	Professional judgment	
				ED	Exposure Duration	years	10	Calculated based on adolescent's age	10	Calculated based on adolescent's age	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	45	EPA, 1997, 2000	45	EPA, 1997, 2000	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	3,650	ED x 365 days/year	3,650	ED x 365 days/year	

TABLE 6-13
SOIL CONTACT EXPOSURE PARAMETERS
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface/Total Soils

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal Contact		Adult	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Tables 6-6 and 6-12	EU-Specific	See Tables 6-6 and 6-12	Dermally Absorbed Dose (mg/kg-day) =
(continued)				SA	Exposed Skin Surface Area	cm^2/day	3,300	EPA, 2004	3,300	EPA, 2004	EPC x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
				AF	Soil to Skin Adherence Factor	mg/cm^2	0.1	EPA, 2004	0.02	EPA, 2004	
				ABS	Dermal Absorption Factor	unitless	COPC-specific	See Section 6.3.1.3	COPC-specific	See Section 6.3.1.3	
				EF	Exposure Frequency	days/year	Varies from 104 to 52 depending of accessibility	Professional judgment	Varies from 52 to 26 depending of accessibility	Professional judgment	
				ED	Exposure Duration	years	30	Professional judgment; U.S. Census Bureau, 2007a, 2007b	30	Professional judgment; U.S. Census Bureau, 2007a, 2007b	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	70	EPA, 1989	70	EPA, 1989	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	10,950	ED x 365 days/year	10,950	ED x 365 days/year	
	Utility Worker	Adult	Total Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Table 6-7	EU-Specific	See Table 6-7	Dermally Absorbed Dose (mg/kg-day) =
				SA	Exposed Skin Surface Area	cm^2/day	3,300	EPA, 2004	3,300	EPA, 2004	EPC x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
				AF	Soil to Skin Adherence Factor	mg/cm^2	0.3	EPA, 2004	0.1	EPA, 2004	
				ABS	Dermal Absorption Factor	unitless	COPC-specific	See Section 6.3.1.3	COPC-specific	See Section 6.3.1.3	
				EF	Exposure Frequency	days/year	10	Professional judgment	5	Professional judgment	
				ED	Exposure Duration	years	1	Professional judgment	1	Professional judgment	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	70	EPA, 1989	70	EPA, 1989	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	365	ED x 365 days/year	
	Farmer	Adult	Surface Soils	EPC	Exposure Point Concentration	mg/kg	EU-Specific	See Table 6-8	EU-Specific	See Table 6-8	Dermally Absorbed Dose (mg/kg-day) =
				SA	Exposed Skin Surface Area	cm^2/day	3,300	EPA, 2004	3,300	EPA, 2004	EPC x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
				AF	Soil to Skin Adherence Factor	mg/cm^2	0.4	EPA, 2004	0.1	EPA, 2004	
				ABS	Dermal Absorption Factor	unitless	COPC-specific	See Section 6.3.1.3	COPC-specific	See Section 6.3.1.3	
				EF	Exposure Frequency	days/year	10	Professional judgment	5	Professional judgment	
				ED	Exposure Duration	years	40	EPA, 2005	40	EPA, 2005	
				CF	Conversion Factor	kg/mg	1.00E-06	Unit Conversion Factor	1.00E-06	Unit Conversion Factor	
				BW	Body Weight	kg	70	EPA, 1989	70	EPA, 1989	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	ED x 365 days/year	14,600	ED x 365 days/year	

TABLE 6-14
SUMMARY OF CANCER RISKS AND NONCANCER HAZARD INDICES FROM PRIMARY COPCS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU-4

Exposure Unit	Exposure Scenario	Receptor	Cancer Risk (Total PCBs)	Hazard Index (Total PCBs and Mercury)	Cancer Risk (PCB Dioxin-like Congener TEQ)	Hazard Index (PCB Dioxin-like Congener TEQ)
C1-EU1	High contact recreational	Young child	4E-06	0.4	5E-07	0.06
		Adolescent	3E-06	0.5	4E-07	0.03
		Adult	2E-06	0.1	2E-07	0.006
C1-EU2	Low contact recreational	Adolescent	7E-06	1	9E-07	0.07
		Adult	4E-06	0.2	5E-07	0.01
	Worker	Adult	1E-07	0.2	2E-08	0.01
C2N-EU1	Low contact recreational	Adolescent	2E-06	0.4	3E-07	0.02
		Adult	1E-06	0.08	2E-07	0.005
	Worker	Adult	6E-08	0.1	8E-09	0.006
C3N-EU1	Low contact recreational	Adolescent	3E-06	0.6	4E-07	0.03
		Adult	2E-06	0.1	2E-07	0.006
C3N-EU2	Low contact recreational	Adolescent	5E-06	0.6	4E-07	0.03
		Adult	3E-06	0.1	2E-07	0.006
C3S-EU1	High contact recreational	Young child	7E-06	1	9E-07	0.1
		Adolescent	6E-06	1	7E-07	0.06
		Adult	3E-06	0.2	4E-07	0.01
C3S-EU2	High contact recreational	Young child	8E-06	1	3E-06	0.3
		Adolescent	7E-06	1	2E-06	0.2
		Adult	4E-06	0.2	1E-06	0.03
C4N-EU1	Low contact recreational	Adolescent	1E-06	0.2	2E-07	0.01
		Adult	7E-07	0.04	1E-07	0.003
	Worker	Adult	1E-08	0.02	2E-09	0.001
C4N-EU2	Low contact recreational	Adolescent	1E-06	0.2	2E-07	0.01
		Adult	7E-07	0.04	1E-07	0.003
C4S-EU1	Low contact recreational	Adolescent	2E-06	0.4	4E-07	0.03
		Adult	1E-06	0.09	2E-07	0.006
C4S-EU2	Low contact recreational	Adolescent	4E-07	0.06	5E-08	0.004
		Adult	2E-07	0.01	3E-08	0.0007
C4S-EU3	Low contact recreational	Adolescent	8E-07	0.1	1E-07	0.008
		Adult	5E-07	0.03	6E-08	0.002
C5N-EU1	Low contact recreational	Adolescent	9E-07	0.2	1E-07	0.009
		Adult	5E-07	0.03	7E-08	0.002
	Worker	Adult	2E-08	0.04	3E-09	0.002
C5S-EU1	Low contact recreational	Adolescent	2E-07	0.03	2E-08	0.002
		Adult	1E-07	0.007	1E-08	0.0004
C6N-EU1	Low contact recreational	Adolescent	3E-07	0.05	4E-08	0.003
		Adult	2E-07	0.01	2E-08	0.0006
C6S-EU1	Low contact recreational	Adolescent	4E-07	0.07	5E-08	0.004
		Adult	3E-07	0.02	3E-08	0.0008
C7S-EU1	Low contact recreational	Adolescent	2E-07	0.03	2E-08	0.002
		Adult	1E-07	0.007	1E-08	0.0004
C8N-EU1	Low contact recreational	Adolescent	4E-07	0.08	7E-08	0.005
		Adult	3E-07	0.02	4E-08	0.001

No Fill	= total cancer risk less than 1E-06 or total hazard index less than or equal to 1.0.
🟨	= total cancer risk between 1E-06 and 1E-04.
🟥	= total cancer risk greater than 1E-4 or total hazard index greater than 1.0.

TABLE 6-15

SUMMARY OF CANCER RISKS AND NONCANCER HAZARD INDICES FROM PRIMARY COPCS - AGRICULTURAL EXPOSURE UNITS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Exposure Unit	Exposure Scenario	Receptor	Cancer Risk (Total PCBs)	Hazard Index (Total PCBs and Mercury)	Cancer Risk (PCB Dioxin-like Congener TEQ)	Hazard Index (PCB Dioxin-like Congener TEQ)
Ag-EU1	Farmer	Adult	3E-06	0.1	3E-07	0.007
Ag-EU2	Farmer	Adult	1E-06	0.06	2E-07	0.004
Ag-EU3	Farmer	Adult	2E-06	0.08	2E-07	0.005
Ag-EU4	Farmer	Adult	1E-07	0.005	1E-08	0.0003
Ag-EU5	Farmer	Adult	3E-07	0.01	4E-08	0.0008
Ag-EU6	Farmer	Adult	3E-09	0.0002	8E-11	0.000002
Ag-EU7	Farmer	Adult	5E-08	0.002	6E-09	0.0001
Ag-EU8	Farmer	Adult	3E-08	0.002	3E-09	0.00006

No Fill = total cancer risk less than 1E-06 or total hazard index less than or equal to 1.0.

🟨 = total cancer risk between 1E-06 and 1E-04.

TABLE 6-16
SITE-WIDE CANCER RISKS FROM OTHER COPCs
ANNISTON PCB SITE
OU-4

			Cancer Risks					
			High Contact Recreational Exposure			Low Contact Recreational Exposure		
COPC	**EPC (mg/kg)**	**CSF (mg/kg-day)$^{-1}$**	**Young Child**	**Adolescent**	**Adult**	**Young Child**	**Adolescent**	**Adult**
Dioxin/Furan Congener								
2,3,7,8-TCDD TEQ	2.50E-05	1.30E+05	1E-06	5E-07	6E-07	6E-07	2E-07	3E-07
PAHs								
Benzo(a)anthracene	1.37E-01	7.30E-01	5E-08	3E-08	2E-08	3E-08	2E-08	1E-08
Benzo(a)pyrene	1.20E-01	7.30E+00	4E-07	3E-07	2E-07	2E-07	1E-07	1E-07
Benzo(b)fluoranthene	6.37E-02	7.30E-01	2E-08	2E-08	1E-08	1E-08	8E-09	6E-09
Benzo(k)fluoranthene	1.25E-01	7.30E-02	5E-09	3E-09	2E-09	2E-09	2E-09	1E-09
Chrysene	1.32E-01	7.30E-03	5E-10	3E-10	2E-10	2E-10	2E-10	1E-10
Indeno(1,2,3-cd)pyrene	1.51E-01	7.30E-01	6E-08	4E-08	3E-08	3E-08	2E-08	1E-08
Inorganics								
Aluminum	1.27E+04	NA	NA	NA	NA	NA	NA	NA
Arsenic	7.46E+00	1.50E+00	4E-06	2E-06	2E-06	2E-06	8E-07	1E-06
Chromium	1.87E+01	5.00E-01	3E-06	8E-07	2E-06	2E-06	4E-07	8E-07
Cobalt	9.47E+00	NA	NA	NA	NA	NA	NA	NA
Iron	2.43E+04	NA	NA	NA	NA	NA	NA	NA
Manganese	9.64E+02	NA	NA	NA	NA	NA	NA	NA
		Total:	9E-06	3E-06	5E-06	4E-06	2E-06	2E-06

NA = Not available.

Presented cancer risks are based on the incidental ingestion and dermal contact exposure pathways.

Chromium CSF is based on hexavalent form.

TABLE 6-17

SITE-WIDE HAZARD INDICES FROM OTHER COPCs

ANNISTON PCB SITE

OU-4

COPC	EPC (mg/kg)	RfD (mg/kg-day)	Hazard Indices					
			High Contact Recreational Exposure			Low Contact Recreational Exposure		
			Young Child	Adolescent	Adult	Young Child	Adolescent	Adult
Dioxin/Furan Congener								
2,3,7,8-TCDD TEQ	2.50E-05	7.00E-10	0.2	0.04	0.02	0.08	0.02	0.008
PAHs								
Benzo(a)anthracene	1.37E-01	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.20E-01	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	6.37E-02	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1.25E-01	NA	NA	NA	NA	NA	NA	NA
Chrysene	1.32E-01	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.51E-01	NA	NA	NA	NA	NA	NA	NA
Inorganics								
Aluminum	1.27E+04	1.00E+00	0.05	0.008	0.005	0.02	0.004	NA
Arsenic	7.46E+00	3.00E-04	0.1	0.03	0.01	0.05	0.01	0.006
Chromium	1.87E+01	3.00E-03	0.02	0.004	0.003	0.01	0.002	0.001
Cobalt	9.47E+00	3.00E-04	0.1	0.02	0.01	0.06	0.01	0.006
Iron	2.43E+04	7.00E-01	0.1	0.02	0.01	0.07	0.01	0.007
Manganese	9.64E+02	2.40E-02	0.2	0.03	0.02	0.08	0.01	0.008
		Total:	0.7	0.1	0.08	0.4	0.07	0.04

NA = Not available.

Presented hazard indices are based on the incidental ingestion and dermal contact exposure pathways.

Chromium RfD is based on hexavalent form.

SECTION 7 TABLES

TABLE 7-1
SUMMARY OF TOTAL PCBS DETECTED IN AGRICULTURAL EXPOSURE UNITS - SURFACE SOIL
ANNISTON PCB SITE
OU-4

Agricultural EU ID	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency[a]	Detection Limits[b]	Arithmetic Mean[c]	Exposure Point Concentration[d]
Ag-EU1	1.10E-01	1.27E+02	mg/kg	C3S-02	10/15	4.15E-02 - 4.40E-02	2.14E+01	4.25E+01
Ag-EU2	7.15E-02	8.95E+01	mg/kg	C3N-05	44/45	3.90E-02 - 3.90E-02	1.11E+01	2.23E+01
Ag-EU3	1.65E-01	4.29E+01	mg/kg	C4S-04	12/12	NA	9.57E+00	2.87E+01
Ag-EU4	5.40E-02	4.63E+00	mg/kg	C4S-16	7/14	4.05E-02 - 4.70E-02	9.64E-01	1.74E+00
Ag-EU5	5.10E-02	1.63E+01	mg/kg	C4SF-30	18/22	3.95E-02 - 4.25E-02	1.83E+00	5.29E+00
Ag-EU6	4.10E-02	1.15E+00	mg/kg	C5S-13	3/11	3.65E-02 - 4.05E-02	1.41E-01	4.08E-02
Ag-EU7	1.84E-01	1.41E+00	mg/kg	C5S-25	2/3	4.00E-02 - 4.00E-02	5.45E-01	7.97E-01
Ag-EU8	1.08E-01	1.37E+00	mg/kg	C5SF-17	3/5	3.75E-02 - 4.05E-02	4.00E-01	4.44E-01

[a] Number of sampling locations at which analyte was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on nondetected samples.

[c] Nondetects were included at the full detection limit.

[d] See Section 6.2.2 for an explanation of the approach used to determine UCLs.

mg/kg = Milligrams per kilogram.

NA = Not applicable.

TABLE 7-2
AGRICULTURAL PRODUCT MODELING PARAMETERS
ANNISTON PCB SITE
OU-4

Parameter	Value	Units	Source
log K_{ow}	6.5	unitless	Aroclor 1254; EPA, 2005
Kds	24535	cm^3/gram	Aroclor 1254; EPA, 2005
Empirical correction factor	0.01	unitless	EPA, 2005
% $Moisture_{ag}$	0.94	unitless	EPA, 1997
BTF_{ag}	6.78E-03	(mg COPC/kg dry weight plant)/(mg COPC/kg dry weight soil)	calculated; Equation 7-1
log RCF_{ww}	3.485	(mg COPC/kg wet weight plant)/(mg COPC/L soil water)	calculated; Equation 7-2
BTF_{bg}	1.25E-03	(mg COPC/kg wet weight plant)/(mg COPC/kg dry weight soil)	calculated; Equation 7-3
log BTF_{fat}	-0.78775	(mg/kg fat)/(mg/day)	calculated; Equation 7-6
BTF_{beef}	3.10E-02	day/kg wet weight tissue	calculated; Equation 7-7
BTF_{milk}	6.52E-03	day/kg wet weight tissue	calculated; Equation 7-9
$BTF_{chicken}$	2.28E-02	day/kg wet weight tissue	calculated; Equation 7-11
BTF_{eggs}	1.30E-02	day/kg wet weight tissue	calculated; Equation 7-11

TABLE 7-3
AGRICULTURAL PRODUCTS - MODELED CONCENTRATIONS ASSUMING 1 MG/KG TOTAL PCBS
ANNISTON PCB SITE
OU-4

Scenario	Portion of Ingested Plant Type Grown in Contaminated Floodplain			Portion of Soil Ingested from Floodplain	Modeled Total PCB Concentration (mg/kg wet weight) from 1 mg Total PCB/kg Soil						
					Produce		Forage/Silage/ Grain*	Beef	Milk	Chicken	Eggs
	Forage	**Silage**	**Grain**		**Above Ground**	**Below Ground**					
Not Applicable				***Not Applicable***	4.07E-04	1.25E-03	6.78E-03	--	--	--	--
Consuming Grain Only											
	--	--	100%	100%	--	--	--	--	--	5.33E-04	3.05E-04
	--	--	50%	50%	--	--	--	--	--	2.67E-04	1.52E-04
	--	--	25%	25%	--	--	--	--	--	1.33E-04	7.61E-05
	--	--	10%	10%	--	--	--	--	--	5.33E-05	3.05E-05
Consuming Forage/Silage/Grain											
	50%	50%	50%	50%	--	--	--	8.98E-03	1.75E-03	--	--
	25%	25%	25%	25%	--	--	--	4.49E-03	8.76E-04	--	--
	10%	10%	10%	10%	--	--	--	1.80E-03	3.51E-04	--	--
	50%	0%	0%	50%	--	--	--	8.67E-03	1.60E-03	--	--
	25%	0%	0%	25%	--	--	--	4.33E-03	7.98E-04	--	--
	10%	0%	0%	10%	--	--	--	1.73E-03	3.19E-04	--	--

*Units mg/kg dry weight.

TABLE 7-4
AGRICULTURAL PRODUCT INGESTION EXPOSURE PARAMETERS - VEGETABLES AND BEEF
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Agricultural Products
Exposure Medium: Agricultural Products

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Farmers	Young Child (1 to 6 years) and Adult	Above Ground Vegetables	C_{ag}	Concentration in Above Ground Vegetables	mg/kg, wet weight	See Table 7-3	see text	
				$IR\text{-}ADJ_{ag}$	Age-adjusted Ingestion Rate of Above Ground Vegetables	g-year/kg-day, wet weight	43.9	Calculated	Chronic daily intake - cancer (mg/kg-day) = C_{ag} x $IR\text{-}ADJ_{ag}$ x FI x CF x IAF x EF x 1/AT-C
		(age-adjusted)		$IR\text{-}C_{ag}$	Ingestion Rate of Above Ground Vegetables - child	g/kg-day, wet weight	1.7	Table 7-8	
				$IR\text{-}A_{ag}$	Ingestion Rate of Above Ground Vegetables - adult	g/kg-day, wet weight	0.99	Table 7-8	
				FI	Fraction of Ingested Above Ground Vegetables Grown in the Floodplain	unitless	multiple	see text	Chronic daily intake - noncancer (mg/kg-day) = C_{ag} x $IR\text{-}ADJ_{ag}$ x FI x CF x IAF x EF x 1/AT-NC
				CF	Conversion Factor	kg/g	1.00E-03	Unit conversion factor	
				IAF	Gastrointestinal Absorption Factor	unitless	1	Default	where:
				EF	Exposure Frequency	days/year	350	Professional judgment	$IR\text{-}ADJ_{ag}$ = ($IR\text{-}C_{ag}$ x EDc) + ($IR\text{-}A_{ag}$ x EDa)
				EDc	Exposure Duration - child	years	6	Calculated based on young child's age	
				EDa	Exposure Duration - adult	years	34	EPA, 2005	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	Total ED (40 years) x 365 days/year	
		Young Child (1 to 6 years) and Adult	Below Ground Vegetables	C_{bg}	Concentration in Below Ground Vegetables	mg/kg, wet weight	See Table 7-3	see text	
				$IR\text{-}ADJ_{bg}$	Age-adjusted Ingestion Rate of Below Ground Vegetables	g-year/kg-day, wet weight	17.7	Calculated	Chronic daily intake - cancer (mg/kg-day) = C_{bg} x $IR\text{-}ADJ_{bg}$ x FI x CF x IAF x EF x 1/AT-C
		(age-adjusted)		$IR\text{-}C_{bg}$	Ingestion Rate of Below Ground Vegetables - child	g/kg-day, wet weight	0.85	Table 7-8	
				$IR\text{-}A_{bg}$	Ingestion Rate of Below Ground Vegetables - adult	g/kg-day, wet weight	0.37	Table 7-8	
				FI	Fraction of Ingested Below Ground Vegetables Grown in the Floodplain	unitless	multiple	see text	Chronic daily intake - noncancer (mg/kg-day) = C_{bg} x $IR\text{-}ADJ_{bg}$ x FI x CF x IAF x EF x 1/AT-NC
				CF	Conversion Factor	kg/g	1.00E-03	Unit conversion factor	
				IAF	Gastrointestinal Absorption Factor	unitless	1	Default	where:
				EF	Exposure Frequency	days/year	350	Professional judgment	$IR\text{-}ADJ_{bg}$ = ($IR\text{-}C_{bg}$ x EDc) + ($IR\text{-}A_{bg}$ x EDa)
				EDc	Exposure Duration - child	years	6	Calculated based on young child's age	
				EDa	Exposure Duration - adult	years	34	EPA, 2005	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	Total ED (40 years) x 365 days/year	
		Young Child (1 to 6 years) and Adult	Beef	C_{beef}	Concentration in Beef	mg/kg, wet weight	See Table 7-3	see text	
				$IR\text{-}ADJ_{beef}$	Age-adjusted Ingestion Rate of Beef	g-year/kg-day, wet weight	45.2	Calculated	Chronic daily intake - cancer (mg/kg-day) = C_{beef} x $IR\text{-}ADJ_{beef}$ x CF x IAF x EF x 1/AT-C
		(age-adjusted)		$IR\text{-}C_{beef}$	Ingestion Rate of Beef - child	g/kg-day, wet weight	2.1	Table 7-8	
				$IR\text{-}A_{beef}$	Ingestion Rate of Beef - adult	g/kg-day, wet weight	0.96	Table 7-8	
				CF	Conversion Factor	kg/g	1.00E-03	Unit conversion factor	Chronic daily intake - noncancer (mg/kg-day) = C_{beef} x $IR\text{-}ADJ_{beef}$ x CF x IAF x EF x 1/AT-NC
				IAF	Gastrointestinal Absorption Factor	unitless	1	Default	
				EF	Exposure Frequency	days/year	350	Professional judgment	where:
				EDc	Exposure Duration - child	years	6	Calculated based on young child's age	$IR\text{-}ADJ_{beef}$ = ($IR\text{-}C_{beef}$ x EDc) + ($IR\text{-}A_{beef}$ x EDa)
				EDa	Exposure Duration - adult	years	34	EPA, 2005	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	Total ED (40 years) x 365 days/year	

TABLE 7-5
AGRICULTURAL PRODUCT INGESTION EXPOSURE PARAMETERS - DAIRY, CHICKENS, AND EGGS
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Medium: Agricultural Products
Exposure Medium: Agricultural Products

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Farmers	Young Child (1 to 6 years) and Adult (age-adjusted)	Dairy Products	C_{dairy}	Concentration in Dairy Products	mg/kg, wet weight	See Table 7-3	see text	Chronic daily intake - cancer (mg/kg-day) =
				IR-ADJ_{dairy}	Age-adjusted Ingestion Rate of Dairy Products	g-year/kg-day, wet weight	154	Calculated	C_{dairy} x IR-ADJ_{dairy} x CF x IAF x EF x 1/AT-C
				IR-C_{dairy}	Ingestion Rate of Dairy Products - child	g/kg-day, wet weight	14.4	Table 7-8	
				IR-A_{dairy}	Ingestion Rate of Dairy Products - adult	g/kg-day, wet weight	2.0	Table 7-8	Chronic daily intake - noncancer (mg/kg-day) =
				CF	Conversion Factor	kg/g	1.00E-03	Unit conversion factor	C_{dairy} x IR-ADJ_{dairy} x CF x IAF x EF x 1/AT-NC
				IAF	Gastrointestinal Absorption Factor	unitless	1	Default	
				EF	Exposure Frequency	days/year	350	Professional judgment	where:
				EDc	Exposure Duration - child	years	6	Calculated based on young child's age	IR-ADJ_{dairy} = (IR-C_{dairy} x EDc) + (IR-A_{dairy} x EDa)
				EDa	Exposure Duration - adult	years	34	EPA, 2005	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	Total ED (40 years) x 365 days/year	
		Young Child (1 to 6 years) and Adult (age-adjusted)	Chickens	$C_{chicken}$	Concentration in Chicken	mg/kg, wet weight	See Table 7-3	see text	Chronic daily intake - cancer (mg/kg-day) =
				$\text{IR-ADJ}_{chicken}$	Age-adjusted Ingestion Rate of Chicken	g-year/kg-day, wet weight	20.9	Calculated	$C_{chicken}$ x $\text{IR-ADJ}_{chicken}$ x CF x IAF x EF x 1/AT-C
				$\text{IR-C}_{chicken}$	Ingestion Rate of Chicken - child	g/kg-day, wet weight	1.1	Table 7-8	
				$\text{IR-A}_{chicken}$	Ingestion Rate of Chicken - adult	g/kg-day, wet weight	0.42	Table 7-8	Chronic daily intake - noncancer (mg/kg-day) =
				CF	Conversion Factor	kg/g	1.00E-03	Unit conversion factor	$C_{chicken}$ x $\text{IR-ADJ}_{chicken}$ x CF x IAF x EF x 1/AT-NC
				IAF	Gastrointestinal Absorption Factor	unitless	1	Default	
				EF	Exposure Frequency	days/year	350	Professional judgment	where:
				EDc	Exposure Duration - child	years	6	Calculated based on young child's age	$\text{IR-ADJ}_{chicken}$ = ($\text{IR-C}_{chicken}$ x EDc) + ($\text{IR-A}_{chicken}$ x EDa)
				EDa	Exposure Duration - adult	years	34	EPA, 2005	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	Total ED (40 years) x 365 days/year	
		Young Child (1 to 6 years) and Adult (age-adjusted)	Eggs	C_{eggs}	Concentration in Eggs	mg/kg, wet weight	See Table 7-3	see text	Chronic daily intake - cancer (mg/kg-day) =
				IR-ADJ_{eggs}	Age-adjusted Ingestion Rate of Eggs	g-year/kg-day, wet weight	14.3	Calculated	C_{eggs} x IR-ADJ_{eggs} x CF x IAF x EF x 1/AT-C
				IR-C_{eggs}	Ingestion Rate of Eggs - child	g/kg-day, wet weight	0.91	Table 7-8	
				IR-A_{eggs}	Ingestion Rate of Eggs - adult	g/kg-day, wet weight	0.26	Table 7-8	Chronic daily intake - noncancer (mg/kg-day) =
				CF	Conversion Factor	kg/g	1.00E-03	Unit conversion factor	C_{eggs} x IR-ADJ_{eggs} x CF x IAF x EF x 1/AT-NC
				IAF	Gastrointestinal Absorption Factor	unitless	1	Default	
				EF	Exposure Frequency	days/year	350	Professional judgment	where:
				EDc	Exposure Duration - child	years	6	Calculated based on young child's age	IR-ADJ_{eggs} = (IR-C_{eggs} x EDc) + (IR-A_{eggs} x EDa)
				EDa	Exposure Duration - adult	years	34	EPA, 2005	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989	
				AT-NC	Averaging Time (Non-Cancer)	days	14,600	Total ED (40 years) x 365 days/year	

TABLE 7-6

SUMMARY OF AGRICULTURAL PRODUCT INTAKE RATES (AS CONSUMED)

ANNISTON PCB SITE

OU-4

	95th Percentile Intake Rate	
Age Group	**(g/kg-day wet weight)**	**(ounces/day wet weight)***
Exposed Vegetables (obtained from Table 3-11, EPA, 2003a)		
Young Child		
1-2	8.6	
3-5	6.4	
Average:	**7.5**	**4.0**
Adult		
20-39	4.1	
40-69	4.3	
70+	4.4	
Average:	**4.3**	**10.7**
Root Vegetables (obtained from Table 3-13, EPA, 2003a)		
Young Child		
1-2	8.3	
3-5	7.1	
Average:	**7.7**	**4.1**
Adult		
20-39	3.5	
40-69	3.1	
70+	3.4	
Average:	**3.4**	**8.4**
Beef (obtained from Table 3-23, EPA, 2003a)		
Young Child		
1-2	4.6	
3-5	4.2	
Average:	**4.4**	**2.3**
Adult		
20-39	2.5	
40-69	2.0	
70+	1.5	
Average:	**2.0**	**1.1**
Dairy Products (obtained from Table 3-5, EPA, 2003a)		
Young Child		
1-2	90.1	
3-5	48.8	
Average:	**69.4**	**37.2**
Adult		
20-39	10.7	
40-69	8.7	
70+	9.9	
Average:	**9.8**	**5.2**
Chicken, represented by poultry (obtained from Table 3-25, EPA, 2003a)		
Young Child		
1-2	4.958	
3-5	4.361	
Average:	**4.7**	**2.5**
Adult		
20-39	2.0	
40-69	1.7	
70+	1.5	
Average:	**1.7**	**0.93**

TABLE 7-6

SUMMARY OF AGRICULTURAL PRODUCT INTAKE RATES (AS CONSUMED)

ANNISTON PCB SITE

OU-4

Age Group	95th Percentile Intake Rate (g/kg-day wet weight)	95th Percentile Intake Rate (ounces/day wet weight)*
Eggs (obtained from Table 3-6, EPA, 2003a)		
Young Child		
1-2	5.1	
3-5	3.4	
Average:	**4.3**	**2.3**
Adult		
20-39	1.4	
40-69	1.2	
70+	1.1	
Average:	**1.2**	**0.65**

EPA, 2003a - CSFII Analysis of Food Intake Distributions. National Center for Environmental Assessment. EPA/600/R-03/029.

* Calculated from g/kg-day intake rate. Young child body weight was assumed to be 15 kg and adult body weight was assumed to be 70 kg. There are 28 grams in an ounce.

TABLE 7-7
FRACTION OF FOOD INTAKE THAT IS HOME PRODUCED*
ANNISTON PCB SITE
OU-4

Category	Exposed Vegetables	Root Vegetables	Beef	Dairy Products	Poultry	Eggs
Total Population	0.095	0.043	0.038	0.012	0.013	0.014
South Region	0.091	0.042	0.022	0.006	0.012	0.012
Households who farm	0.42	0.17	0.49	0.25	0.24	0.15
Households who garden	0.23	0.11	not applicable	not applicable	not applicable	not applicable
Households who raised animals	not applicable	not applicable	0.48	0.21	0.24	0.21

* See Table 13-71 of the Exposure Factors Handbook (EPA, 1997).

TABLE 7-8
DERIVATION OF AGRICULTURAL PRODUCT INGESTION RATES
ANNISTON PCB SITE
OU-4

Reasonable Maximum Exposure (RME)					
Age Group	**95th Percentile [a] Intake Rate (g/kg-day wet weight)**	**Fraction of Food Intake that is Home Produced [b]**	**Basis**	**RME [c] Ingestion Rate (g/kg-day wet weight)**	**(ounces/day wet weight) [d]**
Exposed Vegetables					
Young Child	7.5	0.23	Based on households who garden	1.7	0.92
Adult	4.3	0.23	Based on households who garden	0.99	2.5
Root Vegetables					
Young Child	7.7	0.11	Based on households who garden	0.85	0.46
Adult	3.4	0.11	Based on households who garden	0.37	0.9
Beef					
Young Child	4.4	0.48	Based on households who raised animals	2.1	1.1
Adult	2.0	0.48	Based on households who raised animals	0.96	2.4
Dairy Products					
Young Child	69.4	0.21	Based on households who raised animals	14.4	7.7
Adult	9.8	0.21	Based on households who raised animals	2.0	5.1
Chicken					
Young Child	4.7	0.24	Based on households who raised animals	1.1	0.6
Adult	1.7	0.24	Based on households who raised animals	0.42	1.0
Eggs					
Young Child	4.3	0.21	Based on households who raised animals	0.91	0.5
Adult	1.2	0.21	Based on households who raised animals	0.26	0.6

[a] See Table 7-6.

[b] See Table 7-7.

[c] Calculated by multiplying intake rate and fraction of food intake that is home produced.

[d] Calculated from g/kg-day intake rate. Young child body weight was assumed to be 15 kg and adult body weight was assumed to be 70 kg. There are 28 grams in an ounce.

TABLE 7-9
VEGETABLE INGESTION RISK MATRIX
ANNISTON PCB SITE
OU-4

Fraction Ingested from Floodplain/ Vegetable Growing Scenario	Cancer Risk				Hazard Quotient			
	Total PCB Soil Concentration (mg/kg)				Total PCB Soil Concentration (mg/kg)			
	1	5	20	40	1	5	20	40
100%								
Aboveground	5E-07	2E-06	1E-05	2E-05	0.02	0.1	0.4	0.9
Root	6E-07	3E-06	1E-05	2E-05	0.03	0.1	0.5	1
Total	1E-06	5E-06	2E-05	4E-05	0.05	0.2	1	2
75%								
Aboveground	4E-07	2E-06	7E-06	1E-05	0.02	0.08	0.3	0.6
Root	5E-07	2E-06	9E-06	2E-05	0.02	0.10	0.4	0.8
Total	8E-07	4E-06	2E-05	3E-05	0.04	0.2	0.7	1
50%								
Aboveground	2E-07	1E-06	5E-06	1E-05	0.01	0.05	0.2	0.4
Root	3E-07	2E-06	6E-06	1E-05	0.01	0.07	0.3	0.5
Total	5E-07	3E-06	1E-05	2E-05	0.02	0.1	0.5	1
25%								
Aboveground	1E-07	6E-07	2E-06	5E-06	0.005	0.03	0.1	0.2
Root	2E-07	8E-07	3E-06	6E-06	0.007	0.03	0.1	0.3
Total	3E-07	1E-06	5E-06	1E-05	0.01	0.06	0.2	0.5
10%								
Aboveground	5E-08	2E-07	1E-06	2E-06	0.002	0.01	0.04	0.09
Root	6E-08	3E-07	1E-06	2E-06	0.003	0.01	0.05	0.1
Total	1E-07	5E-07	2E-06	4E-06	0.005	0.02	0.10	0.2

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.

🟨 = cancer risk between 1E-06 and 1E-04.

🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

TABLE 7-10
BEEF INGESTION RISK MATRIX
ANNISTON PCB SITE
OU-4

	Cancer Risk					**Hazard Quotient**			
	Total PCB Soil Concentration (mg/kg)					**Total PCB Soil Concentration (mg/kg)**			
Cattle Ingestion Scenario	**1**	**5**	**20**	**40**		**1**	**5**	**20**	**40**
Forage/Silage/Grain/Soil - FI 50%	1E-05	6E-05	2E-04	4E-04		0.5	2	10	19
Forage/Silage/Grain/Soil - FI 25%	6E-06	3E-05	1E-04	2E-04		0.2	1	5	10
Forage/Silage/Grain/Soil - FI 10%	2E-06	1E-05	4E-05	9E-05		0.1	0.5	2	4
Forage/Soil - FI 50%	1E-05	5E-05	2E-04	4E-04		0.5	2	9	19
Forage/Soil - FI 25%	5E-06	3E-05	1E-04	2E-04		0.2	1	5	9
Forage/Soil - FI 10%	2E-06	1E-05	4E-05	9E-05		0.09	0.5	2	4

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.
🟨 = cancer risk between 1E-06 and 1E-04.
🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

TABLE 7-11
DAIRY INGESTION RISK MATRIX
ANNISTON PCB SITE
OU-4

	Cancer Risk					Hazard Quotient			
	Total PCB Soil Concentration (mg/kg)					Total PCB Soil Concentration (mg/kg)			
Cattle Ingestion Scenario	**1**	**5**	**20**	**40**		**1**	**5**	**20**	**40**
Forage/Silage/Grain/Soil - FI 50%	7E-06	4E-05	1E-04	3E-04		0.3	2	6	13
Forage/Silage/Grain/Soil - FI 25%	4E-06	2E-05	7E-05	1E-04		0.2	0.8	3	6
Forage/Silage/Grain/Soil - FI 10%	1E-06	7E-06	3E-05	6E-05		0.06	0.3	1	3
Forage/Soil - FI 50%	7E-06	3E-05	1E-04	3E-04		0.3	1	6	12
Forage/Soil - FI 25%	3E-06	2E-05	7E-05	1E-04		0.1	0.7	3	6
Forage/Soil - FI 10%	1E-06	7E-06	3E-05	5E-05		0.06	0.3	1	2

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.
🟨 = cancer risk between 1E-06 and 1E-04.
🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

TABLE 7-12
CHICKEN INGESTION RISK MATRIX
ANNISTON PCB SITE
OU-4

	Cancer Risk					**Hazard Quotient**			
	Total Soil PCB Concentration (mg/kg)					**Total PCB Soil Concentration (mg/kg)**			
Chicken Ingestion Scenario	**1**	**5**	**20**	**40**		**1**	**5**	**20**	**40**
Grain/Soil - FI 100%	3E-07	2E-06	6E-06	1E-05		0.01	0.07	0.3	0.5
Grain/Soil - FI 50%	2E-07	8E-07	3E-06	6E-06		0.007	0.03	0.1	0.3
Grain/Soil - FI 25%	8E-08	4E-07	2E-06	3E-06		0.003	0.02	0.07	0.1
Grain/Soil - FI 10%	3E-08	2E-07	6E-07	1E-06		0.001	0.007	0.03	0.05

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.
🟨 = cancer risk between 1E-06 and 1E-04.
🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

TABLE 7-13
EGG INGESTION RISK MATRIX
ANNISTON PCB SITE
OU-4

	Cancer Risk					Hazard Quotient			
	Total PCB Soil Concentration (mg/kg)					Total PCB Soil Concentration (mg/kg)			
Chicken Ingestion Scenario	**1**	**5**	**20**	**40**		**1**	**5**	**20**	**40**
Grain/Soil - FI 100%	1E-07	6E-07	2E-06	5E-06		0.005	0.03	0.1	0.2
Grain/Soil - FI 50%	6E-08	3E-07	1E-06	2E-06		0.003	0.01	0.05	0.1
Grain/Soil - FI 25%	3E-08	1E-07	6E-07	1E-06		0.001	0.007	0.03	0.05
Grain/Soil - FI 10%	1E-08	6E-08	2E-07	5E-07		0.0005	0.003	0.01	0.02

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.

🟨 = cancer risk between 1E-06 and 1E-04.

🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

TABLE 7-14
BEEF INGESTION RISK MATRIX - SENSITIVITY ANALYSIS FOR LOWER SOIL BIOAVAILABILITY
ANNISTON PCB SITE
OU-4

	Cancer Risk					Hazard Quotient			
	Total PCB Concentration (mg/kg)					Total PCB Concentration (mg/kg)			
Cattle Ingestion Scenario	**1**	**5**	**20**	**40**		**1**	**5**	**20**	**40**
Forage/Silage/Grain/Soil - FI 50%	6E-06	3E-05	1E-04	3E-04		0.3	1	6	11
Forage/Silage/Grain/Soil - FI 25%	3E-06	2E-05	6E-05	1E-04		0.1	0.7	3	6
Forage/Silage/Grain/Soil - FI 10%	1E-06	6E-06	3E-05	5E-05		0.06	0.3	1	2
Forage/Soil - FI 50%	6E-06	3E-05	1E-04	2E-04		0.3	1	5	10
Forage/Soil - FI 25%	3E-06	1E-05	6E-05	1E-04		0.1	0.6	3	5
Forage/Soil - FI 10%	1E-06	6E-06	2E-05	5E-05		0.05	0.3	1	2

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.

🟨 = cancer risk between 1E-06 and 1E-04.

🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

Note: All the risk values presented in Table 7-14 are based on an assumed bioavailability of 50% for PCBs in soil ingested by cattle. This is a lower bounding estimate to the 100% assumed bioavailability used in the HHRA.

TABLE 7-15

DAIRY INGESTION RISK MATRIX - SENSITIVITY ANALYSIS FOR LOWER SOIL BIOAVAILABILITY

ANNISTON PCB SITE

OU-4

	Cancer Risk					**Hazard Quotient**			
	Total PCB Concentration (mg/kg)					**Total PCB Concentration (mg/kg)**			
Cattle Ingestion Scenario	**1**	**5**	**20**	**40**		**1**	**5**	**20**	**40**
Forage/Silage/Grain/Soil - FI 50%	5E-06	2E-05	9E-05	2E-04		0.2	1	4	8
Forage/Silage/Grain/Soil - FI 25%	2E-06	1E-05	5E-05	9E-05		0.1	0.5	2	4
Forage/Silage/Grain/Soil - FI 10%	9E-07	5E-06	2E-05	4E-05		0.04	0.2	0.8	2
Forage/Soil - FI 50%	4E-06	2E-05	8E-05	2E-04		0.2	0.9	3	7
Forage/Soil - FI 25%	2E-06	1E-05	4E-05	8E-05		0.09	0.4	2	3
Forage/Soil - FI 10%	8E-07	4E-06	2E-05	3E-05		0.03	0.2	0.7	1

No Fill = cancer risk less than 1E-06 or hazard quotient/index less than or equal to 1.0.
🟨 = cancer risk between 1E-06 and 1E-04.
🟥 = cancer risk greater than 1E-04 or hazard quotient/index greater than 1.0.

Note: All the risk values presented in Table 7-15 are based on an assumed bioavailability of 50% for PCBs in soil ingested by cattle. This is a lower bounding estimate to the 100% assumed bioavailability used in the HHRA.

APPENDICES

APPENDIX A

INHALATION SCREENING EVALUATION

APPENDIX A

INHALATION SCREENING ANALYSIS

As noted in Section 2, the soil contact exposure pathway includes incidental soil ingestion, dermal contact and absorption, and inhalation of particulates as pathways of concern. Typically, the inhalation of particulates exposure pathway results in exposure and risks that are minimal compared to the exposure and risks associated with the incidental ingestion and dermal contact and absorption exposure pathways. The mechanism of the inhalation exposure relevant for this HHRA is the release of particulates (i.e., PCB-contaminated soil) from soil due to wind erosion.

The analysis performed in this appendix demonstrates that the inhalation of particulates exposure pathway results in negligible risks. This was done using the highest tPCB concentration observed in the floodplain soil and the most conservative inhalation exposure parameters to determine if the inhalation of particulates pathway warranted further evaluation in the HHRA.

Table A-1 shows the maximum tPCB soil concentration (from 0-1 bgs) compared with the inhalation-based residential RSL, the integrated residential RSL (i.e., based on all three exposure routes), and the contribution of the inhalation pathway to the overall risks. The ratio of the maximum concentration to the inhalation screening value is less than one (0.04); therefore, cancer risk from this pathway would be less than 1E-07, and well below the EPA risk range. In addition, the comparison of the inhalation risk to total direct contact risk is 0.004%, which further supports the contention that inhalation risk is not of concern for OU-4. As such, it was not evaluated quantitatively in the HHRA.

TABLE A-1

FLOODPLAIN SOIL (0 TO 1 FT BGS) MAXIMUM tPCB CONCENTRATIONS COMPARISON TO RESIDENTIAL SOIL RSLS

ANNISTON PCB SITE

OU-4

Contaminant	Maximum Concentration	Units	Inhalation Screening Toxicity Value [a]	Ratio	Residential Screening Toxicity Value[b]	Ratio	% Contribution of Inhalation Pathway to Total Risks
Aroclors							
Total PCBs (sum of Aroclors)	2.28E+02	mg/kg	5.80E+03 C	0.04	2.20E-01 C	1036	0.004%

[a] Residential soil inhalation RSL (May 2012).

[b] Residential soil RSL, includes all routes (i.e., inhalation, dermal, and ingestion; May 2012).

C = cancer based, target risk equals 1E-06.

Total PCBs (sum of Aroclors) toxicity value assumed to be the most conservative cancer-based value of the detected Aroclors.

APPENDIX B

SURFACE WATER SCREENING EVALUATION

APPENDIX B

SURFACE WATER SCREENING ANALYSIS

As noted in Section 2, the surface water contact exposure scenarios were eliminated from consideration based on the low levels observed in the available surface water data. This risk-based surface water screening evaluation was the basis of that determination.

To perform this analysis, available surface water data from October 2009 and February 2010 were used. Table B-1 presents the data that were collected by Solutia during the Phase 2 ecological risk assessment sampling. There were 49 surface water samples collected from 48 locations within Choccolocco Creek. All of the these surface water samples were analyzed for inorganics and mercury, with a subset of six sample locations analyzed for PCB dioxin-like congeners and dioxin/furan congeners, and one sample location analyzed for tPCBs as Aroclors. The one tPCB (Aroclor) value and all PCB congener values were nondetects; however, PCB homologs were analyzed for in all surface water samples and total homolog PCB concentrations were able to be calculated from those concentrations. Therefore, total homolog PCB values were used in this exercise.

Table B-2 presents a summary of the analytes detected in surface water, the screening toxicity value, and whether the ratio of the maximum detected concentration versus the screening toxicity value is greater than one. The site-specific surface water values for recreational exposure were calculated using the EPA on-line RSL calculator (EPA, 2012a) and input values used are as noted on Table B-3. If a site-specific RSL could not be calculated, the Maximum Contaminant Level (MCL) was used (EPA, 2012b).

All of the detected chemicals were below the screening value, with the exception of tPCBs (homolog) and chromium. The ratios of the maximum detected concentrations to the respective RSLs were 15 and 38.1. Note that the chromium ratio is conservative as it was calculated assuming that all of the chromium present was in the +6 valence state.

The ratios calculated from comparisons of soil and fish tPCB concentrations with their RSLs were 2,073 and 21,250 respectively. From this, it is clear that the contribution to risk from the surface water pathway would be very small compared to the risk from other pathways.

Given that only two chemicals detected in surface water would be considered COPCs based on a conservative screening and that the contribution to overall risk would be minimal, the surface water pathway was not evaluated quantitatively in this risk assessment.

EPA (U.S. Environmental Protection Agency). 2012a. *Regional Screening Levels for Chemical Contaminants at Superfund Sites.* http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

____. 2012b. *Regional Screening Levels Table*. May 2012.

TABLE B-1
SURFACE WATER SAMPLES USED IN HHRA
ANNISTON PCB SITE
OU-4

				Analyses					
Location	Sample ID	Sample Type	Date	PCBs	PCB Congeners	PCB Homologs	Mercury	Dioxins/ Furans	Inorganics
ELA-01-07	C50636	N	10/3/2009			X	X		X
ELA-02-13	C50637	N	10/3/2009		X	X	X	X	X
ELA-03-14	C50638	N	10/3/2009			X	X		X
ELW-01-05	C50620	N	10/2/2009			X	X		X
ELW-02-06	C50621	N	10/2/2009			X	X		X
ELW-03-08	C50622	N	10/3/2009			X	X		X
ELW-03-08	C50623	FD	10/3/2009			X	X		X
ELW-04-09	C50624	N	10/3/2009			X	X		X
ELW-04-09	C50639	N	2/24/2010			X	X		X
ELW-05-10	C50625	N	10/3/2009			X	X		X
ELW-06-11	C50626	N	10/3/2009			X	X		X
ELW-07-12	C50627	N	10/3/2009			X	X		X
ELW-08-15	C50628	N	10/3/2009			X	X		X
ELW-09-16	C50629	N	10/3/2009			X	X		X
EMA-01-08	C50633	N	10/3/2009			X	X		X
EMA-02-26	C50634	N	10/4/2009			X	X		X
EMA-03-28	C50635	N	10/4/2009			X	X		X
EMW-01-17	C50611	N	10/3/2009			X	X		X
EMW-02-22	C50612	N	10/4/2009		X	X	X	X	X
EMW-03-23	C50613	N	10/4/2009			X	X		X
EMW-04-24	C50614	N	10/4/2009		X	X	X	X	X
EMW-05-25	C50615	N	10/4/2009			X	X		X
EMW-06-27	C50616	N	10/4/2009			X	X		X
EMW-07-19	C50617	N	10/3/2009			X	X		X
EMW-08-20	C50618	N	10/3/2009			X	X		X
EMW-09-21	C50619	N	10/3/2009			X	X		X
ERA-01-45	R50001	N	2/23/2010			X	X		X
ERA-01-46	R50004	N	2/23/2010			X	X		X
ERA-01-47	R50008	N	2/23/2010			X	X		X
ERA-01-48	R50011	N	2/23/2010			X	X		X
ERA-02-41	R50002	N	10/6/2009	X		X	X		X
ERA-02-42	R50005	N	10/6/2009			X	X		X
ERA-02-42	R50006	FD	10/6/2009			X	X		X
ERA-02-43	R50009	N	10/6/2009		X	X	X	X	X
ERA-02-44	R50012	N	10/6/2009			X	X		X
ERA-03-01	R50003	N	10/2/2009			X	X		X
ERA-03-02	R50007	N	10/2/2009			X	X		X
ERA-03-03	R50010	N	10/2/2009			X	X		X
ERA-03-04	R50013	N	10/2/2009			X	X		X
EUA-01-40	C50630	N	10/4/2009			X	X		X
EUA-02-35	C50631	N	10/4/2009			X	X		X
EUA-03-31	C50632	N	10/4/2009		X	X	X	X	X
EUW-01-37	C50601	N	10/4/2009			X	X		X
EUW-01-37	C50602	FD	10/4/2009			X	X		X
EUW-02-39	C50603	N	10/4/2009			X	X		X
EUW-03-38	C50604	N	10/4/2009			X	X		X
EUW-04-36	C50605	N	10/4/2009			X	X		X
EUW-05-34	C50606	N	10/4/2009			X	X		X
EUW-06-32	C50607	N	10/4/2009			X	X		X
EUW-07-33	C50608	N	10/4/2009		X	X	X	X	X
EUW-08-29	C50609	N	10/4/2009			X	X		X
EUW-09-30	C50610	N	10/4/2009			X	X		X

*Sample Types:
FD = Field duplicate sample.
N = Primary sample.

TABLE B-2

SUMMARY OF ANALYTES DETECTED IN SURFACE WATER AND COMPARISON TO SITE-SPECIFIC RECREATOR SURFACE WATER RSLS

ANNISTON PCB SITE

OU-4

Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Detected Concentration	Detection Frequency	Average Concentration (mg/kg)	Screening Toxicity Value [a]	Ratio Greater than One?
PCB Homologs								
Decachlorobiphenyl	1.20E-06	5.30E-06	mg/L	EMW-02-22	5/49	1.75E-05	Evaluated as tPCBs	
Total Trichlorobiphenyl	7.60E-06	4.60E-05	mg/L	ELA-02-13	34/49	5.60E-05	Evaluated as tPCBs	
Total Pentachlorobiphenyl	6.00E-06	2.60E-05	mg/L	EUW-07-33	33/49	6.00E-05	Evaluated as tPCBs	
Total Dichlorobiphenyl	4.50E-06	7.50E-05	mg/L	ELA-02-13	35/49	2.34E-05	Evaluated as tPCBs	
Total Hexachlorobiphenyl	3.00E-06	3.10E-05	mg/L	EUW-07-33	32/49	6.18E-05	Evaluated as tPCBs	
Total Tetrachlorobiphenyl	7.60E-06	2.50E-05	mg/L	EMW-02-22	32/49	6.54E-05	Evaluated as tPCBs	
Total Monochlorobiphenyl	1.00E-06	1.00E-05	mg/L	EUW-06-32	16/49	1.44E-05	Evaluated as tPCBs	
Total Heptachlorobiphenyl	4.70E-06	1.70E-05	mg/L	EUW-07-33	16/49	9.77E-05	Evaluated as tPCBs	
Total Octachlorobiphenyl	6.60E-06	1.50E-04	mg/L	ELA-02-13	14/49	4.18E-05	Evaluated as tPCBs	
Total Nonachlorobiphenyl	9.60E-06	9.60E-06	mg/L	EMW-02-22	1/49	4.67E-05	Evaluated as tPCBs	
Total Homolog PCB	6.60E-06	3.09E-04	mg/L	ELA-02-13	39/49	9.02E-05	2.03E-05 C	Yes
Dioxin/Furan Congeners								
1,2,3,4,7,8-HxCDD	7.00E-10	7.00E-10	mg/L	EMW-02-22	1/6	6.50E-10	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDD	5.30E-10	1.66E-09	mg/L	EMW-02-22	2/6	7.63E-10	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8,9-HxCDD	1.26E-09	1.26E-09	mg/L	EMW-02-22	1/6	7.00E-10	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,6,7,8-HpCDD	1.81E-08	3.86E-08	mg/L	EMW-02-22	2/6	1.08E-08	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDD	2.50E-08	6.42E-07	mg/L	EMW-02-22	6/6	2.22E-07	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDF	1.03E-09	5.67E-08	mg/L	EMW-02-22	5/6	1.57E-08	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,7,8-PeCDF	1.68E-09	3.52E-09	mg/L	EUW-07-33	2/6	1.27E-09	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,7,8-PeCDF	4.86E-09	8.34E-09	mg/L	EUW-07-33	2/6	2.72E-09	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8-HxCDF	1.26E-09	5.37E-09	mg/L	EMW-02-22	2/6	1.46E-09	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,6,7,8-HxCDF	2.79E-09	9.75E-09	mg/L	EMW-02-22	2/6	2.45E-09	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,4,6,7,8-HxCDF	9.10E-10	1.22E-09	mg/L	EMW-02-22	2/6	7.48E-10	Evaluated as 2,3,7,8-TCDD TEQ	
1,2,3,4,7,8,9-HpCDF	1.86E-09	1.86E-09	mg/L	EMW-02-22	1/6	8.40E-10	Evaluated as 2,3,7,8-TCDD TEQ	
Octa CDF	1.80E-09	2.67E-08	mg/L	EMW-02-22	4/6	6.03E-09	Evaluated as 2,3,7,8-TCDD TEQ	
2,3,7,8-TCDD TEQ	---	1.09E-08	mg/L	---	---	---	2.35E-08 C	No
Inorganics								
Arsenic	2.10E-04	1.20E-03	mg/L	EMW-02-22	5/5	6.50E-04	1.63E-03 C	No
Barium	1.74E-02	4.28E-02	mg/L	EMW-02-22	5/5	2.72E-02	3.61E+00 NC	No
Beryllium	1.00E-04	1.00E-04	mg/L	EMW-02-22	1/5	5.52E-05	5.23E-03 NC	No
Cadmium	2.10E-04	2.10E-04	mg/L	EMW-02-22	1/5	1.62E-04	7.15E-03 NC	No
Chromium	4.90E-04	4.00E-03	mg/L	EMW-02-22	4/5	1.96E-03	1.05E-04 C	Yes
Cobalt	2.20E-03	2.20E-03	mg/L	EMW-02-22	1/5	8.44E-03	1.50E-02 NC	No
Lead	3.40E-04	4.80E-03	mg/L	EMW-02-22	4/5	1.66E-03	1.50E-02 MCL	No
Manganese	2.89E-02	2.10E-01	mg/L	EMW-02-22	5/5	1.09E-01	2.90E-01 NC	No
Mercury	6.90E-05	6.90E-05	mg/L	ELW-04-09	1/49	6.80E-05	5.42E-03 NC	No
Methyl Mercury	1.00E-07	1.00E-07	mg/L	ELW-04-09	1/1	1.00E-07	4.64E-03 NC	No
Nickel	2.30E-04	1.80E-03	mg/L	EMW-02-22	4/5	5.64E-04	6.30E-01 NC	No
Vanadium	3.60E-04	3.10E-03	mg/L	EMW-02-22	5/5	1.04E-03	2.34E-01 NC	No

[a] Site-specific recreator RSL, unless unavailable in which case the MCL used.

C = cancer based, target risk equals 1E-06.

MCL = maximum contaminant level.

NC = noncancer based, hazard index equals 0.1.

2,3,7,8-TCDD TEQ conservatively calculated by multiplying the maximum detected concentration of each congener by the TEF and summing.

Chromium VI noncancer value used.

TABLE B-3
SITE-SPECIFIC RECREATOR EQUATION INPUTS FOR SURFACE WATER
ANNISTON PCB SITE
OU-4

Variable	Value
TR (target cancer risk) unitless	1.00E-06
THQ (target hazard quotient) unitless	0.1
EF_{recwc} (child exposure frequency) day/year	104
EF_{recwa} (adult exposure frequency) day/year	104
EF_{0-2} (mutagenic exposure frequency) day/year	104
EF_{2-6} (mutagenic exposure frequency) day/year	104
EF_{6-16} (mutagenic exposure frequency) day/year	104
EF_{16-30} (mutagenic exposure frequency) day/year	104
ED_{recwc} (exposure duration - child) year	6
ED_{recwa} (exposure duration - adult) year	24
ED_{0-2} (mutagenic exposure duration) year	2
ED_{2-6} (mutagenic exposure duration) year	4
ED_{6-16} (mutagenic exposure duration) year	10
ED_{16-30} (mutagenic exposure duration) year	14
LT (lifetime - recreator) year	70
EV_{recwa} (adult) events/day	1
EV_{recwc} (child) events/day	1
EV_{0-2} (mutagenic) events/day	1
EV_{2-6} (mutagenic) events/day	1
EV_{6-16} (mutagenic) events/day	1
EV_{16-30} (mutagenic) events/day	1
ET_{recwa} (adult exposure time) hour/event	2
ET_{recwc} (child exposure time) hour/event	2
$ET_{recw0-2}$ (mutagenic exposure time) hour/event	2
$ET_{recw2-6}$ (mutagenic exposure time) hour/event	2
$ET_{recw6-16}$ (mutagenic exposure time) hour/event	2
$ET_{recw16-30}$ (mutagenic exposure time) hour/event	2
$ET_{recw-adj}$ (age-adjusted exposure time) hour/event	2
$ET_{recw-madj}$ (mutagenic age-adjusted exposure time) hour/event	2
BW_{recwa} (body weight - adult) kg	59.583
BW_{recwc} (body weight - child) kg	15
BW_{0-2} (mutagenic body weight) kg	15
BW_{2-6} (mutagenic body weight) kg	15
BW_{6-16} (mutagenic body weight) kg	45
BW_{16-30} (mutagenic body weight) kg	70
IRW_{recwa} (water intake rate - adult) L/hr	0.05
IRW_{recwc} (water intake rate - child) L/hr	0.05
IRW_{0-2} (mutagenic water intake rate) L/hr	0.05
IRW_{2-6} (mutagenic water intake rate) L/hr	0.05
IRW_{6-16} (mutagenic water intake rate) L/hr	0.05
IRW_{16-30} (mutagenic water intake rate) L/hr	0.05
SA_{recwa} (skin surface area - adult) cm^2	18150
SA_{recwc} (skin surface area - child) cm^2	6700
SA_{0-2} (mutagenic skin surface area) cm^2	5300
SA_{2-6} (mutagenic skin surface area) cm^2	7400
SA_{6-16} (mutagenic skin surface area) cm^2	15700
SA_{16-30} (mutagenic skin surface area) cm^2	19900
l_{sc} (apparent thickness of stratum corneum) cm	0.001
$IFW_{rec-adj}$ (age-adjusted water intake rate) L/kg	8.349
$IFWM_{rec-adj}$ (mutagenic age-adjusted water intake rate) L/kg	31.2
$DFW_{rec-adj}$ (age-adjusted dermal factor) cm^2-event/kg	1039044.254
$DFWM_{rec-adj}$ (mutagenic age-adjusted dermal factor) cm^2-event/kg	2853066.667

Output generated 20APR2012:16:03:36

APPENDIX C

FISH SAMPLE LOCATION GROUPINGS

APPENDIX C

FISH SAMPLE LOCATION GROUPINGS
HUMAN HEALTH RISK ASSESSMENT
ANNISTON PCB SITE – OU4

PCBs are the primary COPCs at the site; and therefore, PCB concentrations are the most important metric when performing statistics to determine which locations should be grouped. Using the four categories of fish species selected for use in the human health risk assessment (i.e., all species, bass, catfish, and panfish), one way analysis of variance (ANOVA) and Tukey Honestly Significant Difference (HSD) comparisons were made. An ANOVA is a statistical technique for comparing the means among more than two sample groups. If the ANOVA (at a 95% confidence interval) indicated that there were differences among the means, the Tukey's HSD Test was used for indicating specifically which of the locations were different from one another (that is, a pair-wise comparison) within a species grouping. In this case the ANOVA test indicated that there were differences among the means so the HSD test was run for all pairings.

This is important because if the means of two different groups of data are statistically different, the potential exists for the final EPC to be inflated or unrealistically high. A visual depiction of the HSD test results is presented below and the statistical outputs follow this text. A summary of the results is presented below.

	Species Groupings			
Location	**All Species**	**Bass**	**Catfish**	**Panfish**
1	🟨	🟨	🟨	🟨🟩
2	🟨	🟨	🟨	🟨🟩
3	🟨	🟨	🟨	🟩
4	🟨🟩	🟨🟩	🟨	🟨🟩
5	🟩🟦	🟨 🟦	🟩	🟨🟩
6	🟩🟦	🟩	🟨🟩	🟨🟩🟦
7	🟦	🟩🟦	🟨🟩	🟦
8	🟨🟩🟦	🟨🟩	🟨🟩	🟨 🟦
9	🟨🟩🟦	🟨🟩	---	🟨🟩🟦

Note: Similar color bars indicate that those locations are not different from one another.
Comparisons only apply within species groupings.

In general:

- The locations downstream of Jackson Shoals (Locations 1 and 2) were not statistically different from each other for any of the species groupings. That is, as on the summary table, locations 1 and 2 have the same colors within species groupings.

- The four most upstream locations (Locations 6 through 9) were not statistically different from each other for any of the species groupings. For example, as on the summary table, locations 6 through 9 have a similar color – blue – for each location in the "all species" group.

All species:

- Location 3 was not similar to Locations 5, 6, or 7.
- Location 4 was not similar to Location 7.

Bass:

- Location 3 was not similar to Locations 6 and 7.
- Location 5 was not similar to Location 6.

Catfish:

- Locations 3 and 4 were not similar to Location 5.

Panfish:

- Location 3 was not similar to Locations 7 and 8.
- Locations 4 and 5 were not similar to Location 7.

Given the creek characteristics and statistical results, certain location groupings are indicated:

- Locations 1 and 2;
- Locations 3 and 4;
- Location 5 alone; and
- Locations 6 through 9.

However, it was only the bass species grouping that precluded Location 5 from being grouped with Location 6. Running an ANOVA and subsequent Tukey HSD on Locations 3 and 4 combined, Location 5 alone, and Locations 6 through 9 combined indicated no statistical difference between Location 5 and the other two groupings. Therefore, because all other species groups indicate no differences among Locations 5 through 9, Location 5 was grouped with Locations 6 through 9.

Therefore, the final data groupings used to evaluate fishing in the Choccolocco Creek are based on each targeted species group (i.e., bass, catfish, and panfish) and all species combined in the following location groupings:

- Group A – Locations 1 and 2;
- Group B – Locations 3 and 4; and
- Group C – Locations 5 through 9.

All Species
Locations 1 through 9

```
ONEWAY PCBconc BY Location
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS
  /POSTHOC=TUKEY ALPHA(0.05).
```

Oneway

```
[DataSet1] E:\Anniston ANOVA Runs\anniston-pcbs anova-1through9all.sav
```

Descriptives

PCB conc.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
1	42	2.0829	1.25156	.19312	1.6929	2.4729
2	42	2.1376	1.63638	.25250	1.6277	2.6476
3	42	1.9459	1.89025	.29167	1.3569	2.5349
4	42	3.0757	2.13297	.32912	2.4111	3.7404
5	42	4.5024	5.30006	.81782	2.8508	6.1540
6	42	4.7257	3.07600	.47464	3.7672	5.6843
7	42	5.1012	2.99713	.46247	4.1672	6.0352
8	42	3.5833	2.30404	.35552	2.8653	4.3013
9	25	3.4596	1.93697	.38739	2.6601	4.2591
Total	361	3.3989	2.98310	.15701	3.0901	3.7076

Descriptives

PCB conc.

	Minimum	Maximum
1	.22	5.40
2	.45	9.47
3	.24	10.80
4	.62	11.80
5	.89	34.00
6	.43	15.50
7	.23	12.90
8	.51	11.80
9	.76	11.00
Total	.22	34.00

ANOVA

PCB conc.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	480.917	8	60.115	7.772	.000
Within Groups	2722.680	352	7.735		
Total	3203.596	360			

Post Hoc Tests

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.05469	.60690	1.000	-1.9490	1.8396
	3	.13702	.60690	1.000	-1.7572	2.0313
	4	-.99281	.60690	.784	-2.8871	.9015
	5	-2.41948*	.60690	.003	-4.3137	-.5252
	6	-2.64279*	.60690	.001	-4.5371	-.7485
	7	-3.01826*	.60690	.000	-4.9125	-1.1240
	8	-1.50040	.60690	.249	-3.3947	.3939
	9	-1.37667	.70254	.573	-3.5694	.8161
2	1	.05469	.60690	1.000	-1.8396	1.9490
	3	.19171	.60690	1.000	-1.7026	2.0860
	4	-.93812	.60690	.833	-2.8324	.9561
	5	-2.36479*	.60690	.004	-4.2591	-.4705
	6	-2.58810*	.60690	.001	-4.4824	-.6938
	7	-2.96357*	.60690	.000	-4.8578	-1.0693
	8	-1.44571	.60690	.297	-3.3400	.4486

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2	9	-1.32198	.70254	.627	-3.5148	.8708
3	1	-.13702	.60690	1.000	-2.0313	1.7572
	2	-.19171	.60690	1.000	-2.0860	1.7026
	4	-1.12983	.60690	.641	-3.0241	.7644
	5	-2.55650*	.60690	.001	-4.4508	-.6622
	6	-2.77981*	.60690	.000	-4.6741	-.8855
	7	-3.15529*	.60690	.000	-5.0496	-1.2610
	8	-1.63743	.60690	.152	-3.5317	.2568
	9	-1.51370	.70254	.438	-3.7065	.6791
4	1	.99281	.60690	.784	-.9015	2.8871
	2	.93812	.60690	.833	-.9561	2.8324
	3	1.12983	.60690	.641	-.7644	3.0241
	5	-1.42667	.60690	.315	-3.3209	.4676
	6	-1.64998	.60690	.145	-3.5442	.2443
	7	-2.02545*	.60690	.026	-3.9197	-.1312
	8	-.50760	.60690	.996	-2.4019	1.3867
	9	-.38386	.70254	1.000	-2.5766	1.8089
5	1	2.41948*	.60690	.003	.5252	4.3137
	2	2.36479*	.60690	.004	.4705	4.2591
	3	2.55650*	.60690	.001	.6622	4.4508
	4	1.42667	.60690	.315	-.4676	3.3209
	6	-.22331	.60690	1.000	-2.1176	1.6710
	7	-.59879	.60690	.987	-2.4931	1.2955
	8	.91907	.60690	.848	-.9752	2.8133

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
5	9	1.04280	.70254	.862	-1.1500	3.2356
6	1	2.64279*	.60690	.001	.7485	4.5371
	2	2.58810*	.60690	.001	.6938	4.4824
	3	2.77981*	.60690	.000	.8855	4.6741
	4	1.64998	.60690	.145	-.2443	3.5442
	5	.22331	.60690	1.000	-1.6710	2.1176
	7	-.37548	.60690	1.000	-2.2697	1.5188
	8	1.14238	.60690	.626	-.7519	3.0366
	9	1.26611	.70254	.681	-.9267	3.4589
7	1	3.01826*	.60690	.000	1.1240	4.9125
	2	2.96357*	.60690	.000	1.0693	4.8578
	3	3.15529*	.60690	.000	1.2610	5.0496
	4	2.02545*	.60690	.026	.1312	3.9197
	5	.59879	.60690	.987	-1.2955	2.4931
	6	.37548	.60690	1.000	-1.5188	2.2697
	8	1.51786	.60690	.235	-.3764	3.4121
	9	1.64159	.70254	.323	-.5512	3.8344
8	1	1.50040	.60690	.249	-.3939	3.3947
	2	1.44571	.60690	.297	-.4486	3.3400
	3	1.63743	.60690	.152	-.2568	3.5317
	4	.50760	.60690	.996	-1.3867	2.4019
	5	-.91907	.60690	.848	-2.8133	.9752
	6	-1.14238	.60690	.626	-3.0366	.7519
	7	-1.51786	.60690	.235	-3.4121	.3764
	9	.12373	.70254	1.000	-2.0690	2.3165

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
9	1	1.37667	.70254	.573	-.8161	3.5694
	2	1.32198	.70254	.627	-.8708	3.5148
	3	1.51370	.70254	.438	-.6791	3.7065
	4	.38386	.70254	1.000	-1.8089	2.5766
	5	-1.04280	.70254	.862	-3.2356	1.1500
	6	-1.26611	.70254	.681	-3.4589	.9267
	7	-1.64159	.70254	.323	-3.8344	.5512
	8	-.12373	.70254	1.000	-2.3165	2.0690

Homogeneous Subsets

PCB conc.

Tukey HSD^{a,b}

Location	N	Subset for alpha = 0.05		
		1	2	3
3	42	1.9459		
1	42	2.0829		
2	42	2.1376		
4	42	3.0757	3.0757	
9	25	3.4596	3.4596	3.4596
8	42	3.5833	3.5833	3.5833
5	42		4.5024	4.5024
6	42		4.7257	4.7257
7	42			5.1012
Sig.		.190	.181	.187

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 39.050.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Bass
Locations 1 through 9

```
ONEWAY PCBconc BY Location
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS
  /POSTHOC=TUKEY ALPHA(0.05).
```

Oneway

```
[DataSet1] E:\Anniston ANOVA Runs\anniston-pcbs anova-1through9bass.sav
```

Descriptives

PCB conc.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
1	14	1.6952	.86653	.23159	1.1949	2.1955
2	14	2.7164	2.20650	.58971	1.4424	3.9904
3	14	2.0476	1.18253	.31604	1.3649	2.7304
4	13	3.8932	2.63558	.73098	2.3005	5.4858
5	14	3.5607	1.24844	.33366	2.8399	4.2815
6	14	6.2729	2.96534	.79252	4.5607	7.9850
7	14	5.6479	3.16350	.84548	3.8213	7.4744
8	14	3.8450	1.29630	.34645	3.0965	4.5935
9	11	4.3400	2.48036	.74786	2.6737	6.0063
Total	122	3.7652	2.54139	.23009	3.3097	4.2207

Descriptives

PCB conc.

	Minimum	Maximum
1	.22	3.70
2	.81	9.47
3	.33	3.60
4	.62	11.80
5	1.64	6.07
6	2.39	14.90
7	2.19	12.90
8	1.65	6.00
9	1.63	11.00
Total	.22	14.90

ANOVA

PCB conc.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	258.867	8	32.358	6.996	.000
Within Groups	522.629	113	4.625		
Total	781.496	121			

Post Hoc Tests

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-1.02121	.81285	.942	-3.5921	1.5496
	3	-.35243	.81285	1.000	-2.9233	2.2184
	4	-2.19794	.82833	.177	-4.8178	.4219
	5	-1.86550	.81285	.354	-4.4364	.7054
	6	-4.57764*	.81285	.000	-7.1485	-2.0068
	7	-3.95264*	.81285	.000	-6.5235	-1.3818
	8	-2.14979	.81285	.180	-4.7206	.4211
	9	-2.64479	.86650	.067	-5.3853	.0958
2	1	1.02121	.81285	.942	-1.5496	3.5921
	3	.66879	.81285	.996	-1.9021	3.2396
	4	-1.17673	.82833	.888	-3.7966	1.4431
	5	-.84429	.81285	.981	-3.4151	1.7266
	6	-3.55643*	.81285	.001	-6.1273	-.9856
	7	-2.93143*	.81285	.013	-5.5023	-.3606
	8	-1.12857	.81285	.900	-3.6994	1.4423

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2	9	-1.62357	.86650	.633	-4.3641	1.1170
3	1	.35243	.81285	1.000	-2.2184	2.9233
	2	-.66879	.81285	.996	-3.2396	1.9021
	4	-1.84551	.82833	.395	-4.4653	.7743
	5	-1.51307	.81285	.641	-4.0839	1.0578
	6	-4.22521*	.81285	.000	-6.7961	-1.6544
	7	-3.60021*	.81285	.001	-6.1711	-1.0294
	8	-1.79736	.81285	.406	-4.3682	.7735
	9	-2.29236	.86650	.180	-5.0329	.4482
4	1	2.19794	.82833	.177	-.4219	4.8178
	2	1.17673	.82833	.888	-1.4431	3.7966
	3	1.84551	.82833	.395	-.7743	4.4653
	5	.33244	.82833	1.000	-2.2874	2.9523
	6	-2.37970	.82833	.107	-4.9995	.2401
	7	-1.75470	.82833	.466	-4.3745	.8651
	8	.04815	.82833	1.000	-2.5717	2.6680
	9	-.44685	.88104	1.000	-3.2334	2.3397
5	1	1.86550	.81285	.354	-.7054	4.4364
	2	.84429	.81285	.981	-1.7266	3.4151
	3	1.51307	.81285	.641	-1.0578	4.0839
	4	-.33244	.82833	1.000	-2.9523	2.2874
	6	-2.71214*	.81285	.030	-5.2830	-.1413
	7	-2.08714	.81285	.212	-4.6580	.4837
	8	-.28429	.81285	1.000	-2.8551	2.2866

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
5	9	-.77929	.86650	.993	-3.5198	1.9613
6	1	4.57764*	.81285	.000	2.0068	7.1485
	2	3.55643*	.81285	.001	.9856	6.1273
	3	4.22521*	.81285	.000	1.6544	6.7961
	4	2.37970	.82833	.107	-.2401	4.9995
	5	2.71214*	.81285	.030	.1413	5.2830
	7	.62500	.81285	.997	-1.9459	3.1959
	8	2.42786	.81285	.080	-.1430	4.9987
	9	1.93286	.86650	.393	-.8077	4.6734
7	1	3.95264*	.81285	.000	1.3818	6.5235
	2	2.93143*	.81285	.013	.3606	5.5023
	3	3.60021*	.81285	.001	1.0294	6.1711
	4	1.75470	.82833	.466	-.8651	4.3745
	5	2.08714	.81285	.212	-.4837	4.6580
	6	-.62500	.81285	.997	-3.1959	1.9459
	8	1.80286	.81285	.401	-.7680	4.3737
	9	1.30786	.86650	.849	-1.4327	4.0484
8	1	2.14979	.81285	.180	-.4211	4.7206
	2	1.12857	.81285	.900	-1.4423	3.6994
	3	1.79736	.81285	.406	-.7735	4.3682
	4	-.04815	.82833	1.000	-2.6680	2.5717
	5	.28429	.81285	1.000	-2.2866	2.8551
	6	-2.42786	.81285	.080	-4.9987	.1430
	7	-1.80286	.81285	.401	-4.3737	.7680
	9	-.49500	.86650	1.000	-3.2355	2.2455

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
9	1	2.64479	.86650	.067	-.0958	5.3853
	2	1.62357	.86650	.633	-1.1170	4.3641
	3	2.29236	.86650	.180	-.4482	5.0329
	4	.44685	.88104	1.000	-2.3397	3.2334
	5	.77929	.86650	.993	-1.9613	3.5198
	6	-1.93286	.86650	.393	-4.6734	.8077
	7	-1.30786	.86650	.849	-4.0484	1.4327
	8	.49500	.86650	1.000	-2.2455	3.2355

Homogeneous Subsets

PCB conc.

Tukey HSD[a,b]

Location	N	Subset for alpha = 0.05			
		1	2	3	4
1	14	1.6952			
3	14	2.0476	2.0476		
2	14	2.7164	2.7164		
5	14	3.5607	3.5607	3.5607	
8	14	3.8450	3.8450	3.8450	3.8450
4	13	3.8932	3.8932	3.8932	3.8932
9	11		4.3400	4.3400	4.3400
7	14			5.6479	5.6479
6	14				6.2729
Sig.		.177	.137	.234	.092

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 13.476.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Catfish
Locations 1 through 8

```
GET
  FILE='E:\Anniston ANOVA Runs\anniston-pcbs anova-1through9catfish.sav'.
DATASET NAME DataSet2 WINDOW=FRONT.
SAVE OUTFILE='E:\Anniston ANOVA Runs\anniston-pcbs anova-1through9catfish.sav'
 /COMPRESSED.
SAVE OUTFILE='E:\Anniston ANOVA Runs\anniston-pcbs anova-1through9catfish.sav'
 /COMPRESSED.
ONEWAY PCBconc BY Location
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS
  /POSTHOC=TUKEY ALPHA(0.05).
```

Oneway

```
[DataSet2] E:\Anniston ANOVA Runs\anniston-pcbs anova-1through9catfish.sav
```

Descriptives

PCB conc.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
1	14	2.855	1.4057	.3757	2.043	3.667
2	14	2.017	1.3124	.3507	1.259	2.775
3	14	2.797	2.8229	.7545	1.167	4.427
4	14	3.390	2.2499	.6013	2.091	4.689
5	14	7.793	8.2340	2.2006	3.039	12.547
6	14	5.424	3.3619	.8985	3.482	7.365
7	14	5.431	2.8859	.7713	3.765	7.098
8	14	3.810	2.9280	.7825	2.119	5.501
Total	112	4.190	4.0485	.3825	3.432	4.948

Descriptives

PCB conc.

	Minimum	Maximum
1	.4	5.4
2	.7	5.8
3	.2	10.8
4	1.4	9.7
5	.9	34.0
6	2.1	15.5
7	.2	11.8
8	.5	11.8
Total	.2	34.0

ANOVA

PCB conc.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	353.818	7	50.545	3.587	.002
Within Groups	1465.517	104	14.092		
Total	1819.335	111			

Post Hoc Tests

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.8379	1.4188	.999	-3.551	5.227
	3	.0581	1.4188	1.000	-4.331	4.447
	4	-.5350	1.4188	1.000	-4.924	3.854
	5	-4.9379*	1.4188	.016	-9.327	-.549
	6	-2.5686	1.4188	.615	-6.958	1.821
	7	-2.5764	1.4188	.611	-6.966	1.813
	8	-.9550	1.4188	.998	-5.344	3.434
2	1	-.8379	1.4188	.999	-5.227	3.551
	3	-.7797	1.4188	.999	-5.169	3.609
	4	-1.3729	1.4188	.978	-5.762	3.016
	5	-5.7758*	1.4188	.002	-10.165	-1.387
	6	-3.4064	1.4188	.252	-7.796	.983
	7	-3.4143	1.4188	.249	-7.803	.975
	8	-1.7929	1.4188	.910	-6.182	2.596
3	1	-.0581	1.4188	1.000	-4.447	4.331
	2	.7797	1.4188	.999	-3.609	5.169
	4	-.5931	1.4188	1.000	-4.982	3.796
	5	-4.9961*	1.4188	.014	-9.385	-.607
	6	-2.6267	1.4188	.587	-7.016	1.762
	7	-2.6346	1.4188	.583	-7.024	1.755
	8	-1.0131	1.4188	.996	-5.402	3.376
4	1	.5350	1.4188	1.000	-3.854	4.924
	2	1.3729	1.4188	.978	-3.016	5.762
	3	.5931	1.4188	1.000	-3.796	4.982
	5	-4.4029*	1.4188	.049	-8.792	-.014
	6	-2.0336	1.4188	.840	-6.423	2.356
	7	-2.0414	1.4188	.837	-6.431	2.348
	8	-.4200	1.4188	1.000	-4.809	3.969

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
5	1	4.9379	1.4188	.016	.549	9.327
	2	5.7758*	1.4188	.002	1.387	10.165
	3	4.9961*	1.4188	.014	.607	9.385
	4	4.4029*	1.4188	.049	.014	8.792
	6	2.3694	1.4188	.706	-2.020	6.759
	7	2.3615	1.4188	.710	-2.028	6.751
	8	3.9829	1.4188	.104	-.406	8.372
6	1	2.5686	1.4188	.615	-1.821	6.958
	2	3.4064	1.4188	.252	-.983	7.796
	3	2.6267	1.4188	.587	-1.762	7.016
	4	2.0336	1.4188	.840	-2.356	6.423
	5	-2.3694	1.4188	.706	-6.759	2.020
	7	-.0079	1.4188	1.000	-4.397	4.381
	8	1.6136	1.4188	.947	-2.776	6.003
7	1	2.5764	1.4188	.611	-1.813	6.966
	2	3.4143	1.4188	.249	-.975	7.803
	3	2.6346	1.4188	.583	-1.755	7.024
	4	2.0414	1.4188	.837	-2.348	6.431
	5	-2.3615	1.4188	.710	-6.751	2.028
	6	.0079	1.4188	1.000	-4.381	4.397
	8	1.6214	1.4188	.946	-2.768	6.011
8	1	.9550	1.4188	.998	-3.434	5.344
	2	1.7929	1.4188	.910	-2.596	6.182
	3	1.0131	1.4188	.996	-3.376	5.402
	4	.4200	1.4188	1.000	-3.969	4.809
	5	-3.9829	1.4188	.104	-8.372	.406
	6	-1.6136	1.4188	.947	-6.003	2.776
	7	-1.6214	1.4188	.946	-6.011	2.768

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

PCB conc.

Tukey HSD[a]

Location	N	Subset for alpha = 0.05	
		1	2
2	14	2.017	
3	14	2.797	
1	14	2.855	
4	14	3.390	
8	14	3.810	3.810
6	14	5.424	5.424
7	14	5.431	5.431
5	14		7.793
Sig.		.249	.104

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.000.

Panfish
Locations 1 through 9

```
ONEWAY PCBconc BY Location
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS
  /POSTHOC=TUKEY ALPHA(0.05).
```

Oneway

```
[DataSet3] E:\Anniston ANOVA Runs\anniston-pcbs anova-1through9crsf.sav
```

Descriptives

PCB conc.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
1	14	1.6986	1.11818	.29885	1.0530	2.3442
2	14	1.6793	1.11876	.29900	1.0333	2.3252
3	14	.9932	.36483	.09751	.7826	1.2039
4	15	2.0740	.93539	.24152	1.5560	2.5920
5	14	2.1536	.82421	.22028	1.6777	2.6295
6	14	2.4807	1.10252	.29466	1.8441	3.1173
7	14	4.2243	2.95409	.78951	2.5186	5.9299
8	14	3.0950	2.47049	.66027	1.6686	4.5214
9	14	2.7679	1.01136	.27030	2.1839	3.3518
Total	127	2.3496	1.72874	.15340	2.0461	2.6532

Descriptives

PCB conc.

	Minimum	Maximum
1	.27	3.89
2	.45	4.40
3	.24	1.69
4	1.03	4.35
5	1.20	4.20
6	.43	4.84
7	1.00	10.40
8	.97	10.30
9	.76	4.30
Total	.24	10.40

ANOVA

PCB conc.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	99.329	8	12.416	5.285	.000
Within Groups	277.225	118	2.349		
Total	376.554	126			

Post Hoc Tests

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.01929	.57933	1.000	-1.8115	1.8501
	3	.70536	.57933	.951	-1.1254	2.5361
	4	-.37543	.56959	.999	-2.1754	1.4246
	5	-.45500	.57933	.997	-2.2858	1.3758
	6	-.78214	.57933	.914	-2.6129	1.0486
	7	-2.52571*	.57933	.001	-4.3565	-.6949
	8	-1.39643	.57933	.288	-3.2272	.4344
	9	-1.06929	.57933	.652	-2.9001	.7615
2	1	-.01929	.57933	1.000	-1.8501	1.8115
	3	.68607	.57933	.958	-1.1447	2.5169
	4	-.39471	.56959	.999	-2.1947	1.4053
	5	-.47429	.57933	.996	-2.3051	1.3565
	6	-.80143	.57933	.902	-2.6322	1.0294
	7	-2.54500*	.57933	.001	-4.3758	-.7142
	8	-1.41571	.57933	.271	-3.2465	.4151

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2	9	-1.08857	.57933	.629	-2.9194	.7422
3	1	-.70536	.57933	.951	-2.5361	1.1254
	2	-.68607	.57933	.958	-2.5169	1.1447
	4	-1.08079	.56959	.617	-2.8808	.7192
	5	-1.16036	.57933	.545	-2.9911	.6704
	6	-1.48750	.57933	.212	-3.3183	.3433
	7	-3.23107*	.57933	.000	-5.0619	-1.4003
	8	-2.10179*	.57933	.012	-3.9326	-.2710
	9	-1.77464	.57933	.065	-3.6054	.0561
4	1	.37543	.56959	.999	-1.4246	2.1754
	2	.39471	.56959	.999	-1.4053	2.1947
	3	1.08079	.56959	.617	-.7192	2.8808
	5	-.07957	.56959	1.000	-1.8796	1.7204
	6	-.40671	.56959	.999	-2.2067	1.3933
	7	-2.15029*	.56959	.007	-3.9503	-.3503
	8	-1.02100	.56959	.687	-2.8210	.7790
	9	-.69386	.56959	.951	-2.4939	1.1062
5	1	.45500	.57933	.997	-1.3758	2.2858
	2	.47429	.57933	.996	-1.3565	2.3051
	3	1.16036	.57933	.545	-.6704	2.9911
	4	.07957	.56959	1.000	-1.7204	1.8796
	6	-.32714	.57933	1.000	-2.1579	1.5036
	7	-2.07071*	.57933	.014	-3.9015	-.2399
	8	-.94143	.57933	.789	-2.7722	.8894

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
5	9	-.61429	.57933	.979	-2.4451	1.2165
6	1	.78214	.57933	.914	-1.0486	2.6129
	2	.80143	.57933	.902	-1.0294	2.6322
	3	1.48750	.57933	.212	-.3433	3.3183
	4	.40671	.56959	.999	-1.3933	2.2067
	5	.32714	.57933	1.000	-1.5036	2.1579
	7	-1.74357	.57933	.075	-3.5744	.0872
	8	-.61429	.57933	.979	-2.4451	1.2165
	9	-.28714	.57933	1.000	-2.1179	1.5436
7	1	2.52571*	.57933	.001	.6949	4.3565
	2	2.54500*	.57933	.001	.7142	4.3758
	3	3.23107*	.57933	.000	1.4003	5.0619
	4	2.15029*	.56959	.007	.3503	3.9503
	5	2.07071*	.57933	.014	.2399	3.9015
	6	1.74357	.57933	.075	-.0872	3.5744
	8	1.12929	.57933	.581	-.7015	2.9601
	9	1.45643	.57933	.236	-.3744	3.2872
8	1	1.39643	.57933	.288	-.4344	3.2272
	2	1.41571	.57933	.271	-.4151	3.2465
	3	2.10179*	.57933	.012	.2710	3.9326
	4	1.02100	.56959	.687	-.7790	2.8210
	5	.94143	.57933	.789	-.8894	2.7722
	6	.61429	.57933	.979	-1.2165	2.4451
	7	-1.12929	.57933	.581	-2.9601	.7015
	9	.32714	.57933	1.000	-1.5036	2.1579

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

PCB conc.
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
9	1	1.06929	.57933	.652	-.7615	2.9001
	2	1.08857	.57933	.629	-.7422	2.9194
	3	1.77464	.57933	.065	-.0561	3.6054
	4	.69386	.56959	.951	-1.1062	2.4939
	5	.61429	.57933	.979	-1.2165	2.4451
	6	.28714	.57933	1.000	-1.5436	2.1179
	7	-1.45643	.57933	.236	-3.2872	.3744
	8	-.32714	.57933	1.000	-2.1579	1.5036

Homogeneous Subsets

PCB conc.

Tukey HSD[a,b]

Location	N	Subset for alpha = 0.05		
		1	2	3
3	14	.9932		
2	14	1.6793	1.6793	
1	14	1.6986	1.6986	
4	15	2.0740	2.0740	
5	14	2.1536	2.1536	
6	14	2.4807	2.4807	2.4807
9	14	2.7679	2.7679	2.7679
8	14		3.0950	3.0950
7	14			4.2243
Sig.		.063	.266	.073

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 14.104.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Bass Location 5 Grouping Check

Oneway

```
[DataSet1] C:\Users\Kristina Early\Documents\anniston-pcbs anova-bassgroupings1.sav
```

Descriptives

PCB conc

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
5	14	3.5607	1.24844	.33366	2.8399	4.2815	1.64	6.07
34	27	2.9362	2.18819	.42112	2.0706	3.8018	.33	11.80
69	53	5.0653	2.70178	.37112	4.3206	5.8100	1.63	14.90
Total	94	4.2297	2.56691	.26476	3.7039	4.7554	.33	14.90

ANOVA

PCB conc

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	88.443	2	44.222	7.675	.001
Within Groups	524.334	91	5.762		
Total	612.778	93			

Post Hoc Tests

Multiple Comparisons

PCB conc
Tukey HSD

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
5	34	.62449	.79055	.710	-1.2591	2.5081
	69	-1.50457	.72130	.098	-3.2232	.2141
34	5	-.62449	.79055	.710	-2.5081	1.2591
	69	-2.12906*	.56756	.001	-3.4814	-.7768
69	5	1.50457	.72130	.098	-.2141	3.2232
	34	2.12906*	.56756	.001	.7768	3.4814

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

PCB conc

Tukey HSD

Location	N	Subset for alpha = 0.05	
		1	2
34	27	2.9362	
5	14	3.5607	3.5607
69	53		5.0653
Sig.		.646	.085

Means for groups in homogeneous subsets are displayed.

All Species
Final Groupings Check

Oneway

```
[DataSet1] C:\Users\Kristina Early\Documents\anniston-pcbs anova-finalgroupingsall.sav
```

Descriptives

pcb concentration

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
12	84	2.1103	1.44819	.15801	1.7960	2.4246	.22	9.47
34	84	2.5108	2.08215	.22718	2.0590	2.9627	.24	11.80
59	193	4.3462	3.45413	.24863	3.8558	4.8366	.23	34.00
Total	361	3.3989	2.98310	.15701	3.0901	3.7076	.22	34.00

ANOVA

pcb concentration

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	378.938	2	189.469	24.014	.000
Within Groups	2824.658	358	7.890		
Total	3203.596	360			

Post Hoc Tests

Multiple Comparisons

pcb concentration
Tukey HSD

(I) location	(J) location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
12	34	-.40055	.43343	.625	-1.4206	.6195
	59	-2.23595*	.36717	.000	-3.1001	-1.3718
34	12	.40055	.43343	.625	-.6195	1.4206
	59	-1.83540*	.36717	.000	-2.6995	-.9713
59	12	2.23595*	.36717	.000	1.3718	3.1001
	34	1.83540*	.36717	.000	.9713	2.6995

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

pcb concentration

Tukey HSD

location	N	Subset for alpha = 0.05	
		1	2
12	84	2.1103	
34	84	2.5108	
59	193		4.3462
Sig.		.561	1.000

Means for groups in homogeneous subsets are displayed.

Bass
Final Groupings Check

Oneway

```
[DataSet1] C:\Users\Kristina Early\Documents\anniston-pcbs anova-finalgroupingsbass.sav
```

Descriptives

pcb concentration

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
12	28	2.2058	1.72513	.32602	1.5369	2.8748	.22	9.47
34	27	2.9362	2.18819	.42112	2.0706	3.8018	.33	11.80
59	67	4.7509	2.53733	.30998	4.1320	5.3698	1.63	14.90
Total	122	3.7652	2.54139	.23009	3.3097	4.2207	.22	14.90

ANOVA

pcb concentration

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	151.738	2	75.869	14.336	.000
Within Groups	629.758	119	5.292		
Total	781.496	121			

Post Hoc Tests

Multiple Comparisons

pcb concentration
Tukey HSD

(I) location	(J) location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
12	34	-.73040	.62049	.469	-2.2031	.7423
	59	-2.54507*	.51768	.000	-3.7737	-1.3164
34	12	.73040	.62049	.469	-.7423	2.2031
	59	-1.81467*	.52439	.002	-3.0593	-.5701
59	12	2.54507*	.51768	.000	1.3164	3.7737
	34	1.81467*	.52439	.002	.5701	3.0593

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

pcb concentration

Tukey HSD

location	N	Subset for alpha = 0.05	
		1	2
12	28	2.2058	
34	27	2.9362	
59	67		4.7509
Sig.		.391	1.000

Means for groups in homogeneous subsets are displayed.

Catfish
Final Groupings Check

Oneway

```
[DataSet1] C:\Users\Kristina Early\Documents\anniston-pcbs anova-finalgroupingscat.sav
```

Descriptives

pcb concentration

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
12	28	2.436	1.4010	.2648	1.893	2.979	.4	5.8
34	28	3.093	2.5230	.4768	2.115	4.072	.2	10.8
59	56	5.614	4.9746	.6648	4.282	6.947	.2	34.0
Total	112	4.190	4.0485	.3825	3.432	4.948	.2	34.0

ANOVA

pcb concentration

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	233.437	2	116.718	8.022	.001
Within Groups	1585.898	109	14.550		
Total	1819.335	111			

Post Hoc Tests

Multiple Comparisons

pcb concentration
Tukey HSD

(I) location	(J) location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
12	34	-.6574	1.0194	.796	-3.080	1.765
	59	-3.1784*	.8829	.001	-5.276	-1.081
34	12	.6574	1.0194	.796	-1.765	3.080
	59	-2.5211*	.8829	.014	-4.619	-.423
59	12	3.1784*	.8829	.001	1.081	5.276
	34	2.5211*	.8829	.014	.423	4.619

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

pcb concentration

Tukey HSD

location	N	Subset for alpha = 0.05	
		1	2
12	28	2.436	
34	28	3.093	
59	56		5.614
Sig.		.760	1.000

Means for groups in homogeneous subsets are displayed.

Panfish
Final Groupings Check

Oneway

```
[DataSet1] C:\Users\Kristina Early\Documents\anniston-pcbs anova-finalgroupingssfcr.sav
```

Descriptives

pcb concentration

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
12	28	1.6889	1.09760	.20743	1.2633	2.1145	.27	4.40
34	29	1.5522	.89519	.16623	1.2117	1.8928	.24	4.35
59	70	2.9443	1.96407	.23475	2.4760	3.4126	.43	10.40
Total	127	2.3496	1.72874	.15340	2.0461	2.6532	.24	10.40

ANOVA

pcb concentration

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	55.415	2	27.707	10.699	.000
Within Groups	321.139	124	2.590		
Total	376.554	126			

Post Hoc Tests

Multiple Comparisons

pcb concentration
Tukey HSD

(I) location	(J) location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
12	34	.13669	.42638	.945	-.8748	1.1481
	59	-1.25536*	.35985	.002	-2.1090	-.4017
34	12	-.13669	.42638	.945	-1.1481	.8748
	59	-1.39204*	.35539	.000	-2.2351	-.5490
59	12	1.25536*	.35985	.002	.4017	2.1090
	34	1.39204*	.35539	.000	.5490	2.2351

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

pcb concentration

Tukey HSD

location	N	Subset for alpha = 0.05	
		1	2
34	29	1.5522	
12	28	1.6889	
59	70		2.9443
Sig.		.932	1.000

Means for groups in homogeneous subsets are displayed.

APPENDIX D

PCB DIOXIN-LIKE CONGENER REGRESSION ANALYSIS

APPENDIX D

DIOXIN LIKE PCB CONGENER REGRESSION ANALYSIS

1. PURPOSE

Regression models can be used to predict one variable from one or more other variables. Regression models, in this case, allow for a prediction of one contaminant concentration in soil based on a known concentration of another contaminant in soil at a particular location. As part of the overall evaluation of OU-4, floodplain soil was analyzed for total PCBs (represented as the sum of Aroclors). Approximately 10% of these samples were also analyzed for dioxin-like PCB congeners, but did not include any soil samples in the planned 10% sampling frequency that had tPCB concentrations greater than 5 mg/kg due to concerns about analytical interferences at higher tPCB concentrations. As a result of having only 10% of the soil samples available for dioxin-like PCB congeners EPC development, as well as having data in a limited concentration range, a robust PCB congener data set was not available to calculate EPCs and risks for all exposure units (EUs). Linear regression models were developed to predict dioxin-like PCB congener concentrations from tPCB concentrations to provide a more robust data base and to allow for an estimation of dioxin-like PCB congener concentrations at each EU.

2. REGRESSION APPROACH

This section describes the selection of congener data used in the regression models, the regression model used in the analysis, and the use of the predicted information in the human health risk assessment (HHRA).

2.1 DATA FOR REGRESSION MODELS

Regression models were developed using the subset of floodplain soil data from OU-4 that were analyzed for both tPCBs (sum of Aroclors) and dioxin-like PCB congeners. These data are presented on Table D-1. As shown on the table, most of the congeners had a large number of samples that were nondetect. The frequency of detection (FOD) for each of the congeners ranged from 0 (PCB-81, PCB-157, and PCB-169) to 88% or higher (PCB-105 at 92%, PCB-118 at 96%, and PCB-156 at 88%). The FOD for tPCBs in theses samples was 95%. A regression analysis performed on congeners with low FODs would result in very uncertain predicted congener values, and because of this, only data from the PCB-105, PCB-118, and PCB-156 were included in the analysis. Results for duplicate samples were averaged prior to conducting the analyses.

2.2 REGRESSION MODEL DEVELOPMENT

A simple regression model was used to perform all regression analyses. Figures D-1 through D-3 present the plots of the linear regression model for congeners PCB-105, PCB-118, and PCB-156. Each plot shows the 95% confidence intervals related to the slope of the regression line along with other relevant statistical parameters. For all three congeners, the r^2 values were approximately 0.9 and the p-values were < 0.05. Table D-2 presents the model and the results. This suggests that a strong correlation exists between total PCBs and these three congeners in this particular data set. This information was used to develop predicted concentrations for each of the three congeners in each EU.

2.3 USE OF DIOXIN-LIKE PCB CONGENER DATA IN HHRA

The regression models were used to predict the dioxin-like PCB congener concentrations for PCB-105, PCB-118, and PCB-156 based on the calculated tPCB exposure point concentration (EPC) at each EU. The estimated congener concentrations were multiplied by their respective toxic equivalency factor (TEF) to result in a TEQ for each congener. The TEQs from the three congeners were summed to calculate the total dioxin-like PCB congener TEQ for the EU, which represents the dioxin-like PCB congener EPC. The total TEQ concentrations were applied to the exposure scenarios evaluated for the EU and risks were calculated. It should be noted that evaluating only three of the congeners is likely to underestimate risk to some degree, however given the low FOD for the other congeners, this underestimate is unlikely to be significant.

Table D-1
Available Data for PCB Congener vs. Total PCB Regression Analyses for Floodplain Soil
Anniston PCB Site
OU-4

Sample ID	Total PCBs	PCB-77	PCB-81	PCB-105	PCB-114	PCB-118	PCB-123	PCB-126	PCB-156	PCB-157	PCB-167	PCB-169	PCB-189
Frequency of Detection	129/136	12/136	0/136	125/136	1/136	130/136	3/136	11/136	119/136	0/136	7/136	0/136	1/136
C70516	0.1 Y	0.0015 N	0.0029 N	0.0031 Y	0.0015 N	0.0073 Y	0.0015 N	0.0015 N	0.0023 Y	0.0015 N	0.0029 N	0.0015 N	0.0015 N
C70517	0.037 N	0.0015 N	0.0029 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0029 N	0.0015 N	0.0015 N
C70531	0.035 N	0.0014 N	0.0028 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0028 N	0.0014 N	0.0014 N
C70548	0.078 Y	0.0015 N	0.003 N	0.0029 Y	0.0015 N	0.0057 Y	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.003 N	0.0015 N	0.0015 N
C70549	0.119 Y	0.0015 N	0.0029 N	0.0028 Y	0.0015 N	0.0054 Y	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0029 N	0.0015 N	0.0015 N
C70562	0.038 N	0.0015 N	0.003 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.003 N	0.0015 N	0.0015 N
C70579	0.332 Y	0.0014 N	0.0029 N	0.0068 Y	0.0014 N	0.014 Y	0.0014 N	0.0027 Y	0.0044 Y	0.0014 N	0.0029 N	0.0014 N	0.0014 N
C70580	0.188 Y	0.0026 Y	0.0029 N	0.0022 Y	0.0014 N	0.0049 Y	0.0014 N	0.0014 N	0.0016 Y	0.0014 N	0.0029 N	0.0014 N	0.0014 N
C70596	0.26 Y	0.0014 N	0.0029 N	0.0047 Y	0.0014 N	0.0095 Y	0.0014 N	0.002 Y	0.0019 Y	0.0014 N	0.0029 N	0.0014 N	0.0014 N
C70610	0.363 Y	0.0015 N	0.003 N	0.0047 Y	0.0015 N	0.0097 Y	0.0015 N	0.0025 Y	0.0027 Y	0.0015 N	0.003 N	0.0015 N	0.0015 N
C70611	0.087 Y	0.0015 N	0.003 N	0.0021 Y	0.0015 N	0.0043 Y	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.003 N	0.0015 N	0.0015 N
C70627	0.075 Y	0.0015 N	0.003 N	0.0023 Y	0.0015 N	0.0031 Y	0.0041 Y	0.0015 N	0.0015 N	0.0015 N	0.0031 Y	0.0015 N	0.0015 N
C70641	3.62 Y	0.015 N	0.029 N	0.12 Y	0.015 N	0.23 Y	0.015 N	0.044 Y	0.042 Y	0.015 N	0.029 N	0.015 N	0.015 N
C70642	2.01 Y	0.22 Y	0.015 N	0.065 Y	0.0073 N	0.14 Y	0.0073 N	0.022 Y	0.025 Y	0.0073 N	0.015 N	0.0073 N	0.0073 N
C70659	0.035 N	0.0014 N	0.0028 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0028 N	0.0014 N	0.0014 N
C70673	0.037 N	0.0015 N	0.0029 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.0029 N	0.0015 N	0.0015 N
C70674	0.036 N	0.0014 N	0.0029 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0014 N	0.0029 N	0.0014 N	0.0014 N
C70692	3.2 Y	0.31 Y	0.03 N	0.077 Y	0.015 N	0.16 Y	0.023 Y	0.039 Y	0.029 Y	0.015 N	0.03 N	0.015 N	0.015 N
C70693	3.5 Y	0.32 Y	0.027 N	0.081 Y	0.014 N	0.17 Y	0.023 Y	0.041 Y	0.031 Y	0.014 N	0.027 N	0.014 N	0.014 N
C70703	1.21 Y	0.0029 N	0.0059 N	0.025 Y	0.0029 N	0.046 Y	0.0029 N	0.0093 Y	0.0079 Y	0.0029 N	0.0059 N	0.0029 N	0.0029 N
C70704	5 Y	0.015 N	0.03 N	0.078 Y	0.015 N	0.15 Y	0.015 N	0.039 Y	0.03 Y	0.015 N	0.03 N	0.015 N	0.015 N
C70724	0.166 Y	0.0086 Y	0.0031 N	0.0037 Y	0.0016 N	0.007 Y	0.0016 N	0.0016 N	0.0016 N	0.0016 N	0.0031 N	0.0016 N	0.0016 N
C70734	0.407 Y	0.018 Y	0.0031 N	0.0074 Y	0.0015 N	0.015 Y	0.0015 N	0.0015 N	0.0031 Y	0.0015 N	0.0031 N	0.0015 N	0.0015 N
C70735	0.35 Y	0.0015 N	0.0031 N	0.0062 Y	0.0015 N	0.013 Y	0.0015 N	0.0031 Y	0.0025 Y	0.0015 N	0.0031 N	0.0015 N	0.0015 N
C70736	0.038 N	0.003 Y	0.003 N	0.0015 N	0.0015 N	0.0024 Y	0.0015 N	0.0015 N	0.0015 N	0.0015 N	0.003 N	0.0015 N	0.0015 N
C70821	5.3 Y	0.017 N	0.034 N	0.1 Y	0.017 N	0.2 Y	0.017 N	0.017 N	0.035 Y	0.017 N	0.034 N	0.017 N	0.017 N
C70822	0.62 Y	0.0017 N	0.0034 N	0.01 Y	0.0017 N	0.021 Y	0.0017 N	0.0017 N	0.0038 Y	0.0017 N	0.0034 N	0.0017 N	0.0017 N
C70831	0.56 Y	0.0036 N	0.0073 N	0.0084 Y	0.0036 N	0.018 Y	0.0036 N	0.0036 N	0.004 Y	0.0036 N	0.0073 N	0.0036 N	0.0036 N
C70845	1.83 Y	0.0061 N	0.012 N	0.033 Y	0.0061 N	0.063 Y	0.0061 N	0.0061 N	0.011 Y	0.0061 N	0.012 N	0.0061 N	0.0061 N
C70846	1.05 Y	0.0031 N	0.0063 N	0.021 Y	0.0031 N	0.04 Y	0.0031 N	0.0031 N	0.0067 Y	0.0031 N	0.0063 N	0.0031 N	0.0031 N
C70902	1.76 Y	0.0056 N	0.011 N	0.049 Y	0.0056 N	0.081 Y	0.0056 N	0.0056 N	0.016 Y	0.0057 Y	0.011 N	0.0056 N	0.0056 N
C70903	3.6 Y	0.0092 N	0.018 N	0.12 Y	0.0092 N	0.17 Y	0.0092 N	0.0092 N	0.031 Y	0.01 Y	0.018 N	0.0092 N	0.0092 N
C70910	0.57 Y	0.0017 N	0.0033 N	0.012 Y	0.0017 N	0.024 Y	0.0017 N	0.0017 N	0.0045 Y	0.0017 N	0.0033 N	0.0017 N	0.0017 N
C70911	0.76 Y	0.0033 N	0.0067 N	0.015 Y	0.0033 N	0.029 Y	0.0033 N	0.0033 N	0.0055 Y	0.0033 N	0.0067 N	0.0033 N	0.0033 N
C70914	3.82 Y	0.0067 N	0.013 N	0.093 Y	0.0067 N	0.19 Y	0.0067 N	0.0067 N	0.029 Y	0.01 Y	0.014 Y	0.0067 N	0.0067 N
C70938	3.66 Y	0.0086 N	0.017 N	0.083 Y	0.0086 N	0.14 Y	0.0086 N	0.0086 N	0.027 Y	0.0086 Y	0.017 N	0.0086 N	0.0086 N
C70944	2.33 Y	0.007 N	0.014 N	0.053 Y	0.007 N	0.096 Y	0.007 N	0.007 N	0.021 Y	0.007 N	0.014 N	0.007 N	0.007 N

Table D-1
Available Data for PCB Congener vs. Total PCB Regression Analyses for Floodplain Soil
Anniston PCB Site
OU-4

Sample ID	Total PCBs	PCB-77	PCB-81	PCB-105	PCB-114	PCB-118	PCB-123	PCB-126	PCB-156	PCB-157	PCB-167	PCB-169	PCB-189
C70947	3.54 Y	0.0083 N	0.017 N	0.072 Y	0.0083 N	0.13 Y	0.0083 N	0.0083 N	0.026 Y	0.0089 Y	0.017 N	0.0083 N	0.0083 N
C70954	0.8 Y	0.06 Y	0.0069 N	0.016 Y	0.0035 N	0.028 Y	0.0035 N	0.0035 N	0.005 Y	0.0035 N	0.0069 N	0.0035 N	0.0035 N
C70957	1.08 Y	0.0034 N	0.0069 N	0.017 Y	0.0034 N	0.034 Y	0.0034 N	0.0034 N	0.0059 Y	0.0034 N	0.0069 N	0.0034 N	0.0034 N
C70972	0.856 Y	0.0018 N	0.0035 N	0.015 Y	0.0018 N	0.029 Y	0.0018 N	0.0018 N	0.005 Y	0.0018 N	0.0035 N	0.0018 N	0.0018 N
C70986	0.91 Y	0.0033 N	0.0066 N	0.013 Y	0.0033 N	0.027 Y	0.0033 N	0.0033 N	0.0053 Y	0.0033 N	0.0066 N	0.0033 N	0.0033 N
C71004	4.72 Y	0.012 N	0.024 N	0.14 Y	0.012 N	0.28 Y	0.012 N	0.012 N	0.048 Y	0.017 Y	0.024 N	0.012 N	0.012 N
C71016	2.26 Y	0.007 N	0.014 N	0.047 Y	0.007 N	0.089 Y	0.007 N	0.007 N	0.018 Y	0.007 N	0.014 N	0.007 N	0.007 N
C71034	1.42 Y	0.0016 N	0.0032 N	0.028 Y	0.0016 N	0.049 Y	0.0016 N	0.0016 N	0.0089 Y	0.003 Y	0.0041 Y	0.0016 N	0.0016 N
C71071	0.96 Y	0.0032 N	0.0064 N	0.017 Y	0.0032 N	0.035 Y	0.0032 N	0.0032 N	0.0066 Y	0.0032 N	0.0064 N	0.0032 N	0.0032 N
C71082	0.658 Y	0.0018 N	0.0037 N	0.015 Y	0.0018 N	0.027 Y	0.0018 N	0.0018 N	0.0058 Y	0.0022 Y	0.0037 N	0.0018 N	0.0018 N
C71088	0.62 Y	0.0034 N	0.0068 N	0.012 Y	0.0034 N	0.024 Y	0.0034 N	0.0034 N	0.0063 Y	0.0034 N	0.0068 N	0.0034 N	0.0034 N
C71096	1.24 Y	0.0033 N	0.0067 N	0.02 Y	0.0033 N	0.042 Y	0.0033 N	0.0033 N	0.008 Y	0.0033 N	0.0067 N	0.0033 N	0.0033 N
C71112	4.64 Y	0.017 N	0.033 N	0.13 Y	0.017 N	0.24 Y	0.017 N	0.017 N	0.042 Y	0.017 N	0.033 N	0.017 N	0.017 N
C71113	2.08 Y	0.0047 N	0.0094 N	0.061 Y	0.0047 N	0.12 Y	0.0047 N	0.0047 N	0.019 Y	0.0063 Y	0.01 Y	0.0047 N	0.0047 N
C71187	0.61 Y	0.0035 N	0.0069 N	0.015 Y	0.0035 N	0.03 Y	0.0035 N	0.0035 N	0.0044 Y	0.0035 N	0.0069 N	0.0035 N	0.0035 N
C71202	4.1 Y	0.019 N	0.038 N	0.085 Y	0.019 N	0.16 Y	0.019 N	0.019 N	0.031 Y	0.019 N	0.038 N	0.019 N	0.019 N
C71221	0.656 Y	0.0032 N	0.0064 N	0.013 Y	0.0032 N	0.025 Y	0.0032 N	0.0032 N	0.005 Y	0.0032 N	0.0064 N	0.0032 N	0.0032 N
C71233	3.14 Y	0.0082 N	0.016 N	0.063 Y	0.0082 N	0.12 Y	0.0082 N	0.024 Y	0.022 Y	0.0082 N	0.016 N	0.0082 N	0.0082 N
C71248	3.19 Y	0.0065 N	0.013 N	0.06 Y	0.0065 N	0.11 Y	0.0065 N	0.0065 N	0.02 Y	0.0068 Y	0.013 N	0.0065 N	0.0065 N
C71269	1.67 Y	0.0054 N	0.011 N	0.038 Y	0.0054 N	0.071 Y	0.0054 N	0.0054 N	0.012 Y	0.0054 N	0.011 N	0.0054 N	0.0054 N
C71281	3.36 Y	0.0078 N	0.016 N	0.069 Y	0.0078 N	0.13 Y	0.0078 N	0.0078 N	0.023 Y	0.0082 Y	0.016 N	0.0078 N	0.0078 N
C71287	4.9 Y	0.017 N	0.034 N	0.12 Y	0.017 N	0.23 Y	0.017 N	0.017 N	0.039 Y	0.017 N	0.034 N	0.017 N	0.017 N
C71300	1.62 Y	0.0051 N	0.01 N	0.022 Y	0.0051 N	0.048 Y	0.0051 N	0.0051 N	0.011 Y	0.0051 N	0.01 N	0.0051 N	0.0051 N
C71306	2.44 Y	0.005 N	0.01 N	0.043 Y	0.005 N	0.079 Y	0.005 N	0.005 N	0.013 Y	0.005 N	0.01 N	0.005 N	0.005 N
C71332	4.22 Y	0.0095 N	0.019 N	0.067 Y	0.0095 N	0.13 Y	0.0095 N	0.0095 N	0.024 Y	0.0095 N	0.019 N	0.0095 N	0.0095 N
C71335	4.84 Y	0.017 N	0.033 N	0.088 Y	0.017 N	0.17 Y	0.017 N	0.017 N	0.03 Y	0.017 N	0.033 N	0.017 N	0.017 N
C71351	0.71 Y	0.0031 N	0.0062 N	0.013 Y	0.0031 N	0.03 Y	0.0031 N	0.0031 N	0.0063 Y	0.0031 N	0.0062 N	0.0031 N	0.0031 N
C71388	1.11 Y	0.0034 N	0.0068 N	0.022 Y	0.0034 N	0.049 Y	0.0034 N	0.0034 N	0.0089 Y	0.0035 Y	0.0068 N	0.0034 N	0.0034 N
C71432	4.42 Y	0.011 N	0.022 N	0.089 Y	0.011 N	0.18 Y	0.011 N	0.011 N	0.033 Y	0.012 Y	0.022 N	0.011 N	0.011 N
C71446	0.904 Y	0.0034 N	0.0068 N	0.013 Y	0.0034 N	0.028 Y	0.0034 N	0.0034 N	0.0066 Y	0.0034 N	0.0068 N	0.0034 N	0.0034 N
C71460	4.4 Y	0.015 N	0.031 N	0.086 Y	0.015 N	0.16 Y	0.015 N	0.015 N	0.03 Y	0.015 N	0.031 N	0.015 N	0.015 N
C71468	1.75 Y	0.0066 N	0.013 N	0.03 Y	0.0066 N	0.06 Y	0.0066 N	0.0066 N	0.011 Y	0.0066 N	0.013 N	0.0066 N	0.0066 N
C71479	2.03 Y	0.0083 N	0.017 N	0.036 Y	0.0083 N	0.071 Y	0.0083 N	0.0083 N	0.012 Y	0.0083 N	0.017 N	0.0083 N	0.0083 N
C71485	0.53 Y	0.0018 N	0.0036 N	0.011 Y	0.0018 N	0.021 Y	0.0018 N	0.0018 N	0.0032 Y	0.0018 N	0.0036 N	0.0018 N	0.0018 N
C71512	4 Y	0.017 N	0.034 N	0.085 Y	0.017 N	0.16 Y	0.017 N	0.017 N	0.029 Y	0.017 N	0.034 N	0.017 N	0.017 N
C71517	2.32 Y	0.0071 N	0.014 N	0.039 Y	0.0071 N	0.076 Y	0.0071 N	0.0071 N	0.014 Y	0.0071 N	0.014 N	0.0071 N	0.0071 N
C71520	4.12 Y	0.0096 N	0.019 N	0.1 Y	0.0096 N	0.19 Y	0.0096 N	0.0096 N	0.032 Y	0.011 Y	0.019 N	0.0096 N	0.0096 N
C71527	2.99 Y	0.0051 N	0.01 N	0.052 Y	0.0051 N	0.096 Y	0.0051 N	0.0051 N	0.016 Y	0.0052 Y	0.01 N	0.0051 N	0.0051 N
C71535	4.33 Y	0.0094 N	0.019 N	0.11 Y	0.0094 N	0.2 Y	0.0094 N	0.0094 N	0.031 Y	0.011 Y	0.019 N	0.0094 N	0.0094 N

Table D-1
Available Data for PCB Congener vs. Total PCB Regression Analyses for Floodplain Soil
Anniston PCB Site
OU-4

Sample ID	Total PCBs	PCB-77	PCB-81	PCB-105	PCB-114	PCB-118	PCB-123	PCB-126	PCB-156	PCB-157	PCB-167	PCB-169	PCB-189
C71536	2.95 Y	0.0058 N	0.012 N	0.079 Y	0.0058 N	0.15 Y	0.0058 N	0.0058 N	0.023 Y	0.0081 Y	0.013 Y	0.0058 N	0.0058 N
C71550	3.55 Y	0.0074 N	0.015 N	0.095 Y	0.0074 N	0.16 Y	0.0074 N	0.0074 N	0.03 Y	0.0097 Y	0.015 Y	0.0074 N	0.0074 N
C71580	4.66 Y	0.0083 N	0.017 N	0.12 Y	0.0089 Y	0.19 Y	0.0083 N	0.0083 N	0.033 Y	0.011 Y	0.017 N	0.0083 N	0.0083 N
C71599	1.79 Y	0.0049 N	0.0098 N	0.031 Y	0.0049 N	0.062 Y	0.0049 N	0.0049 N	0.01 Y	0.0049 N	0.0098 N	0.0049 N	0.0049 N
C71605	3.04 Y	0.0067 N	0.013 N	0.073 Y	0.0067 N	0.13 Y	0.0067 N	0.0067 N	0.023 Y	0.008 Y	0.013 N	0.0067 N	0.0067 N
C71685	3.64 Y	0.0085 N	0.017 N	0.052 Y	0.0085 N	0.11 Y	0.0085 N	0.0085 N	0.023 Y	0.0085 N	0.017 N	0.0085 N	0.0085 N
C71703	3.57 Y	0.0095 N	0.019 N	0.095 Y	0.0095 N	0.17 Y	0.0095 N	0.0095 N	0.025 Y	0.0095 N	0.019 N	0.0095 N	0.0095 N
C71738	0.96 Y	0.071 Y	0.0066 N	0.013 Y	0.0033 N	0.026 Y	0.0033 N	0.0033 N	0.0052 Y	0.0033 N	0.0066 N	0.0033 N	0.0033 N
C71741	3.2 Y	0.0091 N	0.018 N	0.056 Y	0.0091 N	0.11 Y	0.0091 N	0.0091 N	0.021 Y	0.0091 N	0.018 N	0.0091 N	0.0091 N
C71744	2.42 Y	0.007 N	0.014 N	0.04 Y	0.007 N	0.08 Y	0.007 N	0.007 N	0.016 Y	0.007 N	0.014 N	0.007 N	0.007 N
C71747	1.17 Y	0.0047 N	0.0094 N	0.02 Y	0.0047 N	0.041 Y	0.0047 N	0.0047 N	0.0082 Y	0.0047 N	0.0094 N	0.0047 N	0.0047 N
C71750	1.51 Y	0.006 N	0.012 N	0.025 Y	0.006 N	0.049 Y	0.006 N	0.006 N	0.0095 Y	0.006 N	0.012 N	0.006 N	0.006 N
C71759	1.82 Y	0.0049 N	0.0099 N	0.045 Y	0.0049 N	0.082 Y	0.0049 N	0.0049 N	0.015 Y	0.0056 Y	0.0099 N	0.0049 N	0.0049 N
C71780	2.8 Y	0.0083 N	0.017 N	0.048 Y	0.0083 N	0.093 Y	0.0083 N	0.0083 N	0.018 Y	0.0083 N	0.017 N	0.0083 N	0.0083 N
C71893	1.99 Y	0.0054 N	0.011 N	0.039 Y	0.0054 N	0.081 Y	0.0054 N	0.0054 N	0.016 Y	0.0056 Y	0.011 N	0.0054 N	0.0054 N
C71905	0.89 Y	0.0018 N	0.0036 N	0.012 Y	0.0018 N	0.026 Y	0.0018 N	0.0018 N	0.0066 Y	0.0024 Y	0.0036 N	0.0018 N	0.0018 N
C71920	3.53 Y	0.0069 N	0.014 N	0.055 Y	0.0069 N	0.1 Y	0.0069 N	0.0069 N	0.022 Y	0.0072 Y	0.014 N	0.0069 N	0.0069 N
C71921	3.8 Y	0.0085 N	0.017 N	0.064 Y	0.0085 N	0.12 Y	0.0085 N	0.0085 N	0.025 Y	0.0085 N	0.017 N	0.0085 N	0.0085 N
C71938	2.15 Y	0.0047 N	0.0094 N	0.032 Y	0.0047 N	0.063 Y	0.0047 N	0.0047 N	0.012 Y	0.0047 N	0.0094 N	0.0047 N	0.0047 N
C71968	1.45 Y	0.0031 N	0.0062 N	0.031 Y	0.0031 N	0.058 Y	0.0031 N	0.0031 N	0.01 Y	0.0037 Y	0.0062 N	0.0031 N	0.0031 N
C71970	1.37 Y	0.0031 N	0.0062 N	0.028 Y	0.0031 N	0.054 Y	0.0031 N	0.0031 N	0.0097 Y	0.0035 Y	0.0062 N	0.0031 N	0.0031 N
C71992	3.91 Y	0.0086 N	0.017 N	0.067 Y	0.0086 N	0.13 Y	0.0086 N	0.0086 N	0.023 Y	0.0086 N	0.017 N	0.0086 N	0.0086 N
C72001	3.46 Y	0.0087 N	0.017 N	0.064 Y	0.0087 N	0.14 Y	0.0087 N	0.0087 N	0.028 Y	0.0096 Y	0.017 N	0.0087 N	0.0087 N
C72004	2.19 Y	0.0045 N	0.009 N	0.044 Y	0.0045 N	0.081 Y	0.0045 N	0.0045 N	0.015 Y	0.0052 Y	0.009 N	0.0045 N	0.0045 N
C72034	2.58 Y	0.0056 N	0.011 N	0.04 Y	0.0056 N	0.08 Y	0.0056 N	0.0056 N	0.016 Y	0.0056 N	0.011 N	0.0056 N	0.0056 N
C72097	2.17 Y	0.0037 N	0.0074 N	0.038 Y	0.0037 N	0.071 Y	0.0037 N	0.0037 N	0.014 Y	0.0051 Y	0.0074 N	0.0037 N	0.0037 N
C72098	4.8 Y	0.017 N	0.035 N	0.1 Y	0.017 N	0.19 Y	0.017 N	0.017 N	0.035 Y	0.017 N	0.035 N	0.017 N	0.017 N
C72103	0.92 Y	0.0036 N	0.0073 N	0.02 Y	0.0036 N	0.035 Y	0.0036 N	0.0036 N	0.0079 Y	0.0036 N	0.0073 N	0.0036 N	0.0036 N
C72109	1.93 Y	0.0048 N	0.0097 N	0.025 Y	0.0048 N	0.06 Y	0.0048 N	0.0048 N	0.013 Y	0.0048 N	0.0097 N	0.0048 N	0.0048 N
C72124	4.4 Y	0.016 N	0.032 N	0.13 Y	0.016 N	0.22 Y	0.016 N	0.016 N	0.04 Y	0.016 N	0.032 N	0.016 N	0.016 N
C72139	4.9 Y	0.0079 N	0.016 N	0.092 Y	0.0079 N	0.18 Y	0.0079 N	0.0079 N	0.03 Y	0.012 Y	0.016 N	0.0079 N	0.0079 N
C72142	2.19 Y	0.0051 N	0.01 N	0.028 Y	0.0051 N	0.069 Y	0.0051 N	0.0051 N	0.014 Y	0.0051 N	0.01 N	0.0051 N	0.0051 N
C72154	4.66 Y	0.018 N	0.037 N	0.095 Y	0.018 N	0.17 Y	0.018 N	0.018 N	0.034 Y	0.018 N	0.037 N	0.018 N	0.018 N
C72166	1.21 Y	0.0044 N	0.0089 N	0.022 Y	0.0044 N	0.041 Y	0.0044 N	0.0044 N	0.0087 Y	0.0044 N	0.0089 N	0.0044 N	0.0044 N
C72172	2.8 Y	0.0056 N	0.011 N	0.041 Y	0.0056 N	0.086 Y	0.0056 N	0.0056 N	0.016 Y	0.0056 Y	0.011 N	0.0056 N	0.0056 N
C72208	2.66 Y	0.0068 N	0.014 N	0.045 Y	0.0068 N	0.084 Y	0.0068 N	0.0068 N	0.017 Y	0.0068 N	0.014 N	0.0068 N	0.0068 N
C72209	1.36 Y	0.12 Y	0.0069 N	0.02 Y	0.0035 N	0.038 Y	0.0035 N	0.0035 N	0.0079 Y	0.0035 N	0.0069 N	0.0035 N	0.0035 N
C72215	0.052 Y	0.0017 N	0.0034 N	0.0017 N	0.0017 N	0.0019 Y	0.0017 N	0.0017 N	0.0017 N	0.0017 N	0.0034 N	0.0017 N	0.0017 N
C72237	0.67 Y	0.0033 N	0.0065 N	0.018 Y	0.0033 N	0.032 Y	0.0033 N	0.0033 N	0.0069 Y	0.0033 N	0.0065 N	0.0033 N	0.0033 N

Table D-1
Available Data for PCB Congener vs. Total PCB Regression Analyses for Floodplain Soil
Anniston PCB Site
OU-4

Sample ID	Total PCBs	PCB-77	PCB-81	PCB-105	PCB-114	PCB-118	PCB-123	PCB-126	PCB-156	PCB-157	PCB-167	PCB-169	PCB-189
C72243	1.12 Y	0.0034 N	0.0068 N	0.022 Y	0.0034 N	0.044 Y	0.0034 N	0.0034 N	0.0088 Y	0.0034 N	0.0068 N	0.0034 N	0.0034 N
C72249	0.11 Y	0.0019 Y	0.0036 N	0.0018 N	0.0018 N	0.0036 Y	0.0018 N	0.0018 N	0.0018 N	0.0018 N	0.0036 N	0.0018 N	0.0018 N
C72250	0.087 Y	0.0017 N	0.0033 N	0.0017 N	0.0017 N	0.0031 Y	0.0017 N	0.0017 N	0.0017 N	0.0017 N	0.0033 N	0.0017 N	0.0017 N
C72279	0.178 Y	0.012 Y	0.0033 N	0.0031 Y	0.0016 N	0.0059 Y	0.0016 N	0.0016 N	0.0016 N	0.0016 N	0.0033 N	0.0016 N	0.0016 N
C72283	0.068 Y	0.0016 N	0.0032 N	0.0016 N	0.0016 N	0.0026 Y	0.0016 N	0.0016 N	0.0016 N	0.0016 N	0.0032 N	0.0016 N	0.0016 N
C72295	1.01 Y	0.0015 N	0.003 N	0.022 Y	0.0015 N	0.038 Y	0.0015 N	0.0015 N	0.007 Y	0.0031 Y	0.0041 Y	0.0015 N	0.0015 Y
C72296	7.9 Y	0.015 N	0.031 N	0.12 Y	0.015 N	0.23 Y	0.015 N	0.015 N	0.04 Y	0.015 N	0.031 N	0.015 N	0.015 N
C72298	5.1 Y	0.016 N	0.033 N	0.077 Y	0.016 N	0.15 Y	0.016 N	0.016 N	0.034 Y	0.016 N	0.033 N	0.016 N	0.016 N
C72299	0.711 Y	0.0031 N	0.0061 N	0.011 Y	0.0031 N	0.022 Y	0.0031 N	0.0031 N	0.0048 Y	0.0031 N	0.0061 N	0.0031 N	0.0031 N
C72352	2.38 Y	0.0049 N	0.0098 N	0.029 Y	0.0049 N	0.064 Y	0.0049 N	0.0049 N	0.012 Y	0.0049 N	0.0098 N	0.0049 N	0.0049 N
C72353	1.06 Y	0.0031 N	0.0062 N	0.011 Y	0.0031 N	0.025 Y	0.0031 N	0.0031 N	0.005 Y	0.0031 N	0.0062 N	0.0031 N	0.0031 N
C72364	0.58 Y	0.0032 N	0.0064 N	0.015 Y	0.0032 N	0.028 Y	0.0032 N	0.0032 N	0.0056 Y	0.0032 N	0.0064 N	0.0032 N	0.0032 N
C72391	0.55 Y	0.0033 N	0.0066 N	0.012 Y	0.0033 N	0.022 Y	0.0033 N	0.0033 N	0.0047 Y	0.0033 N	0.0066 N	0.0033 N	0.0033 N
C72394	0.54 Y	0.0032 N	0.0063 N	0.0074 Y	0.0032 N	0.016 Y	0.0032 N	0.0032 N	0.0043 Y	0.0032 N	0.0063 N	0.0032 N	0.0032 N
C72515	5.3 Y	0.017 N	0.035 N	0.1 Y	0.017 N	0.19 Y	0.017 N	0.017 N	0.035 Y	0.017 N	0.035 N	0.017 N	0.017 N
C72524	0.374 Y	0.0016 N	0.0031 N	0.0047 Y	0.0016 N	0.0099 Y	0.0016 N	0.0016 N	0.0023 Y	0.0016 N	0.0031 N	0.0016 N	0.0016 N
C72535	1.32 Y	0.0065 N	0.013 N	0.024 Y	0.0065 N	0.047 Y	0.0065 N	0.0065 N	0.0094 Y	0.0065 N	0.013 N	0.0065 N	0.0065 N
C72536	1.56 Y	0.0033 N	0.0066 N	0.029 Y	0.0033 N	0.059 Y	0.0033 N	0.0033 N	0.011 Y	0.0038 Y	0.0066 N	0.0033 N	0.0033 N
C72547	2.57 Y	0.0074 N	0.015 N	0.05 Y	0.0074 N	0.094 Y	0.0074 N	0.0074 N	0.017 Y	0.0074 N	0.015 N	0.0074 N	0.0074 N
C72552	3.9 Y	0.016 N	0.033 N	0.1 Y	0.016 N	0.21 Y	0.016 N	0.016 N	0.034 Y	0.016 N	0.033 N	0.016 N	0.016 N
C72556	2.66 Y	0.0076 N	0.015 N	0.037 Y	0.0076 N	0.078 Y	0.0076 N	0.0076 N	0.016 Y	0.0076 N	0.015 N	0.0076 N	0.0076 N

Notes:

Y = indicates analyte was detected.

N = indicates analyte was not detected.

Figure D-1
PCB-105 vs Total PCB Regression
Anniston PCB Site
OU-4

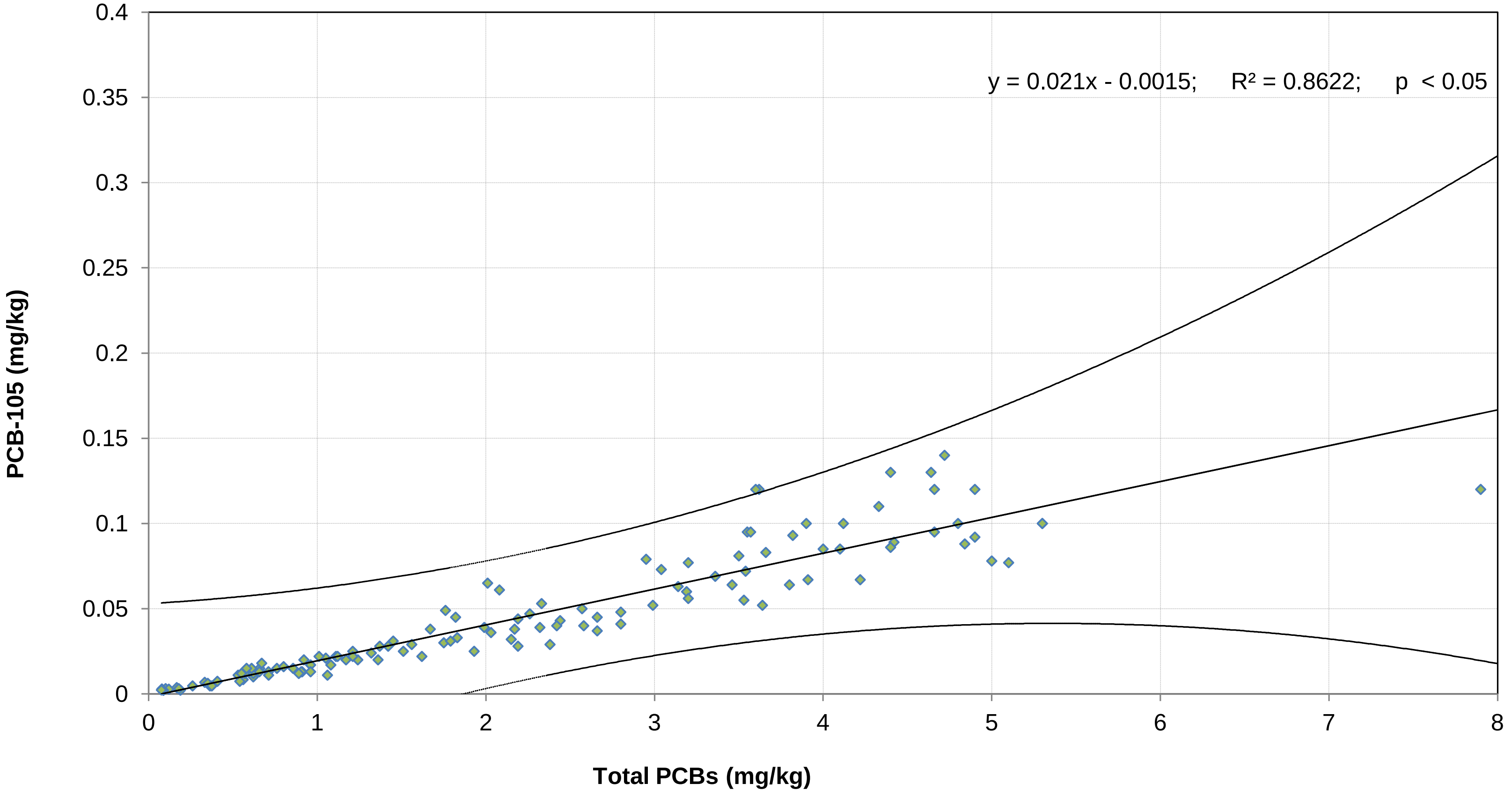


Table D-2
Regression Models for Floodplain Soil
Anniston PCB Site
OU-4

Congener	n	r^2	p-value	TEF	Regression Equation
PCB-105	125	0.86	$p < 0.05$	0.00003	PCB-105 = 0.021(tPCB) - 0.0015
PCB-118	129	0.88	$p < 0.05$	0.00003	PCB-118 = 0.0394(tPCB) - 0.0011
PCB-156	119	0.89	$p < 0.05$	0.00003	PCB-156 = 0.007(tPCB) + 0.0005

TEFs obtained from Van den Berg, et al. 2006.

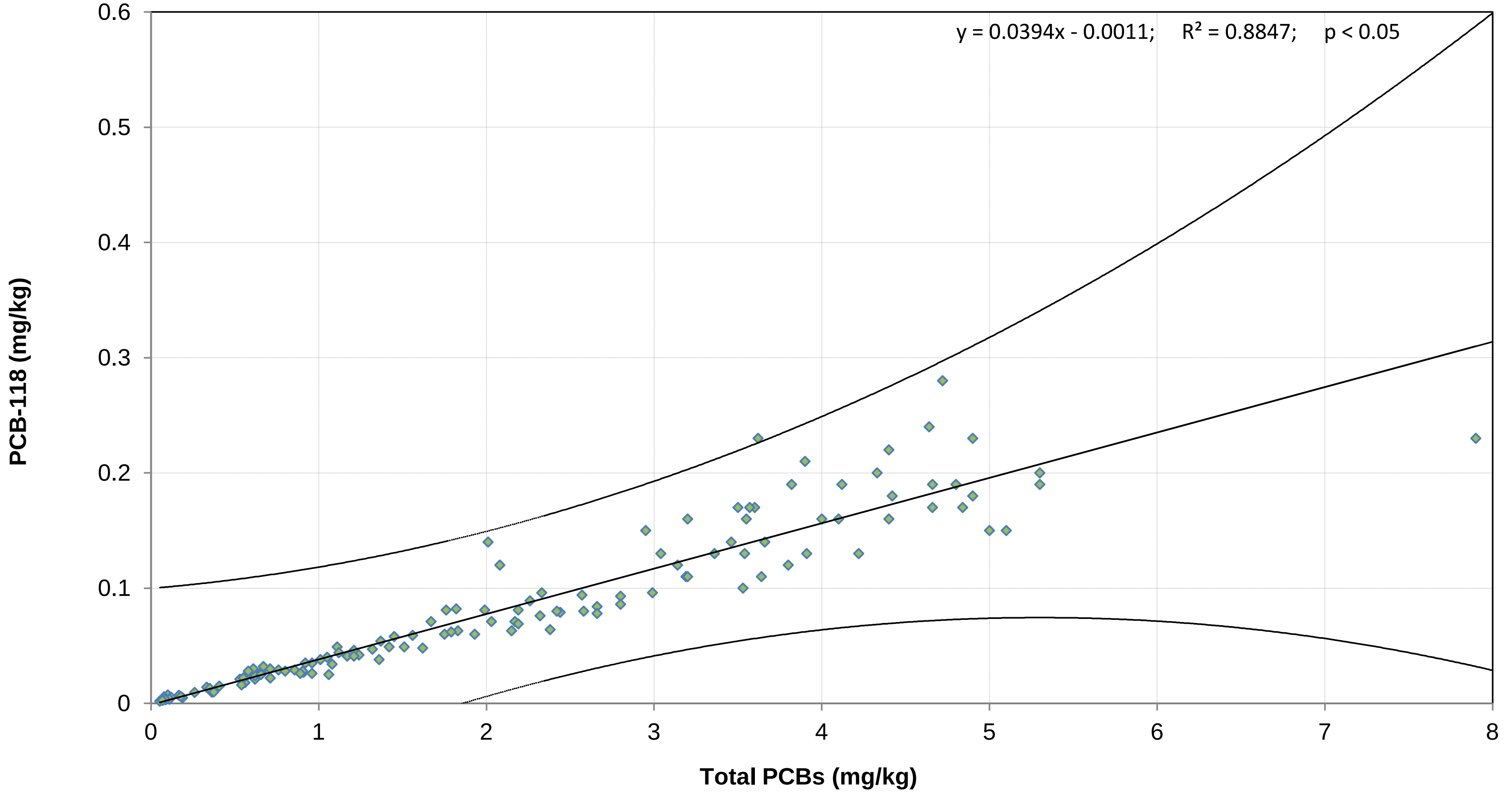
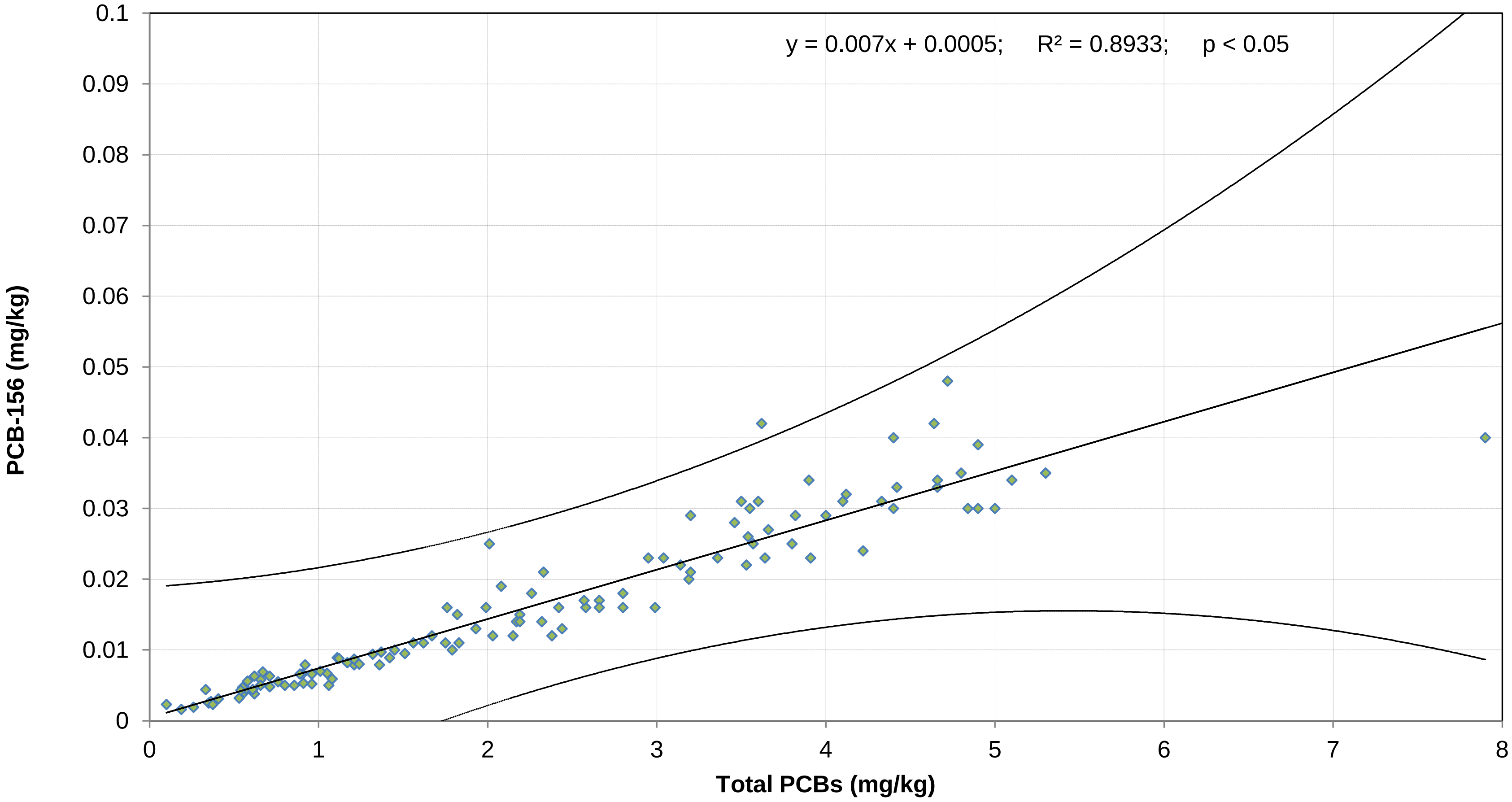


Figure D-2
PCB-118 vs Total PCB Regression
Anniston PCB Site
OU-4

Figure D-3
PCB-156 vs Total PCB Regression
Anniston PCB Site
OU-4



APPENDIX E

PROUCL OUTPUTS – FISH

Appendix E
ProUCL Output for Fish Tissue- Location A All Species
Anniston PCB Site
OU IV

```
                              General UCL Statistics for Data Sets with Non-Detects
                   User Selected Options
                           From File  WorkSheet.wst
                      Full Precision  OFF
              Confidence Coefficient  95%
     Number of Bootstrap Operations  2000


2,3,7,8-TCDD TEQ

                                                  General Statistics
                         Number of Valid Observations 12                       Number of Distinct Observations 12

                           Raw Statistics                                    Log-transformed Statistics
                                            Minimum 5.114E-07                        Minimum of Log Data -14.49
                                            Maximum 1.11E-05                         Maximum of Log Data -11.41
                                               Mean 2.937E-06                            Mean of log Data -13.2
                                             Median 2.012E-06                              SD of log Data 1.019
                                                 SD 3.059E-06
                           Coefficient of Variation    N/A
                                           Skewness 1.909

                                                Relevant UCL Statistics
                        Normal Distribution Test                            Lognormal Distribution Test
                          Shapiro Wilk Test Statistic 0.781                    Shapiro Wilk Test Statistic 0.933
                          Shapiro Wilk Critical Value 0.859                    Shapiro Wilk Critical Value 0.859
              Data not Normal at 5% Significance Level                 Data appear Lognormal at 5% Significance Level

                     Assuming Normal Distribution                          Assuming Lognormal Distribution
                                 95% Student's-t UCL 4.524E-06                                 95% H-UCL 7.697E-06
                   95% UCLs (Adjusted for Skewness)                            95% Chebyshev (MVUE) UCL 6.956E-06
                   95% Adjusted-CLT UCL (Chen-1995) 4.91E-06                 97.5% Chebyshev (MVUE) UCL 8.698E-06
                  95% Modified-t UCL (Johnson-1978) 4.605E-06                  99% Chebyshev (MVUE) UCL 1.212E-05

                        Gamma Distribution Test                                     Data Distribution
                               k star (bias corrected) 0.972          Data appear Gamma Distributed at 5% Significance Level
                                           Theta Star 3.021E-06
                                          MLE of Mean 2.937E-06
                            MLE of Standard Deviation 2.979E-06
                                              nu star 23.34
                      Approximate Chi Square Value (.05) 13.35                    Nonparametric Statistics
                         Adjusted Level of Significance 0.029                                 95% CLT UCL 4.39E-06
                            Adjusted Chi Square Value 12.21                             95% Jackknife UCL 4.524E-06
                                                                                95% Standard Bootstrap UCL 4.345E-06
                        Anderson-Darling Test Statistic 0.397                         95% Bootstrap-t UCL 5.586E-06
                       Anderson-Darling 5% Critical Value 0.752                    95% Hall's Bootstrap UCL 1.009E-05
                      Kolmogorov-Smirnov Test Statistic 0.187                  95% Percentile Bootstrap UCL 4.437E-06
                     Kolmogorov-Smirnov 5% Critical Value 0.251                       95% BCA Bootstrap UCL 4.906E-06
      Data appear Gamma Distributed at 5% Significance Level               95% Chebyshev(Mean, Sd) UCL 6.787E-06
                                                                         97.5% Chebyshev(Mean, Sd) UCL 8.453E-06
                    Assuming Gamma Distribution                            99% Chebyshev(Mean, Sd) UCL 1.173E-05
                       95% Approximate Gamma UCL 5.136E-06
                          95% Adjusted Gamma UCL 5.616E-06

                        Potential UCL to Use                           Use 95% Approximate Gamma UCL 5.136E-06

        Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
           These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
                   and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

```
Mercury

                                              General Statistics
             Number of Valid Observations 84                            Number of Distinct Observations 53

                   Raw Statistics                                        Log-transformed Statistics
                                  Minimum 0.031                                    Minimum of Log Data -3.474
                                  Maximum 0.87                                     Maximum of Log Data -0.139
                                     Mean 0.281                                        Mean of log Data -1.51
                                   Median 0.235                                          SD of log Data 0.726
                                       SD 0.191
                 Coefficient of Variation 0.681
                                 Skewness 1.125

                                              Relevant UCL Statistics
                Normal Distribution Test                                 Lognormal Distribution Test
               Lilliefors Test Statistic 0.108                               Lilliefors Test Statistic 0.073
               Lilliefors Critical Value 0.0967                              Lilliefors Critical Value 0.0967
        Data not Normal at 5% Significance Level                 Data appear Lognormal at 5% Significance Level

              Assuming Normal Distribution                             Assuming Lognormal Distribution
                      95% Student's-t UCL 0.315                                           95% H-UCL 0.338
             95% UCLs (Adjusted for Skewness)                               95% Chebyshev (MVUE) UCL 0.396
           95% Adjusted-CLT UCL (Chen-1995) 0.318                         97.5% Chebyshev (MVUE) UCL 0.444
         95% Modified-t UCL (Johnson-1978) 0.316                            99% Chebyshev (MVUE) UCL 0.537

                Gamma Distribution Test                                        Data Distribution
                  k star (bias corrected) 2.175            Data appear Gamma Distributed at 5% Significance Level
                               Theta Star 0.129
                              MLE of Mean 0.281
                MLE of Standard Deviation 0.19
                                  nu star 365.4
          Approximate Chi Square Value (.05) 322.1                        Nonparametric Statistics
            Adjusted Level of Significance 0.0471                                     95% CLT UCL 0.315
                  Adjusted Chi Square Value 321.4                               95% Jackknife UCL 0.315
                                                                      95% Standard Bootstrap UCL 0.315
            Anderson-Darling Test Statistic 0.294                           95% Bootstrap-t UCL 0.319
         Anderson-Darling 5% Critical Value 0.763                        95% Hall's Bootstrap UCL 0.318
        Kolmogorov-Smirnov Test Statistic 0.0723                    95% Percentile Bootstrap UCL 0.315
     Kolmogorov-Smirnov 5% Critical Value 0.0987                           95% BCA Bootstrap UCL 0.316
   Data appear Gamma Distributed at 5% Significance Level           95% Chebyshev(Mean, Sd) UCL 0.371
                                                                  97.5% Chebyshev(Mean, Sd) UCL 0.411
              Assuming Gamma Distribution                          99% Chebyshev(Mean, Sd) UCL 0.488
             95% Approximate Gamma UCL 0.318
               95% Adjusted Gamma UCL 0.319

                 Potential UCL to Use                           Use 95% Approximate Gamma UCL 0.318

  Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
     These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
          and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location A All Species
Anniston PCB Site
OU IV

```
Total PCBs

                                         General Statistics
                Number of Valid Observations 84                  Number of Distinct Observations 68

                  Raw Statistics                                     Log-transformed Statistics
                                     Minimum 0.223                           Minimum of Log Data -1.501
                                     Maximum 9.47                            Maximum of Log Data 2.248
                                        Mean 2.11                               Mean of log Data 0.533
                                      Median 1.77                                 SD of log Data 0.685
                                          SD 1.448
                    Coefficient of Variation 0.686
                                    Skewness 2.04

                                        Relevant UCL Statistics
             Normal Distribution Test                                Lognormal Distribution Test
                   Lilliefors Test Statistic 0.116                  Lilliefors Test Statistic 0.0559
                  Lilliefors Critical Value 0.0967                  Lilliefors Critical Value 0.0967
        Data not Normal at 5% Significance Level           Data appear Lognormal at 5% Significance Level

           Assuming Normal Distribution                            Assuming Lognormal Distribution
                        95% Student's-t UCL 2.373                                    95% H-UCL 2.501
         95% UCLs (Adjusted for Skewness)                            95% Chebyshev (MVUE) UCL 2.915
          95% Adjusted-CLT UCL (Chen-1995) 2.408                    97.5% Chebyshev (MVUE) UCL 3.248
          95% Modified-t UCL (Johnson-1978) 2.379                     99% Chebyshev (MVUE) UCL 3.901

             Gamma Distribution Test                                     Data Distribution
                    k star (bias corrected) 2.413        Data appear Gamma Distributed at 5% Significance Level
                                 Theta Star 0.875
                                MLE of Mean 2.11
                  MLE of Standard Deviation 1.359
                                    nu star 405.4
             Approximate Chi Square Value (.05) 359.7                    Nonparametric Statistics
              Adjusted Level of Significance 0.0471                                  95% CLT UCL 2.37
                   Adjusted Chi Square Value 358.9                             95% Jackknife UCL 2.373
                                                                      95% Standard Bootstrap UCL 2.371
              Anderson-Darling Test Statistic 0.259                        95% Bootstrap-t UCL 2.42
            Anderson-Darling 5% Critical Value 0.761                    95% Hall's Bootstrap UCL 2.446
            Kolmogorov-Smirnov Test Statistic 0.0643                 95% Percentile Bootstrap UCL 2.373
          Kolmogorov-Smirnov 5% Critical Value 0.0985                      95% BCA Bootstrap UCL 2.401
    Data appear Gamma Distributed at 5% Significance Level           95% Chebyshev(Mean, Sd) UCL 2.799
                                                                  97.5% Chebyshev(Mean, Sd) UCL 3.097
           Assuming Gamma Distribution                              99% Chebyshev(Mean, Sd) UCL 3.682
                 95% Approximate Gamma UCL 2.378
                    95% Adjusted Gamma UCL 2.383

               Potential UCL to Use                             Use 95% Approximate Gamma UCL 2.378

   Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
      These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
              and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

```
PCB Dioxin-like Congener TEQ

                                              General Statistics
               Number of Valid Observations 12                            Number of Distinct Observations 12

                   Raw Statistics                                        Log-transformed Statistics
                                    Minimum 1.963E-06                                 Minimum of Log Data -13.14
                                    Maximum 3.175E-05                                 Maximum of Log Data -10.36
                                       Mean 1.158E-05                                    Mean of log Data -11.71
                                     Median 8.193E-06                                      SD of log Data 0.907
                                         SD 9.35E-06
                   Coefficient of Variation    N/A
                                   Skewness 0.975

                                              Relevant UCL Statistics
                 Normal Distribution Test                               Lognormal Distribution Test
               Shapiro Wilk Test Statistic 0.89                              Shapiro Wilk Test Statistic 0.956
               Shapiro Wilk Critical Value 0.859                             Shapiro Wilk Critical Value 0.859
       Data appear Normal at 5% Significance Level              Data appear Lognormal at 5% Significance Level

            Assuming Normal Distribution                                Assuming Lognormal Distribution
                      95% Student's-t UCL 1.643E-05                                          95% H-UCL 2.637E-05
          95% UCLs (Adjusted for Skewness)                                95% Chebyshev (MVUE) UCL 2.629E-05
       95% Adjusted-CLT UCL (Chen-1995) 1.683E-05                       97.5% Chebyshev (MVUE) UCL 3.252E-05
       95% Modified-t UCL (Johnson-1978) 1.655E-05                        99% Chebyshev (MVUE) UCL 4.476E-05

                 Gamma Distribution Test                                        Data Distribution
                  k star (bias corrected) 1.268                  Data appear Normal at 5% Significance Level
                               Theta Star 9.128E-06
                              MLE of Mean 1.158E-05
                MLE of Standard Deviation 1.028E-05
                                  nu star 30.44
         Approximate Chi Square Value (.05) 18.84                          Nonparametric Statistics
           Adjusted Level of Significance 0.029                                        95% CLT UCL 1.602E-05
              Adjusted Chi Square Value 17.46                                    95% Jackknife UCL 1.643E-05
                                                                        95% Standard Bootstrap UCL 1.577E-05
           Anderson-Darling Test Statistic 0.256                              95% Bootstrap-t UCL 1.787E-05
         Anderson-Darling 5% Critical Value 0.745                        95% Hall's Bootstrap UCL 1.686E-05
          Kolmogorov-Smirnov Test Statistic 0.128                   95% Percentile Bootstrap UCL 1.622E-05
        Kolmogorov-Smirnov 5% Critical Value 0.249                         95% BCA Bootstrap UCL 1.705E-05
   Data appear Gamma Distributed at 5% Significance Level          95% Chebyshev(Mean, Sd) UCL 2.334E-05
                                                                97.5% Chebyshev(Mean, Sd) UCL 2.843E-05
            Assuming Gamma Distribution                               99% Chebyshev(Mean, Sd) UCL 3.843E-05
              95% Approximate Gamma UCL 1.871E-05
                 95% Adjusted Gamma UCL 2.019E-05

                 Potential UCL to Use                                  Use 95% Student's-t UCL 1.643E-05

    Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
               and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location A Bass
Anniston PCB Site
OU IV

```
                                   General UCL Statistics for Data Sets with Non-Detects
                 User Selected Options
                            From File  J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationA_Bass ProUCL Input.xls.wst
                       Full Precision  OFF
               Confidence Coefficient  95%
      Number of Bootstrap Operations  2000


Mercury

                                                        General Statistics
                       Number of Valid Observations  28                        Number of Distinct Observations  22

                         Raw Statistics                                      Log-transformed Statistics
                                          Minimum  0.2                                Minimum of Log Data  -1.609
                                          Maximum  0.87                               Maximum of Log Data  -0.139
                                             Mean  0.416                                  Mean of log Data  -0.967
                                           Median  0.34                                     SD of log Data  0.421
                                               SD  0.191
                         Coefficient of Variation  0.46
                                         Skewness  1.111

                                                     Relevant UCL Statistics
                   Normal Distribution Test                                      Lognormal Distribution Test
                      Shapiro Wilk Test Statistic  0.86                       Shapiro Wilk Test Statistic  0.94
                     Shapiro Wilk Critical Value  0.924                       Shapiro Wilk Critical Value  0.924
          Data not Normal at 5% Significance Level                  Data appear Lognormal at 5% Significance Level

              Assuming Normal Distribution                                  Assuming Lognormal Distribution
                           95% Student's-t UCL  0.478                                          95% H-UCL  0.484
           95% UCLs (Adjusted for Skewness)                                     95% Chebyshev (MVUE) UCL  0.562
           95% Adjusted-CLT UCL (Chen-1995)  0.484                            97.5% Chebyshev (MVUE) UCL  0.626
           95% Modified-t UCL (Johnson-1978)  0.479                             99% Chebyshev (MVUE) UCL  0.752

                   Gamma Distribution Test                                          Data Distribution
                         k star (bias corrected)  5.135                 Data appear Lognormal at 5% Significance Level
                                      Theta Star  0.081
                                     MLE of Mean  0.416
                       MLE of Standard Deviation  0.184
                                         nu star  287.6
               Approximate Chi Square Value (.05)  249.3                          Nonparametric Statistics
                    Adjusted Level of Significance  0.0404                                     95% CLT UCL  0.476
                       Adjusted Chi Square Value  247.1                                 95% Jackknife UCL  0.478
                                                                               95% Standard Bootstrap UCL  0.475
                  Anderson-Darling Test Statistic  0.846                             95% Bootstrap-t UCL  0.488
                Anderson-Darling 5% Critical Value  0.748                          95% Hall's Bootstrap UCL  0.485
               Kolmogorov-Smirnov Test Statistic  0.184                      95% Percentile Bootstrap UCL  0.478
              Kolmogorov-Smirnov 5% Critical Value  0.166                            95% BCA Bootstrap UCL  0.486
       Data not Gamma Distributed at 5% Significance Level                     95% Chebyshev(Mean, Sd) UCL  0.574
                                                                            97.5% Chebyshev(Mean, Sd) UCL  0.642
                  Assuming Gamma Distribution                                  99% Chebyshev(Mean, Sd) UCL  0.776
                        95% Approximate Gamma UCL  0.48
                          95% Adjusted Gamma UCL  0.484

                    Potential UCL to Use                                            Use 95% Student's-t UCL  0.478
                                                                                       or 95% Modified-t UCL  0.479
                                                                                                or 95% H-UCL  0.484

                                 ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
                H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
                                    It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
           Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.
```

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Fish Tissue- Location A Bass
Anniston PCB Site
OU IV

```
Total PCBs

                                        General Statistics
                Number of Valid Observations 28                  Number of Distinct Observations 25

                    Raw Statistics                                      Log-transformed Statistics
                                     Minimum 0.223                               Minimum of Log Data -1.501
                                     Maximum 9.47                                Maximum of Log Data 2.248
                                        Mean 2.206                                  Mean of log Data 0.577
                                      Median 1.795                                    SD of log Data 0.677
                                          SD 1.725
                    Coefficient of Variation 0.782
                                    Skewness 2.955

                                      Relevant UCL Statistics
                 Normal Distribution Test                               Lognormal Distribution Test
                 Shapiro Wilk Test Statistic 0.718                       Shapiro Wilk Test Statistic 0.948
                 Shapiro Wilk Critical Value 0.924                       Shapiro Wilk Critical Value 0.924
         Data not Normal at 5% Significance Level               Data appear Lognormal at 5% Significance Level

               Assuming Normal Distribution                            Assuming Lognormal Distribution
                        95% Student's-t UCL 2.761                                        95% H-UCL 2.944
             95% UCLs (Adjusted for Skewness)                               95% Chebyshev (MVUE) UCL 3.547
          95% Adjusted-CLT UCL (Chen-1995) 2.937                          97.5% Chebyshev (MVUE) UCL 4.123
         95% Modified-t UCL (Johnson-1978) 2.791                            99% Chebyshev (MVUE) UCL 5.253

                 Gamma Distribution Test                                     Data Distribution
                  k star (bias corrected) 2.242        Data appear Gamma Distributed at 5% Significance Level
                               Theta Star 0.984
                              MLE of Mean 2.206
                MLE of Standard Deviation 1.473
                                  nu star 125.6
          Approximate Chi Square Value (.05) 100.7                     Nonparametric Statistics
            Adjusted Level of Significance 0.0404                                   95% CLT UCL 2.742
                 Adjusted Chi Square Value 99.32                              95% Jackknife UCL 2.761
                                                                      95% Standard Bootstrap UCL 2.736
             Anderson-Darling Test Statistic 0.595                          95% Bootstrap-t UCL 3.177
          Anderson-Darling 5% Critical Value 0.756                      95% Hall's Bootstrap UCL 5.232
           Kolmogorov-Smirnov Test Statistic 0.145                 95% Percentile Bootstrap UCL 2.782
        Kolmogorov-Smirnov 5% Critical Value 0.167                        95% BCA Bootstrap UCL 2.955
   Data appear Gamma Distributed at 5% Significance Level         95% Chebyshev(Mean, Sd) UCL 3.627
                                                                97.5% Chebyshev(Mean, Sd) UCL 4.242
              Assuming Gamma Distribution                         99% Chebyshev(Mean, Sd) UCL 5.45
               95% Approximate Gamma UCL 2.751
                  95% Adjusted Gamma UCL 2.789

                    Potential UCL to Use                         Use 95% Approximate Gamma UCL 2.751

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
             and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location A Catfish
Anniston PCB Site
OU IV

```
                              General UCL Statistics for Data Sets with Non-Detects
              User Selected Options
                          From File   J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationA_Catfish ProUCL Input.xls.wst
                     Full Precision   OFF
             Confidence Coefficient   95%
   Number of Bootstrap Operations     2000


Mercury

                                                 General Statistics
                   Number of Valid Observations 28                          Number of Distinct Observations 21

                      Raw Statistics                                          Log-transformed Statistics
                                        Minimum 0.031                                 Minimum of Log Data -3.474
                                        Maximum 0.43                                  Maximum of Log Data -0.844
                                           Mean 0.156                                     Mean of log Data -2.03
                                         Median 0.115                                       SD of log Data 0.604
                                             SD 0.0944
                       Coefficient of Variation 0.606
                                       Skewness 1.226

                                               Relevant UCL Statistics
                   Normal Distribution Test                                   Lognormal Distribution Test
                    Shapiro Wilk Test Statistic 0.897                         Shapiro Wilk Test Statistic 0.984
                    Shapiro Wilk Critical Value 0.924                         Shapiro Wilk Critical Value 0.924
          Data not Normal at 5% Significance Level                  Data appear Lognormal at 5% Significance Level

               Assuming Normal Distribution                                Assuming Lognormal Distribution
                          95% Student's-t UCL 0.186                                           95% H-UCL 0.2
              95% UCLs (Adjusted for Skewness)                                95% Chebyshev (MVUE) UCL 0.239
         95% Adjusted-CLT UCL (Chen-1995) 0.19                              97.5% Chebyshev (MVUE) UCL 0.275
         95% Modified-t UCL (Johnson-1978) 0.187                              99% Chebyshev (MVUE) UCL 0.345

                   Gamma Distribution Test                                          Data Distribution
                       k star (bias corrected) 2.789              Data appear Gamma Distributed at 5% Significance Level
                                   Theta Star 0.0559
                                  MLE of Mean 0.156
                    MLE of Standard Deviation 0.0933
                                      nu star 156.2
             Approximate Chi Square Value (.05) 128.3                           Nonparametric Statistics
                 Adjusted Level of Significance 0.0404                                     95% CLT UCL 0.185
                     Adjusted Chi Square Value 126.7                                 95% Jackknife UCL 0.186
                                                                          95% Standard Bootstrap UCL 0.184
                 Anderson-Darling Test Statistic 0.325                             95% Bootstrap-t UCL 0.194
               Anderson-Darling 5% Critical Value 0.753                          95% Hall's Bootstrap UCL 0.194
                 Kolmogorov-Smirnov Test Statistic 0.149                     95% Percentile Bootstrap UCL 0.186
              Kolmogorov-Smirnov 5% Critical Value 0.167                            95% BCA Bootstrap UCL 0.188
    Data appear Gamma Distributed at 5% Significance Level             95% Chebyshev(Mean, Sd) UCL 0.234
                                                                     97.5% Chebyshev(Mean, Sd) UCL 0.267
                Assuming Gamma Distribution                            99% Chebyshev(Mean, Sd) UCL 0.333
                     95% Approximate Gamma UCL 0.19
                        95% Adjusted Gamma UCL 0.192

                    Potential UCL to Use                          Use 95% Approximate Gamma UCL 0.19

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
        These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
                  and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location A Catfish
Anniston PCB Site
OU IV

```
Total PCBs

                                          General Statistics
                 Number of Valid Observations 28                Number of Distinct Observations 26

                   Raw Statistics                                  Log-transformed Statistics
                                      Minimum 0.42                          Minimum of Log Data -0.868
                                      Maximum 5.8                           Maximum of Log Data 1.758
                                         Mean 2.436                            Mean of log Data 0.717
                                       Median 2.27                               SD of log Data 0.631
                                           SD 1.401
                     Coefficient of Variation 0.575
                                     Skewness 0.855

                                          Relevant UCL Statistics
              Normal Distribution Test                              Lognormal Distribution Test
                  Shapiro Wilk Test Statistic 0.922                 Shapiro Wilk Test Statistic 0.963
                  Shapiro Wilk Critical Value 0.924                 Shapiro Wilk Critical Value 0.924
         Data not Normal at 5% Significance Level           Data appear Lognormal at 5% Significance Level

            Assuming Normal Distribution                          Assuming Lognormal Distribution
                        95% Student's-t UCL 2.887                                    95% H-UCL 3.206
          95% UCLs (Adjusted for Skewness)                          95% Chebyshev (MVUE) UCL 3.85
          95% Adjusted-CLT UCL (Chen-1995) 2.917                  97.5% Chebyshev (MVUE) UCL 4.443
        95% Modified-t UCL (Johnson-1978) 2.894                     99% Chebyshev (MVUE) UCL 5.609

              Gamma Distribution Test                                    Data Distribution
                  k star (bias corrected) 2.738       Data appear Gamma Distributed at 5% Significance Level
                               Theta Star 0.89
                              MLE of Mean 2.436
                MLE of Standard Deviation 1.472
                                  nu star 153.3
           Approximate Chi Square Value (.05) 125.7                 Nonparametric Statistics
              Adjusted Level of Significance 0.0404                                95% CLT UCL 2.872
                  Adjusted Chi Square Value 124.1                            95% Jackknife UCL 2.887
                                                                   95% Standard Bootstrap UCL 2.864
             Anderson-Darling Test Statistic 0.307                        95% Bootstrap-t UCL 2.958
         Anderson-Darling 5% Critical Value 0.754                    95% Hall's Bootstrap UCL 2.962
          Kolmogorov-Smirnov Test Statistic 0.119                 95% Percentile Bootstrap UCL 2.868
        Kolmogorov-Smirnov 5% Critical Value 0.167                       95% BCA Bootstrap UCL 2.945
   Data appear Gamma Distributed at 5% Significance Level          95% Chebyshev(Mean, Sd) UCL 3.59
                                                                 97.5% Chebyshev(Mean, Sd) UCL 4.089
             Assuming Gamma Distribution                           99% Chebyshev(Mean, Sd) UCL 5.07
                95% Approximate Gamma UCL 2.971
                   95% Adjusted Gamma UCL 3.008

               Potential UCL to Use                          Use 95% Approximate Gamma UCL 2.971

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
        These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
                and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location A Panfish
Anniston PCB Site
OU IV

```
                              General UCL Statistics for Data Sets with Non-Detects
                 User Selected Options
                          From File  J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationA_Panfish ProUCL Input.xls.wst
                     Full Precision  OFF
             Confidence Coefficient  95%
   Number of Bootstrap Operations  2000


Mercury

                                               General Statistics
                 Number of Valid Observations  28                    Number of Distinct Observations  24

                     Raw Statistics                                   Log-transformed Statistics
                                      Minimum  0.053                           Minimum of Log Data  -2.937
                                      Maximum  0.7                             Maximum of Log Data  -0.357
                                         Mean  0.27                                Mean of log Data  -1.533
                                       Median  0.205                                 SD of log Data  0.703
                                           SD  0.178
                     Coefficient of Variation  0.658
                                     Skewness  0.831

                                             Relevant UCL Statistics
                  Normal Distribution Test                              Lognormal Distribution Test
                  Shapiro Wilk Test Statistic  0.908                       Shapiro Wilk Test Statistic  0.97
                  Shapiro Wilk Critical Value  0.924                       Shapiro Wilk Critical Value  0.924
           Data not Normal at 5% Significance Level            Data appear Lognormal at 5% Significance Level

                Assuming Normal Distribution                            Assuming Lognormal Distribution
                         95% Student's-t UCL  0.327                                      95% H-UCL  0.368
             95% UCLs (Adjusted for Skewness)                          95% Chebyshev (MVUE) UCL  0.444
          95% Adjusted-CLT UCL (Chen-1995)  0.331                     97.5% Chebyshev (MVUE) UCL  0.518
         95% Modified-t UCL (Johnson-1978)  0.328                       99% Chebyshev (MVUE) UCL  0.664

                  Gamma Distribution Test                                    Data Distribution
                      k star (bias corrected)  2.165       Data appear Gamma Distributed at 5% Significance Level
                                   Theta Star  0.125
                                  MLE of Mean  0.27
                    MLE of Standard Deviation  0.183
                                      nu star  121.2
              Approximate Chi Square Value (.05)  96.81                     Nonparametric Statistics
                 Adjusted Level of Significance  0.0404                               95% CLT UCL  0.325
                     Adjusted Chi Square Value  95.46                           95% Jackknife UCL  0.327
                                                                      95% Standard Bootstrap UCL  0.325
                Anderson-Darling Test Statistic  0.333                        95% Bootstrap-t UCL  0.335
              Anderson-Darling 5% Critical Value  0.756                      95% Hall's Bootstrap UCL  0.331
             Kolmogorov-Smirnov Test Statistic  0.0959               95% Percentile Bootstrap UCL  0.326
           Kolmogorov-Smirnov 5% Critical Value  0.167                       95% BCA Bootstrap UCL  0.33
     Data appear Gamma Distributed at 5% Significance Level          95% Chebyshev(Mean, Sd) UCL  0.416
                                                                   97.5% Chebyshev(Mean, Sd) UCL  0.479
                Assuming Gamma Distribution                          99% Chebyshev(Mean, Sd) UCL  0.604
                  95% Approximate Gamma UCL  0.338
                     95% Adjusted Gamma UCL  0.343

                    Potential UCL to Use                        Use 95% Approximate Gamma UCL  0.338

      Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
         These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
                   and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location A Panfish
Anniston PCB Site
OU IV

```
Total PCBs

                                          General Statistics
                Number of Valid Observations 28                        Number of Distinct Observations 26

                  Raw Statistics                                       Log-transformed Statistics
                                     Minimum 0.27                                Minimum of Log Data -1.309
                                     Maximum 4.4                                 Maximum of Log Data 1.482
                                        Mean 1.689                                  Mean of log Data 0.306
                                      Median 1.34                                     SD of log Data 0.703
                                          SD 1.098
                    Coefficient of Variation 0.65
                                    Skewness 0.909

                                          Relevant UCL Statistics
              Normal Distribution Test                                 Lognormal Distribution Test
                Shapiro Wilk Test Statistic 0.912                         Shapiro Wilk Test Statistic 0.973
                Shapiro Wilk Critical Value 0.924                         Shapiro Wilk Critical Value 0.924
       Data not Normal at 5% Significance Level                Data appear Lognormal at 5% Significance Level

             Assuming Normal Distribution                              Assuming Lognormal Distribution
                        95% Student's-t UCL 2.042                                          95% H-UCL 2.318
           95% UCLs (Adjusted for Skewness)                               95% Chebyshev (MVUE) UCL 2.796
        95% Adjusted-CLT UCL (Chen-1995) 2.068                           97.5% Chebyshev (MVUE) UCL 3.261
        95% Modified-t UCL (Johnson-1978) 2.048                            99% Chebyshev (MVUE) UCL 4.176

              Gamma Distribution Test                                       Data Distribution
                   k star (bias corrected) 2.207         Data appear Gamma Distributed at 5% Significance Level
                                Theta Star 0.765
                               MLE of Mean 1.689
                 MLE of Standard Deviation 1.137
                                   nu star 123.6
            Approximate Chi Square Value (.05) 98.9                        Nonparametric Statistics
             Adjusted Level of Significance 0.0404                                     95% CLT UCL 2.03
                 Adjusted Chi Square Value 97.54                                 95% Jackknife UCL 2.042
                                                                          95% Standard Bootstrap UCL 2.029
             Anderson-Darling Test Statistic 0.279                           95% Bootstrap-t UCL 2.084
           Anderson-Darling 5% Critical Value 0.756                        95% Hall's Bootstrap UCL 2.076
           Kolmogorov-Smirnov Test Statistic 0.13                      95% Percentile Bootstrap UCL 2.037
         Kolmogorov-Smirnov 5% Critical Value 0.167                           95% BCA Bootstrap UCL 2.047
    Data appear Gamma Distributed at 5% Significance Level             95% Chebyshev(Mean, Sd) UCL 2.593
                                                                     97.5% Chebyshev(Mean, Sd) UCL 2.984
             Assuming Gamma Distribution                               99% Chebyshev(Mean, Sd) UCL 3.753
                95% Approximate Gamma UCL 2.11
                   95% Adjusted Gamma UCL 2.14

                 Potential UCL to Use                            Use 95% Approximate Gamma UCL 2.11

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
             and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

```
                         General UCL Statistics for Data Sets with Non-Detects
            User Selected Options
                        From File  WorkSheet.wst
                   Full Precision  OFF
           Confidence Coefficient  95%
 Number of Bootstrap Operations  2000


Mercury

                                                    General Statistics
                Number of Valid Observations  84                  Number of Distinct Observations  46

                 Raw Statistics                                  Log-transformed Statistics
                                     Minimum  0.11                          Minimum of Log Data  -2.207
                                     Maximum  1.3                           Maximum of Log Data  0.262
                                        Mean  0.426                            Mean of log Data  -1.054
                                      Median  0.34                               SD of log Data  0.644
                                          SD  0.278
                    Coefficient of Variation  0.652
                                    Skewness  1.202

                                                  Relevant UCL Statistics
              Normal Distribution Test                          Lognormal Distribution Test
                   Lilliefors Test Statistic  0.152                     Lilliefors Test Statistic  0.083
                   Lilliefors Critical Value  0.0967                    Lilliefors Critical Value  0.0967
       Data not Normal at 5% Significance Level          Data appear Lognormal at 5% Significance Level

            Assuming Normal Distribution                        Assuming Lognormal Distribution
                        95% Student's-t UCL  0.477                                   95% H-UCL  0.492
         95% UCLs (Adjusted for Skewness)                           95% Chebyshev (MVUE) UCL  0.57
           95% Adjusted-CLT UCL (Chen-1995)  0.48                   97.5% Chebyshev (MVUE) UCL  0.632
          95% Modified-t UCL (Johnson-1978)  0.477                    99% Chebyshev (MVUE) UCL  0.753

              Gamma Distribution Test                                 Data Distribution
                     k star (bias corrected)  2.559   Data Follow Appr. Gamma Distribution at 5% Significance Level
                                  Theta Star  0.167
                                 MLE of Mean  0.426
                   MLE of Standard Deviation  0.266
                                     nu star  429.9
            Approximate Chi Square Value (.05)  382.8                  Nonparametric Statistics
                 Adjusted Level of Significance  0.0471                               95% CLT UCL  0.476
                     Adjusted Chi Square Value  382                             95% Jackknife UCL  0.477
                                                                       95% Standard Bootstrap UCL  0.475
                 Anderson-Darling Test Statistic  0.797                       95% Bootstrap-t UCL  0.48
              Anderson-Darling 5% Critical Value  0.761                     95% Hall's Bootstrap UCL  0.484
             Kolmogorov-Smirnov Test Statistic  0.0954                 95% Percentile Bootstrap UCL  0.476
          Kolmogorov-Smirnov 5% Critical Value  0.0985                        95% BCA Bootstrap UCL  0.484
   Data follow Appr. Gamma Distribution at 5% Significance Level     95% Chebyshev(Mean, Sd) UCL  0.558
                                                                  97.5% Chebyshev(Mean, Sd) UCL  0.616
            Assuming Gamma Distribution                             99% Chebyshev(Mean, Sd) UCL  0.728
                  95% Approximate Gamma UCL  0.479
                     95% Adjusted Gamma UCL  0.48

               Potential UCL to Use                           Use 95% Approximate Gamma UCL  0.479

       Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
          These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
                   and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location B All Species
Anniston PCB Site
OU IV

Total PCBs

	General Statistics		
Number of Valid Observations	84	Number of Distinct Observations	73
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.236	Minimum of Log Data	-1.444
Maximum	11.8	Maximum of Log Data	2.468
Mean	2.511	Mean of log Data	0.641
Median	2.055	SD of log Data	0.771
SD	2.082		
Coefficient of Variation	0.829		
Skewness	2.381		
	Relevant UCL Statistics		
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.14	Lilliefors Test Statistic	0.0534
Lilliefors Critical Value	0.0967	Lilliefors Critical Value	0.0967
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2.889	95% H-UCL	3.039
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.591
95% Adjusted-CLT UCL (Chen-1995)	2.948	97.5% Chebyshev (MVUE) UCL	4.044
95% Modified-t UCL (Johnson-1978)	2.899	99% Chebyshev (MVUE) UCL	4.934
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.876	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	1.338		
MLE of Mean	2.511		
MLE of Standard Deviation	1.833		
nu star	315.2		
Approximate Chi Square Value (.05)	275.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0471	95% CLT UCL	2.885
Adjusted Chi Square Value	274.4	95% Jackknife UCL	2.889
		95% Standard Bootstrap UCL	2.879
Anderson-Darling Test Statistic	0.532	95% Bootstrap-t UCL	2.981
Anderson-Darling 5% Critical Value	0.765	95% Hall's Bootstrap UCL	2.991
Kolmogorov-Smirnov Test Statistic	0.0624	95% Percentile Bootstrap UCL	2.893
Kolmogorov-Smirnov 5% Critical Value	0.0989	95% BCA Bootstrap UCL	2.95
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.501
		97.5% Chebyshev(Mean, Sd) UCL	3.93
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.771
95% Approximate Gamma UCL	2.877		
95% Adjusted Gamma UCL	2.884		
Potential UCL to Use		Use 95% Approximate Gamma UCL	2.877

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

```
                          General UCL Statistics for Data Sets with Non-Detects
            User Selected Options
                      From File  J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationB_Bass ProUCL Input.xls.wst
                 Full Precision  OFF
         Confidence Coefficient  95%
Number of Bootstrap Operations  2000


Mercury

                                              General Statistics
                 Number of Valid Observations 27                       Number of Distinct Observations 21

                     Raw Statistics                                     Log-transformed Statistics
                                      Minimum 0.12                                Minimum of Log Data -2.12
                                      Maximum 1.3                                 Maximum of Log Data 0.262
                                         Mean 0.684                                  Mean of log Data -0.466
                                       Median 0.68                                     SD of log Data 0.468
                                           SD 0.255
                     Coefficient of Variation 0.373
                                     Skewness 0.256

                                            Relevant UCL Statistics
                 Normal Distribution Test                                Lognormal Distribution Test
                  Shapiro Wilk Test Statistic 0.979                       Shapiro Wilk Test Statistic 0.876
                  Shapiro Wilk Critical Value 0.923                       Shapiro Wilk Critical Value 0.923
        Data appear Normal at 5% Significance Level              Data not Lognormal at 5% Significance Level

                Assuming Normal Distribution                           Assuming Lognormal Distribution
                         95% Student's-t UCL 0.767                                         95% H-UCL 0.837
            95% UCLs (Adjusted for Skewness)                                 95% Chebyshev (MVUE) UCL 0.981
         95% Adjusted-CLT UCL (Chen-1995) 0.767                            97.5% Chebyshev (MVUE) UCL 1.104
        95% Modified-t UCL (Johnson-1978) 0.768                              99% Chebyshev (MVUE) UCL 1.345

                  Gamma Distribution Test                                      Data Distribution
                      k star (bias corrected) 5.354              Data appear Normal at 5% Significance Level
                                   Theta Star 0.128
                                  MLE of Mean 0.684
                    MLE of Standard Deviation 0.295
                                      nu star 289.1
            Approximate Chi Square Value (.05) 250.7                        Nonparametric Statistics
                Adjusted Level of Significance 0.0401                                   95% CLT UCL 0.764
                   Adjusted Chi Square Value 248.4                                95% Jackknife UCL 0.767
                                                                       95% Standard Bootstrap UCL 0.764
               Anderson-Darling Test Statistic 0.516                            95% Bootstrap-t UCL 0.77
              Anderson-Darling 5% Critical Value 0.747                       95% Hall's Bootstrap UCL 0.78
              Kolmogorov-Smirnov Test Statistic 0.164                    95% Percentile Bootstrap UCL 0.76
           Kolmogorov-Smirnov 5% Critical Value 0.168                           95% BCA Bootstrap UCL 0.761
    Data appear Gamma Distributed at 5% Significance Level            95% Chebyshev(Mean, Sd) UCL 0.898
                                                                    97.5% Chebyshev(Mean, Sd) UCL 0.99
                 Assuming Gamma Distribution                            99% Chebyshev(Mean, Sd) UCL 1.172
                   95% Approximate Gamma UCL 0.788
                      95% Adjusted Gamma UCL 0.796

                   Potential UCL to Use                                  Use 95% Student's-t UCL 0.767

   Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
     These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
              and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location B Bass
Anniston PCB Site
OU IV

```
Total PCBs

                                                General Statistics
                      Number of Valid Observations 27                    Number of Distinct Observations 24

                        Raw Statistics                                  Log-transformed Statistics
                                           Minimum 0.329                              Minimum of Log Data -1.112
                                           Maximum 11.8                               Maximum of Log Data 2.468
                                              Mean 2.936                                 Mean of log Data 0.824
                                            Median 2.81                                    SD of log Data 0.783
                                                SD 2.188
                          Coefficient of Variation 0.745
                                          Skewness 2.55

                                                Relevant UCL Statistics
                     Normal Distribution Test                            Lognormal Distribution Test
                       Shapiro Wilk Test Statistic 0.755                      Shapiro Wilk Test Statistic 0.905
                       Shapiro Wilk Critical Value 0.923                      Shapiro Wilk Critical Value 0.923
            Data not Normal at 5% Significance Level              Data not Lognormal at 5% Significance Level

                  Assuming Normal Distribution                          Assuming Lognormal Distribution
                              95% Student's-t UCL 3.654                                    95% H-UCL 4.382
               95% UCLs (Adjusted for Skewness)                             95% Chebyshev (MVUE) UCL 5.253
                 95% Adjusted-CLT UCL (Chen-1995) 3.85                    97.5% Chebyshev (MVUE) UCL 6.205
                95% Modified-t UCL (Johnson-1978) 3.689                     99% Chebyshev (MVUE) UCL 8.073

                     Gamma Distribution Test                                    Data Distribution
                          k star (bias corrected) 1.917       Data do not follow a Discernable Distribution (0.05)
                                       Theta Star 1.531
                                      MLE of Mean 2.936
                        MLE of Standard Deviation 2.12
                                          nu star 103.5
                   Approximate Chi Square Value (.05) 81.06                   Nonparametric Statistics
                      Adjusted Level of Significance 0.0401                              95% CLT UCL 3.629
                           Adjusted Chi Square Value 79.79                         95% Jackknife UCL 3.654
                                                                          95% Standard Bootstrap UCL 3.618
                     Anderson-Darling Test Statistic 1.002                       95% Bootstrap-t UCL 3.962
                   Anderson-Darling 5% Critical Value 0.756                   95% Hall's Bootstrap UCL 7.25
                   Kolmogorov-Smirnov Test Statistic 0.175               95% Percentile Bootstrap UCL 3.658
                 Kolmogorov-Smirnov 5% Critical Value 0.17                      95% BCA Bootstrap UCL 3.893
      Data not Gamma Distributed at 5% Significance Level                95% Chebyshev(Mean, Sd) UCL 4.772
                                                                       97.5% Chebyshev(Mean, Sd) UCL 5.566
                  Assuming Gamma Distribution                            99% Chebyshev(Mean, Sd) UCL 7.126
                       95% Approximate Gamma UCL 3.75
                          95% Adjusted Gamma UCL 3.81

                      Potential UCL to Use                          Use 95% Chebyshev (Mean, Sd) UCL 4.772

    Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
      These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
              and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location B Catfish
Anniston PCB Site
OU IV

```
                              General UCL Statistics for Data Sets with Non-Detects
              User Selected Options
                      From File  J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationB_Catfish ProUCL Input.xls.wst
                 Full Precision  OFF
         Confidence Coefficient  95%
 Number of Bootstrap Operations  2000


Mercury

                                                  General Statistics
                  Number of Valid Observations  28                      Number of Distinct Observations  23

                Raw Statistics                                            Log-transformed Statistics
                                       Minimum  0.11                             Minimum of Log Data  -2.207
                                       Maximum  1.3                              Maximum of Log Data  0.262
                                          Mean  0.362                               Mean of log Data  -1.185
                                        Median  0.31                                  SD of log Data  0.572
                                            SD  0.244
                      Coefficient of Variation  0.676
                                      Skewness  2.301

                                                  Relevant UCL Statistics
              Normal Distribution Test                                     Lognormal Distribution Test
                   Shapiro Wilk Test Statistic  0.79                     Shapiro Wilk Test Statistic  0.981
                   Shapiro Wilk Critical Value  0.924                    Shapiro Wilk Critical Value  0.924
        Data not Normal at 5% Significance Level                Data appear Lognormal at 5% Significance Level

             Assuming Normal Distribution                                 Assuming Lognormal Distribution
                          95% Student's-t UCL  0.44                                       95% H-UCL  0.449
          95% UCLs (Adjusted for Skewness)                                95% Chebyshev (MVUE) UCL  0.536
          95% Adjusted-CLT UCL (Chen-1995)  0.459                       97.5% Chebyshev (MVUE) UCL  0.613
          95% Modified-t UCL (Johnson-1978)  0.444                        99% Chebyshev (MVUE) UCL  0.764

              Gamma Distribution Test                                            Data Distribution
                      k star (bias corrected)  2.823            Data appear Gamma Distributed at 5% Significance Level
                                   Theta Star  0.128
                                  MLE of Mean  0.362
                    MLE of Standard Deviation  0.215
                                      nu star  158.1
            Approximate Chi Square Value (.05)  130                        Nonparametric Statistics
                 Adjusted Level of Significance  0.0404                               95% CLT UCL  0.438
                     Adjusted Chi Square Value  128.5                          95% Jackknife UCL  0.44
                                                                     95% Standard Bootstrap UCL  0.435
                Anderson-Darling Test Statistic  0.414                      95% Bootstrap-t UCL  0.48
              Anderson-Darling 5% Critical Value  0.753                  95% Hall's Bootstrap UCL  0.567
              Kolmogorov-Smirnov Test Statistic  0.115             95% Percentile Bootstrap UCL  0.446
            Kolmogorov-Smirnov 5% Critical Value  0.167                   95% BCA Bootstrap UCL  0.454
    Data appear Gamma Distributed at 5% Significance Level         95% Chebyshev(Mean, Sd) UCL  0.563
                                                                 97.5% Chebyshev(Mean, Sd) UCL  0.65
             Assuming Gamma Distribution                            99% Chebyshev(Mean, Sd) UCL  0.821
                  95% Approximate Gamma UCL  0.44
                     95% Adjusted Gamma UCL  0.445

               Potential UCL to Use                               Use 95% Approximate Gamma UCL  0.44

    Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
      These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
               and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location B Catfish
Anniston PCB Site
OU IV

```
Total PCBs

                                          General Statistics
              Number of Valid Observations 28                     Number of Distinct Observations 27

                    Raw Statistics                                   Log-transformed Statistics
                                   Minimum 0.236                             Minimum of Log Data -1.444
                                   Maximum 10.8                              Maximum of Log Data 2.38
                                      Mean 3.093                                Mean of log Data 0.83
                                    Median 2.09                                   SD of log Data 0.827
                                        SD 2.523
                  Coefficient of Variation 0.816
                                  Skewness 1.725

                                        Relevant UCL Statistics
                 Normal Distribution Test                               Lognormal Distribution Test
              Shapiro Wilk Test Statistic 0.82                       Shapiro Wilk Test Statistic 0.971
              Shapiro Wilk Critical Value 0.924                      Shapiro Wilk Critical Value 0.924
       Data not Normal at 5% Significance Level              Data appear Lognormal at 5% Significance Level

               Assuming Normal Distribution                         Assuming Lognormal Distribution
                     95% Student's-t UCL 3.906                                      95% H-UCL 4.62
            95% UCLs (Adjusted for Skewness)                          95% Chebyshev (MVUE) UCL 5.569
      95% Adjusted-CLT UCL (Chen-1995) 4.044                        97.5% Chebyshev (MVUE) UCL 6.605
      95% Modified-t UCL (Johnson-1978) 3.931                         99% Chebyshev (MVUE) UCL 8.639

                 Gamma Distribution Test                                    Data Distribution
                 k star (bias corrected) 1.647            Data appear Gamma Distributed at 5% Significance Level
                              Theta Star 1.878
                             MLE of Mean 3.093
               MLE of Standard Deviation 2.41
                                 nu star 92.25
           Approximate Chi Square Value (.05) 71.1                      Nonparametric Statistics
              Adjusted Level of Significance 0.0404                                  95% CLT UCL 3.878
                   Adjusted Chi Square Value 69.95                             95% Jackknife UCL 3.906
                                                                      95% Standard Bootstrap UCL 3.869
              Anderson-Darling Test Statistic 0.369                          95% Bootstrap-t UCL 4.161
          Anderson-Darling 5% Critical Value 0.76                       95% Hall's Bootstrap UCL 4.472
          Kolmogorov-Smirnov Test Statistic 0.139                   95% Percentile Bootstrap UCL 3.933
       Kolmogorov-Smirnov 5% Critical Value 0.168                          95% BCA Bootstrap UCL 4.085
  Data appear Gamma Distributed at 5% Significance Level            95% Chebyshev(Mean, Sd) UCL 5.172
                                                                  97.5% Chebyshev(Mean, Sd) UCL 6.071
               Assuming Gamma Distribution                          99% Chebyshev(Mean, Sd) UCL 7.838
              95% Approximate Gamma UCL 4.014
                95% Adjusted Gamma UCL 4.079

                   Potential UCL to Use                          Use 95% Approximate Gamma UCL 4.014

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
             and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location B Panfish
Anniston PCB Site
OU IV

```
                          General UCL Statistics for Data Sets with Non-Detects
              User Selected Options
                         From File   J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationB_Panfish ProUCL Input.xls.wst
                    Full Precision   OFF
            Confidence Coefficient   95%
    Number of Bootstrap Operations   2000


Mercury

                                                    General Statistics
                     Number of Valid Observations  29                      Number of Distinct Observations  19

                       Raw Statistics                                       Log-transformed Statistics
                                          Minimum  0.11                               Minimum of Log Data  -2.207
                                          Maximum  0.51                               Maximum of Log Data  -0.673
                                             Mean  0.249                                 Mean of log Data  -1.474
                                           Median  0.24                                    SD of log Data  0.419
                                               SD  0.102
                         Coefficient of Variation  0.41
                                         Skewness  0.628

                                                  Relevant UCL Statistics
                   Normal Distribution Test                                  Lognormal Distribution Test
                       Shapiro Wilk Test Statistic  0.944                      Shapiro Wilk Test Statistic  0.964
                       Shapiro Wilk Critical Value  0.926                      Shapiro Wilk Critical Value  0.926
           Data appear Normal at 5% Significance Level               Data appear Lognormal at 5% Significance Level

                 Assuming Normal Distribution                               Assuming Lognormal Distribution
                            95% Student's-t UCL  0.281                                          95% H-UCL  0.29
            95% UCLs (Adjusted for Skewness)                                     95% Chebyshev (MVUE) UCL  0.336
                95% Adjusted-CLT UCL (Chen-1995)  0.282                        97.5% Chebyshev (MVUE) UCL  0.374
              95% Modified-t UCL (Johnson-1978)  0.281                           99% Chebyshev (MVUE) UCL  0.448

                   Gamma Distribution Test                                        Data Distribution
                          k star (bias corrected)  5.598               Data appear Normal at 5% Significance Level
                                       Theta Star  0.0444
                                      MLE of Mean  0.249
                        MLE of Standard Deviation  0.105
                                          nu star  324.7
                  Approximate Chi Square Value (.05)  283.9                        Nonparametric Statistics
                     Adjusted Level of Significance  0.0407                                  95% CLT UCL  0.28
                           Adjusted Chi Square Value  281.7                            95% Jackknife UCL  0.281
                                                                             95% Standard Bootstrap UCL  0.279
                    Anderson-Darling Test Statistic  0.35                           95% Bootstrap-t UCL  0.284
                    Anderson-Darling 5% Critical Value  0.747                   95% Hall's Bootstrap UCL  0.283
                  Kolmogorov-Smirnov Test Statistic  0.11                  95% Percentile Bootstrap UCL  0.28
                Kolmogorov-Smirnov 5% Critical Value  0.163                      95% BCA Bootstrap UCL  0.281
       Data appear Gamma Distributed at 5% Significance Level             95% Chebyshev(Mean, Sd) UCL  0.331
                                                                        97.5% Chebyshev(Mean, Sd) UCL  0.367
                 Assuming Gamma Distribution                              99% Chebyshev(Mean, Sd) UCL  0.437
                       95% Approximate Gamma UCL  0.284
                          95% Adjusted Gamma UCL  0.287

                    Potential UCL to Use                                         Use 95% Student's-t UCL  0.281

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
         These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
                 and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location B Panfish
Anniston PCB Site
OU IV

```
Total PCBs

                                              General Statistics
                  Number of Valid Observations 29                          Number of Distinct Observations 28

                   Raw Statistics                                           Log-transformed Statistics
                                       Minimum 0.244                                   Minimum of Log Data -1.411
                                       Maximum 4.35                                    Maximum of Log Data 1.47
                                          Mean 1.552                                      Mean of log Data 0.288
                                        Median 1.26                                         SD of log Data 0.58
                                            SD 0.895
                      Coefficient of Variation 0.577
                                      Skewness 1.452

                                            Relevant UCL Statistics
                Normal Distribution Test                                     Lognormal Distribution Test
                    Shapiro Wilk Test Statistic 0.882                          Shapiro Wilk Test Statistic 0.967
                    Shapiro Wilk Critical Value 0.926                          Shapiro Wilk Critical Value 0.926
         Data not Normal at 5% Significance Level                   Data appear Lognormal at 5% Significance Level

               Assuming Normal Distribution                                 Assuming Lognormal Distribution
                          95% Student's-t UCL 1.835                                              95% H-UCL 1.967
             95% UCLs (Adjusted for Skewness)                                    95% Chebyshev (MVUE) UCL 2.344
             95% Adjusted-CLT UCL (Chen-1995) 1.874                             97.5% Chebyshev (MVUE) UCL 2.681
             95% Modified-t UCL (Johnson-1978) 1.842                              99% Chebyshev (MVUE) UCL 3.342

                Gamma Distribution Test                                            Data Distribution
                      k star (bias corrected) 3.115               Data appear Gamma Distributed at 5% Significance Level
                                   Theta Star 0.498
                                  MLE of Mean 1.552
                    MLE of Standard Deviation 0.88
                                      nu star 180.7
             Approximate Chi Square Value (.05) 150.6                           Nonparametric Statistics
                Adjusted Level of Significance 0.0407                                       95% CLT UCL 1.826
                     Adjusted Chi Square Value 148.9                                   95% Jackknife UCL 1.835
                                                                              95% Standard Bootstrap UCL 1.822
                Anderson-Darling Test Statistic 0.389                               95% Bootstrap-t UCL 1.902
             Anderson-Darling 5% Critical Value 0.752                          95% Hall's Bootstrap UCL 1.924
             Kolmogorov-Smirnov Test Statistic 0.12                       95% Percentile Bootstrap UCL 1.824
           Kolmogorov-Smirnov 5% Critical Value 0.164                              95% BCA Bootstrap UCL 1.87
   Data appear Gamma Distributed at 5% Significance Level                  95% Chebyshev(Mean, Sd) UCL 2.277
                                                                         97.5% Chebyshev(Mean, Sd) UCL 2.59
               Assuming Gamma Distribution                                 99% Chebyshev(Mean, Sd) UCL 3.206
                  95% Approximate Gamma UCL 1.862
                     95% Adjusted Gamma UCL 1.883

                  Potential UCL to Use                                   Use 95% Approximate Gamma UCL 1.862

      Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
         These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
               and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location C All Species
Anniston PCB Site
OU IV

```
                         General UCL Statistics for Data Sets with Non-Detects
            User Selected Options
                      From File   J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationC_All Species ProUCL Input.xls.v
                 Full Precision   OFF
         Confidence Coefficient   95%
Number of Bootstrap Operations   2000


2,3,7,8-TCDD TEQ

                                              General Statistics
                Number of Valid Observations 19                        Number of Distinct Observations 19

                 Raw Statistics                                          Log-transformed Statistics
                                     Minimum 2.979E-07                           Minimum of Log Data -15.03
                                     Maximum 1.366E-06                           Maximum of Log Data -13.5
                                        Mean 6.834E-07                              Mean of log Data -14.26
                                      Median 6.883E-07                                SD of log Data 0.376
                                          SD 2.59E-07
                    Coefficient of Variation   N/A
                                    Skewness 0.959

                                              Relevant UCL Statistics
             Normal Distribution Test                                   Lognormal Distribution Test
                 Shapiro Wilk Test Statistic 0.933                           Shapiro Wilk Test Statistic 0.975
                 Shapiro Wilk Critical Value 0.901                           Shapiro Wilk Critical Value 0.901
     Data appear Normal at 5% Significance Level             Data appear Lognormal at 5% Significance Level

           Assuming Normal Distribution                                Assuming Lognormal Distribution
                       95% Student's-t UCL 7.864E-07                                       95% H-UCL 8.124E-07
          95% UCLs (Adjusted for Skewness)                                95% Chebyshev (MVUE) UCL 9.461E-07
           95% Adjusted-CLT UCL (Chen-1995) 7.951E-07                   97.5% Chebyshev (MVUE) UCL 1.06E-06
          95% Modified-t UCL (Johnson-1978) 7.886E-07                     99% Chebyshev (MVUE) UCL 1.283E-06

             Gamma Distribution Test                                          Data Distribution
                       k star (bias corrected) 6.543               Data appear Normal at 5% Significance Level
                                   Theta Star 1.045E-07
                                  MLE of Mean 6.834E-07
                    MLE of Standard Deviation 2.672E-07
                                      nu star 248.6
            Approximate Chi Square Value (.05) 213.1                       Nonparametric Statistics
                 Adjusted Level of Significance 0.0369                                    95% CLT UCL 7.811E-07
                      Adjusted Chi Square Value 210.3                                95% Jackknife UCL 7.864E-07
                                                                        95% Standard Bootstrap UCL 7.797E-07
                Anderson-Darling Test Statistic 0.306                            95% Bootstrap-t UCL 8.098E-07
               Anderson-Darling 5% Critical Value 0.742                        95% Hall's Bootstrap UCL 8.326E-07
              Kolmogorov-Smirnov Test Statistic 0.127                    95% Percentile Bootstrap UCL 7.818E-07
             Kolmogorov-Smirnov 5% Critical Value 0.199                          95% BCA Bootstrap UCL 7.875E-07
  Data appear Gamma Distributed at 5% Significance Level              95% Chebyshev(Mean, Sd) UCL 9.423E-07
                                                                      97.5% Chebyshev(Mean, Sd) UCL 1.054E-06
            Assuming Gamma Distribution                                 99% Chebyshev(Mean, Sd) UCL 1.275E-06
                 95% Approximate Gamma UCL 7.972E-07
                   95% Adjusted Gamma UCL 8.081E-07

               Potential UCL to Use                                         Use 95% Student's-t UCL 7.864E-07

    Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
        These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
                 and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location C All Species
Anniston PCB Site
OU IV

```
Mercury

                                              General Statistics
                    Number of Valid Data        194                        Number of Detected Data        192
           Number of Distinct Detected Data      80                        Number of Non-Detect Data        2
                                                                               Percent Non-Detects     1.03%

                  Raw Statistics                                  Log-transformed Statistics
                        Minimum Detected      0.026                            Minimum Detected        -3.65
                        Maximum Detected        1.9                            Maximum Detected        0.642
                        Mean of Detected      0.394                            Mean of Detected       -1.199
                          SD of Detected      0.294                              SD of Detected        0.762
                     Minimum Non-Detect      0.071                           Minimum Non-Detect       -2.645
                     Maximum Non-Detect      0.073                           Maximum Non-Detect       -2.617

Note: Data have multiple DLs - Use of KM Method is recommended          Number treated as Non-Detect        8
For all methods (except KM, DL/2, and ROS Methods),                      Number treated as Detected      186
Observations < Largest ND are treated as NDs                        Single DL Non-Detect Percentage    4.12%

                                                UCL Statistics
      Normal Distribution Test with Detected Values Only        Lognormal Distribution Test with Detected Values Only
               Lilliefors Test Statistic      0.154                   Lilliefors Test Statistic       0.0635
            5% Lilliefors Critical Value     0.0639                5% Lilliefors Critical Value       0.0639
         Data not Normal at 5% Significance Level                Data appear Lognormal at 5% Significance Level

              Assuming Normal Distribution                             Assuming Lognormal Distribution
                 DL/2 Substitution Method                                     DL/2 Substitution Method
                                    Mean      0.391                                        Mean       -1.221
                                      SD      0.295                                          SD        0.788
                      95% DL/2 (t) UCL      0.426                          95%  H-Stat (DL/2) UCL        0.451

   Maximum Likelihood Estimate(MLE) Method                                           Log ROS Method
                                    Mean      0.385                               Mean in Log Scale       -1.215
                                      SD      0.303                                 SD in Log Scale        0.776
                        95% MLE (t) UCL      0.421                          Mean in Original Scale        0.391
                     95% MLE (Tiku) UCL       0.42                            SD in Original Scale        0.295
                                                                                      95% t UCL        0.426
                                                                   95% Percentile Bootstrap UCL        0.429
                                                                         95% BCA Bootstrap UCL        0.431

      Gamma Distribution Test with Detected Values Only             Data Distribution Test with Detected Values Only
                  k star (bias corrected)      1.985              Data appear Lognormal at 5% Significance Level
                              Theta Star      0.199
                                 nu star      762.1

                       A-D Test Statistic      1.528                         Nonparametric Statistics
                     5% A-D Critical Value      0.766                            Kaplan-Meier (KM) Method
                       K-S Test Statistic      0.766                                           Mean        0.391
                     5% K-S Critical Value     0.0666                                             SD        0.294
    Data not Gamma Distributed at 5% Significance Level                                  SE of Mean       0.0212
                                                                                    95% KM (t) UCL        0.426
              Assuming Gamma Distribution                                           95% KM (z) UCL        0.426
      Gamma ROS Statistics using Extrapolated Data                          95% KM (jackknife) UCL        0.426
                                 Minimum      1E-12                          95% KM (bootstrap t) UCL         0.43
                                 Maximum        1.9                                95% KM (BCA) UCL        0.427
                                    Mean       0.39              95% KM (Percentile Bootstrap) UCL        0.427
                                  Median       0.29                         95% KM (Chebyshev) UCL        0.483
                                      SD      0.296                       97.5% KM (Chebyshev) UCL        0.523
                                  k star      1.065                         99% KM (Chebyshev) UCL        0.602
                              Theta star      0.367
                                 Nu star      413.2                        Potential UCLs to Use
                                 AppChi2      367.1                                95% KM (BCA) UCL        0.427
```

95% Gamma Approximate UCL	0.439
95% Adjusted Gamma UCL	0.44

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Fish Tissue- Location C All Species
Anniston PCB Site
OU IV

```
PCB Dioxin-like Congener TEQ

                                              General Statistics
                 Number of Valid Observations 20                   Number of Distinct Observations 18

                  Raw Statistics                                  Log-transformed Statistics
                                      Minimum 1.955E-06                         Minimum of Log Data -13.15
                                      Maximum 1.842E-05                         Maximum of Log Data -10.9
                                         Mean 6.905E-06                            Mean of log Data -11.99
                                       Median 0.0000065                              SD of log Data 0.466
                                           SD 3.494E-06
                     Coefficient of Variation    N/A
                                     Skewness 1.96

                                              Relevant UCL Statistics
                Normal Distribution Test                          Lognormal Distribution Test
                 Shapiro Wilk Test Statistic 0.831                      Shapiro Wilk Test Statistic 0.958
                 Shapiro Wilk Critical Value 0.905                      Shapiro Wilk Critical Value 0.905
          Data not Normal at 5% Significance Level            Data appear Lognormal at 5% Significance Level

              Assuming Normal Distribution                         Assuming Lognormal Distribution
                        95% Student's-t UCL 8.256E-06                                   95% H-UCL 8.586E-06
           95% UCLs (Adjusted for Skewness)                             95% Chebyshev (MVUE) UCL 1.014E-05
        95% Adjusted-CLT UCL (Chen-1995) 8.556E-06                    97.5% Chebyshev (MVUE) UCL 1.154E-05
        95% Modified-t UCL (Johnson-1978) 8.313E-06                     99% Chebyshev (MVUE) UCL 1.429E-05

                Gamma Distribution Test                                   Data Distribution
                  k star (bias corrected) 4.272          Data appear Gamma Distributed at 5% Significance Level
                               Theta Star 1.616E-06
                              MLE of Mean 6.905E-06
                MLE of Standard Deviation 3.341E-06
                                  nu star 170.9
          Approximate Chi Square Value (.05) 141.6                  Nonparametric Statistics
              Adjusted Level of Significance 0.038                                  95% CLT UCL 8.19E-06
                   Adjusted Chi Square Value 139.5                           95% Jackknife UCL 8.256E-06
                                                                     95% Standard Bootstrap UCL 8.126E-06
             Anderson-Darling Test Statistic 0.448                         95% Bootstrap-t UCL 8.823E-06
           Anderson-Darling 5% Critical Value 0.745                     95% Hall's Bootstrap UCL 1.455E-05
           Kolmogorov-Smirnov Test Statistic 0.146                  95% Percentile Bootstrap UCL 8.227E-06
         Kolmogorov-Smirnov 5% Critical Value 0.194                         95% BCA Bootstrap UCL 8.587E-06
     Data appear Gamma Distributed at 5% Significance Level       95% Chebyshev(Mean, Sd) UCL 1.031E-05
                                                                97.5% Chebyshev(Mean, Sd) UCL 1.178E-05
              Assuming Gamma Distribution                         99% Chebyshev(Mean, Sd) UCL 1.468E-05
                  95% Approximate Gamma UCL 8.33E-06
                     95% Adjusted Gamma UCL 8.455E-06

                Potential UCL to Use                           Use 95% Approximate Gamma UCL 8.33E-06

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
               and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location C All Species
Anniston PCB Site
OU IV

```
Total PCBs

                                        General Statistics
           Number of Valid Observations 193                    Number of Distinct Observations 154

              Raw Statistics                                     Log-transformed Statistics
                                Minimum 0.23                              Minimum of Log Data -1.47
                                Maximum 34                                Maximum of Log Data 3.526
                                   Mean 4.346                                Mean of log Data 1.247
                                 Median 3.6                                    SD of log Data 0.682
                                     SD 3.454
               Coefficient of Variation 0.795
                               Skewness 4.018

                                       Relevant UCL Statistics
           Normal Distribution Test                              Lognormal Distribution Test
              Lilliefors Test Statistic 0.172                      Lilliefors Test Statistic 0.0681
              Lilliefors Critical Value 0.0638                     Lilliefors Critical Value 0.0638
     Data not Normal at 5% Significance Level           Data not Lognormal at 5% Significance Level

         Assuming Normal Distribution                           Assuming Lognormal Distribution
                  95% Student's-t UCL 4.757                                        95% H-UCL 4.824
       95% UCLs (Adjusted for Skewness)                            95% Chebyshev (MVUE) UCL 5.416
     95% Adjusted-CLT UCL (Chen-1995) 4.832                      97.5% Chebyshev (MVUE) UCL 5.864
    95% Modified-t UCL (Johnson-1978) 4.769                        99% Chebyshev (MVUE) UCL 6.743

           Gamma Distribution Test                                    Data Distribution
             k star (bias corrected) 2.364          Data do not follow a Discernable Distribution (0.05)
                          Theta Star 1.838
                         MLE of Mean 4.346
           MLE of Standard Deviation 2.827
                             nu star 912.7
       Approximate Chi Square Value (.05) 843.5                   Nonparametric Statistics
          Adjusted Level of Significance 0.0488                                95% CLT UCL 4.755
               Adjusted Chi Square Value 843                             95% Jackknife UCL 4.757
                                                                95% Standard Bootstrap UCL 4.76
            Anderson-Darling Test Statistic 1.277                      95% Bootstrap-t UCL 4.86
        Anderson-Darling 5% Critical Value 0.764                   95% Hall's Bootstrap UCL 4.949
        Kolmogorov-Smirnov Test Statistic 0.0779              95% Percentile Bootstrap UCL 4.785
      Kolmogorov-Smirnov 5% Critical Value 0.0661                    95% BCA Bootstrap UCL 4.82
  Data not Gamma Distributed at 5% Significance Level        95% Chebyshev(Mean, Sd) UCL 5.43
                                                           97.5% Chebyshev(Mean, Sd) UCL 5.899
         Assuming Gamma Distribution                         99% Chebyshev(Mean, Sd) UCL 6.82
            95% Approximate Gamma UCL 4.702
              95% Adjusted Gamma UCL 4.705

              Potential UCL to Use                      Use 95% Chebyshev (Mean, Sd) UCL 5.43

   Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
      These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
             and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location C Bass
Anniston PCB Site
OU IV

```
                              General UCL Statistics for Data Sets with Non-Detects
              User Selected Options
                         From File  J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationC_Bass ProUCL Input.xls.wst
                    Full Precision  OFF
            Confidence Coefficient  95%
    Number of Bootstrap Operations  2000


Mercury

                                                   General Statistics
                    Number of Valid Observations 67                          Number of Distinct Observations 47

                 Raw Statistics                                         Log-transformed Statistics
                                      Minimum 0.09                                   Minimum of Log Data -2.408
                                      Maximum 1.9                                    Maximum of Log Data 0.642
                                         Mean 0.638                                     Mean of log Data -0.622
                                       Median 0.68                                        SD of log Data 0.656
                                           SD 0.334
                     Coefficient of Variation 0.524
                                     Skewness 0.801

                                                 Relevant UCL Statistics
             Normal Distribution Test                                      Lognormal Distribution Test
                    Lilliefors Test Statistic 0.0988                            Lilliefors Test Statistic 0.158
                    Lilliefors Critical Value 0.108                             Lilliefors Critical Value 0.108
      Data appear Normal at 5% Significance Level                 Data not Lognormal at 5% Significance Level

            Assuming Normal Distribution                                 Assuming Lognormal Distribution
                         95% Student's-t UCL 0.706                                          95% H-UCL 0.781
        95% UCLs (Adjusted for Skewness)                                   95% Chebyshev (MVUE) UCL 0.916
            95% Adjusted-CLT UCL (Chen-1995) 0.709                       97.5% Chebyshev (MVUE) UCL 1.025
          95% Modified-t UCL (Johnson-1978) 0.707                          99% Chebyshev (MVUE) UCL 1.239

             Gamma Distribution Test                                           Data Distribution
                     k star (bias corrected) 2.933                 Data appear Normal at 5% Significance Level
                                  Theta Star 0.217
                                 MLE of Mean 0.638
                   MLE of Standard Deviation 0.372
                                     nu star 393.1
            Approximate Chi Square Value (.05) 348.1                       Nonparametric Statistics
               Adjusted Level of Significance 0.0464                                   95% CLT UCL 0.705
                   Adjusted Chi Square Value 347.2                               95% Jackknife UCL 0.706
                                                                        95% Standard Bootstrap UCL 0.703
               Anderson-Darling Test Statistic 1.49                            95% Bootstrap-t UCL 0.709
              Anderson-Darling 5% Critical Value 0.757                     95% Hall's Bootstrap UCL 0.716
            Kolmogorov-Smirnov Test Statistic 0.127                    95% Percentile Bootstrap UCL 0.704
           Kolmogorov-Smirnov 5% Critical Value 0.11                          95% BCA Bootstrap UCL 0.711
   Data not Gamma Distributed at 5% Significance Level               95% Chebyshev(Mean, Sd) UCL 0.816
                                                                  97.5% Chebyshev(Mean, Sd) UCL 0.893
            Assuming Gamma Distribution                               99% Chebyshev(Mean, Sd) UCL 1.044
                   95% Approximate Gamma UCL 0.72
                     95% Adjusted Gamma UCL 0.722

               Potential UCL to Use                                       Use 95% Student's-t UCL 0.706

    Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
              and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location C Bass
Anniston PCB Site
OU IV

```
Total PCBs

                                          General Statistics
              Number of Valid Observations 67                    Number of Distinct Observations 62

                    Raw Statistics                                    Log-transformed Statistics
                                   Minimum 1.63                              Minimum of Log Data 0.489
                                   Maximum 14.9                              Maximum of Log Data 2.701
                                      Mean 4.751                                Mean of log Data 1.446
                                    Median 4.3                                    SD of log Data 0.463
                                        SD 2.537
                  Coefficient of Variation 0.534
                                  Skewness 1.924

                                        Relevant UCL Statistics
              Normal Distribution Test                                Lognormal Distribution Test
                 Lilliefors Test Statistic 0.172                       Lilliefors Test Statistic 0.0731
                 Lilliefors Critical Value 0.108                       Lilliefors Critical Value 0.108
      Data not Normal at 5% Significance Level                Data appear Lognormal at 5% Significance Level

            Assuming Normal Distribution                            Assuming Lognormal Distribution
                     95% Student's-t UCL 5.268                                         95% H-UCL 5.252
         95% UCLs (Adjusted for Skewness)                           95% Chebyshev (MVUE) UCL 5.937
       95% Adjusted-CLT UCL (Chen-1995) 5.339                     97.5% Chebyshev (MVUE) UCL 6.464
       95% Modified-t UCL (Johnson-1978) 5.28                       99% Chebyshev (MVUE) UCL 7.499

              Gamma Distribution Test                                     Data Distribution
                  k star (bias corrected) 4.424    Data Follow Appr. Gamma Distribution at 5% Significance Level
                               Theta Star 1.074
                              MLE of Mean 4.751
                MLE of Standard Deviation 2.259
                                  nu star 592.8
           Approximate Chi Square Value (.05) 537.3                       Nonparametric Statistics
           Adjusted Level of Significance 0.0464                                      95% CLT UCL 5.261
                Adjusted Chi Square Value 536.1                                 95% Jackknife UCL 5.268
                                                                      95% Standard Bootstrap UCL 5.256
           Anderson-Darling Test Statistic 0.914                             95% Bootstrap-t UCL 5.383
         Anderson-Darling 5% Critical Value 0.754                         95% Hall's Bootstrap UCL 5.401
        Kolmogorov-Smirnov Test Statistic 0.105                     95% Percentile Bootstrap UCL 5.276
      Kolmogorov-Smirnov 5% Critical Value 0.109                           95% BCA Bootstrap UCL 5.356
 Data follow Appr. Gamma Distribution at 5% Significance Level    95% Chebyshev(Mean, Sd) UCL 6.102
                                                                97.5% Chebyshev(Mean, Sd) UCL 6.687
            Assuming Gamma Distribution                            99% Chebyshev(Mean, Sd) UCL 7.835
             95% Approximate Gamma UCL 5.241
                95% Adjusted Gamma UCL 5.253

                 Potential UCL to Use                           Use 95% Approximate Gamma UCL 5.241

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
              and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

```
                              General UCL Statistics for Data Sets with Non-Detects
              User Selected Options
                         From File   J:\Projects\JM Waller RAC Lite Region 4\Anniston OU IV\Data\ProUCL\LocationC_Catfish ProUCL Input.xls.wst
                    Full Precision   OFF
            Confidence Coefficient   95%
   Number of Bootstrap Operations    2000


Mercury

                                              General Statistics
                       Number of Valid Data       57                        Number of Detected Data        55
           Number of Distinct Detected Data       35                     Number of Non-Detect Data          2
                                                                               Percent Non-Detects      3.51%

                         Raw Statistics                                Log-transformed Statistics
                          Minimum Detected     0.047                              Minimum Detected     -3.058
                          Maximum Detected      0.89                              Maximum Detected     -0.117
                          Mean of Detected     0.297                              Mean of Detected     -1.414
                            SD of Detected     0.192                                SD of Detected      0.656
                        Minimum Non-Detect     0.071                            Minimum Non-Detect     -2.645
                        Maximum Non-Detect     0.073                            Maximum Non-Detect     -2.617

Note: Data have multiple DLs - Use of KM Method is recommended                Number treated as Non-Detect        5
For all methods (except KM, DL/2, and ROS Methods),                              Number treated as Detected       52
Observations < Largest ND are treated as NDs                            Single DL Non-Detect Percentage     8.77%

                                                UCL Statistics
        Normal Distribution Test with Detected Values Only          Lognormal Distribution Test with Detected Values Only
                   Lilliefors Test Statistic      0.19                     Lilliefors Test Statistic     0.0786
                 5% Lilliefors Critical Value     0.119                  5% Lilliefors Critical Value      0.119
          Data not Normal at 5% Significance Level                Data appear Lognormal at 5% Significance Level

              Assuming Normal Distribution                              Assuming Lognormal Distribution
                      DL/2 Substitution Method                                 DL/2 Substitution Method
                                          Mean     0.288                                          Mean     -1.481
                                            SD     0.194                                            SD      0.735
                             95% DL/2 (t) UCL      0.331                        95%  H-Stat (DL/2) UCL      0.365

        Maximum Likelihood Estimate(MLE) Method                                         Log ROS Method
                                          Mean     0.281                                Mean in Log Scale  -1.458
                                            SD     0.205                                  SD in Log Scale   0.685
                               95% MLE (t) UCL     0.326                           Mean in Original Scale   0.289
                            95% MLE (Tiku) UCL     0.325                             SD in Original Scale   0.193
                                                                                             95% t UCL   0.332
                                                                            95% Percentile Bootstrap UCL   0.333
                                                                                   95% BCA Bootstrap UCL   0.338

        Gamma Distribution Test with Detected Values Only                Data Distribution Test with Detected Values Only
                       k star (bias corrected)     2.532          Data appear Gamma Distributed at 5% Significance Level
                                   Theta Star      0.117
                                      nu star      278.5

                              A-D Test Statistic    0.6                          Nonparametric Statistics
                           5% A-D Critical Value   0.759                                 Kaplan-Meier (KM) Method
                              K-S Test Statistic   0.759                                                     Mean   0.288
                           5% K-S Critical Value   0.121                                                       SD   0.192
      Data appear Gamma Distributed at 5% Significance Level                                          SE of Mean  0.0256
                                                                                               95% KM (t) UCL   0.331
              Assuming Gamma Distribution                                                      95% KM (z) UCL   0.331
        Gamma ROS Statistics using Extrapolated Data                                   95% KM (jackknife) UCL   0.331
                                       Minimum     1E-12                               95% KM (bootstrap t) UCL   0.339
```

Maximum	0.89	95% KM (BCA) UCL	0.333
Mean	0.286	95% KM (Percentile Bootstrap) UCL	0.33
Median	0.22	95% KM (Chebyshev) UCL	0.4
SD	0.196	97.5% KM (Chebyshev) UCL	0.449
k star	0.556	99% KM (Chebyshev) UCL	0.544
Theta star	0.516		
Nu star	63.33	**Potential UCLs to Use**	
AppChi2	46.03	95% KM (BCA) UCL	0.333
95% Gamma Approximate UCL	0.394		
95% Adjusted Gamma UCL	0.398		
Note: DL/2 is not a recommended method.			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
For additional insight, the user may want to consult a statistician.			

Appendix E
ProUCL Output for Fish Tissue- Location C Catfish
Anniston PCB Site
OU IV

```
Total PCBs

                                              General Statistics
                Number of Valid Observations 56                 Number of Distinct Observations 48

                    Raw Statistics                                     Log-transformed Statistics
                                     Minimum 0.23                              Minimum of Log Data -1.47
                                     Maximum 34                                Maximum of Log Data 3.526
                                        Mean 5.614                                Mean of log Data 1.431
                                      Median 4.755                                  SD of log Data 0.84
                                          SD 4.975
                    Coefficient of Variation 0.886
                                    Skewness 3.648

                                            Relevant UCL Statistics
                Normal Distribution Test                               Lognormal Distribution Test
                   Lilliefors Test Statistic 0.202                      Lilliefors Test Statistic 0.129
                   Lilliefors Critical Value 0.118                      Lilliefors Critical Value 0.118
        Data not Normal at 5% Significance Level            Data not Lognormal at 5% Significance Level

              Assuming Normal Distribution                           Assuming Lognormal Distribution
                       95% Student's-t UCL 6.727                                   95% H-UCL 7.603
          95% UCLs (Adjusted for Skewness)                          95% Chebyshev (MVUE) UCL 9.178
         95% Adjusted-CLT UCL (Chen-1995) 7.054                   97.5% Chebyshev (MVUE) UCL 10.59
       95% Modified-t UCL (Johnson-1978) 6.781                      99% Chebyshev (MVUE) UCL 13.38

                Gamma Distribution Test                                    Data Distribution
                    k star (bias corrected) 1.759      Data appear Gamma Distributed at 5% Significance Level
                                 Theta Star 3.192
                                MLE of Mean 5.614
                  MLE of Standard Deviation 4.233
                                    nu star 197
          Approximate Chi Square Value (.05) 165.5                     Nonparametric Statistics
              Adjusted Level of Significance 0.0457                             95% CLT UCL 6.708
                  Adjusted Chi Square Value 164.8                        95% Jackknife UCL 6.727
                                                                95% Standard Bootstrap UCL 6.711
             Anderson-Darling Test Statistic 0.719                    95% Bootstrap-t UCL 7.318
          Anderson-Darling 5% Critical Value 0.765               95% Hall's Bootstrap UCL 11.83
          Kolmogorov-Smirnov Test Statistic 0.107             95% Percentile Bootstrap UCL 6.716
       Kolmogorov-Smirnov 5% Critical Value 0.121                   95% BCA Bootstrap UCL 7.206
    Data appear Gamma Distributed at 5% Significance Level   95% Chebyshev(Mean, Sd) UCL 8.512
                                                           97.5% Chebyshev(Mean, Sd) UCL 9.766
              Assuming Gamma Distribution                     99% Chebyshev(Mean, Sd) UCL 12.23
                 95% Approximate Gamma UCL 6.682
                    95% Adjusted Gamma UCL 6.713

                 Potential UCL to Use                          Use 95% Approximate Gamma UCL 6.682

   Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
     These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
               and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location C Panfish
Anniston PCB Site
OU IV

```
                    General UCL Statistics for Data Sets with Non-Detects
          User Selected Options
                          From File   WorkSheet.wst
                     Full Precision   OFF
             Confidence Coefficient   95%
    Number of Bootstrap Operations   2000


2,3,7,8-TCDD TEQ

                                          General Statistics
                Number of Valid Observations 9                         Number of Distinct Observations 9

                    Raw Statistics                                    Log-transformed Statistics
                                   Minimum 2.979E-07                          Minimum of Log Data -15.03
                                   Maximum 7.169E-07                          Maximum of Log Data -14.15
                                      Mean 5.262E-07                             Mean of log Data -14.5
                                    Median 4.696E-07                               SD of log Data 0.3
                                        SD 1.5E-07
                  Coefficient of Variation   N/A
                                  Skewness 0.0108


                              Warning:  There are only 9 Values in this data
             Note:  It should be noted that even though bootstrap methods may be performed on this data set,
                    the resulting calculations may not be reliable enough to draw conclusions

           The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

                                         Relevant UCL Statistics
              Normal Distribution Test                                Lognormal Distribution Test
                  Shapiro Wilk Test Statistic 0.919                        Shapiro Wilk Test Statistic 0.923
                  Shapiro Wilk Critical Value 0.829                        Shapiro Wilk Critical Value 0.829
         Data appear Normal at 5% Significance Level         Data appear Lognormal at 5% Significance Level

             Assuming Normal Distribution                            Assuming Lognormal Distribution
                       95% Student's-t UCL 6.192E-07                                      95% H-UCL 6.557E-07
         95% UCLs (Adjusted for Skewness)                               95% Chebyshev (MVUE) UCL 7.58E-07
           95% Adjusted-CLT UCL (Chen-1995) 6.087E-07                 97.5% Chebyshev (MVUE) UCL 8.581E-07
         95% Modified-t UCL (Johnson-1978) 6.192E-07                    99% Chebyshev (MVUE) UCL 1.055E-06

              Gamma Distribution Test                                      Data Distribution
                     k star (bias corrected) 8.823                Data appear Normal at 5% Significance Level
                                  Theta Star 5.964E-08
                                 MLE of Mean 5.262E-07
                   MLE of Standard Deviation 1.772E-07
                                     nu star 158.8
           Approximate Chi Square Value (.05) 130.7                    Nonparametric Statistics
               Adjusted Level of Significance 0.0231                                 95% CLT UCL 6.085E-07
                 Adjusted Chi Square Value 125.3                               95% Jackknife UCL 6.192E-07
                                                                     95% Standard Bootstrap UCL 6.045E-07
               Anderson-Darling Test Statistic 0.372                       95% Bootstrap-t UCL 6.206E-07
            Anderson-Darling 5% Critical Value 0.722                   95% Hall's Bootstrap UCL 5.993E-07
             Kolmogorov-Smirnov Test Statistic 0.203              95% Percentile Bootstrap UCL 6.054E-07
          Kolmogorov-Smirnov 5% Critical Value 0.279                     95% BCA Bootstrap UCL 6.048E-07
     Data appear Gamma Distributed at 5% Significance Level     95% Chebyshev(Mean, Sd) UCL 7.442E-07
                                                                  97.5% Chebyshev(Mean, Sd) UCL 8.385E-07
              Assuming Gamma Distribution                          99% Chebyshev(Mean, Sd) UCL 1.024E-06
                   95% Approximate Gamma UCL 6.395E-07
                       95% Adjusted Gamma UCL 6.67E-07

                 Potential UCL to Use                                  Use 95% Student's-t UCL 6.192E-07
```

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Fish Tissue- Location C Panfish
Anniston PCB Site
OU IV

```
Mercury

                                        General Statistics
                Number of Valid Observations  70                  Number of Distinct Observations  37

                   Raw Statistics                                    Log-transformed Statistics
                                     Minimum  0.026                               Minimum of Log Data  -3.65
                                     Maximum  0.53                                Maximum of Log Data  -0.635
                                        Mean  0.238                                  Mean of log Data  -1.582
                                      Median  0.205                                    SD of log Data  0.592
                                          SD  0.121
                    Coefficient of Variation  0.507
                                    Skewness  0.615

                                       Relevant UCL Statistics
                Normal Distribution Test                             Lognormal Distribution Test
                   Lilliefors Test Statistic  0.127                         Lilliefors Test Statistic  0.0934
                   Lilliefors Critical Value  0.106                         Lilliefors Critical Value  0.106
         Data not Normal at 5% Significance Level            Data appear Lognormal at 5% Significance Level

              Assuming Normal Distribution                         Assuming Lognormal Distribution
                       95% Student's-t UCL  0.262                                       95% H-UCL  0.281
           95% UCLs (Adjusted for Skewness)                           95% Chebyshev (MVUE) UCL  0.325
         95% Adjusted-CLT UCL (Chen-1995)  0.263                    97.5% Chebyshev (MVUE) UCL  0.36
        95% Modified-t UCL (Johnson-1978)  0.262                      99% Chebyshev (MVUE) UCL  0.429

                Gamma Distribution Test                                  Data Distribution
                    k star (bias corrected)  3.402        Data appear Gamma Distributed at 5% Significance Level
                                Theta Star  0.07
                               MLE of Mean  0.238
                 MLE of Standard Deviation  0.129
                                   nu star  476.3
          Approximate Chi Square Value (.05)  426.7                    Nonparametric Statistics
             Adjusted Level of Significance  0.0466                                 95% CLT UCL  0.262
                 Adjusted Chi Square Value  425.7                             95% Jackknife UCL  0.262
                                                                    95% Standard Bootstrap UCL  0.262
              Anderson-Darling Test Statistic  0.328                       95% Bootstrap-t UCL  0.263
           Anderson-Darling 5% Critical Value  0.756                  95% Hall's Bootstrap UCL  0.262
           Kolmogorov-Smirnov Test Statistic  0.0588              95% Percentile Bootstrap UCL  0.263
          Kolmogorov-Smirnov 5% Critical Value  0.107                     95% BCA Bootstrap UCL  0.262
   Data appear Gamma Distributed at 5% Significance Level          95% Chebyshev(Mean, Sd) UCL  0.301
                                                                 97.5% Chebyshev(Mean, Sd) UCL  0.328
              Assuming Gamma Distribution                          99% Chebyshev(Mean, Sd) UCL  0.382
                 95% Approximate Gamma UCL  0.266
                   95% Adjusted Gamma UCL  0.267

                  Potential UCL to Use                           Use 95% Approximate Gamma UCL  0.266

    Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
      These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
              and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

```
PCB Dioxin-like Congener TEQ

                                         General Statistics
              Number of Valid Observations 10                  Number of Distinct Observations 9

                  Raw Statistics                                    Log-transformed Statistics
                                   Minimum 1.955E-06                       Minimum of Log Data -13.15
                                   Maximum 1.842E-05                       Maximum of Log Data -10.9
                                      Mean 6.446E-06                          Mean of log Data -12.12
                                    Median 4.789E-06                            SD of log Data 0.581
                                        SD 4.551E-06
                  Coefficient of Variation    N/A
                                  Skewness 2.337


                                       Relevant UCL Statistics
              Normal Distribution Test                             Lognormal Distribution Test
               Shapiro Wilk Test Statistic 0.729                 Shapiro Wilk Test Statistic 0.934
               Shapiro Wilk Critical Value 0.842                 Shapiro Wilk Critical Value 0.842
        Data not Normal at 5% Significance Level          Data appear Lognormal at 5% Significance Level

            Assuming Normal Distribution                        Assuming Lognormal Distribution
                     95% Student's-t UCL 9.084E-06                                  95% H-UCL 1.017E-05
           95% UCLs (Adjusted for Skewness)                       95% Chebyshev (MVUE) UCL 1.155E-05
          95% Adjusted-CLT UCL (Chen-1995) 9.95E-06              97.5% Chebyshev (MVUE) UCL 1.38E-05
        95% Modified-t UCL (Johnson-1978) 9.262E-06                99% Chebyshev (MVUE) UCL 1.822E-05

              Gamma Distribution Test                                    Data Distribution
                  k star (bias corrected) 2.298        Data appear Gamma Distributed at 5% Significance Level
                                Theta Star 2.806E-06
                               MLE of Mean 6.446E-06
                 MLE of Standard Deviation 4.253E-06
                                   nu star 45.95
          Approximate Chi Square Value (.05) 31.4                      Nonparametric Statistics
              Adjusted Level of Significance 0.0267                                  95% CLT UCL 8.814E-06
                   Adjusted Chi Square Value 29.32                             95% Jackknife UCL 9.084E-06
                                                                      95% Standard Bootstrap UCL 8.679E-06
            Anderson-Darling Test Statistic 0.574                            95% Bootstrap-t UCL 1.184E-05
          Anderson-Darling 5% Critical Value 0.732                       95% Hall's Bootstrap UCL 1.927E-05
          Kolmogorov-Smirnov Test Statistic 0.216                   95% Percentile Bootstrap UCL 9.22E-06
        Kolmogorov-Smirnov 5% Critical Value 0.268                         95% BCA Bootstrap UCL 1.032E-05
  Data appear Gamma Distributed at 5% Significance Level              95% Chebyshev(Mean, Sd) UCL 1.272E-05
                                                                    97.5% Chebyshev(Mean, Sd) UCL 1.543E-05
            Assuming Gamma Distribution                               99% Chebyshev(Mean, Sd) UCL 2.077E-05
               95% Approximate Gamma UCL 9.434E-06
                  95% Adjusted Gamma UCL 1.01E-05

               Potential UCL to Use                                Use 95% Approximate Gamma UCL 9.434E-06

    Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
      These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
              and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

Appendix E
ProUCL Output for Fish Tissue- Location C Panfish
Anniston PCB Site
OU IV

```
Total PCBs

                                                   General Statistics
                  Number of Valid Observations  70                        Number of Distinct Observations  65

                  Raw Statistics                                          Log-transformed Statistics
                                       Minimum  0.43                               Minimum of Log Data  -0.844
                                       Maximum  10.4                               Maximum of Log Data  2.342
                                          Mean  2.944                                 Mean of log Data  0.908
                                        Median  2.53                                    SD of log Data  0.585
                                            SD  1.964
                      Coefficient of Variation  0.667
                                      Skewness  2.221

                                                 Relevant UCL Statistics
              Normal Distribution Test                                    Lognormal Distribution Test
                    Lilliefors Test Statistic  0.172                          Lilliefors Test Statistic  0.0749
                    Lilliefors Critical Value  0.106                          Lilliefors Critical Value  0.106
        Data not Normal at 5% Significance Level                  Data appear Lognormal at 5% Significance Level

            Assuming Normal Distribution                              Assuming Lognormal Distribution
                        95% Student's-t UCL  3.336                                        95% H-UCL  3.37
         95% UCLs (Adjusted for Skewness)                                  95% Chebyshev (MVUE) UCL  3.892
           95% Adjusted-CLT UCL (Chen-1995)  3.397                       97.5% Chebyshev (MVUE) UCL  4.306
          95% Modified-t UCL (Johnson-1978)  3.346                         99% Chebyshev (MVUE) UCL  5.12

              Gamma Distribution Test                                          Data Distribution
                    k star (bias corrected)  2.947       Data Follow Appr. Gamma Distribution at 5% Significance Level
                                 Theta Star  0.999
                                MLE of Mean  2.944
                  MLE of Standard Deviation  1.715
                                    nu star  412.5
          Approximate Chi Square Value (.05)  366.5                          Nonparametric Statistics
              Adjusted Level of Significance  0.0466                                     95% CLT UCL  3.33
                   Adjusted Chi Square Value  365.5                                95% Jackknife UCL  3.336
                                                                        95% Standard Bootstrap UCL  3.333
              Anderson-Darling Test Statistic  0.876                           95% Bootstrap-t UCL  3.406
             Anderson-Darling 5% Critical Value  0.757                      95% Hall's Bootstrap UCL  3.463
             Kolmogorov-Smirnov Test Statistic  0.101                  95% Percentile Bootstrap UCL  3.338
            Kolmogorov-Smirnov 5% Critical Value  0.107                        95% BCA Bootstrap UCL  3.402
  Data follow Appr. Gamma Distribution at 5% Significance Level         95% Chebyshev(Mean, Sd) UCL  3.968
                                                                       97.5% Chebyshev(Mean, Sd) UCL  4.41
            Assuming Gamma Distribution                                  99% Chebyshev(Mean, Sd) UCL  5.28
                 95% Approximate Gamma UCL  3.315
                   95% Adjusted Gamma UCL  3.323

               Potential UCL to Use                                  Use 95% Approximate Gamma UCL  3.315

     Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
       These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
            and Singh and Singh (2003).   For additional insight, the user may want to consult a statistician.
```

APPENDIX F

FISH CONSUMPTION RATE DERIVATION

APPENDIX F

FISH CONSUMPTION RATE DERIVATION

F-1. INTRODUCTION

Many studies have estimated fish consumption in the United States. As noted by Moya (2004), data for the general population are often useful, but specific data on recreational fishing are needed to assess potential exposure to individuals at the higher end of the consumption range. Recreational fishermen, subsistence fishing populations, and some racial/ethnic minority groups have been shown to consume fish and shellfish at higher rates than the general population. Because interest in recreational angling varies with proximity to suitable water bodies, species of fish available, and economic factors, it is best to collect data specific for the recreational anglers residing near the study area.

Solutia has conducted a creel/angler survey for the portion of the Choccolocco Creek that constitutes OU-4 (Arcadis, 2009). However, the results of Solutia's survey are likely to be biased low as there has been a fish consumption advisory on the Creek, recommending no consumption, since 1994. The purpose of the OU-4 human health risk assessment is to determine the potential exposure to individuals consuming fish caught from the Choccolocco Creek assuming there are no advisories. Although the results of the Solutia survey are used in the derivation of the fish consumption rate, the fish consumption rate estimates resulting from that study are not used to calculate the reasonable maximum exposure (RME) scenario risks.

When suitable local data are not available, which is most often the case, surrogate data derived by state or local agencies or other interested parties must be used. Because sufficient information regarding fish consumption from the Choccolocco Creek unaffected by the longstanding fish consumption advisory with which to derive site-specific consumption rates are not available, regional data were considered. Through a web and reference search, three principal studies relevant to the patterns of recreational fish consumption in the Alabama region were identified:

- ADEM (1993) – *Estimation of Daily Per Capita Freshwater Fish Consumption of Alabama Anglers*

- ADCNR (Wright and DeVries, 2003) – *2002 Alabama Freshwater Anglers Survey*
- Burger et al. (1999) – *Factors in Exposure Assessment: Ethnic and Socioeconomic Differences in Fish and Consumption of Fish Caught along the Savannah River*

The study design of each is summarized in Table F-1. Because studies have shown that ethnicity, age, education, and income play an important role in fishing behavior and consumption (Moya, 2004), basic demographics associated with Calhoun and Talladega Counties, Alabama, and each of the studies are also presented in Table F-1. This demographic information, along with the survey design and results of each of the key studies presented below, helped to determine the suitability of and potential uncertainties associated with the use of surrogate fishing data. Note that the demographics (based on 2000 census data and 2007 estimated values) are similar among Calhoun (Alabama [AL]), Talladega (AL), and the areas in Georgia/South Carolina represented in the Savannah River Study (Burger et al., 1999).

F-2. ESTIMATION OF DAILY PER CAPITA FRESHWATER FISH CONSUMPTION OF ALABAMA ANGLERS

The Estimation of Daily per Capita Freshwater Fish Consumption of Alabama Anglers (ADEM, 1993) was conducted by Auburn University Department of Fisheries and Allied Aquacultures for ADEM. The objective of this study was to estimate daily per capita consumption of freshwater fish harvested from Alabama rivers and reservoirs (by Alabama anglers). Angler interviews were conducted from August 1992 to July 1993, and fish consumption was quantified using both harvest and serving size methods (ADEM, 1993). The ‘harvest method’ entailed a survey of the actual number of fish caught and anglers identified the fish to be consumed at the next meal, typically that day. The ‘serving method’ involved an interview with each angler, the display of a typical serving size of 4 ounces (approximately the size of the palm of a hand) and an estimate by the angler of how many 4-ounce portions of fish caught in the specific water body would be consumed at a meal. Fishing advisories were in effect in Alabama when this survey was conducted; however, it is not known if advisories were in effect at the study locations.

Interviews were conducted at 29 locations – 23 tailwater sites and six impounded sites representing 11 river drainages. Three sampling locations on the Coosa River were sampled; however, the locations were associated with dam tailwaters or the more quiescent waters of a reservoir (as opposed to a flowing stream). Sampling days were selected within seasonal blocks. The seasonal blocks were defined as fall (August 1st through November 30th), winter (December 1st through February 20th), spring (February 21st through May 8th), and summer (May 9th through July 30th). Each study site was surveyed once, from sunrise to sunset, for two-consecutive days (either Friday and Saturday or Sunday and Monday), within each seasonal block. Anglers were interviewed at the completion of their fishing trip to assure that all fish harvested were enumerated. After the interview was concluded, the species and number of harvested fish were noted, and total length and weight were measured (ADEM, 1993).

A fish consumption rate was quantified only for consumers of recreationally caught fish. Of the 1,586 anglers interviewed, 1,303 were consumers. The serving method was used to estimate a fish consumption rate for all 1,303 people. In addition, 563 had caught fish and the harvest method was also used to estimate fish consumption (ADEM, 1993). The estimated sample sizes required to produce 90% confidence intervals of ± 15% around means were 456 for the serving method and 753 for harvest method, which consequently did not meet the criterion (Meredith and Malvestuto, 1996).

Fish consumption rates were calculated as follows (Meredith and Malvestuto, 1996):

> Via Harvest Method (g/day) = dressed weight of fish divided by number of people eating fish times the number of fish meals/month divided by 30 days.
>
> Via Serving Method (g/day) = assumed a 113 g serving (4 oz) times the number of servings/meal times the number of fish meals/month divided by 30 days.

Based on the serving method, the mean number of 4-ounce servings of fish consumed per meal was 3.7. The number of fish meals per month ranged from an average of 3.9 meals/month during spring to 4.8 meals/month during summer (ADEM, 1993).

Mean average daily rates were calculated on a seasonal basis and annualized by summing the weighted mean of the seasonal per capita consumption rates across the four seasonal time periods as follows:

$$C_{annual}(g/day) = \sum (Wt_{seasonal})(C_{seasonal})$$

Where:

$Wt_{seasonal}$ = weighting factor for a particular season (unitless), where the summation is for all seasons:

$$\frac{(W1)(W2)}{\sum (W1)(W2)}$$

$C_{seasonal}$ = mean of C_{daily} for a particular season (g/day)

and:

W1 = fraction of the total number of interviews taken each season (receptor-exposure unit specific; unitless)

W2 = fraction of the total year represented by each season (0.25; unitless)

For the 29 study sites, average fish consumption rates were calculated as 33 g/day and 30 g/day using the harvest and serving methods, respectively. There was no significant difference in consumption rates between methods and no significant difference for an individual between methods using a paired t-test. In addition, there were no significant differences in ingestion rates calculated among the 11 river drainages (ADEM, 1993).

For meals eaten from the study sites plus other lakes and rivers in Alabama, consumption rates of 43.1 g/day and 45.8 g/day (harvest and serving methods, respectively) were calculated. There was a significant difference between annual fish consumption rates based on site meals and all meals with both estimation methods (ADEM, 1993).

When individual consumption rates were pooled and annualized not using seasonal weighting, the mean annual consumption rate was 44.8 g/day, with a median of 22.7 g/day and a 75th percentile of 56.7 g/day. (Note that other percentiles were not provided and the individual angler data are not available with which to calculate them.) It is not specified if these values were based on site-only or all fish ingestion (ADEM, 1993). Data for specific segments of the interviewed population are noted in Table F-2.

Most of the anglers interviewed were African Americans or Caucasians. There were no statistically significant differences in annual fish consumption between the two major ethnic groups for either estimation method. There were observable trends, i.e., decreases in fish consumption as income increased, decrease in annual fish consumption across income categories for both African Americans and Caucasians (although the downward trend in Caucasian consumption rates was not as extreme). Data also indicated that 22% of the interviewed anglers could be classified as living in poverty (less than $15,000 annually for a family of 4).

In addition to calculating fish consumption rates, this report also presented data on fish harvested by those interviewed. Channel catfish was the most common species taken (15%), followed by largemouth bass and bluegill sunfish (11% each), and blue catfish (10%). When similar species were grouped, the harvest was catfish (29%), black bass (includes largemouth, smallmouth, and spotted bass - 17%), sunfish (16%), crappie (15%), and Morone spp. (striped, hybrid, white, and yellow bass - 13%). The rest of the groups contributed to less than 10%.

F-3. 2002 ALABAMA FRESHWATER ANGLERS SURVEY

The 2002 Alabama Freshwater Anglers Survey (Wright and DeVries, 2003; Wright et al., 2003) was conducted by Auburn University Department of Fisheries and Allied Aquacultures for the Alabama Department of Conservation and Natural Resources (ADCNR) Wildlife and Freshwater Fisheries Division. The objectives of this survey were to evaluate the demographics, attitudes and practices of Alabama-licensed freshwater anglers. The survey instrument was a questionnaire of 36 questions addressing fishing practices, knowledge and opinion of management practices, knowledge and opinion of the Alabama Division of Wildlife and Freshwater Fisheries (ADWFF), and respondent demographics. The survey was mailed to anglers. In general, the survey questions paralleled those from a survey completed in 1987. Fishing advisories were in effect in Alabama when the 2002 survey was conducted. Estimation of fish consumption rates were not an objective of this study.

The survey was sent to 2,000 randomly-selected licensed freshwater Alabama anglers. The participant list was selected by generating a list of 2,000 random numbers, compiling the license records from all freshwater resident license sales from 1 May 2001 to 1 May 2002 (including all freshwater licenses, senior citizen fishing licenses, combination fishing and hunting, combination freshwater and saltwater fishing and handicapped fishing licenses) as well as all lifetime license holders and then counting to the randomly-selected anglers' licenses. Only anglers 19 years of age and older were included in the survey. Because this study used licensed fisherman as the target population, it is important to note that national studies estimate that only 65% of anglers purchase a resident fishing license. Although some anglers are exempt, an estimated 19% of all anglers fish illegally without the required license (Hyde et al., 1998); therefore, selecting participants only from licensing information leaves a segment of the fishing public unrepresented. Although not specifically noted, it stands to reason that a significant portion of the population that fishes illegally (e.g., is not licensed because of financial or other issues) likely consumes more fish than licensed anglers out of need.

Of the 2,000 surveys sent out, 628 (31%) were returned before the deadline. It should be noted that there was a low rate of return for non-Caucasian respondents. The survey respondents were, among others, 84% Caucasian and 7% African American. According to 2005 U.S. Census Bureau information, Alabama's citizens are, among others, 69% non-Hispanic/Latino Caucasians and 26% African American. However, the ethnic breakout of licensed anglers is unknown.

The majority of anglers (72%) indicated that they fished entirely within Alabama. In response to a question regarding the type of water fished at least once in the past year, the most popular places to fish appear to be rivers (76%), private ponds (54%), small streams (51%), public lakes (43%), reservoirs (31%) and tailwaters (31%). The average number of fishing trips was highest for small streams (i.e., 21.9 trips per year). Between 1987 and 2002 data, there was an apparent shift away from the use of reservoirs towards rivers and creeks/small streams. However, most anglers responded that they fished from a boat (71%), making it unlikely that they were fishing in small streams. The data regarding where anglers fish most often (e.g., small streams) versus how they fish most often (e.g., from boats) is conflicting and this is acknowledged in the survey report.

The most sought after fish were largemouth bass, crappie, catfish, bream (sunfish) and striped bass (including hybrids). Water type affected these results, with largemouth bass being most sought after in all except tailwaters, where catfish were most sought. Nearly half (48%) of the 375 anglers targeting largemouth bass reported seldom keeping the fish they caught. Anglers were less reluctant to keep crappie, bream or catfish than largemouth bass. Catfish and crappie were indicated to be the favorite freshwater fish to eat. The minimum average size fish that an angler would keep was as follows:

Species	Minimum Average Length Kept (inches)
Largemouth bass	13.3
Crappie	9.4
Bream	6.7
Catfish	~12.5 (estimated from graph)

Lastly, it is important to note that the survey did not take into consideration any effects fish advisories had on the responses.

F-4. SAVANNAH RIVER STUDY (BURGER ET AL., 1999)

Researchers examined the differences in fishing rates and fish consumption of individuals fishing along the Savannah River in South Carolina near the Department of Energy's (DOE's) Savannah River Site (SRS). The area examined in the Savannah River study is approximately 60 miles long and runs upriver from the site to the Augusta Lock and Dam and downriver from the site to Barton's Landing (Burger et al., 1999). The Savannah River is much larger than the Choccolocco Creek. The river is part of the boundary between South Carolina and Georgia and is an alluvial stream running 313 miles from its headwaters in Lake Hartwell, SC to the Atlantic Ocean 13 miles downstream from the city of Savannah, GA. The river provides water to numerous municipalities, including Augusta and Savannah, GA and Hilton Head, SC. It also supplies water for the SRS and for the two nuclear reactors at Plant Vogtle, Burke County, GA. The section of the Savannah River that flows by the SRS includes wide flood plains and wetlands. Note that the SRS once siphoned hundreds of millions of gallons each day from the Savannah to cool the five nuclear reactors, which are no longer in operation (GHC/UGP, 2009).

At the time of this survey, South Carolina had fish consumption advisories on the Savannah River for mercury and radionuclides; however, Georgia did not.

The target population was people who fished the 60 mi SRS segment of the Savannah River and was meant to be representative of anglers anywhere along the Savannah River or similar fish areas in the region. This area includes Richmond, Burke, and Screven Counties in Georgia and Aiken, Barnwell, and Allendale Counties in South Carolina.

A university-approved protocol was used to interview 258 people fishing on the Savannah River. Interviews were conducted on land and by boat from 3 April through 22 November, 1997. Interviews were conducted from dawn to dusk, almost weekly, for 54 fishing days (including weekdays and weekends). Each person was interviewed only once. The questionnaire contained questions regarding fishing behavior, consumption patterns, cooking patterns, warnings and safety of the fish, and personal demographics.

Preferred fish for consumption (in descending order of frequency noted) were bream (Lepomis spp.), catfish (Ictalurus punctatus), largemouth bass (Micropterus salmoides), crappie (Pomoxis nigromaculatus), and bowfin (Amia calva). These also accounted for most of the fish caught.

Fishing behavior and consumption rates for the study population indicated that the best models explained variations in serving size, fish meals per month, and total kg of fish consumed per year as a function of ethnicity and education. Age and income did not significantly affect the aforementioned consumption variables. Fish ingestion statistics for all respondents, based on ethnicity, and based on education are presented in Table F-3.

In general, African Americans ate larger portions of fish and ate fish more often than Caucasians. The higher number of meals per month resulted in significant differences in average fish consumption per year. In addition, a significantly higher proportion of African Americans than Caucasians ate whole fish as opposed to fillets. Anglers who had not graduated from high school ate fish more often, consumed more fish per month and year, deep fried fish more often, and had lower incomes than people with more education. However, those with a high school education fish for significantly longer periods than the groups with less than or more than a high school education.

The estimated mean consumption rates were 71 g/day for African Americans, 38 g/day for Caucasians, 84 g/day for those without a high school education, and 48 g/day for all respondents.

F-5. STUDY SELECTED FOR INGESTION RATE

The ADEM (1993) study estimated adult consumption rates of recreationally caught freshwater fish in Alabama based on data from angler interviews at 29 locations throughout the state. Of the studies available, the data generated from this 1993 study proved most suitable for determining site-specific angler consumption rates for this exposure assessment. The 1993 ADEM study is specific to the State of Alabama while the Savannah River study was conducted in Georgia and South Carolina. The Savannah River is also a much larger waterbody than the Choccolocco Creek. The "families living below the poverty line" demographics of 2 of the 6 counties in the SRS area were outside the range of those observed in Calhoun and Talladega Counties, the State of Alabama, and the 1993 ADEM study that focused on Alabama Anglers. The ADEM study showed no significant differences in the annual ingestion rates between African Americans and Caucasians and noted downward trends in fish consumption as income increased; whereas, the Savannah River study showed significant differences in annual fish consumption between races and income did not significantly affect consumption rates.

The 1993 ADEM study was selected as the most appropriate basis for the RME fish consumption rate. Downstream of Jackson Shoals (i.e., river mile 0 to 10), the Choccolocco Creek widens out and slows down and has characteristics of a smaller dammed river, more similar to the waterbodies surveyed in the 1993 ADEM study than the Savannah River. Although neither the ADEM nor Savannah River study focused on waterbodies of similar characteristics to the Choccolocco Creek upstream of Jackson Shoals (i.e., river mile 10-37), based on the demographic data, the 1993 ADEM study is the best fit of the available studies.

The mean consumption rate calculated by the serving size method for all respondents was 30 g/day. This consumption rate was calculated based on data applicable to the interview site (i.e., not all lakes and rivers in Alabama). To provide conservative, yet realistic, consumption rates, site-specific demographics were considered in determining a consumption rate from the Alabama data. Several ethnic and one age and income category each appeared to be potential high-end populations.

Estimated statistics for 2007 indicate that African Americans are the largest ethnic minority group living in Calhoun and Talladega Counties (19.8 and 31.8% of the population, respectively; U.S. Census Bureau, 2007a, 2007b; Table F-4). The mean daily consumption rate calculated for African Americans was 33.4 g/day (n=232; site meals; serving size method), which was slightly higher than the mean for all respondents. The mean daily consumption rate calculated for Native Americans was lower (22.7 g/day) and for Asians was higher (44.1 g/day), than the mean daily consumption rate for all respondents, but the sample sizes on which these estimates were based were small (n= 2 and 3, respectively; ADEM, 1993). In addition, these ethnic minority groups each account for 1% or less of the population in Calhoun and Talladega Counties (U.S. Census Bureau, 2007a and 2007b).

Age groups for which the calculated consumption rates were higher than the mean were 31-50 years old (39 g/day) and 51 years and over (76 g/day) (values calculated using serving method and for all meals).

Income demographics estimated for 2007 show that approximately 17.1 and 18.0% of households in the counties through which the Choccolocco Creek flows in OU-4 (Calhoun and Talladega Counties, respectively; U.S. Census Bureaus, 2007a, 2007b) are living below the poverty level, which is defined as a family of four with an annual income of less than $15,000. From the ADEM (1993) survey, it was found that 22% of the respondents were living below the poverty level (USDA, 2004). In addition, 2007 Census Bureau estimates for the State of Alabama indicate that 16.6% of the population lives below the poverty level. Therefore, given the higher percentage of anglers that were living below the poverty level than are accounted for in the general population, individuals living below the poverty level are important to consider in this assessment.

The only consumption rate data reported for the ADEM study for those living below the poverty level was segregated by ethnicity. For African Americans with an annual income of less than $15,000, the mean consumption rate was 63 g/day (n=42; average of serving and harvest methods; all meals), which is approximately twice that of the mean consumption rate based on all respondents. This value considers both the largest minority group in Calhoun and Talladega Counties and an income group that likely ingests fish at a higher rate than others. The mean consumption rate for Caucasians with an annual income of less than $15,000 was 53 g/day (n=74; average of serving and harvest methods; all meals). When considering all income levels, there were no statistically significant differences between African American and Caucasian consumption rates.

The highest ingestion rates for a potential high-end receptor with a substantial population are based on those >50 years old. However, only ingestion rates calculated assuming “all meals” are available. Because fish ingestion is being evaluated from only one water body, basing the consumption rate on site meals is more appropriate than basing it on all meals. The next most substantial population of potential high-end receptors is the African Americans with annual incomes <$15,000. The mean value of 63 g/day was based on all meals. However, consumption rates for site and all meals are available for ethnic groups. Using the serving method, the fraction of site meals (33.4 g/day) to all meals (50.7 g/day) for African Americans was 0.66. Assuming this ratio is representative of the ratio of site to all meals for the <$15,000/year annual salary subgroup, a site meal consumption rate would be approximately 42 g/day (i.e., 63 g/day multiplied by 0.66).

F-5.1 ADULT INGESTION RATE

Agricultural, forest, and scrublands make up approximately 88% of the land use/habitats along the Choccolocco Creek floodplain. Given the size of the tax parcels associated with these uses, it is unlikely that a significant portion of the population residing along the creek falls below the poverty line. Therefore, it is suggested that the mean consumption rate, calculated by the serving size method for all respondents based on site meals only of 30 g/day be used.   Note that the fish consumption rate suggested herein is equal to the 30 g/day that ADEM uses to establish water quality criteria for the protection of human health associated with the consumption of fish and shellfish. As noted previously, there were advisories on some Alabama waterbodies when the ADEM study was conducted; however it is not known if the advisories were emplaced on the waters on which the interviews were conducted. Therefore, the 30 g/day, may be biased low.

F-5.2 CHILD INGESTION RATE

Child consumption rates for recreationally caught freshwater fish were not available from the ADEM (1993) study. The child consumption rates were assumed to be a fraction of the adult rate. This approach assumes that the ratio of the amount of fish consumed by children and adults is similar between fish consumers in the United States and the population of Choccolocco Creek recreational anglers who consume recreationally caught fish.

Data regarding fish consumption in the U.S. general population for various age groups were available from EPA's *Estimated per Capita Fish Consumption in the United States* (2002). Because the Choccolocco Creek is a freshwater habitat, the use of consumption rates based on freshwater finfish to develop child to adult ratios would have been preferable; however, these were not available. Therefore, the rates based on freshwater/estuarine finfish/shellfish were used. In addition, the consumption rates were based on consumers only and "uncooked" fish.

Consumption estimates for children and adults are presented in Table F-5. The ratios of the child and adult consumption rates are also presented, ranging from 0.48 to 0.49 depending on the consumption rate statistic (i.e., mean, median, 90th percentile) considered. Based on these ratios, one-half of the adult consumption rate of 30 g/day, that is 15 g/day, was selected as a reasonable estimate of the consumption rate for the dependent child of a recreational angler.

F-6. REFERENCES

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APPENDIX F TABLES

Table F-1

Fish Ingestion Rate Study Designs and Demographics

Demographic	Census Statistics[a]			ADEM, 1993[b]		Wright and DeVries, 2003	Burger et al., 1999
	Calhoun County	Talladega County	State of Alabama	Harvest-Based	Serving-Based		
Survey Dates	---	---	---	August 1992 to July 1993		Recall for 1 July 2001 to 30 June 2002	April 1997 to November 1997
Geographic Area	---	---	---	29 locations – 23 tailwater sites and six reservoir sites representing 11 river drainages in Alabama		State of Alabama	3 locations along the DOE's Savannah River Site (SRS), South Carolina and Georgia
Study Type	---	---	---	Angler Interviews		Household mail questionnaire	Angler Interviews
Sample Selection	---	---	---	Intercepted anglers finished fishing for the day on two consecutive days (Friday-Saturday or Sunday-Monday) in each of four seasonal blocks.		Random selection of licensed anglers	Interviewed anglers from dawn to dusk weekdays and weekends most weeks during study period.
Population	Calhoun County Residents	Talladega County Residents	State of Alabama Residents	Freshwater Alabama Resident Anglers		Freshwater Alabama Resident Anglers	SRS Anglers
Sample Size	113,103	80,255	4,627,851			2,000	
Response Rates (%)	---	---	---			31	
Total Participants	---	---	---	563	1303	628	258
Sex (%):							
Male	47.9	49.1	48.4	88		81	89
Female	52.1	50.9	51.6	12		19	11
Age in years (%, except for average):							
<5	6.5[c]	6.4[c]				NR	NR
>18	76.8[c]	76.3[c]				NR	NR
>65	14.4[c]	13.6[c]				NR	NR

	Census Statistics[a]			ADEM, 1993[b]			
Demographic	**Calhoun County**	**Talladega County**	**State of Alabama**	**Harvest-Based**	**Serving-Based**	**Wright and DeVries, 2003**	**Burger et al., 1999**
Average	38.2[c] (median)	37.6[c] (median)				43.6	43 (range 16-82)
Ethnicity (%, except for number responding):							
Number responding	NR	NR	NR	1164		596	258
Caucasian (non Hispanic/Latino)	75.9	65.8	68.6	79.5[e]		84	70
African American	19.8	31.8	26.5	19.9[e]		7	28
Native American	0.4	0.3	0.5	0.2[e]		6	NR
Mixed Heritage	1.0	0.4	1.0	NR		2	NR
Asian/Pacific	0.8	0.8	1.0	0.3[e]		<1	NR
Hispanic/Latino	2.3	1.3	2.7	0.2[e]		<1	NR
Annual Household Income (%, except for number responding [individuals] and median income [$]):							
Number responding						557	
<$10,000						<10	
$10,000-$19,900						<10	
$20,000-$24,900						<10	
$25,000-$29,900						<10	
$30,000-$34,900						<10	
$35,000-$39,900						<10	
$40,000-$49,900						14	
$50,000-$74,900						26	
$75,000-$100,000						11	
>$100,000						<10	
Median	$37,478	$38,644	$40,596			NR	Average = $21,490 (range 0-$60,000)
Families below poverty level (%)	17.1	18.0	16.6	22[f]		NR	12.1-28.4[g]
Education (%, except for number responding):							

Demographic	Census Statistics[a]			ADEM, 1993[b]		Wright and DeVries, 2003	Burger et al., 1999
	Calhoun County	Talladega County	State of Alabama	Harvest-Based	Serving-Based		
Number responding						610	
≤8 years or less						2	
9-11 years						10	
12 years	73.9[d]	69.7[d]	75.3[d]			39	60
1-3 years of college						28	
≥4 years of college	15.2[d]	11.2[d]	19.0[d]			21	11
Technical training							12

[a] U.S. Census Bureau, 2007a and b (Calhoun and Talladega Quick Facts, respectively), except where otherwise noted. NR = Not reported.

[b] As cited in Meredith and Malvestuto, 1996 unless otherwise noted.

[c] U.S. Census Bureau, 2007c and d (2005-2007 American Community Survey).

[d] 2000 data. People aged 25+.

[e] Moya, 2004.

[f] USDA, 2004.

[g] Range of 6 surrounding counties – 3 in Georgia (Richmond, Burke, and Screven) and 3 in South Carolina (Aiken, Barnwell, and Allendale). Minimum value is from Aiken County, SC and maximum is from Allendale County, SC (U.S. Census Bureau Fact Sheets, 2007e through h and 2000a and b).

Table F-2

Recreational Angler Fish Consumption Estimates from ADEM, 1993

Population/Age Group (yrs)	Sample Size	Mean (g/day)	Method	Area
All respondents	1303	30	Serving	Site
All respondents	1303	46	Serving	All
20-30	NR	16	Serving	All
31-50	NR	39	Serving	All
51 and over	NR	76	Serving	All
African American	232	33.4	Serving	Site
Asian	3	44.1	Serving	Site
Caucasian	925	29.4	Serving	Site
Hispanic	2	0	Serving	Site
Native American	2	22.7	Serving	Site
African American with income <$15,000	43	63	Average of Serving and Harvest	All
Caucasian with income <$15,000	74	53	Average of Serving and Harvest	All

NR = Not reported.

Table F-3

Recreational Angler Fish Consumption Estimates from Burger et al., 1999

Population	Sample Size	Meals/ Month	Serving Size (g)	Fish/ Month (kg)	Fish/Year (kg)	Ingestion Rate (g/day)
All respondents	258	3.61	376.1	1.46	17.60	48
Ethnicity						
African American	72	5.37	387	2.13	25.55	71
Caucasian	180	2.88	370.53	1.17	14.03	38
Education						
Not a High School Graduate	45	5.93	383.12	2.61	31.30	84
High School Graduate	154	3.02	366.1	1.15	13.79	38
College or Technical Training	59	3.36	397.73	1.52	18.20	49

Note: All values except for sample size are means. Mean ingestion rate is equal to the mean of ingestion rates calculated by the following three methods: 1) Meals per Month times Serving Size divided by 30 days/month; 2) Fish per Month divided 30 days/month; and 3) Fish per Year divided by 350 days/year.

Table F-4

2007 Population Distribution Estimates*

Cultural Classifications	Calhoun County	Talladega County
White (non-Hispanic)	75.9%	65.8%
Black	19.8%	31.8%
Hispanic (or Latino of any race)	2.3%	1.3%
Asian/Pacific	0.8%	0.4%
American Indian or Native Alaskan	0.4%	0.3%

*Sources: U.S. Census Bureau, 2007a and b.

Table F-5

Freshwater/Estuarine Finfish and Shellfish Consumption Estimates for Children and Adults

Statistic	Consumption Rate (g/day)*		Child to Adult Ratio
	Child (years 3 to 5)	Adult (>18 years old)	
Mean	40	81	0.49
Median	23	47	0.49
90th percentile	95	200	0.48

* EPA, 2002. *(Estimated per Capita Fish Consumption in the United States).*

This table was used to derive the child fish ingestion rate for the SLHEA by determining the child to adult consumption rate ratio based on EPA documentation. As presented, the child fish consumption rate is approximately half of the adult rate. Using this information and extrapolating it to Talladega and Calhoun County, Alabama, the child ingestion rate for this SLHEA is approximately one-half of the adult rate.

APPENDIX G

FISH CONSUMPTION RAGS 7 TABLES

TABLE G-1

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP A - PRIMARY COPCS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group A Fish Tissue	Ingestion	**All Species**												
				Total PCBs	2.38E+00	mg/kg	5.3E-04	mg/kg-day	2.0E+00	mg/kg-day	1E-03	1.2E-03	mg/kg-day	2.0E-05	mg/kg-day	62
				Mercury	3.18E-01	mg/kg	7.1E-05	mg/kg-day	NA	---	NA	1.7E-04	mg/kg-day	1.0E-04	mg/kg-day	2
			All Species Total								1E-03					64
			All Species PCB Dioxin-like Congener TEQ		1.64E-05	mg/kg	3.7E-09	mg/kg-day	1.3E+05	mg/kg-day	5E-04	8.6E-09	mg/kg-day	7.0E-10	mg/kg-day	12
			Ingestion	**Bass**												
				Total PCBs	2.75E+00	mg/kg	6.1E-04	mg/kg-day	2.0E+00	mg/kg-day	1E-03	1.4E-03	mg/kg-day	2.0E-05	mg/kg-day	72
				Mercury	4.84E-01	mg/kg	1.1E-04	mg/kg-day	NA	---	NA	2.5E-04	mg/kg-day	1.0E-04	mg/kg-day	3
			Bass Total								1E-03					74
			Bass PCB Dioxin-like Congener TEQ		2.06E-05	mg/kg	4.6E-09	mg/kg-day	1.3E+05	mg/kg-day	6E-04	1.1E-08	mg/kg-day	7.0E-10	mg/kg-day	15
			Ingestion	**Catfish**												
				Total PCBs	2.97E+00	mg/kg	6.6E-04	mg/kg-day	2.0E+00	mg/kg-day	1E-03	1.5E-03	mg/kg-day	2.0E-05	mg/kg-day	77
				Mercury	1.90E-01	mg/kg	4.2E-05	mg/kg-day	NA	---	NA	9.9E-05	mg/kg-day	1.0E-04	mg/kg-day	1
			Catfish Total								1E-03					78
			Catfish PCB Dioxin-like Congener TEQ		5.78E-06	mg/kg	1.3E-09	mg/kg-day	1.3E+05	mg/kg-day	2E-04	3.0E-09	mg/kg-day	7.0E-10	mg/kg-day	4
			Ingestion	**Panfish**												
				Total PCBs	2.11E+00	mg/kg	4.7E-04	mg/kg-day	2.0E+00	mg/kg-day	9E-04	1.1E-03	mg/kg-day	2.0E-05	mg/kg-day	55
				Mercury	3.38E-01	mg/kg	7.5E-05	mg/kg-day	NA	---	NA	1.8E-04	mg/kg-day	1.0E-04	mg/kg-day	2
			Panfish Total								9E-04					57
			Panfish PCB Dioxin-like Congener TEQ		1.25E-05	mg/kg	2.8E-09	mg/kg-day	1.3E+05	mg/kg-day	4E-04	6.5E-09	mg/kg-day	7.0E-10	mg/kg-day	9

TABLE G-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP A - TEQS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group A Fish Tissue	Ingestion	**All Species**												
				PCB Dioxin-like Congener TEQ	1.64E-05	mg/kg	3.7E-09	mg/kg-day	1.3E+05	mg/kg-day	5E-04	8.6E-09	mg/kg-day	7.0E-10	mg/kg-day	12
				2,3,7,8-TCDD TEQ	5.14E-06	mg/kg	1.1E-09	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.7E-09	mg/kg-day	7.0E-10	mg/kg-day	4
			All Species Total TEQ								6E-04					16
			Ingestion	**Bass**												
				PCB Dioxin-like Congener TEQ	2.06E-05	mg/kg	4.6E-09	mg/kg-day	1.3E+05	mg/kg-day	6E-04	1.1E-08	mg/kg-day	7.0E-10	mg/kg-day	15
				2,3,7,8-TCDD TEQ	3.92E-06	mg/kg	8.7E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.0E-09	mg/kg-day	7.0E-10	mg/kg-day	3
			Bass Total TEQ								7E-04					18
			Ingestion	**Catfish**												
				PCB Dioxin-like Congener TEQ	5.78E-06	mg/kg	1.3E-09	mg/kg-day	1.3E+05	mg/kg-day	2E-04	3.0E-09	mg/kg-day	7.0E-10	mg/kg-day	4
				2,3,7,8-TCDD TEQ	9.34E-07	mg/kg	2.1E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	4.9E-10	mg/kg-day	7.0E-10	mg/kg-day	0.7
			Catfish Total TEQ								2E-04					5
			Ingestion	**Panfish**												
				PCB Dioxin-like Congener TEQ	1.25E-05	mg/kg	2.8E-09	mg/kg-day	1.3E+05	mg/kg-day	4E-04	6.5E-09	mg/kg-day	7.0E-10	mg/kg-day	9
				2,3,7,8-TCDD TEQ	5.02E-06	mg/kg	1.1E-09	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.6E-09	mg/kg-day	7.0E-10	mg/kg-day	4
			Panfish Total TEQ								5E-04					13

TABLE G-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP A - PRIMARY COPCS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group A Fish Tissue	Ingestion	**All Species**												
				Total PCBs	2.38E+00	mg/kg	5.0E-05	mg/kg-day	1.0E+00	mg/kg-day	5E-05	1.2E-04	mg/kg-day	2.0E-05	mg/kg-day	6
				Mercury	3.18E-01	mg/kg	6.7E-06	mg/kg-day	NA	---	NA	1.6E-05	mg/kg-day	1.0E-04	mg/kg-day	0.2
			All Species Total								5E-05					6
			All Species PCB Dioxin-like Congener TEQ		1.64E-05	mg/kg	3.5E-10	mg/kg-day	1.3E+05	mg/kg-day	4E-05	8.1E-10	mg/kg-day	7.0E-10	mg/kg-day	1
			Ingestion	**Bass**												
				Total PCBs	2.75E+00	mg/kg	5.8E-05	mg/kg-day	1.0E+00	mg/kg-day	6E-05	1.3E-04	mg/kg-day	2.0E-05	mg/kg-day	7
				Mercury	4.84E-01	mg/kg	1.0E-05	mg/kg-day	NA	---	NA	2.4E-05	mg/kg-day	1.0E-04	mg/kg-day	0.2
			Bass Total								6E-05					7
			Bass PCB Dioxin-like Congener TEQ		2.06E-05	mg/kg	4.3E-10	mg/kg-day	1.3E+05	mg/kg-day	6E-05	1.0E-09	mg/kg-day	7.0E-10	mg/kg-day	1
			Ingestion	**Catfish**												
				Total PCBs	2.97E+00	mg/kg	6.2E-05	mg/kg-day	1.0E+00	mg/kg-day	6E-05	1.5E-04	mg/kg-day	2.0E-05	mg/kg-day	7
				Mercury	1.90E-01	mg/kg	4.0E-06	mg/kg-day	NA	---	NA	9.3E-06	mg/kg-day	1.0E-04	mg/kg-day	0.09
			Catfish Total								6E-05					7
			Catfish PCB Dioxin-like Congener TEQ		5.78E-06	mg/kg	1.2E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	2.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.4
			Ingestion	**Panfish**												
				Total PCBs	2.11E+00	mg/kg	4.4E-05	mg/kg-day	1.0E+00	mg/kg-day	4E-05	1.0E-04	mg/kg-day	2.0E-05	mg/kg-day	5
				Mercury	3.38E-01	mg/kg	7.1E-06	mg/kg-day	NA	---	NA	1.7E-05	mg/kg-day	1.0E-04	mg/kg-day	0.2
			Panfish Total								4E-05					5
			Panfish PCB Dioxin-like Congener TEQ		1.25E-05	mg/kg	2.6E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	6.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.9

TABLE G-4
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP A - TEQS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group A Fish Tissue	Ingestion	**All Species**												
				PCB Dioxin-like Congener TEQ	1.64E-05	mg/kg	3.5E-10	mg/kg-day	1.3E+05	mg/kg-day	4E-05	8.1E-10	mg/kg-day	7.0E-10	mg/kg-day	1
				2,3,7,8-TCDD TEQ	5.14E-06	mg/kg	1.1E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.4
			All Species Total TEQ								6E-05					2
			Ingestion	**Bass**												
				PCB Dioxin-like Congener TEQ	2.06E-05	mg/kg	4.3E-10	mg/kg-day	1.3E+05	mg/kg-day	6E-05	1.0E-09	mg/kg-day	7.0E-10	mg/kg-day	1
				2,3,7,8-TCDD TEQ	3.92E-06	mg/kg	8.2E-11	mg/kg-day	1.3E+05	mg/kg-day	1E-05	1.9E-10	mg/kg-day	7.0E-10	mg/kg-day	0.3
			Bass Total TEQ								7E-05					2
			Ingestion	**Catfish**												
				PCB Dioxin-like Congener TEQ	5.78E-06	mg/kg	1.2E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	2.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.4
				2,3,7,8-TCDD TEQ	9.34E-07	mg/kg	2.0E-11	mg/kg-day	1.3E+05	mg/kg-day	3E-06	4.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.07
			Catfish Total TEQ								2E-05					0.5
			Ingestion	**Panfish**												
				PCB Dioxin-like Congener TEQ	1.25E-05	mg/kg	2.6E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	6.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.9
				2,3,7,8-TCDD TEQ	5.02E-06	mg/kg	1.1E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.4
			Panfish Total TEQ								5E-05					1

TABLE G-5
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP B - PRIMARY COPCS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group B Fish Tissue	Ingestion	**All Species**												
				Total PCBs	2.88E+00	mg/kg	3.2E-04	mg/kg-day	2.0E+00	mg/kg-day	6E-04	7.5E-04	mg/kg-day	2.0E-05	mg/kg-day	37
				Mercury	4.79E-01	mg/kg	5.3E-05	mg/kg-day	NA	---	NA	1.2E-04	mg/kg-day	1.0E-04	mg/kg-day	1
			All Species Total								6E-04					39
			All Species PCB Dioxin-like Congener TEQ		7.39E-06	mg/kg	8.2E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	1.9E-09	mg/kg-day	7.0E-10	mg/kg-day	3
			Ingestion	**Bass**												
				Total PCBs	4.77E+00	mg/kg	5.3E-04	mg/kg-day	2.0E+00	mg/kg-day	1E-03	1.2E-03	mg/kg-day	2.0E-05	mg/kg-day	62
				Mercury	7.67E-01	mg/kg	8.6E-05	mg/kg-day	NA	---	NA	2.0E-04	mg/kg-day	1.0E-04	mg/kg-day	2
			Bass Total								1E-03					64
			Bass PCB Dioxin-like Congener TEQ		1.03E-05	mg/kg	1.1E-09	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.7E-09	mg/kg-day	7.0E-10	mg/kg-day	4
			Ingestion	**Catfish**												
				Total PCBs	4.01E+00	mg/kg	4.5E-04	mg/kg-day	2.0E+00	mg/kg-day	9E-04	1.0E-03	mg/kg-day	2.0E-05	mg/kg-day	52
				Mercury	4.40E-01	mg/kg	4.9E-05	mg/kg-day	NA	---	NA	1.1E-04	mg/kg-day	1.0E-04	mg/kg-day	1
			Catfish Total								9E-04					53
			Catfish PCB Dioxin-like Congener TEQ		5.09E-06	mg/kg	5.7E-10	mg/kg-day	1.3E+05	mg/kg-day	7E-05	1.3E-09	mg/kg-day	7.0E-10	mg/kg-day	2
			Ingestion	**Panfish**												
				Total PCBs	1.86E+00	mg/kg	2.1E-04	mg/kg-day	2.0E+00	mg/kg-day	4E-04	4.8E-04	mg/kg-day	2.0E-05	mg/kg-day	24
				Mercury	2.81E-01	mg/kg	3.1E-05	mg/kg-day	NA	---	NA	7.3E-05	mg/kg-day	1.0E-04	mg/kg-day	0.7
			Panfish Total								4E-04					25
			Panfish PCB Dioxin-like Congener TEQ		4.09E-06	mg/kg	4.6E-10	mg/kg-day	1.3E+05	mg/kg-day	6E-05	1.1E-09	mg/kg-day	7.0E-10	mg/kg-day	2

TABLE G-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP B - TEQS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group B Fish Tissue	Ingestion	**All Species**												
				PCB Dioxin-like Congener TEQ	7.39E-06	mg/kg	8.2E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	1.9E-09	mg/kg-day	7.0E-10	mg/kg-day	3
				2,3,7,8-TCDD TEQ	1.73E-06	mg/kg	1.9E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	4.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
			All Species Total TEQ								1E-04					3
			Ingestion	**Bass**												
				PCB Dioxin-like Congener TEQ	1.03E-05	mg/kg	1.1E-09	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.7E-09	mg/kg-day	7.0E-10	mg/kg-day	4
				2,3,7,8-TCDD TEQ	2.43E-06	mg/kg	2.7E-10	mg/kg-day	1.3E+05	mg/kg-day	4E-05	6.3E-10	mg/kg-day	7.0E-10	mg/kg-day	0.9
			Bass Total TEQ								2E-04					5
			Ingestion	**Catfish**												
				PCB Dioxin-like Congener TEQ	5.09E-06	mg/kg	5.7E-10	mg/kg-day	1.3E+05	mg/kg-day	7E-05	1.3E-09	mg/kg-day	7.0E-10	mg/kg-day	2
				2,3,7,8-TCDD TEQ	8.69E-07	mg/kg	9.7E-11	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.3E-10	mg/kg-day	7.0E-10	mg/kg-day	0.3
			Catfish Total TEQ								9E-05					2
			Ingestion	**Panfish**												
				PCB Dioxin-like Congener TEQ	4.09E-06	mg/kg	4.6E-10	mg/kg-day	1.3E+05	mg/kg-day	6E-05	1.1E-09	mg/kg-day	7.0E-10	mg/kg-day	2
				2,3,7,8-TCDD TEQ	1.49E-06	mg/kg	1.7E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	3.9E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
			Panfish Total TEQ								8E-05					2

TABLE G-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP B - PRIMARY COPCS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group B Fish Tissue	Ingestion	**All Species**												
				Total PCBs	2.88E+00	mg/kg	6.0E-05	mg/kg-day	1.0E+00	mg/kg-day	6E-05	1.4E-04	mg/kg-day	2.0E-05	mg/kg-day	7
				Mercury	4.79E-01	mg/kg	1.0E-05	mg/kg-day	NA	---	NA	2.3E-05	mg/kg-day	1.0E-04	mg/kg-day	0.2
			All Species Total								6E-05					7
			All Species PCB Dioxin-like Congener TEQ		7.39E-06	mg/kg	1.6E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	3.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.5
			Ingestion	**Bass**												
				Total PCBs	4.77E+00	mg/kg	1.0E-04	mg/kg-day	1.0E+00	mg/kg-day	1E-04	2.3E-04	mg/kg-day	2.0E-05	mg/kg-day	12
				Mercury	7.67E-01	mg/kg	1.6E-05	mg/kg-day	NA	---	NA	3.8E-05	mg/kg-day	1.0E-04	mg/kg-day	0.4
			Bass Total								1E-04					12
			Bass PCB Dioxin-like Congener TEQ		1.03E-05	mg/kg	2.2E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	5.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.7
			Ingestion	**Catfish**												
				Total PCBs	4.01E+00	mg/kg	8.4E-05	mg/kg-day	1.0E+00	mg/kg-day	8E-05	2.0E-04	mg/kg-day	2.0E-05	mg/kg-day	10
				Mercury	4.40E-01	mg/kg	9.2E-06	mg/kg-day	NA	---	NA	2.2E-05	mg/kg-day	1.0E-04	mg/kg-day	0.2
			Catfish Total								8E-05					10
			Catfish PCB Dioxin-like Congener TEQ		5.09E-06	mg/kg	1.1E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.4
			Ingestion	**Panfish**												
				Total PCBs	1.86E+00	mg/kg	3.9E-05	mg/kg-day	1.0E+00	mg/kg-day	4E-05	9.1E-05	mg/kg-day	2.0E-05	mg/kg-day	5
				Mercury	2.81E-01	mg/kg	5.9E-06	mg/kg-day	NA	---	NA	1.4E-05	mg/kg-day	1.0E-04	mg/kg-day	0.1
			Panfish Total								4E-05					5
			Panfish PCB Dioxin-like Congener TEQ		4.09E-06	mg/kg	8.6E-11	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.3

TABLE G-8
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP B - TEQS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group B Fish Tissue	Ingestion	**All Species**												
				PCB Dioxin-like Congener TEQ	7.39E-06	mg/kg	1.6E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	3.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.5
				2,3,7,8-TCDD TEQ	1.73E-06	mg/kg	3.6E-11	mg/kg-day	1.3E+05	mg/kg-day	5E-06	8.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.1
			All Species Total TEQ								2E-05					0.6
			Ingestion	**Bass**												
				PCB Dioxin-like Congener TEQ	1.03E-05	mg/kg	2.2E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	5.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.7
				2,3,7,8-TCDD TEQ	2.43E-06	mg/kg	5.1E-11	mg/kg-day	1.3E+05	mg/kg-day	7E-06	1.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.2
			Bass Total TEQ								3E-05					0.9
			Ingestion	**Catfish**												
				PCB Dioxin-like Congener TEQ	5.09E-06	mg/kg	1.1E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.4
				2,3,7,8-TCDD TEQ	8.69E-07	mg/kg	1.8E-11	mg/kg-day	1.3E+05	mg/kg-day	2E-06	4.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.06
			Catfish Total TEQ								2E-05					0.4
			Ingestion	**Panfish**												
				PCB Dioxin-like Congener TEQ	4.09E-06	mg/kg	8.6E-11	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.3
				2,3,7,8-TCDD TEQ	1.49E-06	mg/kg	3.1E-11	mg/kg-day	1.3E+05	mg/kg-day	4E-06	7.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.1
			Panfish Total TEQ								2E-05					0.4

TABLE G-9
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP C - PRIMARY COPCS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group C Fish Tissue	Ingestion	**All Species**												
				Total PCBs	5.43E+00	mg/kg	6.1E-04	mg/kg-day	2.0E+00	mg/kg-day	1E-03	1.4E-03	mg/kg-day	2.0E-05	mg/kg-day	71
				Mercury	4.30E-01	mg/kg	4.8E-05	mg/kg-day	NA	---	NA	1.1E-04	mg/kg-day	1.0E-04	mg/kg-day	1
			All Species Total								1E-03					72
			All Species PCB Dioxin-like Congener TEQ		8.33E-06	mg/kg	9.3E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.2E-09	mg/kg-day	7.0E-10	mg/kg-day	3
			Ingestion	**Bass**												
				Total PCBs	5.24E+00	mg/kg	5.8E-04	mg/kg-day	2.0E+00	mg/kg-day	1E-03	1.4E-03	mg/kg-day	2.0E-05	mg/kg-day	68
				Mercury	7.06E-01	mg/kg	7.9E-05	mg/kg-day	NA	---	NA	1.8E-04	mg/kg-day	1.0E-04	mg/kg-day	2
			Bass Total								1E-03					70
			Bass PCB Dioxin-like Congener TEQ		8.10E-06	mg/kg	9.0E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.1E-09	mg/kg-day	7.0E-10	mg/kg-day	3
			Ingestion	**Catfish**												
				Total PCBs	6.68E+00	mg/kg	7.5E-04	mg/kg-day	2.0E+00	mg/kg-day	1E-03	1.7E-03	mg/kg-day	2.0E-05	mg/kg-day	87
				Mercury	3.33E-01	mg/kg	3.7E-05	mg/kg-day	NA	---	NA	8.7E-05	mg/kg-day	1.0E-04	mg/kg-day	0.9
			Catfish Total								1E-03					88
			Catfish PCB Dioxin-like Congener TEQ		8.78E-06	mg/kg	9.8E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.3E-09	mg/kg-day	7.0E-10	mg/kg-day	3
			Ingestion	**Panfish**												
				Total PCBs	3.32E+00	mg/kg	3.7E-04	mg/kg-day	2.0E+00	mg/kg-day	7E-04	8.6E-04	mg/kg-day	2.0E-05	mg/kg-day	43
				Mercury	2.66E-01	mg/kg	3.0E-05	mg/kg-day	NA	---	NA	6.9E-05	mg/kg-day	1.0E-04	mg/kg-day	0.7
			Panfish Total								7E-04					44
			Panfish PCB Dioxin-like Congener TEQ		9.43E-06	mg/kg	1.1E-09	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.5E-09	mg/kg-day	7.0E-10	mg/kg-day	4

TABLE G-10

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP C - TEQS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group C Fish Tissue	Ingestion	**All Species**												
				PCB Dioxin-like Congener TEQ	8.33E-06	mg/kg	9.3E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.2E-09	mg/kg-day	7.0E-10	mg/kg-day	3
				2,3,7,8-TCDD TEQ	7.86E-07	mg/kg	8.8E-11	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.3
			All Species Total TEQ								1E-04					3
			Ingestion	**Bass**												
				PCB Dioxin-like Congener TEQ	8.10E-06	mg/kg	9.0E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.1E-09	mg/kg-day	7.0E-10	mg/kg-day	3
				2,3,7,8-TCDD TEQ	7.68E-07	mg/kg	8.6E-11	mg/kg-day	1.3E+05	mg/kg-day	1E-05	2.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.3
			Bass Total TEQ								1E-04					3
			Ingestion	**Catfish**												
				PCB Dioxin-like Congener TEQ	8.78E-06	mg/kg	9.8E-10	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.3E-09	mg/kg-day	7.0E-10	mg/kg-day	3
				2,3,7,8-TCDD TEQ	1.04E-06	mg/kg	1.2E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	2.7E-10	mg/kg-day	7.0E-10	mg/kg-day	0.4
			Catfish Total TEQ								1E-04					4
			Ingestion	**Panfish**												
				PCB Dioxin-like Congener TEQ	9.43E-06	mg/kg	1.1E-09	mg/kg-day	1.3E+05	mg/kg-day	1E-04	2.5E-09	mg/kg-day	7.0E-10	mg/kg-day	4
				2,3,7,8-TCDD TEQ	6.19E-07	mg/kg	6.9E-11	mg/kg-day	1.3E+05	mg/kg-day	9E-06	1.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.2
			Panfish Total TEQ								1E-04					4

TABLE G-11
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP C - PRIMARY COPCS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group C Fish Tissue	Ingestion	**All Species**												
				Total PCBs	5.43E+00	mg/kg	1.1E-04	mg/kg-day	1.0E+00	mg/kg-day	1E-04	2.7E-04	mg/kg-day	2.0E-05	mg/kg-day	13
				Mercury	4.30E-01	mg/kg	9.0E-06	mg/kg-day	NA	---	NA	2.1E-05	mg/kg-day	1.0E-04	mg/kg-day	0.2
			All Species Total								1E-04					14
			All Species PCB Dioxin-like Congener TEQ		8.33E-06	mg/kg	1.8E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	4.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
			Ingestion	**Bass**												
				Total PCBs	5.24E+00	mg/kg	1.1E-04	mg/kg-day	1.0E+00	mg/kg-day	1E-04	2.6E-04	mg/kg-day	2.0E-05	mg/kg-day	13
				Mercury	7.06E-01	mg/kg	1.5E-05	mg/kg-day	NA	---	NA	3.5E-05	mg/kg-day	1.0E-04	mg/kg-day	0.3
			Bass Total								1E-04					13
			Bass PCB Dioxin-like Congener TEQ		8.10E-06	mg/kg	1.7E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	4.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
			Ingestion	**Catfish**												
				Total PCBs	6.68E+00	mg/kg	1.4E-04	mg/kg-day	1.0E+00	mg/kg-day	1E-04	3.3E-04	mg/kg-day	2.0E-05	mg/kg-day	16
				Mercury	3.33E-01	mg/kg	7.0E-06	mg/kg-day	NA	---	NA	1.6E-05	mg/kg-day	1.0E-04	mg/kg-day	0.2
			Catfish Total								1E-04					17
			Catfish PCB Dioxin-like Congener TEQ		8.78E-06	mg/kg	1.8E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	4.3E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
			Ingestion	**Panfish**												
				Total PCBs	3.32E+00	mg/kg	7.0E-05	mg/kg-day	1.0E+00	mg/kg-day	7E-05	1.6E-04	mg/kg-day	2.0E-05	mg/kg-day	8
				Mercury	2.66E-01	mg/kg	5.6E-06	mg/kg-day	NA	---	NA	1.3E-05	mg/kg-day	1.0E-04	mg/kg-day	0.1
			Panfish Total								7E-05					8
			Panfish PCB Dioxin-like Congener TEQ		9.43E-06	mg/kg	2.0E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	4.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.7

TABLE G-12
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - FISH INGESTION - GROUP C - TEQS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish Tissue	Group C Fish Tissue	Ingestion	**All Species**												
				PCB Dioxin-like Congener TEQ	8.33E-06	mg/kg	1.8E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	4.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
				2,3,7,8-TCDD TEQ	7.86E-07	mg/kg	1.7E-11	mg/kg-day	1.3E+05	mg/kg-day	2E-06	3.9E-11	mg/kg-day	7.0E-10	mg/kg-day	0.06
			All Species Total TEQ								2E-05					0.6
			Ingestion	**Bass**												
				PCB Dioxin-like Congener TEQ	8.10E-06	mg/kg	1.7E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	4.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
				2,3,7,8-TCDD TEQ	7.68E-07	mg/kg	1.6E-11	mg/kg-day	1.3E+05	mg/kg-day	2E-06	3.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.05
			Bass Total TEQ								2E-05					0.6
			Ingestion	**Catfish**												
				PCB Dioxin-like Congener TEQ	8.78E-06	mg/kg	1.8E-10	mg/kg-day	1.3E+05	mg/kg-day	2E-05	4.3E-10	mg/kg-day	7.0E-10	mg/kg-day	0.6
				2,3,7,8-TCDD TEQ	1.04E-06	mg/kg	2.2E-11	mg/kg-day	1.3E+05	mg/kg-day	3E-06	5.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.07
			Catfish Total TEQ								3E-05					0.7
			Ingestion	**Panfish**												
				PCB Dioxin-like Congener TEQ	9.43E-06	mg/kg	2.0E-10	mg/kg-day	1.3E+05	mg/kg-day	3E-05	4.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.7
				2,3,7,8-TCDD TEQ	6.19E-07	mg/kg	1.3E-11	mg/kg-day	1.3E+05	mg/kg-day	2E-06	3.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.04
			Panfish Total TEQ								3E-05					0.7

APPENDIX H

FISH CONSUMPTION RAGS 9 TABLES

TABLE H-1

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP A - PRIMARY COPCS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group A Fish Tissue	**All Species**									
			Total PCBs	1E-03	---	---	1E-03	Eyes, Immune system	62	---	---	62
			Mercury	---	---	---	---	Nervous system	2	---	---	2
			All Species Total	1E-03	---	---	1E-03		64	---	---	64
			All Species PCB Dioxin-like Congener TEQ	5E-04	---	---	5E-04	Developmental	12	---	---	12
			Bass									
			Total PCBs	1E-03	---	---	1E-03	Eyes, Immune system	72	---	---	72
			Mercury	---	---	---	---	Nervous system	3	---	---	3
			Bass Total	1E-03	---	---	1E-03		74	---	---	74
			Bass PCB Dioxin-like Congener TEQ	6E-04	---	---	6E-04	Developmental	15	---	---	15
			Catfish									
			Total PCBs	1E-03	---	---	1E-03	Eyes, Immune system	77	---	---	77
			Mercury	---	---	---	---	Nervous system	1	---	---	1
			Catfish Total	1E-03	---	---	1E-03		78	---	---	78
			Catfish PCB Dioxin-like Congener TEQ	2E-04	---	---	2E-04	Developmental	4	---	---	4
			Panfish									
			Total PCBs	9E-04	---	---	9E-04	Eyes, Immune system	55	---	---	55
			Mercury	---	---	---	---	Nervous system	2	---	---	2
			Panfish Total	9E-04	---	---	9E-04		57	---	---	57
			Panfish PCB Dioxin-like Congener TEQ	4E-04	---	---	4E-04	Developmental	9	---	---	9

TABLE H-2

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP A - TEQS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group A Fish Tissue	**All Species**									
			PCB Dioxin-like Congener TEQ	5E-04	---	---	5E-04	Developmental	12	---	---	12
			2,3,7,8-TCDD TEQ	1E-04	---	---	1E-04	Developmental	4	---	---	4
			All Species Total TEQ	6E-04	---	---	6E-04		16	---	---	16
			Bass									
			PCB Dioxin-like Congener TEQ	6E-04	---	---	6E-04	Developmental	15	---	---	15
			2,3,7,8-TCDD TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			Bass Total TEQ	7E-04	---	---	7E-04		18	---	---	18
			Catfish									
			PCB Dioxin-like Congener TEQ	2E-04	---	---	2E-04	Developmental	4	---	---	4
			2,3,7,8-TCDD TEQ	3E-05	---	---	3E-05	Developmental	0.7	---	---	0.7
			Catfish Total TEQ	2E-04	---	---	2E-04		5	---	---	5
			Panfish									
			PCB Dioxin-like Congener TEQ	4E-04	---	---	4E-04	Developmental	9	---	---	9
			2,3,7,8-TCDD TEQ	1E-04	---	---	1E-04	Developmental	4	---	---	4
			Panfish Total TEQ	5E-04	---	---	5E-04		13	---	---	13

TABLE H-3

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP A - PRIMARY COPCS

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group A Fish Tissue	**All Species**									
			Total PCBs	5E-05	---	---	5E-05	Eyes, Immune system	6	---	---	6
			Mercury	---	---	---	---	Nervous system	0.2	---	---	0.2
			All Species Total	5E-05	---	---	5E-05		6	---	---	6
			All Species PCB Dioxin-like Congener TEQ	4E-05	---	---	4E-05	Developmental	1	---	---	1
			Bass									
			Total PCBs	6E-05	---	---	6E-05	Eyes, Immune system	7	---	---	7
			Mercury	---	---	---	---	Nervous system	0.2	---	---	0.2
			Bass Total	6E-05	---	---	6E-05		7	---	---	7
			Bass PCB Dioxin-like Congener TEQ	6E-05	---	---	6E-05	Developmental	1	---	---	1
			Catfish									
			Total PCBs	6E-05	---	---	6E-05	Eyes, Immune system	7	---	---	7
			Mercury	---	---	---	---	Nervous system	0.09	---	---	0.09
			Catfish Total	6E-05	---	---	6E-05		7	---	---	7
			Catfish PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.4	---	---	0.4
			Panfish									
			Total PCBs	4E-05	---	---	4E-05	Eyes, Immune system	5	---	---	5
			Mercury	---	---	---	---	Nervous system	0.2	---	---	0.2
			Panfish Total	4E-05	---	---	4E-05		5	---	---	5
			Panfish PCB Dioxin-like Congener TEQ	3E-05	---	---	3E-05	Developmental	0.9	---	---	0.9

TABLE H-4

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP A - TEQS

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group A Fish Tissue	**All Species**									
			PCB Dioxin-like Congener TEQ	4E-05	---	---	4E-05	Developmental	1	---	---	1
			2,3,7,8-TCDD TEQ	1E-05	---	---	1E-05	Developmental	0.4	---	---	0.4
			All Species Total TEQ	6E-05	---	---	6E-05		2	---	---	2
			Bass									
			PCB Dioxin-like Congener TEQ	6E-05	---	---	6E-05	Developmental	1	---	---	1
			2,3,7,8-TCDD TEQ	1E-05	---	---	1E-05	Developmental	0.3	---	---	0.3
			Bass Total TEQ	7E-05	---	---	7E-05		2	---	---	2
			Catfish									
			PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.4	---	---	0.4
			2,3,7,8-TCDD TEQ	3E-06	---	---	3E-06	Developmental	0.07	---	---	0.07
			Catfish Total TEQ	2E-05	---	---	2E-05		0.5	---	---	0.5
			Panfish									
			PCB Dioxin-like Congener TEQ	3E-05	---	---	3E-05	Developmental	0.9	---	---	0.9
			2,3,7,8-TCDD TEQ	1E-05	---	---	1E-05	Developmental	0.4	---	---	0.4
			Panfish Total TEQ	5E-05	---	---	5E-05		1	---	---	1

TABLE H-5

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP B - PRIMARY COPCS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group B Fish Tissue	**All Species**									
			Total PCBs	6E-04	---	---	6E-04	Eyes, Immune system	37	---	---	37
			Mercury	---	---	---	---	Nervous system	1	---	---	1
			All Species Total	6E-04	---	---	6E-04		39	---	---	39
			All Species PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			Bass									
			Total PCBs	1E-03	---	---	1E-03	Eyes, Immune system	62	---	---	62
			Mercury	---	---	---	---	Nervous system	2	---	---	2
			Bass Total	1E-03	---	---	1E-03		64	---	---	64
			Bass PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	4	---	---	4
			Catfish									
			Total PCBs	9E-04	---	---	9E-04	Eyes, Immune system	52	---	---	52
			Mercury	---	---	---	---	Nervous system	1	---	---	1
			Catfish Total	9E-04	---	---	9E-04		53	---	---	53
			Catfish PCB Dioxin-like Congener TEQ	7E-05	---	---	7E-05	Developmental	2	---	---	2
			Panfish									
			Total PCBs	4E-04	---	---	4E-04	Eyes, Immune system	24	---	---	24
			Mercury	---	---	---	---	Nervous system	0.7	---	---	0.7
			Panfish Total	4E-04	---	---	4E-04		25	---	---	25
			Panfish PCB Dioxin-like Congener TEQ	6E-05	---	---	6E-05	Developmental	2	---	---	2

TABLE H-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP B - TEQS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group B Fish Tissue	**All Species**									
			PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			2,3,7,8-TCDD TEQ	3E-05	---	---	3E-05	Developmental	0.6	---	---	0.6
			All Species Total TEQ	1E-04	---	---	1E-04		3	---	---	3
			Bass									
			PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	4	---	---	4
			2,3,7,8-TCDD TEQ	4E-05	---	---	4E-05	Developmental	0.9	---	---	0.9
			Bass Total TEQ	2E-04	---	---	2E-04		5	---	---	5
			Catfish									
			PCB Dioxin-like Congener TEQ	7E-05	---	---	7E-05	Developmental	2	---	---	2
			2,3,7,8-TCDD TEQ	1E-05	---	---	1E-05	Developmental	0.3	---	---	0.3
			Catfish Total TEQ	9E-05	---	---	9E-05		2	---	---	2
			Panfish									
			PCB Dioxin-like Congener TEQ	6E-05	---	---	6E-05	Developmental	2	---	---	2
			2,3,7,8-TCDD TEQ	2E-05	---	---	2E-05	Developmental	0.6	---	---	0.6
			Panfish Total TEQ	8E-05	---	---	8E-05		2	---	---	2

TABLE H-7

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP B - PRIMARY COPCS

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group B Fish Tissue	**All Species**									
			Total PCBs	6E-05	---	---	6E-05	Eyes, Immune system	7	---	---	7
			Mercury	---	---	---	---	Nervous system	0.2	---	---	0.2
			All Species Total	6E-05	---	---	6E-05		7	---	---	7
			All Species PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.5	---	---	0.5
			Bass									
			Total PCBs	1E-04	---	---	1E-04	Eyes, Immune system	12	---	---	12
			Mercury	---	---	---	---	Nervous system	0.4	---	---	0.4
			Bass Total	1E-04	---	---	1E-04		12	---	---	12
			Bass PCB Dioxin-like Congener TEQ	3E-05	---	---	3E-05	Developmental	0.7	---	---	0.7
			Catfish									
			Total PCBs	8E-05	---	---	8E-05	Eyes, Immune system	10	---	---	10
			Mercury	---	---	---	---	Nervous system	0.2	---	---	0.2
			Catfish Total	8E-05	---	---	8E-05		10	---	---	10
			Catfish PCB Dioxin-like Congener TEQ	1E-05	---	---	1E-05	Developmental	0.4	---	---	0.4
			Panfish									
			Total PCBs	4E-05	---	---	4E-05	Eyes, Immune system	5	---	---	5
			Mercury	---	---	---	---	Nervous system	0.1	---	---	0.1
			Panfish Total	4E-05	---	---	4E-05		5	---	---	5
			Panfish PCB Dioxin-like Congener TEQ	1E-05	---	---	1E-05	Developmental	0.3	---	---	0.3

TABLE H-8

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP B - TEQS

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group B Fish Tissue	**All Species**									
			PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.5	---	---	0.5
			2,3,7,8-TCDD TEQ	5E-06	---	---	5E-06	Developmental	0.1	---	---	0.1
			All Species Total TEQ	2E-05	---	---	2E-05		0.6	---	---	0.6
			Bass									
			PCB Dioxin-like Congener TEQ	3E-05	---	---	3E-05	Developmental	0.7	---	---	0.7
			2,3,7,8-TCDD TEQ	7E-06	---	---	7E-06	Developmental	0.2	---	---	0.2
			Bass Total TEQ	3E-05	---	---	3E-05		0.9	---	---	0.9
			Catfish									
			PCB Dioxin-like Congener TEQ	1E-05	---	---	1E-05	Developmental	0.4	---	---	0.4
			2,3,7,8-TCDD TEQ	2E-06	---	---	2E-06	Developmental	0.06	---	---	0.06
			Catfish Total TEQ	2E-05	---	---	2E-05		0.4	---	---	0.4
			Panfish									
			PCB Dioxin-like Congener TEQ	1E-05	---	---	1E-05	Developmental	0.3	---	---	0.3
			2,3,7,8-TCDD TEQ	4E-06	---	---	4E-06	Developmental	0.1	---	---	0.1
			Panfish Total TEQ	2E-05	---	---	2E-05		0.4	---	---	0.4

TABLE H-9

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP C - PRIMARY COPCS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group C Fish Tissue	**All Species**									
			Total PCBs	1E-03	---	---	1E-03	Eyes, Immune system	71	---	---	71
			Mercury	---	---	---	---	Nervous system	1	---	---	1
			All Species Total	1E-03	---	---	1E-03		72	---	---	72
			All Species PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			Bass									
			Total PCBs	1E-03	---	---	1E-03	Eyes, Immune system	68	---	---	68
			Mercury	---	---	---	---	Nervous system	2	---	---	2
			Bass Total	1E-03	---	---	1E-03		70	---	---	70
			Bass PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			Catfish									
			Total PCBs	1E-03	---	---	1E-03	Eyes, Immune system	87	---	---	87
			Mercury	---	---	---	---	Nervous system	0.9	---	---	0.9
			Catfish Total	1E-03	---	---	1E-03		88	---	---	88
			Catfish PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			Panfish									
			Total PCBs	7E-04	---	---	7E-04	Eyes, Immune system	43	---	---	43
			Mercury	---	---	---	---	Nervous system	0.7	---	---	0.7
			Panfish Total	7E-04	---	---	7E-04		44	---	---	44
			Panfish PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	4	---	---	4

TABLE H-10

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP C - TEQS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group C Fish Tissue	**All Species**									
			PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			2,3,7,8-TCDD TEQ	1E-05	---	---	1E-05	Developmental	0.3	---	---	0.3
			All Species Total TEQ	1E-04	---	---	1E-04		3	---	---	3
			Bass									
			PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			2,3,7,8-TCDD TEQ	1E-05	---	---	1E-05	Developmental	0.3	---	---	0.3
			Bass Total TEQ	1E-04	---	---	1E-04		3	---	---	3
			Catfish									
			PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	3	---	---	3
			2,3,7,8-TCDD TEQ	2E-05	---	---	2E-05	Developmental	0.4	---	---	0.4
			Catfish Total TEQ	1E-04	---	---	1E-04		4	---	---	4
			Panfish									
			PCB Dioxin-like Congener TEQ	1E-04	---	---	1E-04	Developmental	4	---	---	4
			2,3,7,8-TCDD TEQ	9E-06	---	---	9E-06	Developmental	0.2	---	---	0.2
			Panfish Total TEQ	1E-04	---	---	1E-04		4	---	---	4

TABLE H-11

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP C - PRIMARY COPCS

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group C Fish Tissue	**All Species**									
			Total PCBs	1E-04	---	---	1E-04	Eyes, Immune system	13	---	---	13
			Mercury	---	---	---	---	Nervous system	0.2	---	---	0.2
			All Species Total	1E-04	---	---	1E-04		14	---	---	14
			All Species PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.6	---	---	0.6
			Bass									
			Total PCBs	1E-04	---	---	1E-04	Eyes, Immune system	13	---	---	13
			Mercury	---	---	---	---	Nervous system	0.3	---	---	0.3
			Bass Total	1E-04	---	---	1E-04		13	---	---	13
			Bass PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.6	---	---	0.6
			Catfish									
			Total PCBs	1E-04	---	---	1E-04	Eyes, Immune system	16	---	---	16
			Mercury	---	---	---	---	Nervous system	0.2	---	---	0.2
			Catfish Total	1E-04	---	---	1E-04		17	---	---	17
			Catfish PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.6	---	---	0.6
			Panfish									
			Total PCBs	7E-05	---	---	7E-05	Eyes, Immune system	8	---	---	8
			Mercury	---	---	---	---	Nervous system	0.1	---	---	0.1
			Panfish Total	7E-05	---	---	7E-05		8	---	---	8
			Panfish PCB Dioxin-like Congener TEQ	3E-05	---	---	3E-05	Developmental	0.7	---	---	0.7

TABLE H-12

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS - FISH INGESTION - GROUP C - TEQS

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU-4

Scenario Timeframe: Current/Future
Receptor Population: Recreational Fisherman
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish Tissue	Group C Fish Tissue	**All Species**									
			PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.6	---	---	0.6
			2,3,7,8-TCDD TEQ	2E-06	---	---	2E-06	Developmental	0.06	---	---	0.06
			All Species Total TEQ	2E-05	---	---	2E-05		0.6	---	---	0.6
			Bass									
			PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.6	---	---	0.6
			2,3,7,8-TCDD TEQ	2E-06	---	---	2E-06	Developmental	0.05	---	---	0.05
			Bass Total TEQ	2E-05	---	---	2E-05		0.6	---	---	0.6
			Catfish									
			PCB Dioxin-like Congener TEQ	2E-05	---	---	2E-05	Developmental	0.6	---	---	0.6
			2,3,7,8-TCDD TEQ	3E-06	---	---	3E-06	Developmental	0.07	---	---	0.07
			Catfish Total TEQ	3E-05	---	---	3E-05		0.7	---	---	0.7
			Panfish									
			PCB Dioxin-like Congener TEQ	3E-05	---	---	3E-05	Developmental	0.7	---	---	0.7
			2,3,7,8-TCDD TEQ	2E-06	---	---	2E-06	Developmental	0.04	---	---	0.04
			Panfish Total TEQ	3E-05	---	---	3E-05		0.7	---	---	0.7

APPENDIX I

PROUCL OUTPUTS – DIRECT CONTACT

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	**User Selected Options**											
3	From File			WorkSheet.wst								
4	Full Precision			OFF								
5	Confidence Coefficient			95%								
6	Number of Bootstrap Operations			2000								
7												
8												
9	c1_eu1_total pcbs											
10												
11	**General Statistics**											
12	Number of Valid Data					67	Number of Detected Data					47
13	Number of Distinct Detected Data					46	Number of Non-Detect Data					20
14							Percent Non-Detects					29.85%
15												
16	**Raw Statistics**						**Log-transformed Statistics**					
17	Minimum Detected					0.037	Minimum Detected					-3.297
18	Maximum Detected					54.6	Maximum Detected					4
19	Mean of Detected					8.1	Mean of Detected					1.156
20	SD of Detected					9.774	SD of Detected					1.832
21	Minimum Non-Detect					0.04	Minimum Non-Detect					-3.219
22	Maximum Non-Detect					0.04	Maximum Non-Detect					-3.219
23												
24												
25	**UCL Statistics**											
26	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
27	Shapiro Wilk Test Statistic					0.725	Shapiro Wilk Test Statistic					0.871
28	5% Shapiro Wilk Critical Value					0.946	5% Shapiro Wilk Critical Value					0.946
29	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
30												
31	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
32	DL/2 Substitution Method						DL/2 Substitution Method					
33	Mean					5.688	Mean					-0.357
34	SD					8.97	SD					2.793
35	95% DL/2 (t) UCL					7.517	95% H-Stat (DL/2) UCL					112
36												
37	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
38	Mean					3.091	Mean in Log Scale					0.0486
39	SD					11.7	SD in Log Scale					2.367
40	95% MLE (t) UCL					5.475	Mean in Original Scale					5.718
41	95% MLE (Tiku) UCL					5.606	SD in Original Scale					8.951
42							95% t UCL					7.542
43							95% Percentile Bootstrap UCL					7.622
44							95% BCA Bootstrap UCL					8.164
45												
46	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
47	k star (bias corrected)					0.625	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
48	Theta Star					12.97						
49	nu star					58.72						
50												
51	A-D Test Statistic					0.826	**Nonparametric Statistics**					
52	5% A-D Critical Value					0.8	Kaplan-Meier (KM) Method					
53	K-S Test Statistic					0.8	Mean					5.693
54	5% K-S Critical Value					0.135	SD					8.899
55	**Data follow Appr. Gamma Distribution at 5% Significance Level**						SE of Mean					1.099
56							95% KM (t) UCL					7.527
57	**Assuming Gamma Distribution**						95% KM (z) UCL					7.501
58	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					7.52
59	Minimum					1E-12	95% KM (bootstrap t) UCL					8.247
60	Maximum					54.6	95% KM (BCA) UCL					7.532
61	Mean					6.037	95% KM (Percentile Bootstrap) UCL					7.592
62	Median					3.57	95% KM (Chebyshev) UCL					10.48
63	SD					8.8	97.5% KM (Chebyshev) UCL					12.56
64	k star					0.165	99% KM (Chebyshev) UCL					16.63
65	Theta star					36.48						
66	Nu star					22.18	**Potential UCLs to Use**					
67	AppChi2					12.47	95% KM (Chebyshev) UCL					10.48
68	95% Gamma Approximate UCL					10.74						
69	95% Adjusted Gamma UCL					10.88						
70	**Note: DL/2 is not a recommended method.**											
71												
72	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
73	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
74	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
75												
76	c1_eu2_total pcbs											
77												
78	**General Statistics**											
79	Number of Valid Observations					28	Number of Distinct Observations					28
80												
81	**Raw Statistics**						**Log-transformed Statistics**					
82	Minimum					0.115	Minimum of Log Data					-2.163
83	Maximum					228	Maximum of Log Data					5.429
84	Mean					31.63	Mean of log Data					2.812
85	Median					21.1	SD of log Data					1.373
86	SD					43.29						
87	Coefficient of Variation					1.369						
88	Skewness					3.718						
89												
90	**Relevant UCL Statistics**											
91	**Normal Distribution Test**						**Lognormal Distribution Test**					
92	Shapiro Wilk Test Statistic					0.59	Shapiro Wilk Test Statistic					0.882
93	Shapiro Wilk Critical Value					0.924	Shapiro Wilk Critical Value					0.924
94	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
95												
96	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
97	95% Student's-t UCL					45.56	95% H-UCL					93.02
98	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					95.95
99	95% Adjusted-CLT UCL (Chen-1995)					51.23	97.5% Chebyshev (MVUE) UCL					120.1
100	95% Modified-t UCL (Johnson-1978)					46.52	99% Chebyshev (MVUE) UCL					167.4
101												
102	**Gamma Distribution Test**						**Data Distribution**					
103	k star (bias corrected)					0.835	**Data appear Gamma Distributed at 5% Significance Level**					
104	Theta Star					37.86						
105	MLE of Mean					31.63						
106	MLE of Standard Deviation					34.6						
107	nu star					46.79						
108	Approximate Chi Square Value (.05)					32.09	**Nonparametric Statistics**					
109	Adjusted Level of Significance					0.0404	95% CLT UCL					45.08
110	Adjusted Chi Square Value					31.34	95% Jackknife UCL					45.56
111							95% Standard Bootstrap UCL					44.83
112	Anderson-Darling Test Statistic					0.487	95% Bootstrap-t UCL					60.56
113	Anderson-Darling 5% Critical Value					0.778	95% Hall's Bootstrap UCL					100.5
114	Kolmogorov-Smirnov Test Statistic					0.124	95% Percentile Bootstrap UCL					47.16
115	Kolmogorov-Smirnov 5% Critical Value					0.171	95% BCA Bootstrap UCL					54.85
116	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					67.29
117							97.5% Chebyshev(Mean, Sd) UCL					82.72
118	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					113
119	95% Approximate Gamma UCL					46.11						
120	95% Adjusted Gamma UCL					47.22						
121												
122	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					46.11
123												
124	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
125	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
126	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
127												
128	c2n_eu1_mercury											
129												
130	**General Statistics**											
131	Number of Valid Observations					14	Number of Distinct Observations					13
132												
133	**Raw Statistics**						**Log-transformed Statistics**					
134	Minimum					0.0194	Minimum of Log Data					-3.942
135	Maximum					1.65	Maximum of Log Data					0.501
136	Mean					0.374	Mean of log Data					-2.247
137	Median					0.054	SD of log Data					1.61
138	SD					0.573						
139	Coefficient of Variation					1.534						
140	Skewness					1.42						
141												
142	**Relevant UCL Statistics**											
143	**Normal Distribution Test**						**Lognormal Distribution Test**					
144	Shapiro Wilk Test Statistic					0.655	Shapiro Wilk Test Statistic					0.783
145	Shapiro Wilk Critical Value					0.874	Shapiro Wilk Critical Value					0.874
146	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
147												
148	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
149	95% Student's-t UCL					0.645	95% H-UCL					2.205
150	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					1.013
151	95% Adjusted-CLT UCL (Chen-1995)					0.688	97.5% Chebyshev (MVUE) UCL					1.311
152	95% Modified-t UCL (Johnson-1978)					0.655	99% Chebyshev (MVUE) UCL					1.896
153												
154	**Gamma Distribution Test**						**Data Distribution**					
155	k star (bias corrected)					0.443	**Data do not follow a Discernable Distribution (0.05)**					
156	Theta Star					0.845						
157	MLE of Mean					0.374						
158	MLE of Standard Deviation					0.562						
159	nu star					12.39						
160	Approximate Chi Square Value (.05)					5.486	**Nonparametric Statistics**					
161	Adjusted Level of Significance					0.0312	95% CLT UCL					0.626
162	Adjusted Chi Square Value					4.889	95% Jackknife UCL					0.645
163							95% Standard Bootstrap UCL					0.615
164	Anderson-Darling Test Statistic					1.877	95% Bootstrap-t UCL					0.712
165	Anderson-Darling 5% Critical Value					0.793	95% Hall's Bootstrap UCL					0.593
166	Kolmogorov-Smirnov Test Statistic					0.393	95% Percentile Bootstrap UCL					0.626
167	Kolmogorov-Smirnov 5% Critical Value					0.242	95% BCA Bootstrap UCL					0.67
168	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					1.042
169							97.5% Chebyshev(Mean, Sd) UCL					1.331
170	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					1.898
171	95% Approximate Gamma UCL					0.844						
172	95% Adjusted Gamma UCL					0.947						
173												
174	**Potential UCL to Use**						Use 99% Chebyshev (Mean, Sd) UCL					1.898
175	**Recommended UCL exceeds the maximum observation**											
176												
177	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
178	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
179	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
180	c2n_eu1_total pcbs											
181												
182	General Statistics											
183	Number of Valid Data					14	Number of Detected Data					7
184	Number of Distinct Detected Data					7	Number of Non-Detect Data					7
185							Percent Non-Detects					50.00%
186												
187	Raw Statistics						Log-transformed Statistics					
188	Minimum Detected					0.0435	Minimum Detected					-3.135
189	Maximum Detected					72.5	Maximum Detected					4.284
190	Mean of Detected					13.41	Mean of Detected					0.0672
191	SD of Detected					26.74	SD of Detected					2.88
192	Minimum Non-Detect					0.0375	Minimum Non-Detect					-3.283
193	Maximum Non-Detect					0.047	Maximum Non-Detect					-3.058
194												
195	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					8
196	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					6
197	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					57.14%
198												
199	Warning: There are only 7 Detected Values in this data											
200	Note: It should be noted that even though bootstrap may be performed on this data set											
201	the resulting calculations may not be reliable enough to draw conclusions											
202												
203	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
204												
205												
206	UCL Statistics											
207	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
208	Shapiro Wilk Test Statistic					0.597	Shapiro Wilk Test Statistic					0.92
209	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803
210	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
211												
212	Assuming Normal Distribution						Assuming Lognormal Distribution					
213	DL/2 Substitution Method						DL/2 Substitution Method					
214	Mean					6.715	Mean					-1.922
215	SD					19.45	SD					2.845
216	95% DL/2 (t) UCL					15.92	95% H-Stat (DL/2) UCL					1322
217												
218	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
219	MLE yields a negative mean						Mean in Log Scale					-3.959
220							SD in Log Scale					4.692
221							Mean in Original Scale					6.705
222							SD in Original Scale					19.45
223							95% t UCL					15.91
224							95% Percentile Bootstrap UCL					16.08
225							95% BCA Bootstrap UCL					22.45
226												
227	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
228	k star (bias corrected)					0.253	Data appear Gamma Distributed at 5% Significance Level					
229	Theta Star					52.97						
230	nu star					3.544						
231												
232	A-D Test Statistic					0.432	Nonparametric Statistics					
233	5% A-D Critical Value					0.793	Kaplan-Meier (KM) Method					
234	K-S Test Statistic					0.793	Mean					6.727
235	5% K-S Critical Value					0.337	SD					18.74
236	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					5.408
237							95% KM (t) UCL					16.3
238	Assuming Gamma Distribution						95% KM (z) UCL					15.62
239	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					15.92
240	Minimum					1E-12	95% KM (bootstrap t) UCL					157.9
241	Maximum					72.5	95% KM (BCA) UCL					17.11
242	Mean					8.781	95% KM (Percentile Bootstrap) UCL					16.9
243	Median					2.39	95% KM (Chebyshev) UCL					30.3
244	SD					18.99	97.5% KM (Chebyshev) UCL					40.5
245	k star					0.158	99% KM (Chebyshev) UCL					60.54
246	Theta star					55.57						
247	Nu star					4.425	Potential UCLs to Use					
248	AppChi2					0.896	95% KM (t) UCL					16.3
249	95% Gamma Approximate UCL					43.35						
250	95% Adjusted Gamma UCL					54.78						
251	Note: DL/2 is not a recommended method.											
252												
253	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
254	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
255	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
256												
257	c2n_eu2_mercury											
258												
259	General Statistics											
260					Number of Valid Observations	19					Number of Distinct Observations	19
261												
262	Raw Statistics						Log-transformed Statistics					
263					Minimum	0.02					Minimum of Log Data	-3.912
264					Maximum	0.64					Maximum of Log Data	-0.446
265					Mean	0.101					Mean of log Data	-2.91
266					Median	0.0435					SD of log Data	0.906
267					SD	0.174						
268					Coefficient of Variation	1.719						
269					Skewness	2.805						
270												
271	Relevant UCL Statistics											
272	Normal Distribution Test						Lognormal Distribution Test					
273					Shapiro Wilk Test Statistic	0.448					Shapiro Wilk Test Statistic	0.725
274					Shapiro Wilk Critical Value	0.901					Shapiro Wilk Critical Value	0.901
275	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
276												
277	Assuming Normal Distribution						Assuming Lognormal Distribution					
278					95% Student's-t UCL	0.171					95% H-UCL	0.139
279	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	0.159
280					95% Adjusted-CLT UCL (Chen-1995)	0.195					97.5% Chebyshev (MVUE) UCL	0.193
281					95% Modified-t UCL (Johnson-1978)	0.175					99% Chebyshev (MVUE) UCL	0.261
282												
283	Gamma Distribution Test						Data Distribution					
284					k star (bias corrected)	0.823	Data do not follow a Discernable Distribution (0.05)					
285					Theta Star	0.123						
286					MLE of Mean	0.101						
287					MLE of Standard Deviation	0.112						
288					nu star	31.27						
289					Approximate Chi Square Value (.05)	19.5	Nonparametric Statistics					
290					Adjusted Level of Significance	0.0369					95% CLT UCL	0.167
291					Adjusted Chi Square Value	18.69					95% Jackknife UCL	0.171
292											95% Standard Bootstrap UCL	0.165
293					Anderson-Darling Test Statistic	3.362					95% Bootstrap-t UCL	0.804
294					Anderson-Darling 5% Critical Value	0.772					95% Hall's Bootstrap UCL	0.587
295					Kolmogorov-Smirnov Test Statistic	0.355					95% Percentile Bootstrap UCL	0.166
296					Kolmogorov-Smirnov 5% Critical Value	0.205					95% BCA Bootstrap UCL	0.198
297	Data not Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	0.276
298											97.5% Chebyshev(Mean, Sd) UCL	0.351
299	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	0.5
300					95% Approximate Gamma UCL	0.163						
301					95% Adjusted Gamma UCL	0.17						
302												
303	Potential UCL to Use										Use 95% Chebyshev (Mean, Sd) UCL	0.276
304												
305	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
306	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
307	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
308	c2n_eu2_total pcbs											
309												
310	General Statistics											
311	Number of Valid Data					19	Number of Detected Data					4
312	Number of Distinct Detected Data					4	Number of Non-Detect Data					15
313							Percent Non-Detects					78.95%
314												
315	Raw Statistics						Log-transformed Statistics					
316	Minimum Detected					0.0455	Minimum Detected					-3.09
317	Maximum Detected					2.68	Maximum Detected					0.986
318	Mean of Detected					0.827	Mean of Detected					-1.406
319	SD of Detected					1.256	SD of Detected					1.94
320	Minimum Non-Detect					0.042	Minimum Non-Detect					-3.17
321	Maximum Non-Detect					0.0485	Maximum Non-Detect					-3.026
322												
323	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					16
324	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					3
325	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					84.21%
326												
327	Warning: There are only 4 Distinct Detected Values in this data											
328	Note: It should be noted that even though bootstrap may be performed on this data set											
329	the resulting calculations may not be reliable enough to draw conclusions											
330												
331	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
332												
333												
334	UCL Statistics											
335	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
336	Shapiro Wilk Test Statistic					0.754	Shapiro Wilk Test Statistic					0.893
337	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748
338	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
339												
340	Assuming Normal Distribution						Assuming Lognormal Distribution					
341	DL/2 Substitution Method						DL/2 Substitution Method					
342	Mean					0.192	Mean					-3.305
343	SD					0.613	SD					1.282
344	95% DL/2 (t) UCL					0.436	95% H-Stat (DL/2) UCL					0.209
345												
346	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
347	MLE yields a negative mean						Mean in Log Scale					-7.658
348							SD in Log Scale					3.735
349							Mean in Original Scale					0.174
350							SD in Original Scale					0.619
351							95% t UCL					0.42
352							95% Percentile Bootstrap UCL					0.454
353							95% BCA Bootstrap UCL					0.597
354												
355	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
356	k star (bias corrected)					0.297	Data appear Normal at 5% Significance Level					
357	Theta Star					2.787						
358	nu star					2.372						
359												
360	A-D Test Statistic					0.394	Nonparametric Statistics					
361	5% A-D Critical Value					0.68	Kaplan-Meier (KM) Method					
362	K-S Test Statistic					0.68	Mean					0.21
363	5% K-S Critical Value					0.41	SD					0.592
364	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.157
365							95% KM (t) UCL					0.482
366	Assuming Gamma Distribution						95% KM (z) UCL					0.468
367	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.445
368	Minimum					0.0455	95% KM (bootstrap t) UCL					1.015
369	Maximum					2.68	95% KM (BCA) UCL					2.68
370	Mean					0.832	95% KM (Percentile Bootstrap) UCL					0.865
371	Median					0.821	95% KM (Chebyshev) UCL					0.893
372	SD					0.514	97.5% KM (Chebyshev) UCL					1.189
373	k star					1.804	99% KM (Chebyshev) UCL					1.77
374	Theta star					0.461						
375	Nu star					68.56	Potential UCLs to Use					
376	AppChi2					50.5	95% KM (t) UCL					0.482
377	95% Gamma Approximate UCL					1.129	95% KM (Percentile Bootstrap) UCL					0.865
378	95% Adjusted Gamma UCL					N/A						
379	Note: DL/2 is not a recommended method.											
380												
381	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
382	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
383	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
384												
385	c2s_eu1_mercury											
386												
387	**General Statistics**											
388	Number of Valid Observations					16	Number of Distinct Observations					14
389												
390	**Raw Statistics**						**Log-transformed Statistics**					
391	Minimum					0.0125	Minimum of Log Data					-4.382
392	Maximum					0.126	Maximum of Log Data					-2.071
393	Mean					0.0537	Mean of log Data					-3.094
394	Median					0.043	SD of log Data					0.593
395	SD					0.0348						
396	Coefficient of Variation					0.649						
397	Skewness					1.439						
398												
399	**Relevant UCL Statistics**											
400	**Normal Distribution Test**						**Lognormal Distribution Test**					
401	Shapiro Wilk Test Statistic					0.768	Shapiro Wilk Test Statistic					0.91
402	Shapiro Wilk Critical Value					0.887	Shapiro Wilk Critical Value					0.887
403	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
404												
405	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
406	95% Student's-t UCL					0.0689	95% H-UCL					0.0751
407	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					0.0893
408	95% Adjusted-CLT UCL (Chen-1995)					0.0713	97.5% Chebyshev (MVUE) UCL					0.105
409	95% Modified-t UCL (Johnson-1978)					0.0694	99% Chebyshev (MVUE) UCL					0.135
410												
411	**Gamma Distribution Test**						**Data Distribution**					
412	k star (bias corrected)					2.571	**Data appear Lognormal at 5% Significance Level**					
413	Theta Star					0.0209						
414	MLE of Mean					0.0537						
415	MLE of Standard Deviation					0.0335						
416	nu star					82.29						
417	Approximate Chi Square Value (.05)					62.38	**Nonparametric Statistics**					
418	Adjusted Level of Significance					0.0335	95% CLT UCL					0.068
419	Adjusted Chi Square Value					60.41	95% Jackknife UCL					0.0689
420							95% Standard Bootstrap UCL					0.0674
421	Anderson-Darling Test Statistic					0.952	95% Bootstrap-t UCL					0.0766
422	Anderson-Darling 5% Critical Value					0.744	95% Hall's Bootstrap UCL					0.0684
423	Kolmogorov-Smirnov Test Statistic					0.224	95% Percentile Bootstrap UCL					0.0685
424	Kolmogorov-Smirnov 5% Critical Value					0.217	95% BCA Bootstrap UCL					0.0711
425	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					0.0916
426							97.5% Chebyshev(Mean, Sd) UCL					0.108
427	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					0.14
428	95% Approximate Gamma UCL					0.0708						
429	95% Adjusted Gamma UCL					0.0731						
430												
431	**Potential UCL to Use**						Use 95% H-UCL					0.0751
432												
433	**ProUCL computes and outputs H-statistic based UCLs for historical reasons only.**											
434	**H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.**											
435	**It is therefore recommended to avoid the use of H-statistic based 95% UCLs.**											
436	**Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.**											
437												
438	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
439	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
440	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
441	c2s_eu1_total pcbs											
442												
443	**General Statistics**											
444	Number of Valid Data					16	Number of Detected Data					4
445	Number of Distinct Detected Data					4	Number of Non-Detect Data					12
446							Percent Non-Detects					75.00%
447												
448	**Raw Statistics**						**Log-transformed Statistics**					
449	Minimum Detected					0.0515	Minimum Detected					-2.966
450	Maximum Detected					0.505	Maximum Detected					-0.683
451	Mean of Detected					0.237	Mean of Detected					-1.764
452	SD of Detected					0.2	SD of Detected					0.986
453	Minimum Non-Detect					0.04	Minimum Non-Detect					-3.219
454	Maximum Non-Detect					0.0455	Maximum Non-Detect					-3.09
455												
456	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
457	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					4
458	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					75.00%
459												
460	**Warning: There are only 4 Distinct Detected Values in this data**											
461	**Note: It should be noted that even though bootstrap may be performed on this data set**											
462	**the resulting calculations may not be reliable enough to draw conclusions**											
463												
464	**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**											
465												
466												
467	**UCL Statistics**											
468	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
469	Shapiro Wilk Test Statistic					0.94	Shapiro Wilk Test Statistic					0.988
470	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748
471	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
472												
473	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
474	DL/2 Substitution Method						DL/2 Substitution Method					
475	Mean					0.0753	Mean					-3.324
476	SD					0.131	SD					1.03
477	95% DL/2 (t) UCL					0.133	95% H-Stat (DL/2) UCL					0.127
478												
479	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
480	**MLE yields a negative mean**						Mean in Log Scale					-4.961
481							SD in Log Scale					2.073
482							Mean in Original Scale					0.0616
483							SD in Original Scale					0.138
484							95% t UCL					0.122
485							95% Percentile Bootstrap UCL					0.122
486							95% BCA Bootstrap UCL					0.139
487												
488	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
489	k star (bias corrected)					0.589	**Data appear Normal at 5% Significance Level**					
490	Theta Star					0.402						
491	nu star					4.713						
492												
493	A-D Test Statistic					0.204	**Nonparametric Statistics**					
494	5% A-D Critical Value					0.662	Kaplan-Meier (KM) Method					
495	K-S Test Statistic					0.662	Mean					0.0979
496	5% K-S Critical Value					0.399	SD					0.118
497	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					0.0341
498							95% KM (t) UCL					0.158
499	**Assuming Gamma Distribution**						95% KM (z) UCL					0.154
500	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.157
501	Minimum					1E-12	95% KM (bootstrap t) UCL					0.162
502	Maximum					0.505	95% KM (BCA) UCL					0.505
503	Mean					0.222	95% KM (Percentile Bootstrap) UCL					0.297
504	Median					0.148	95% KM (Chebyshev) UCL					0.246
505	SD					0.21	97.5% KM (Chebyshev) UCL					0.311
506	k star					0.141	99% KM (Chebyshev) UCL					0.437
507	Theta star					1.581						
508	Nu star					4.502	**Potential UCLs to Use**					
509	AppChi2					0.929	95% KM (t) UCL					0.158
510	95% Gamma Approximate UCL					1.077	95% KM (Percentile Bootstrap) UCL					0.297
511	95% Adjusted Gamma UCL					N/A						
512	**Note: DL/2 is not a recommended method.**											
513												
514	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
515	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
516	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
517												
518	c3n_eu1_mercury											
519												
520	**General Statistics**											
521	Number of Valid Observations					51	Number of Distinct Observations					45
522												
523	**Raw Statistics**						**Log-transformed Statistics**					
524	Minimum					0.0645	Minimum of Log Data					-2.741
525	Maximum					14.35	Maximum of Log Data					2.664
526	Mean					2.578	Mean of log Data					0.37
527	Median					1.99	SD of log Data					1.229
528	SD					2.924						
529	Coefficient of Variation					1.134						
530	Skewness					2.482						
531												
532	**Relevant UCL Statistics**											
533	**Normal Distribution Test**						**Lognormal Distribution Test**					
534	Lilliefors Test Statistic					0.209	Lilliefors Test Statistic					0.117
535	Lilliefors Critical Value					0.124	Lilliefors Critical Value					0.124
536	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
537												
538	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
539	95% Student's-t UCL					3.264	95% H-UCL					4.802
540	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					5.813
541	95% Adjusted-CLT UCL (Chen-1995)					3.403	97.5% Chebyshev (MVUE) UCL					7.028
542	95% Modified-t UCL (Johnson-1978)					3.288	99% Chebyshev (MVUE) UCL					9.415
543												
544	**Gamma Distribution Test**						**Data Distribution**					
545	k star (bias corrected)					0.955	**Data appear Gamma Distributed at 5% Significance Level**					
546	Theta Star					2.701						
547	MLE of Mean					2.578						
548	MLE of Standard Deviation					2.639						
549	nu star					97.37						
550	Approximate Chi Square Value (.05)					75.61	**Nonparametric Statistics**					
551	Adjusted Level of Significance					0.0453	95% CLT UCL					3.251
552	Adjusted Chi Square Value					75.05	95% Jackknife UCL					3.264
553							95% Standard Bootstrap UCL					3.243
554	Anderson-Darling Test Statistic					0.486	95% Bootstrap-t UCL					3.52
555	Anderson-Darling 5% Critical Value					0.78	95% Hall's Bootstrap UCL					3.531
556	Kolmogorov-Smirnov Test Statistic					0.0943	95% Percentile Bootstrap UCL					3.276
557	Kolmogorov-Smirnov 5% Critical Value					0.128	95% BCA Bootstrap UCL					3.363
558	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					4.363
559							97.5% Chebyshev(Mean, Sd) UCL					5.135
560	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					6.651
561	95% Approximate Gamma UCL					3.32						
562	95% Adjusted Gamma UCL					3.345						
563												
564	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					3.32
565												
566	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
567	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
568	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
569												
570	c3n_eu1_total pcbs											
571												
572	**General Statistics**											
573	Number of Valid Data					51	Number of Detected Data					50
574	Number of Distinct Detected Data					47	Number of Non-Detect Data					1
575							Percent Non-Detects					1.96%
576												
577	**Raw Statistics**						**Log-transformed Statistics**					
578	Minimum Detected					0.0715	Minimum Detected					-2.638
579	Maximum Detected					89.5	Maximum Detected					4.494
580	Mean of Detected					12.28	Mean of Detected					1.55
581	SD of Detected					18.42	SD of Detected					1.608
582	Minimum Non-Detect					0.039	Minimum Non-Detect					-3.244
583	Maximum Non-Detect					0.039	Maximum Non-Detect					-3.244
584												
585												
586	**UCL Statistics**											
587	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
588	Shapiro Wilk Test Statistic					0.646	Shapiro Wilk Test Statistic					0.947
589	5% Shapiro Wilk Critical Value					0.947	5% Shapiro Wilk Critical Value					0.947
590	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
591												
592	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
593	DL/2 Substitution Method						DL/2 Substitution Method					
594	Mean					12.04	Mean					1.443
595	SD					18.31	SD					1.768
596	95% DL/2 (t) UCL					16.34	95% H-Stat (DL/2) UCL					45.2
597												
598	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
599	Mean					11.83	Mean in Log Scale					1.47
600	SD					18.39	SD in Log Scale					1.692
601	95% MLE (t) UCL					16.14	Mean in Original Scale					12.04
602	95% MLE (Tiku) UCL					15.76	SD in Original Scale					18.31
603							95% t UCL					16.34
604							95% Percentile Bootstrap UCL					16.61
605							95% BCA Bootstrap UCL					17.53
606												
607	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
608	k star (bias corrected)					0.614	**Data appear Gamma Distributed at 5% Significance Level**					
609	Theta Star					20.01						
610	nu star					61.4						
611												
612	A-D Test Statistic					0.775	**Nonparametric Statistics**					
613	5% A-D Critical Value					0.803	Kaplan-Meier (KM) Method					
614	K-S Test Statistic					0.803	Mean					12.04
615	5% K-S Critical Value					0.131	SD					18.13
616	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					2.565
617							95% KM (t) UCL					16.34
618	**Assuming Gamma Distribution**						95% KM (z) UCL					16.26
619	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					16.34
620	Minimum					1E-12	95% KM (bootstrap t) UCL					17.96
621	Maximum					89.5	95% KM (BCA) UCL					16.32
622	Mean					12.04	95% KM (Percentile Bootstrap) UCL					16.33
623	Median					6.11	95% KM (Chebyshev) UCL					23.22
624	SD					18.31	97.5% KM (Chebyshev) UCL					28.06
625	k star					0.418	99% KM (Chebyshev) UCL					37.57
626	Theta star					28.79						
627	Nu star					42.67	**Potential UCLs to Use**					
628	AppChi2					28.69	95% KM (Chebyshev) UCL					23.22
629	95% Gamma Approximate UCL					17.91						
630	95% Adjusted Gamma UCL					18.12						
631	**Note: DL/2 is not a recommended method.**											
632												
633	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
634	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
635	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
636												
637	c3n_eu2_mercury											
638												
639	**General Statistics**											
640	Number of Valid Observations					12	Number of Distinct Observations					12
641												
642	**Raw Statistics**						**Log-transformed Statistics**					
643	Minimum					0.033	Minimum of Log Data					-3.411
644	Maximum					6.143	Maximum of Log Data					1.815
645	Mean					1.492	Mean of log Data					-1.046
646	Median					0.55	SD of log Data					2.076
647	SD					2.024						
648	Coefficient of Variation					1.357						
649	Skewness					1.465						
650												
651	**Relevant UCL Statistics**											
652	**Normal Distribution Test**						**Lognormal Distribution Test**					
653	Shapiro Wilk Test Statistic					0.768	Shapiro Wilk Test Statistic					0.85
654	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
655	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
656												
657	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
658	95% Student's-t UCL					2.542	95% H-UCL					75.22
659	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					7.711
660	95% Adjusted-CLT UCL (Chen-1995)					2.717	97.5% Chebyshev (MVUE) UCL					10.17
661	95% Modified-t UCL (Johnson-1978)					2.583	99% Chebyshev (MVUE) UCL					15.01
662												
663	**Gamma Distribution Test**						**Data Distribution**					
664	k star (bias corrected)					0.391	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
665	Theta Star					3.818						
666	MLE of Mean					1.492						
667	MLE of Standard Deviation					2.387						
668	nu star					9.38						
669	Approximate Chi Square Value (.05)					3.558	**Nonparametric Statistics**					
670	Adjusted Level of Significance					0.029	95% CLT UCL					2.453
671	Adjusted Chi Square Value					3.032	95% Jackknife UCL					2.542
672							95% Standard Bootstrap UCL					2.417
673	Anderson-Darling Test Statistic					0.738	95% Bootstrap-t UCL					3.307
674	Anderson-Darling 5% Critical Value					0.795	95% Hall's Bootstrap UCL					3.254
675	Kolmogorov-Smirnov Test Statistic					0.266	95% Percentile Bootstrap UCL					2.437
676	Kolmogorov-Smirnov 5% Critical Value					0.26	95% BCA Bootstrap UCL					2.726
677	**Data follow Appr. Gamma Distribution at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					4.039
678							97.5% Chebyshev(Mean, Sd) UCL					5.141
679	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					7.306
680	95% Approximate Gamma UCL					3.934						
681	95% Adjusted Gamma UCL					4.617						
682												
683	**Potential UCL to Use**						Use 95% Adjusted Gamma UCL					4.617
684												
685	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
686	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
687	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
688												
689	c3n_eu2_total pcbs											
690												
691	**General Statistics**											
692	Number of Valid Data					12	Number of Detected Data					11
693	Number of Distinct Detected Data					11	Number of Non-Detect Data					1
694							Percent Non-Detects					8.33%
695												
696	**Raw Statistics**						**Log-transformed Statistics**					
697	Minimum Detected					0.042	Minimum Detected					-3.17
698	Maximum Detected					70.85	Maximum Detected					4.261
699	Mean of Detected					11.71	Mean of Detected					0.267
700	SD of Detected					21.38	SD of Detected					2.668
701	Minimum Non-Detect					0.04	Minimum Non-Detect					-3.219
702	Maximum Non-Detect					0.04	Maximum Non-Detect					-3.219
703												
704												
705	**UCL Statistics**											
706	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
707	Shapiro Wilk Test Statistic					0.627	Shapiro Wilk Test Statistic					0.927
708	5% Shapiro Wilk Critical Value					0.85	5% Shapiro Wilk Critical Value					0.85
709	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
710												
711	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
712	DL/2 Substitution Method						DL/2 Substitution Method					
713	Mean					10.74	Mean					-0.081
714	SD					20.66	SD					2.815
715	95% DL/2 (t) UCL					21.45	95% H-Stat (DL/2) UCL					15224
716												
717	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
718	Mean					9.6	Mean in Log Scale					-0.278
719	SD					20.98	SD in Log Scale					3.169
720	95% MLE (t) UCL					20.48	Mean in Original Scale					10.74
721	95% MLE (Tiku) UCL					19.68	SD in Original Scale					20.66
722							95% t UCL					21.45
723							95% Percentile Bootstrap UCL					20.84
724							95% BCA Bootstrap UCL					25.84
725												
726	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
727	k star (bias corrected)					0.288	**Data appear Gamma Distributed at 5% Significance Level**					
728	Theta Star					40.71						
729	nu star					6.33						
730												
731	A-D Test Statistic					0.43	**Nonparametric Statistics**					
732	5% A-D Critical Value					0.818	Kaplan-Meier (KM) Method					
733	K-S Test Statistic					0.818	Mean					10.74
734	5% K-S Critical Value					0.275	SD					19.78
735	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					5.989
736							95% KM (t) UCL					21.5
737	**Assuming Gamma Distribution**						95% KM (z) UCL					20.59
738	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					21.45
739	Minimum					1E-12	95% KM (bootstrap t) UCL					38.54
740	Maximum					70.85	95% KM (BCA) UCL					21.97
741	Mean					10.74	95% KM (Percentile Bootstrap) UCL					21.54
742	Median					0.855	95% KM (Chebyshev) UCL					36.85
743	SD					20.66	97.5% KM (Chebyshev) UCL					48.14
744	k star					0.183	99% KM (Chebyshev) UCL					70.33
745	Theta star					58.61						
746	Nu star					4.397	**Potential UCLs to Use**					
747	AppChi2					0.885	95% KM (Chebyshev) UCL					36.85
748	95% Gamma Approximate UCL					53.37						
749	95% Adjusted Gamma UCL					70.03						
750	**Note: DL/2 is not a recommended method.**											
751												
752	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
753	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
754	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
755												
756	c3s_eu1_mercury											
757												
758	**General Statistics**											
759	Number of Valid Data					35	Number of Detected Data					34
760	Number of Distinct Detected Data					30	Number of Non-Detect Data					1
761							Percent Non-Detects					2.86%
762												
763	**Raw Statistics**						**Log-transformed Statistics**					
764	Minimum Detected					0.012	Minimum Detected					-4.423
765	Maximum Detected					18.85	Maximum Detected					2.937
766	Mean of Detected					1.677	Mean of Detected					-1.746
767	SD of Detected					4.414	SD of Detected					1.989
768	Minimum Non-Detect					0.0083	Minimum Non-Detect					-4.791
769	Maximum Non-Detect					0.0083	Maximum Non-Detect					-4.791
770												
771												
772	**UCL Statistics**											
773	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
774	Shapiro Wilk Test Statistic					0.422	Shapiro Wilk Test Statistic					0.857
775	5% Shapiro Wilk Critical Value					0.933	5% Shapiro Wilk Critical Value					0.933
776	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
777												
778	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
779	DL/2 Substitution Method						DL/2 Substitution Method					
780	Mean					1.63	Mean					-1.853
781	SD					4.358	SD					2.059
782	95% DL/2 (t) UCL					2.875	95% H-Stat (DL/2) UCL					5.332
783												
784	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
785	Mean					1.544	Mean in Log Scale					-1.883
786	SD					4.374	SD in Log Scale					2.121
787	95% MLE (t) UCL					2.795	Mean in Original Scale					1.63
788	95% MLE (Tiku) UCL					2.66	SD in Original Scale					4.358
789							95% t UCL					2.875
790							95% Percentile Bootstrap UCL					2.966
791							95% BCA Bootstrap UCL					3.432
792												
793	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
794	k star (bias corrected)					0.297	**Data do not follow a Discernable Distribution (0.05)**					
795	Theta Star					5.652						
796	nu star					20.18						
797												
798	A-D Test Statistic					4.128	**Nonparametric Statistics**					
799	5% A-D Critical Value					0.855	Kaplan-Meier (KM) Method					
800	K-S Test Statistic					0.855	Mean					1.63
801	5% K-S Critical Value					0.164	SD					4.295
802	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					0.737
803							95% KM (t) UCL					2.876
804	**Assuming Gamma Distribution**						95% KM (z) UCL					2.842
805	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.875
806	Minimum					1E-12	95% KM (bootstrap t) UCL					5.636
807	Maximum					18.85	95% KM (BCA) UCL					3.176
808	Mean					1.63	95% KM (Percentile Bootstrap) UCL					2.918
809	Median					0.076	95% KM (Chebyshev) UCL					4.842
810	SD					4.358	97.5% KM (Chebyshev) UCL					6.232
811	k star					0.239	99% KM (Chebyshev) UCL					8.962
812	Theta star					6.824						
813	Nu star					16.72	**Potential UCLs to Use**					
814	AppChi2					8.469	99% KM (Chebyshev) UCL					8.962
815	95% Gamma Approximate UCL					3.216						
816	95% Adjusted Gamma UCL					3.326						
817	**Note: DL/2 is not a recommended method.**											
818												
819	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
820	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
821	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
822												
823	c3s_eu1_total pcbs											
824												
825	General Statistics											
826	Number of Valid Data					35	Number of Detected Data					15
827	Number of Distinct Detected Data					15	Number of Non-Detect Data					20
828							Percent Non-Detects					57.14%
829												
830	Raw Statistics						Log-transformed Statistics					
831	Minimum Detected					0.045	Minimum Detected					-3.101
832	Maximum Detected					126.5	Maximum Detected					4.84
833	Mean of Detected					24.82	Mean of Detected					0.794
834	SD of Detected					42.9	SD of Detected					2.726
835	Minimum Non-Detect					0.0385	Minimum Non-Detect					-3.257
836	Maximum Non-Detect					0.044	Maximum Non-Detect					-3.124
837												
838	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					20
839	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					15
840	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					57.14%
841												
842	UCL Statistics											
843	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
844	Shapiro Wilk Test Statistic					0.644	Shapiro Wilk Test Statistic					0.924
845	5% Shapiro Wilk Critical Value					0.881	5% Shapiro Wilk Critical Value					0.881
846	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
847												
848	Assuming Normal Distribution						Assuming Lognormal Distribution					
849	DL/2 Substitution Method						DL/2 Substitution Method					
850	Mean					10.65	Mean					-1.88
851	SD					30.22	SD					2.929
852	95% DL/2 (t) UCL					19.28	95% H-Stat (DL/2) UCL					167.5
853												
854	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
855	MLE yields a negative mean						Mean in Log Scale					-3.678
856							SD in Log Scale					4.404
857							Mean in Original Scale					10.64
858							SD in Original Scale					30.22
859							95% t UCL					19.27
860							95% Percentile Bootstrap UCL					19.26
861							95% BCA Bootstrap UCL					23.11
862												
863	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
864	k star (bias corrected)					0.274	Data appear Gamma Distributed at 5% Significance Level					
865	Theta Star					90.47						
866	nu star					8.229						
867												
868	A-D Test Statistic					0.76	Nonparametric Statistics					
869	5% A-D Critical Value					0.841	Kaplan-Meier (KM) Method					
870	K-S Test Statistic					0.841	Mean					10.66
871	5% K-S Critical Value					0.241	SD					29.78
872	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					5.21
873							95% KM (t) UCL					19.47
874	Assuming Gamma Distribution						95% KM (z) UCL					19.23
875	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					19.26
876	Minimum					1E-12	95% KM (bootstrap t) UCL					30.06
877	Maximum					126.5	95% KM (BCA) UCL					20.05
878	Mean					24.5	95% KM (Percentile Bootstrap) UCL					19.66
879	Median					27.19	95% KM (Chebyshev) UCL					33.37
880	SD					28.59	97.5% KM (Chebyshev) UCL					43.2
881	k star					0.337	99% KM (Chebyshev) UCL					62.5
882	Theta star					72.62						
883	Nu star					23.61	Potential UCLs to Use					
884	AppChi2					13.55	95% KM (t) UCL					19.47
885	95% Gamma Approximate UCL					42.67						
886	95% Adjusted Gamma UCL					43.85						
887	Note: DL/2 is not a recommended method.											
888												
889	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
890	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
891	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
892												
893	c3s_eu2_mercury											
894												
895	General Statistics											
896					Number of Valid Observations	23					Number of Distinct Observations	23
897												
898	Raw Statistics						Log-transformed Statistics					
899					Minimum	0.035					Minimum of Log Data	-3.352
900					Maximum	13.45					Maximum of Log Data	2.599
901					Mean	2.344					Mean of log Data	-0.0779
902					Median	1.045					SD of log Data	1.663
903					SD	3.078						
904					Coefficient of Variation	1.313						
905					Skewness	2.51						
906												
907	Relevant UCL Statistics											
908	Normal Distribution Test						Lognormal Distribution Test					
909					Shapiro Wilk Test Statistic	0.711					Shapiro Wilk Test Statistic	0.929
910					Shapiro Wilk Critical Value	0.914					Shapiro Wilk Critical Value	0.914
911	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
912												
913	Assuming Normal Distribution						Assuming Lognormal Distribution					
914					95% Student's-t UCL	3.446					95% H-UCL	12.76
915	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	9.362
916					95% Adjusted-CLT UCL (Chen-1995)	3.759					97.5% Chebyshev (MVUE) UCL	12
917					95% Modified-t UCL (Johnson-1978)	3.502					99% Chebyshev (MVUE) UCL	17.2
918												
919	Gamma Distribution Test						Data Distribution					
920					k star (bias corrected)	0.599	Data appear Gamma Distributed at 5% Significance Level					
921					Theta Star	3.912						
922					MLE of Mean	2.344						
923					MLE of Standard Deviation	3.028						
924					nu star	27.57						
925					Approximate Chi Square Value (.05)	16.59	Nonparametric Statistics					
926					Adjusted Level of Significance	0.0389					95% CLT UCL	3.4
927					Adjusted Chi Square Value	15.97					95% Jackknife UCL	3.446
928											95% Standard Bootstrap UCL	3.378
929					Anderson-Darling Test Statistic	0.326					95% Bootstrap-t UCL	4.405
930					Anderson-Darling 5% Critical Value	0.791					95% Hall's Bootstrap UCL	8.672
931					Kolmogorov-Smirnov Test Statistic	0.111					95% Percentile Bootstrap UCL	3.463
932					Kolmogorov-Smirnov 5% Critical Value	0.19					95% BCA Bootstrap UCL	3.844
933	Data appear Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	5.142
934											97.5% Chebyshev(Mean, Sd) UCL	6.352
935	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	8.73
936					95% Approximate Gamma UCL	3.895						
937					95% Adjusted Gamma UCL	4.046						
938												
939	Potential UCL to Use										Use 95% Approximate Gamma UCL	3.895
940												
941	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
942	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
943	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
944												
945	c3s_eu2_total pcbs											
946												
947	General Statistics											
948	Number of Valid Data					23	Number of Detected Data					21
949	Number of Distinct Detected Data					21	Number of Non-Detect Data					2
950							Percent Non-Detects					8.70%
951												
952	Raw Statistics						Log-transformed Statistics					
953	Minimum Detected					0.14	Minimum Detected					-1.97
954	Maximum Detected					69.35	Maximum Detected					4.239
955	Mean of Detected					10.29	Mean of Detected					1.116
956	SD of Detected					16.07	SD of Detected					1.844
957	Minimum Non-Detect					0.037	Minimum Non-Detect					-3.297
958	Maximum Non-Detect					0.0385	Maximum Non-Detect					-3.257
959												
960	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					2
961	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					21
962	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					8.70%
963												
964	UCL Statistics											
965	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
966	Shapiro Wilk Test Statistic					0.649	Shapiro Wilk Test Statistic					0.95
967	5% Shapiro Wilk Critical Value					0.908	5% Shapiro Wilk Critical Value					0.908
968	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
969												
970	Assuming Normal Distribution						Assuming Lognormal Distribution					
971	DL/2 Substitution Method						DL/2 Substitution Method					
972	Mean					9.397	Mean					0.674
973	SD					15.61	SD					2.289
974	95% DL/2 (t) UCL					14.99	95% H-Stat (DL/2) UCL					246.6
975												
976	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
977	Mean					8.5	Mean in Log Scale					0.744
978	SD					16.26	SD in Log Scale					2.148
979	95% MLE (t) UCL					14.32	Mean in Original Scale					9.399
980	95% MLE (Tiku) UCL					13.94	SD in Original Scale					15.61
981							95% t UCL					14.99
982							95% Percentile Bootstrap UCL					15.05
983							95% BCA Bootstrap UCL					17.26
984												
985	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
986	k star (bias corrected)					0.477	Data appear Gamma Distributed at 5% Significance Level					
987	Theta Star					21.57						
988	nu star					20.04						
989												
990	A-D Test Statistic					0.387	Nonparametric Statistics					
991	5% A-D Critical Value					0.804	Kaplan-Meier (KM) Method					
992	K-S Test Statistic					0.804	Mean					9.407
993	5% K-S Critical Value					0.2	SD					15.26
994	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					3.26
995							95% KM (t) UCL					15.01
996	Assuming Gamma Distribution						95% KM (z) UCL					14.77
997	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					14.99
998	Minimum					1E-12	95% KM (bootstrap t) UCL					19.63
999	Maximum					69.35	95% KM (BCA) UCL					15.22
1000	Mean					9.395	95% KM (Percentile Bootstrap) UCL					15.2
1001	Median					3.285	95% KM (Chebyshev) UCL					23.62
1002	SD					15.61	97.5% KM (Chebyshev) UCL					29.77
1003	k star					0.205	99% KM (Chebyshev) UCL					41.85
1004	Theta star					45.78						
1005	Nu star					9.44	Potential UCLs to Use					
1006	AppChi2					3.595	95% KM (Chebyshev) UCL					23.62
1007	95% Gamma Approximate UCL					24.67						
1008	95% Adjusted Gamma UCL					26.58						
1009	Note: DL/2 is not a recommended method.											
1010												
1011	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1012	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1013	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1014												
1015	c4n_eu1_mercury											
1016												
1017	General Statistics											
1018					Number of Valid Observations	53					Number of Distinct Observations	52
1019												
1020	Raw Statistics						Log-transformed Statistics					
1021					Minimum	0.0395					Minimum of Log Data	-3.231
1022					Maximum	8.95					Maximum of Log Data	2.192
1023					Mean	1.321					Mean of log Data	-0.476
1024					Median	0.59					SD of log Data	1.284
1025					SD	1.85						
1026					Coefficient of Variation	1.4						
1027					Skewness	2.488						
1028												
1029	Relevant UCL Statistics											
1030	Normal Distribution Test						Lognormal Distribution Test					
1031					Lilliefors Test Statistic	0.3					Lilliefors Test Statistic	0.0802
1032					Lilliefors Critical Value	0.122					Lilliefors Critical Value	0.122
1033	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1034												
1035	Assuming Normal Distribution						Assuming Lognormal Distribution					
1036					95% Student's-t UCL	1.746					95% H-UCL	2.282
1037	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	2.718
1038					95% Adjusted-CLT UCL (Chen-1995)	1.832					97.5% Chebyshev (MVUE) UCL	3.298
1039					95% Modified-t UCL (Johnson-1978)	1.761					99% Chebyshev (MVUE) UCL	4.438
1040												
1041	Gamma Distribution Test						Data Distribution					
1042					k star (bias corrected)	0.756	Data appear Lognormal at 5% Significance Level					
1043					Theta Star	1.747						
1044					MLE of Mean	1.321						
1045					MLE of Standard Deviation	1.519						
1046					nu star	80.14						
1047					Approximate Chi Square Value (.05)	60.51	Nonparametric Statistics					
1048					Adjusted Level of Significance	0.0455					95% CLT UCL	1.739
1049					Adjusted Chi Square Value	60.03					95% Jackknife UCL	1.746
1050											95% Standard Bootstrap UCL	1.735
1051					Anderson-Darling Test Statistic	1.175					95% Bootstrap-t UCL	1.896
1052					Anderson-Darling 5% Critical Value	0.791					95% Hall's Bootstrap UCL	1.869
1053					Kolmogorov-Smirnov Test Statistic	0.162					95% Percentile Bootstrap UCL	1.747
1054					Kolmogorov-Smirnov 5% Critical Value	0.127					95% BCA Bootstrap UCL	1.839
1055	Data not Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	2.428
1056											97.5% Chebyshev(Mean, Sd) UCL	2.908
1057	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	3.849
1058					95% Approximate Gamma UCL	1.749						
1059					95% Adjusted Gamma UCL	1.763						
1060												
1061	Potential UCL to Use										Use 95% H-UCL	2.282
1062												
1063	ProUCL computes and outputs H-statistic based UCLs for historical reasons only.											
1064	H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.											
1065	It is therefore recommended to avoid the use of H-statistic based 95% UCLs.											
1066	Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.											
1067												
1068	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1069	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1070	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1071												
1072	**c4n_eu1_total pcbs**											
1073												
1074	**General Statistics**											
1075	Number of Valid Data					53	Number of Detected Data					50
1076	Number of Distinct Detected Data					50	Number of Non-Detect Data					3
1077							Percent Non-Detects					5.66%
1078												
1079	**Raw Statistics**						**Log-transformed Statistics**					
1080	Minimum Detected					0.043	Minimum Detected					-3.147
1081	Maximum Detected					25.25	Maximum Detected					3.229
1082	Mean of Detected					3.623	Mean of Detected					0.146
1083	SD of Detected					5.579	SD of Detected					1.604
1084	Minimum Non-Detect					0.0395	Minimum Non-Detect					-3.231
1085	Maximum Non-Detect					0.042	Maximum Non-Detect					-3.17
1086												
1087	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
1088	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
1089	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
1090												
1091	**UCL Statistics**											
1092	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1093	Shapiro Wilk Test Statistic					0.674	Shapiro Wilk Test Statistic					0.953
1094	5% Shapiro Wilk Critical Value					0.947	5% Shapiro Wilk Critical Value					0.947
1095	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1096												
1097	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1098	DL/2 Substitution Method						DL/2 Substitution Method					
1099	Mean					3.419	Mean					-0.0819
1100	SD					5.48	SD					1.819
1101	95% DL/2 (t) UCL					4.679	95% H-Stat (DL/2) UCL					11.27
1102												
1103	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1104	Mean					3.22	Mean in Log Scale					-0.0657
1105	SD					5.652	SD in Log Scale					1.786
1106	95% MLE (t) UCL					4.52	Mean in Original Scale					3.419
1107	95% MLE (Tiku) UCL					4.419	SD in Original Scale					5.48
1108							95% t UCL					4.68
1109							95% Percentile Bootstrap UCL					4.754
1110							95% BCA Bootstrap UCL					4.982
1111												
1112	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1113	k star (bias corrected)					0.529	**Data appear Lognormal at 5% Significance Level**					
1114	Theta Star					6.844						
1115	nu star					52.93						
1116												
1117	A-D Test Statistic					1.965	**Nonparametric Statistics**					
1118	5% A-D Critical Value					0.81	Kaplan-Meier (KM) Method					
1119	K-S Test Statistic					0.81	Mean					3.42
1120	5% K-S Critical Value					0.132	SD					5.428
1121	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					0.753
1122							95% KM (t) UCL					4.681
1123	**Assuming Gamma Distribution**						95% KM (z) UCL					4.659
1124	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4.678
1125	Minimum					1E-12	95% KM (bootstrap t) UCL					5.056
1126	Maximum					25.25	95% KM (BCA) UCL					4.709
1127	Mean					3.418	95% KM (Percentile Bootstrap) UCL					4.71
1128	Median					0.641	95% KM (Chebyshev) UCL					6.703
1129	SD					5.481	97.5% KM (Chebyshev) UCL					8.123
1130	k star					0.263	99% KM (Chebyshev) UCL					10.91
1131	Theta star					13.01						
1132	Nu star					27.84	**Potential UCLs to Use**					
1133	AppChi2					16.8	97.5% KM (Chebyshev) UCL					8.123
1134	95% Gamma Approximate UCL					5.662						
1135	95% Adjusted Gamma UCL					5.745						
1136	**Note: DL/2 is not a recommended method.**											
1137												
1138	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1139	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1140	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1141												
1142	c4n_eu2_mercury											
1143												
1144	**General Statistics**											
1145	Number of Valid Observations					41	Number of Distinct Observations					37
1146												
1147	**Raw Statistics**						**Log-transformed Statistics**					
1148	Minimum					0.028	Minimum of Log Data					-3.576
1149	Maximum					13.8	Maximum of Log Data					2.625
1150	Mean					1.04	Mean of log Data					-1.355
1151	Median					0.175	SD of log Data					1.553
1152	SD					2.494						
1153	Coefficient of Variation					2.398						
1154	Skewness					4.159						
1155												
1156	**Relevant UCL Statistics**											
1157	**Normal Distribution Test**						**Lognormal Distribution Test**					
1158	Shapiro Wilk Test Statistic					0.443	Shapiro Wilk Test Statistic					0.921
1159	Shapiro Wilk Critical Value					0.941	Shapiro Wilk Critical Value					0.941
1160	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1161												
1162	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1163	95% Student's-t UCL					1.696	95% H-UCL					1.809
1164	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					1.94
1165	95% Adjusted-CLT UCL (Chen-1995)					1.951	97.5% Chebyshev (MVUE) UCL					2.428
1166	95% Modified-t UCL (Johnson-1978)					1.738	99% Chebyshev (MVUE) UCL					3.388
1167												
1168	**Gamma Distribution Test**						**Data Distribution**					
1169	k star (bias corrected)					0.444	**Data do not follow a Discernable Distribution (0.05)**					
1170	Theta Star					2.344						
1171	MLE of Mean					1.04						
1172	MLE of Standard Deviation					1.561						
1173	nu star					36.38						
1174	Approximate Chi Square Value (.05)					23.58	**Nonparametric Statistics**					
1175	Adjusted Level of Significance					0.0441	95% CLT UCL					1.681
1176	Adjusted Chi Square Value					23.2	95% Jackknife UCL					1.696
1177							95% Standard Bootstrap UCL					1.68
1178	Anderson-Darling Test Statistic					3.093	95% Bootstrap-t UCL					3.068
1179	Anderson-Darling 5% Critical Value					0.822	95% Hall's Bootstrap UCL					4.5
1180	Kolmogorov-Smirnov Test Statistic					0.246	95% Percentile Bootstrap UCL					1.764
1181	Kolmogorov-Smirnov 5% Critical Value					0.147	95% BCA Bootstrap UCL					2.061
1182	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					2.738
1183							97.5% Chebyshev(Mean, Sd) UCL					3.473
1184	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					4.916
1185	95% Approximate Gamma UCL					1.605						
1186	95% Adjusted Gamma UCL					1.631						
1187												
1188	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL					2.738
1189												
1190	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1191	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002)**											
1192	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1193												
1194	**c4n_eu2_total pcbs**											
1195												
1196	**General Statistics**											
1197	Number of Valid Data					41	Number of Detected Data					30
1198	Number of Distinct Detected Data					30	Number of Non-Detect Data					11
1199							Percent Non-Detects					26.83%
1200												
1201	**Raw Statistics**						**Log-transformed Statistics**					
1202	Minimum Detected					0.0395	Minimum Detected					-3.231
1203	Maximum Detected					19.85	Maximum Detected					2.988
1204	Mean of Detected					2.631	Mean of Detected					-0.776
1205	SD of Detected					4.745	SD of Detected					2.024
1206	Minimum Non-Detect					0.0365	Minimum Non-Detect					-3.31
1207	Maximum Non-Detect					0.071	Maximum Non-Detect					-2.645
1208												
1209	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					17
1210	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					24
1211	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					41.46%
1212												
1213	**UCL Statistics**											
1214	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1215	Shapiro Wilk Test Statistic					0.622	Shapiro Wilk Test Statistic					0.889
1216	5% Shapiro Wilk Critical Value					0.927	5% Shapiro Wilk Critical Value					0.927
1217	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1218												
1219	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1220	DL/2 Substitution Method						DL/2 Substitution Method					
1221	Mean					1.931	Mean					-1.593
1222	SD					4.206	SD					2.2
1223	95% DL/2 (t) UCL					3.037	95% H-Stat (DL/2) UCL					8.974
1224												
1225	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1226	**MLE yields a negative mean**						Mean in Log Scale					-1.927
1227							SD in Log Scale					2.597
1228							Mean in Original Scale					1.927
1229							SD in Original Scale					4.208
1230							95% t UCL					3.033
1231							95% Percentile Bootstrap UCL					3.083
1232							95% BCA Bootstrap UCL					3.497
1233												
1234	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1235	k star (bias corrected)					0.365	**Data do not follow a Discernable Distribution (0.05)**					
1236	Theta Star					7.215						
1237	nu star					21.88						
1238												
1239	A-D Test Statistic					1.806	**Nonparametric Statistics**					
1240	5% A-D Critical Value					0.836	Kaplan-Meier (KM) Method					
1241	K-S Test Statistic					0.836	Mean					1.936
1242	5% K-S Critical Value					0.172	SD					4.152
1243	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					0.66
1244							95% KM (t) UCL					3.046
1245	**Assuming Gamma Distribution**						95% KM (z) UCL					3.021
1246	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.041
1247	Minimum					1E-12	95% KM (bootstrap t) UCL					3.773
1248	Maximum					19.85	95% KM (BCA) UCL					3.149
1249	Mean					1.925	95% KM (Percentile Bootstrap) UCL					3.081
1250	Median					0.0905	95% KM (Chebyshev) UCL					4.811
1251	SD					4.209	97.5% KM (Chebyshev) UCL					6.055
1252	k star					0.104	99% KM (Chebyshev) UCL					8.498
1253	Theta star					18.51						
1254	Nu star					8.529	**Potential UCLs to Use**					
1255	AppChi2					3.045	99% KM (Chebyshev) UCL					8.498
1256	95% Gamma Approximate UCL					5.392						
1257	95% Adjusted Gamma UCL					5.611						
1258	**Note: DL/2 is not a recommended method.**											
1259												
1260	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1261	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1262	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1263												
1264	c4s_eu1_mercury											
1265												
1266	**General Statistics**											
1267	Number of Valid Observations					31	Number of Distinct Observations					31
1268												
1269	**Raw Statistics**						**Log-transformed Statistics**					
1270	Minimum					0.00615	Minimum of Log Data					-5.091
1271	Maximum					9.15	Maximum of Log Data					2.214
1272	Mean					2.269	Mean of log Data					-0.118
1273	Median					1.07	SD of log Data					1.788
1274	SD					2.444						
1275	Coefficient of Variation					1.077						
1276	Skewness					1.148						
1277												
1278	**Relevant UCL Statistics**											
1279	**Normal Distribution Test**						**Lognormal Distribution Test**					
1280	Shapiro Wilk Test Statistic					0.839	Shapiro Wilk Test Statistic					0.92
1281	Shapiro Wilk Critical Value					0.929	Shapiro Wilk Critical Value					0.929
1282	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1283												
1284	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1285	95% Student's-t UCL					3.014	95% H-UCL					13.75
1286	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					11.13
1287	95% Adjusted-CLT UCL (Chen-1995)					3.088	97.5% Chebyshev (MVUE) UCL					14.25
1288	95% Modified-t UCL (Johnson-1978)					3.029	99% Chebyshev (MVUE) UCL					20.39
1289												
1290	**Gamma Distribution Test**						**Data Distribution**					
1291	k star (bias corrected)					0.61	**Data appear Gamma Distributed at 5% Significance Level**					
1292	Theta Star					3.72						
1293	MLE of Mean					2.269						
1294	MLE of Standard Deviation					2.905						
1295	nu star					37.81						
1296	Approximate Chi Square Value (.05)					24.73	**Nonparametric Statistics**					
1297	Adjusted Level of Significance					0.0413	95% CLT UCL					2.991
1298	Adjusted Chi Square Value					24.14	95% Jackknife UCL					3.014
1299							95% Standard Bootstrap UCL					2.963
1300	Anderson-Darling Test Statistic					0.298	95% Bootstrap-t UCL					3.117
1301	Anderson-Darling 5% Critical Value					0.796	95% Hall's Bootstrap UCL					3.073
1302	Kolmogorov-Smirnov Test Statistic					0.117	95% Percentile Bootstrap UCL					3.038
1303	Kolmogorov-Smirnov 5% Critical Value					0.165	95% BCA Bootstrap UCL					3.08
1304	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					4.182
1305							97.5% Chebyshev(Mean, Sd) UCL					5.01
1306	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					6.637
1307	95% Approximate Gamma UCL					3.469						
1308	95% Adjusted Gamma UCL					3.553						
1309												
1310	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					3.469
1311												
1312	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1313	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
1314	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1315												
1316	c4s_eu1_total pcbs											
1317												
1318	**General Statistics**											
1319	Number of Valid Data					31	Number of Detected Data					28
1320	Number of Distinct Detected Data					28	Number of Non-Detect Data					3
1321							Percent Non-Detects					9.68%
1322												
1323	**Raw Statistics**						**Log-transformed Statistics**					
1324	Minimum Detected					0.042	Minimum Detected					-3.17
1325	Maximum Detected					42.9	Maximum Detected					3.759
1326	Mean of Detected					8.284	Mean of Detected					0.811
1327	SD of Detected					11.61	SD of Detected					1.965
1328	Minimum Non-Detect					0.035	Minimum Non-Detect					-3.352
1329	Maximum Non-Detect					0.0425	Maximum Non-Detect					-3.158
1330												
1331	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					4
1332	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					27
1333	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					12.90%
1334												
1335	**UCL Statistics**											
1336	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1337	Shapiro Wilk Test Statistic					0.733	Shapiro Wilk Test Statistic					0.954
1338	5% Shapiro Wilk Critical Value					0.924	5% Shapiro Wilk Critical Value					0.924
1339	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1340												
1341	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1342	DL/2 Substitution Method						DL/2 Substitution Method					
1343	Mean					7.484	Mean					0.352
1344	SD					11.29	SD					2.348
1345	95% DL/2 (t) UCL					10.93	95% H-Stat (DL/2) UCL					144.4
1346												
1347	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1348	Mean					6.484	Mean in Log Scale					0.385
1349	SD					12.25	SD in Log Scale					2.287
1350	95% MLE (t) UCL					10.22	Mean in Original Scale					7.485
1351	95% MLE (Tiku) UCL					10.06	SD in Original Scale					11.29
1352							95% t UCL					10.93
1353							95% Percentile Bootstrap UCL					10.96
1354							95% BCA Bootstrap UCL					11.75
1355												
1356	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1357	k star (bias corrected)					0.461	**Data appear Gamma Distributed at 5% Significance Level**					
1358	Theta Star					17.99						
1359	nu star					25.79						
1360												
1361	A-D Test Statistic					0.386	**Nonparametric Statistics**					
1362	5% A-D Critical Value					0.813	Kaplan-Meier (KM) Method					
1363	K-S Test Statistic					0.813	Mean					7.486
1364	5% K-S Critical Value					0.175	SD					11.1
1365	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					2.031
1366							95% KM (t) UCL					10.93
1367	**Assuming Gamma Distribution**						95% KM (z) UCL					10.83
1368	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					10.92
1369	Minimum					1E-12	95% KM (bootstrap t) UCL					12.16
1370	Maximum					42.9	95% KM (BCA) UCL					11.24
1371	Mean					7.482	95% KM (Percentile Bootstrap) UCL					10.96
1372	Median					1.995	95% KM (Chebyshev) UCL					16.34
1373	SD					11.29	97.5% KM (Chebyshev) UCL					20.17
1374	k star					0.191	99% KM (Chebyshev) UCL					27.69
1375	Theta star					39.12						
1376	Nu star					11.86	**Potential UCLs to Use**					
1377	AppChi2					5.134	95% KM (Chebyshev) UCL					16.34
1378	95% Gamma Approximate UCL					17.28						
1379	95% Adjusted Gamma UCL					18.15						
1380	**Note: DL/2 is not a recommended method.**											
1381												
1382	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1383	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1384	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1385												
1386	c4s_eu2_mercury											
1387												
1388	**General Statistics**											
1389	Number of Valid Observations					38	Number of Distinct Observations					37
1390												
1391	**Raw Statistics**						**Log-transformed Statistics**					
1392	Minimum					0.015	Minimum of Log Data					-4.2
1393	Maximum					4.95	Maximum of Log Data					1.599
1394	Mean					0.845	Mean of log Data					-1.252
1395	Median					0.392	SD of log Data					1.714
1396	SD					1.106						
1397	Coefficient of Variation					1.308						
1398	Skewness					1.916						
1399												
1400	**Relevant UCL Statistics**											
1401	**Normal Distribution Test**						**Lognormal Distribution Test**					
1402	Shapiro Wilk Test Statistic					0.759	Shapiro Wilk Test Statistic					0.925
1403	Shapiro Wilk Critical Value					0.938	Shapiro Wilk Critical Value					0.938
1404	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1405												
1406	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1407	95% Student's-t UCL					1.148	95% H-UCL					3.169
1408	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					2.992
1409	95% Adjusted-CLT UCL (Chen-1995)					1.2	97.5% Chebyshev (MVUE) UCL					3.795
1410	95% Modified-t UCL (Johnson-1978)					1.157	99% Chebyshev (MVUE) UCL					5.371
1411												
1412	**Gamma Distribution Test**						**Data Distribution**					
1413	k star (bias corrected)					0.546	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
1414	Theta Star					1.549						
1415	MLE of Mean					0.845						
1416	MLE of Standard Deviation					1.144						
1417	nu star					41.49						
1418	Approximate Chi Square Value (.05)					27.72	**Nonparametric Statistics**					
1419	Adjusted Level of Significance					0.0434	95% CLT UCL					1.14
1420	Adjusted Chi Square Value					27.26	95% Jackknife UCL					1.148
1421							95% Standard Bootstrap UCL					1.129
1422	Anderson-Darling Test Statistic					0.813	95% Bootstrap-t UCL					1.25
1423	Anderson-Darling 5% Critical Value					0.806	95% Hall's Bootstrap UCL					1.287
1424	Kolmogorov-Smirnov Test Statistic					0.136	95% Percentile Bootstrap UCL					1.166
1425	Kolmogorov-Smirnov 5% Critical Value					0.151	95% BCA Bootstrap UCL					1.172
1426	**Data follow Appr. Gamma Distribution at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					1.627
1427							97.5% Chebyshev(Mean, Sd) UCL					1.965
1428	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					2.63
1429	95% Approximate Gamma UCL					1.265						
1430	95% Adjusted Gamma UCL					1.287						
1431												
1432	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					1.265
1433												
1434	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1435	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
1436	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1437												
1438	**c4s_eu2_total pcbs**											
1439												
1440	**General Statistics**											
1441	Number of Valid Data					38	Number of Detected Data					25
1442	Number of Distinct Detected Data					25	Number of Non-Detect Data					13
1443							Percent Non-Detects					34.21%
1444												
1445	**Raw Statistics**						**Log-transformed Statistics**					
1446	Minimum Detected					0.047	Minimum Detected					-3.058
1447	Maximum Detected					10.07	Maximum Detected					2.309
1448	Mean of Detected					2.569	Mean of Detected					0.0906
1449	SD of Detected					2.943	SD of Detected					1.547
1450	Minimum Non-Detect					0.0405	Minimum Non-Detect					-3.206
1451	Maximum Non-Detect					0.048	Maximum Non-Detect					-3.037
1452												
1453	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					14
1454	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					24
1455	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					36.84%
1456												
1457	**UCL Statistics**											
1458	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1459	Shapiro Wilk Test Statistic					0.804	Shapiro Wilk Test Statistic					0.949
1460	5% Shapiro Wilk Critical Value					0.918	5% Shapiro Wilk Critical Value					0.918
1461	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1462												
1463	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1464	DL/2 Substitution Method						DL/2 Substitution Method					
1465	Mean					1.698	Mean					-1.247
1466	SD					2.668	SD					2.255
1467	95% DL/2 (t) UCL					2.428	95% H-Stat (DL/2) UCL					16.87
1468												
1469	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1470	Mean					0.708	Mean in Log Scale					-1.115
1471	SD					3.681	SD in Log Scale					2.117
1472	95% MLE (t) UCL					1.716	Mean in Original Scale					1.702
1473	95% MLE (Tiku) UCL					1.813	SD in Original Scale					2.665
1474							95% t UCL					2.432
1475							95% Percentile Bootstrap UCL					2.444
1476							95% BCA Bootstrap UCL					2.606
1477												
1478	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1479	k star (bias corrected)					0.649	**Data appear Gamma Distributed at 5% Significance Level**					
1480	Theta Star					3.957						
1481	nu star					32.46						
1482												
1483	A-D Test Statistic					0.335	**Nonparametric Statistics**					
1484	5% A-D Critical Value					0.787	Kaplan-Meier (KM) Method					
1485	K-S Test Statistic					0.787	Mean					1.706
1486	5% K-S Critical Value					0.182	SD					2.627
1487	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					0.435
1488							95% KM (t) UCL					2.44
1489	**Assuming Gamma Distribution**						95% KM (z) UCL					2.422
1490	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.433
1491	Minimum					1E-12	95% KM (bootstrap t) UCL					2.655
1492	Maximum					10.07	95% KM (BCA) UCL					2.51
1493	Mean					1.805	95% KM (Percentile Bootstrap) UCL					2.453
1494	Median					0.754	95% KM (Chebyshev) UCL					3.602
1495	SD					2.61	97.5% KM (Chebyshev) UCL					4.423
1496	k star					0.202	99% KM (Chebyshev) UCL					6.034
1497	Theta star					8.913						
1498	Nu star					15.39	**Potential UCLs to Use**					
1499	AppChi2					7.532	95% KM (BCA) UCL					2.51
1500	95% Gamma Approximate UCL					3.687						
1501	95% Adjusted Gamma UCL					3.802						
1502	**Note: DL/2 is not a recommended method.**											
1503												
1504	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1505	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1506	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1507												
1508	c4s_eu3_mercury											
1509												
1510	**General Statistics**											
1511					Number of Valid Observations	27					Number of Distinct Observations	27
1512												
1513	**Raw Statistics**						**Log-transformed Statistics**					
1514					Minimum	0.037					Minimum of Log Data	-3.297
1515					Maximum	4.25					Maximum of Log Data	1.447
1516					Mean	1.087					Mean of log Data	-0.76
1517					Median	0.515					SD of log Data	1.474
1518					SD	1.254						
1519					Coefficient of Variation	1.154						
1520					Skewness	1.172						
1521												
1522	**Relevant UCL Statistics**											
1523	**Normal Distribution Test**						**Lognormal Distribution Test**					
1524					Shapiro Wilk Test Statistic	0.788					Shapiro Wilk Test Statistic	0.935
1525					Shapiro Wilk Critical Value	0.923					Shapiro Wilk Critical Value	0.923
1526	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1527												
1528	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1529					95% Student's-t UCL	1.498					95% H-UCL	3.496
1530	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	3.258
1531					95% Adjusted-CLT UCL (Chen-1995)	1.542					97.5% Chebyshev (MVUE) UCL	4.111
1532					95% Modified-t UCL (Johnson-1978)	1.507					99% Chebyshev (MVUE) UCL	5.788
1533												
1534	**Gamma Distribution Test**						**Data Distribution**					
1535					k star (bias corrected)	0.66	**Data appear Gamma Distributed at 5% Significance Level**					
1536					Theta Star	1.646						
1537					MLE of Mean	1.087						
1538					MLE of Standard Deviation	1.337						
1539					nu star	35.65						
1540					Approximate Chi Square Value (.05)	22.99	**Nonparametric Statistics**					
1541					Adjusted Level of Significance	0.0401					95% CLT UCL	1.484
1542					Adjusted Chi Square Value	22.34					95% Jackknife UCL	1.498
1543											95% Standard Bootstrap UCL	1.486
1544					Anderson-Darling Test Statistic	0.712					95% Bootstrap-t UCL	1.607
1545					Anderson-Darling 5% Critical Value	0.787					95% Hall's Bootstrap UCL	1.507
1546					Kolmogorov-Smirnov Test Statistic	0.157					95% Percentile Bootstrap UCL	1.483
1547					Kolmogorov-Smirnov 5% Critical Value	0.175					95% BCA Bootstrap UCL	1.535
1548	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	2.138
1549											97.5% Chebyshev(Mean, Sd) UCL	2.593
1550	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	3.487
1551					95% Approximate Gamma UCL	1.685						
1552					95% Adjusted Gamma UCL	1.734						
1553												
1554	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	1.685
1555												
1556	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1557	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
1558	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1559												
1560	**c4s_eu3_total pcbs**											
1561												
1562	**General Statistics**											
1563	Number of Valid Data					27	Number of Detected Data					23
1564	Number of Distinct Detected Data					23	Number of Non-Detect Data					4
1565							Percent Non-Detects					14.81%
1566												
1567	**Raw Statistics**						**Log-transformed Statistics**					
1568	Minimum Detected					0.051	Minimum Detected					-2.976
1569	Maximum Detected					16.25	Maximum Detected					2.788
1570	Mean of Detected					2.727	Mean of Detected					-0.168
1571	SD of Detected					3.955	SD of Detected					1.747
1572	Minimum Non-Detect					0.0395	Minimum Non-Detect					-3.231
1573	Maximum Non-Detect					0.0425	Maximum Non-Detect					-3.158
1574												
1575	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					4
1576	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					23
1577	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					14.81%
1578												
1579	**UCL Statistics**											
1580	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1581	Shapiro Wilk Test Statistic					0.711	Shapiro Wilk Test Statistic					0.951
1582	5% Shapiro Wilk Critical Value					0.914	5% Shapiro Wilk Critical Value					0.914
1583	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1584												
1585	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1586	DL/2 Substitution Method						DL/2 Substitution Method					
1587	Mean					2.326	Mean					-0.72
1588	SD					3.768	SD					2.097
1589	95% DL/2 (t) UCL					3.563	95% H-Stat (DL/2) UCL					24.7
1590												
1591	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1592	Mean					1.929	Mean in Log Scale					-0.753
1593	SD					4.136	SD in Log Scale					2.151
1594	95% MLE (t) UCL					3.287	Mean in Original Scale					2.326
1595	95% MLE (Tiku) UCL					3.234	SD in Original Scale					3.769
1596							95% t UCL					3.563
1597							95% Percentile Bootstrap UCL					3.547
1598							95% BCA Bootstrap UCL					3.909
1599												
1600	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1601	k star (bias corrected)					0.495	**Data appear Gamma Distributed at 5% Significance Level**					
1602	Theta Star					5.506						
1603	nu star					22.78						
1604												
1605	A-D Test Statistic					0.572	**Nonparametric Statistics**					
1606	5% A-D Critical Value					0.802	Kaplan-Meier (KM) Method					
1607	K-S Test Statistic					0.802	Mean					2.331
1608	5% K-S Critical Value					0.191	SD					3.695
1609	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					0.727
1610							95% KM (t) UCL					3.571
1611	**Assuming Gamma Distribution**						95% KM (z) UCL					3.527
1612	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.566
1613	Minimum					1E-12	95% KM (bootstrap t) UCL					4.318
1614	Maximum					16.25	95% KM (BCA) UCL					3.519
1615	Mean					2.323	95% KM (Percentile Bootstrap) UCL					3.613
1616	Median					0.712	95% KM (Chebyshev) UCL					5.5
1617	SD					3.77	97.5% KM (Chebyshev) UCL					6.871
1618	k star					0.159	99% KM (Chebyshev) UCL					9.565
1619	Theta star					14.61						
1620	Nu star					8.588	**Potential UCLs to Use**					
1621	AppChi2					3.08	95% KM (Chebyshev) UCL					5.5
1622	95% Gamma Approximate UCL					6.478						
1623	95% Adjusted Gamma UCL					6.947						
1624	**Note: DL/2 is not a recommended method.**											
1625												
1626	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1627	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1628	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1629												
1630	c5n_eu1_mercury											
1631												
1632	**General Statistics**											
1633	Number of Valid Observations					12	Number of Distinct Observations					11
1634												
1635	**Raw Statistics**						**Log-transformed Statistics**					
1636	Minimum					0.038	Minimum of Log Data					-3.27
1637	Maximum					2.2	Maximum of Log Data					0.788
1638	Mean					1.064	Mean of log Data					-0.668
1639	Median					1.23	SD of log Data					1.62
1640	SD					0.856						
1641	Coefficient of Variation					0.804						
1642	Skewness					-0.0451						
1643												
1644	**Relevant UCL Statistics**											
1645	**Normal Distribution Test**						**Lognormal Distribution Test**					
1646	Shapiro Wilk Test Statistic					0.865	Shapiro Wilk Test Statistic					0.792
1647	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
1648	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1649												
1650	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1651	95% Student's-t UCL					1.507	95% H-UCL					14.43
1652	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					5.031
1653	95% Adjusted-CLT UCL (Chen-1995)					1.467	97.5% Chebyshev (MVUE) UCL					6.535
1654	95% Modified-t UCL (Johnson-1978)					1.507	99% Chebyshev (MVUE) UCL					9.489
1655												
1656	**Gamma Distribution Test**						**Data Distribution**					
1657	k star (bias corrected)					0.664	**Data appear Normal at 5% Significance Level**					
1658	Theta Star					1.602						
1659	MLE of Mean					1.064						
1660	MLE of Standard Deviation					1.306						
1661	nu star					15.94						
1662	Approximate Chi Square Value (.05)					7.917	**Nonparametric Statistics**					
1663	Adjusted Level of Significance					0.029	95% CLT UCL					1.47
1664	Adjusted Chi Square Value					7.07	95% Jackknife UCL					1.507
1665							95% Standard Bootstrap UCL					1.446
1666	Anderson-Darling Test Statistic					0.901	95% Bootstrap-t UCL					1.482
1667	Anderson-Darling 5% Critical Value					0.763	95% Hall's Bootstrap UCL					1.408
1668	Kolmogorov-Smirnov Test Statistic					0.276	95% Percentile Bootstrap UCL					1.454
1669	Kolmogorov-Smirnov 5% Critical Value					0.254	95% BCA Bootstrap UCL					1.435
1670	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					2.14
1671							97.5% Chebyshev(Mean, Sd) UCL					2.606
1672	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					3.521
1673	95% Approximate Gamma UCL					2.141						
1674	95% Adjusted Gamma UCL					2.398						
1675												
1676	**Potential UCL to Use**						Use 95% Student's-t UCL					1.507
1677												
1678	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1679	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
1680	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1681												
1682	c5n_eu1_total pcbs											
1683												
1684	**General Statistics**											
1685					Number of Valid Observations	12					Number of Distinct Observations	12
1686												
1687	**Raw Statistics**						**Log-transformed Statistics**					
1688					Minimum	0.0565					Minimum of Log Data	-2.874
1689					Maximum	9.01					Maximum of Log Data	2.198
1690					Mean	2.544					Mean of log Data	-0.204
1691					Median	1.205					SD of log Data	1.921
1692					SD	3.031						
1693					Coefficient of Variation	1.192						
1694					Skewness	1.222						
1695												
1696	**Relevant UCL Statistics**											
1697	**Normal Distribution Test**						**Lognormal Distribution Test**					
1698					Shapiro Wilk Test Statistic	0.821					Shapiro Wilk Test Statistic	0.884
1699					Shapiro Wilk Critical Value	0.859					Shapiro Wilk Critical Value	0.859
1700	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1701												
1702	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1703					95% Student's-t UCL	4.115					95% H-UCL	82.84
1704	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	13.53
1705					95% Adjusted-CLT UCL (Chen-1995)	4.313					97.5% Chebyshev (MVUE) UCL	17.77
1706					95% Modified-t UCL (Johnson-1978)	4.166					99% Chebyshev (MVUE) UCL	26.1
1707												
1708	**Gamma Distribution Test**						**Data Distribution**					
1709					k star (bias corrected)	0.468	**Data appear Gamma Distributed at 5% Significance Level**					
1710					Theta Star	5.434						
1711					MLE of Mean	2.544						
1712					MLE of Standard Deviation	3.718						
1713					nu star	11.24						
1714					Approximate Chi Square Value (.05)	4.728	**Nonparametric Statistics**					
1715					Adjusted Level of Significance	0.029					95% CLT UCL	3.983
1716					Adjusted Chi Square Value	4.103					95% Jackknife UCL	4.115
1717											95% Standard Bootstrap UCL	3.922
1718					Anderson-Darling Test Statistic	0.389					95% Bootstrap-t UCL	4.745
1719					Anderson-Darling 5% Critical Value	0.781					95% Hall's Bootstrap UCL	4.515
1720					Kolmogorov-Smirnov Test Statistic	0.191					95% Percentile Bootstrap UCL	4.005
1721					Kolmogorov-Smirnov 5% Critical Value	0.258					95% BCA Bootstrap UCL	4.156
1722	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	6.358
1723											97.5% Chebyshev(Mean, Sd) UCL	8.008
1724	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	11.25
1725					95% Approximate Gamma UCL	6.045						
1726					95% Adjusted Gamma UCL	6.966						
1727												
1728	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	6.045
1729												
1730	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1731	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002)**											
1732	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1733												
1734	c5n_eu2_mercury											
1735												
1736	**General Statistics**											
1737	Number of Valid Observations					76	Number of Distinct Observations					69
1738												
1739	**Raw Statistics**						**Log-transformed Statistics**					
1740	Minimum					0.02	Minimum of Log Data					-3.912
1741	Maximum					4.2	Maximum of Log Data					1.435
1742	Mean					0.265	Mean of log Data					-2.228
1743	Median					0.0755	SD of log Data					1.158
1744	SD					0.596						
1745	Coefficient of Variation					2.249						
1746	Skewness					4.957						
1747												
1748	**Relevant UCL Statistics**											
1749	**Normal Distribution Test**						**Lognormal Distribution Test**					
1750	Lilliefors Test Statistic					0.341	Lilliefors Test Statistic					0.138
1751	Lilliefors Critical Value					0.102	Lilliefors Critical Value					0.102
1752	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1753												
1754	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1755	95% Student's-t UCL					0.379	95% H-UCL					0.291
1756	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					0.358
1757	95% Adjusted-CLT UCL (Chen-1995)					0.419	97.5% Chebyshev (MVUE) UCL					0.422
1758	95% Modified-t UCL (Johnson-1978)					0.385	99% Chebyshev (MVUE) UCL					0.55
1759												
1760	**Gamma Distribution Test**						**Data Distribution**					
1761	k star (bias corrected)					0.657	**Data do not follow a Discernable Distribution (0.05)**					
1762	Theta Star					0.403						
1763	MLE of Mean					0.265						
1764	MLE of Standard Deviation					0.327						
1765	nu star					99.9						
1766	Approximate Chi Square Value (.05)					77.84	**Nonparametric Statistics**					
1767	Adjusted Level of Significance					0.0468	95% CLT UCL					0.378
1768	Adjusted Chi Square Value					77.46	95% Jackknife UCL					0.379
1769							95% Standard Bootstrap UCL					0.377
1770	Anderson-Darling Test Statistic					5.456	95% Bootstrap-t UCL					0.507
1771	Anderson-Darling 5% Critical Value					0.8	95% Hall's Bootstrap UCL					0.822
1772	Kolmogorov-Smirnov Test Statistic					0.202	95% Percentile Bootstrap UCL					0.382
1773	Kolmogorov-Smirnov 5% Critical Value					0.107	95% BCA Bootstrap UCL					0.43
1774	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					0.563
1775							97.5% Chebyshev(Mean, Sd) UCL					0.692
1776	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					0.945
1777	95% Approximate Gamma UCL					0.34						
1778	95% Adjusted Gamma UCL					0.342						
1779												
1780	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL					0.563
1781												
1782	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1783	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002)**											
1784	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1785												
1786	**c5n_eu2_total pcbs**											
1787												
1788	**General Statistics**											
1789					Number of Valid Data	76					Number of Detected Data	37
1790					Number of Distinct Detected Data	36					Number of Non-Detect Data	39
1791											Percent Non-Detects	51.32%
1792												
1793	**Raw Statistics**						**Log-transformed Statistics**					
1794					Minimum Detected	0.04					Minimum Detected	-3.219
1795					Maximum Detected	8.01					Maximum Detected	2.081
1796					Mean of Detected	0.627					Mean of Detected	-1.512
1797					SD of Detected	1.423					SD of Detected	1.313
1798					Minimum Non-Detect	0.0365					Minimum Non-Detect	-3.31
1799					Maximum Non-Detect	0.044					Maximum Non-Detect	-3.124
1800												
1801	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	41
1802	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	35
1803	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	53.95%
1804												
1805	**UCL Statistics**											
1806	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1807					Shapiro Wilk Test Statistic	0.433					Shapiro Wilk Test Statistic	0.935
1808					5% Shapiro Wilk Critical Value	0.936					5% Shapiro Wilk Critical Value	0.936
1809	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1810												
1811	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1812					DL/2 Substitution Method						DL/2 Substitution Method	
1813					Mean	0.315					Mean	-2.75
1814					SD	1.032					SD	1.518
1815					95% DL/2 (t) UCL	0.512					95% H-Stat (DL/2) UCL	0.332
1816												
1817					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
1818	**MLE yields a negative mean**										Mean in Log Scale	-3.312
1819											SD in Log Scale	2.072
1820											Mean in Original Scale	0.31
1821											SD in Original Scale	1.034
1822											95% t UCL	0.507
1823											95% Percentile Bootstrap UCL	0.534
1824											95% BCA Bootstrap UCL	0.644
1825												
1826	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1827					k star (bias corrected)	0.562	**Data do not follow a Discernable Distribution (0.05)**					
1828					Theta Star	1.115						
1829					nu star	41.62						
1830												
1831					A-D Test Statistic	2.284	**Nonparametric Statistics**					
1832					5% A-D Critical Value	0.804					Kaplan-Meier (KM) Method	
1833					K-S Test Statistic	0.804					Mean	0.326
1834					5% K-S Critical Value	0.152					SD	1.022
1835	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.119
1836											95% KM (t) UCL	0.524
1837	**Assuming Gamma Distribution**										95% KM (z) UCL	0.521
1838					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.522
1839					Minimum	0.04					95% KM (bootstrap t) UCL	0.94
1840					Maximum	8.01					95% KM (BCA) UCL	0.562
1841					Mean	0.627					95% KM (Percentile Bootstrap) UCL	0.522
1842					Median	0.622					95% KM (Chebyshev) UCL	0.844
1843					SD	0.986					97.5% KM (Chebyshev) UCL	1.068
1844					k star	1.085					99% KM (Chebyshev) UCL	1.508
1845					Theta star	0.578						
1846					Nu star	164.9	**Potential UCLs to Use**					
1847					AppChi2	136.2					95% KM (BCA) UCL	0.562
1848					95% Gamma Approximate UCL	0.76						
1849					95% Adjusted Gamma UCL	0.762						
1850	**Note: DL/2 is not a recommended method.**											
1851												
1852	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1853	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1854	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1855												
1856	c5s_eu1_mercury											
1857												
1858	**General Statistics**											
1859	Number of Valid Observations					78	Number of Distinct Observations					74
1860												
1861	**Raw Statistics**						**Log-transformed Statistics**					
1862	Minimum					0.018	Minimum of Log Data					-4.017
1863	Maximum					4.65	Maximum of Log Data					1.537
1864	Mean					0.472	Mean of log Data					-1.93
1865	Median					0.0838	SD of log Data					1.485
1866	SD					0.84						
1867	Coefficient of Variation					1.781						
1868	Skewness					2.894						
1869												
1870	**Relevant UCL Statistics**											
1871	**Normal Distribution Test**						**Lognormal Distribution Test**					
1872	Lilliefors Test Statistic					0.308	Lilliefors Test Statistic					0.164
1873	Lilliefors Critical Value					0.1	Lilliefors Critical Value					0.1
1874	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1875												
1876	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1877	95% Student's-t UCL					0.63	95% H-UCL					0.701
1878	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					0.848
1879	95% Adjusted-CLT UCL (Chen-1995)					0.661	97.5% Chebyshev (MVUE) UCL					1.032
1880	95% Modified-t UCL (Johnson-1978)					0.635	99% Chebyshev (MVUE) UCL					1.392
1881												
1882	**Gamma Distribution Test**						**Data Distribution**					
1883	k star (bias corrected)					0.521	**Data do not follow a Discernable Distribution (0.05)**					
1884	Theta Star					0.904						
1885	MLE of Mean					0.472						
1886	MLE of Standard Deviation					0.653						
1887	nu star					81.35						
1888	Approximate Chi Square Value (.05)					61.57	**Nonparametric Statistics**					
1889	Adjusted Level of Significance					0.0469	95% CLT UCL					0.628
1890	Adjusted Chi Square Value					61.24	95% Jackknife UCL					0.63
1891							95% Standard Bootstrap UCL					0.627
1892	Anderson-Darling Test Statistic					5.537	95% Bootstrap-t UCL					0.693
1893	Anderson-Darling 5% Critical Value					0.815	95% Hall's Bootstrap UCL					0.69
1894	Kolmogorov-Smirnov Test Statistic					0.234	95% Percentile Bootstrap UCL					0.636
1895	Kolmogorov-Smirnov 5% Critical Value					0.107	95% BCA Bootstrap UCL					0.678
1896	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					0.886
1897							97.5% Chebyshev(Mean, Sd) UCL					1.066
1898	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					1.418
1899	95% Approximate Gamma UCL					0.623						
1900	95% Adjusted Gamma UCL					0.626						
1901												
1902	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL					0.886
1903												
1904	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1905	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
1906	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1907												
1908	**c5s_eu1_total pcbs**											
1909												
1910	**General Statistics**											
1911	Number of Valid Data					78	Number of Detected Data					36
1912	Number of Distinct Detected Data					36	Number of Non-Detect Data					42
1913							Percent Non-Detects					53.85%
1914												
1915	**Raw Statistics**						**Log-transformed Statistics**					
1916	Minimum Detected					0.041	Minimum Detected					-3.194
1917	Maximum Detected					14.5	Maximum Detected					2.674
1918	Mean of Detected					1.87	Mean of Detected					-0.519
1919	SD of Detected					3.218	SD of Detected					1.652
1920	Minimum Non-Detect					0.0365	Minimum Non-Detect					-3.31
1921	Maximum Non-Detect					0.044	Maximum Non-Detect					-3.124
1922												
1923	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					43
1924	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					35
1925	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					55.13%
1926												
1927	**UCL Statistics**											
1928	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1929	Shapiro Wilk Test Statistic					0.579	Shapiro Wilk Test Statistic					0.951
1930	5% Shapiro Wilk Critical Value					0.935	5% Shapiro Wilk Critical Value					0.935
1931	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1932												
1933	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1934	DL/2 Substitution Method						DL/2 Substitution Method					
1935	Mean					0.874	Mean					-2.347
1936	SD					2.36	SD					2.035
1937	95% DL/2 (t) UCL					1.319	95% H-Stat (DL/2) UCL					1.701
1938												
1939	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1940	**MLE yields a negative mean**						Mean in Log Scale					-2.892
1941							SD in Log Scale					2.604
1942							Mean in Original Scale					0.869
1943							SD in Original Scale					2.361
1944							95% t UCL					1.315
1945							95% Percentile Bootstrap UCL					1.347
1946							95% BCA Bootstrap UCL					1.519
1947												
1948	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1949	k star (bias corrected)					0.52	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
1950	Theta Star					3.597						
1951	nu star					37.44						
1952												
1953	A-D Test Statistic					0.809	**Nonparametric Statistics**					
1954	5% A-D Critical Value					0.808	Kaplan-Meier (KM) Method					
1955	K-S Test Statistic					0.808	Mean					0.885
1956	5% K-S Critical Value					0.155	SD					2.341
1957	**Data follow Appr. Gamma Distribution at 5% Significance Level**						SE of Mean					0.269
1958							95% KM (t) UCL					1.333
1959	**Assuming Gamma Distribution**						95% KM (z) UCL					1.327
1960	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.327
1961	Minimum					0.041	95% KM (bootstrap t) UCL					1.783
1962	Maximum					14.5	95% KM (BCA) UCL					1.352
1963	Mean					1.81	95% KM (Percentile Bootstrap) UCL					1.368
1964	Median					1.39	95% KM (Chebyshev) UCL					2.057
1965	SD					2.288	97.5% KM (Chebyshev) UCL					2.564
1966	k star					0.907	99% KM (Chebyshev) UCL					3.559
1967	Theta star					1.995						
1968	Nu star					141.6	**Potential UCLs to Use**					
1969	AppChi2					115.1	95% KM (t) UCL					1.333
1970	95% Gamma Approximate UCL					2.227						
1971	95% Adjusted Gamma UCL					2.236						
1972	**Note: DL/2 is not a recommended method.**											
1973												
1974	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
1975	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
1976	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1977												
1978	c6n_eu1_mercury											
1979												
1980	**General Statistics**											
1981	Number of Valid Observations					20	Number of Distinct Observations					20
1982												
1983	**Raw Statistics**						**Log-transformed Statistics**					
1984	Minimum					0.03	Minimum of Log Data					-3.507
1985	Maximum					4.4	Maximum of Log Data					1.482
1986	Mean					0.784	Mean of log Data					-1.293
1987	Median					0.212	SD of log Data					1.6
1988	SD					1.099						
1989	Coefficient of Variation					1.402						
1990	Skewness					2.109						
1991												
1992	**Relevant UCL Statistics**											
1993	**Normal Distribution Test**						**Lognormal Distribution Test**					
1994	Shapiro Wilk Test Statistic					0.71	Shapiro Wilk Test Statistic					0.927
1995	Shapiro Wilk Critical Value					0.905	Shapiro Wilk Critical Value					0.905
1996	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1997												
1998	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1999	95% Student's-t UCL					1.208	95% H-UCL					3.698
2000	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					2.509
2001	95% Adjusted-CLT UCL (Chen-1995)					1.311	97.5% Chebyshev (MVUE) UCL					3.218
2002	95% Modified-t UCL (Johnson-1978)					1.228	99% Chebyshev (MVUE) UCL					4.61
2003												
2004	**Gamma Distribution Test**						**Data Distribution**					
2005	k star (bias corrected)					0.535	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
2006	Theta Star					1.464						
2007	MLE of Mean					0.784						
2008	MLE of Standard Deviation					1.071						
2009	nu star					21.4						
2010	Approximate Chi Square Value (.05)					11.89	**Nonparametric Statistics**					
2011	Adjusted Level of Significance					0.038	95% CLT UCL					1.188
2012	Adjusted Chi Square Value					11.33	95% Jackknife UCL					1.208
2013							95% Standard Bootstrap UCL					1.176
2014	Anderson-Darling Test Statistic					0.803	95% Bootstrap-t UCL					1.392
2015	Anderson-Darling 5% Critical Value					0.794	95% Hall's Bootstrap UCL					1.527
2016	Kolmogorov-Smirnov Test Statistic					0.185	95% Percentile Bootstrap UCL					1.222
2017	Kolmogorov-Smirnov 5% Critical Value					0.204	95% BCA Bootstrap UCL					1.33
2018	**Data follow Appr. Gamma Distribution at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					1.854
2019							97.5% Chebyshev(Mean, Sd) UCL					2.318
2020	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					3.228
2021	95% Approximate Gamma UCL					1.41						
2022	95% Adjusted Gamma UCL					1.48						
2023												
2024	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					1.41
2025												
2026	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
2027	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
2028	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2029												
2030	**c6n_eu1_total pcbs**											
2031												
2032	**General Statistics**											
2033	Number of Valid Data					20	Number of Detected Data					14
2034	Number of Distinct Detected Data					14	Number of Non-Detect Data					6
2035							Percent Non-Detects					30.00%
2036												
2037	**Raw Statistics**						**Log-transformed Statistics**					
2038	Minimum Detected					0.039	Minimum Detected					-3.244
2039	Maximum Detected					7.9	Maximum Detected					2.067
2040	Mean of Detected					1.852	Mean of Detected					-0.402
2041	SD of Detected					2.333	SD of Detected					1.708
2042	Minimum Non-Detect					0.037	Minimum Non-Detect					-3.297
2043	Maximum Non-Detect					0.039	Maximum Non-Detect					-3.244
2044												
2045	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					6
2046	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					14
2047	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					30.00%
2048												
2049	**UCL Statistics**											
2050	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
2051	Shapiro Wilk Test Statistic					0.784	Shapiro Wilk Test Statistic					0.947
2052	5% Shapiro Wilk Critical Value					0.874	5% Shapiro Wilk Critical Value					0.874
2053	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
2054												
2055	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
2056	DL/2 Substitution Method						DL/2 Substitution Method					
2057	Mean					1.302	Mean					-1.469
2058	SD					2.114	SD					2.189
2059	95% DL/2 (t) UCL					2.119	95% H-Stat (DL/2) UCL					26.11
2060												
2061	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
2062	Mean					0.743	Mean in Log Scale					-1.607
2063	SD					2.658	SD in Log Scale					2.366
2064	95% MLE (t) UCL					1.771	Mean in Original Scale					1.3
2065	95% MLE (Tiku) UCL					1.817	SD in Original Scale					2.115
2066							95% t UCL					2.118
2067							95% Percentile Bootstrap UCL					2.079
2068							95% BCA Bootstrap UCL					2.334
2069												
2070	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
2071	k star (bias corrected)					0.524	**Data appear Gamma Distributed at 5% Significance Level**					
2072	Theta Star					3.538						
2073	nu star					14.66						
2074												
2075	A-D Test Statistic					0.345	**Nonparametric Statistics**					
2076	5% A-D Critical Value					0.784	Kaplan-Meier (KM) Method					
2077	K-S Test Statistic					0.784	Mean					1.308
2078	5% K-S Critical Value					0.24	SD					2.056
2079	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					0.477
2080							95% KM (t) UCL					2.133
2081	**Assuming Gamma Distribution**						95% KM (z) UCL					2.093
2082	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.122
2083	Minimum					1E-12	95% KM (bootstrap t) UCL					2.709
2084	Maximum					7.9	95% KM (BCA) UCL					2.139
2085	Mean					1.3	95% KM (Percentile Bootstrap) UCL					2.153
2086	Median					0.22	95% KM (Chebyshev) UCL					3.388
2087	SD					2.115	97.5% KM (Chebyshev) UCL					4.288
2088	k star					0.124	99% KM (Chebyshev) UCL					6.056
2089	Theta star					10.51						
2090	Nu star					4.946	**Potential UCLs to Use**					
2091	AppChi2					1.128	95% KM (BCA) UCL					2.139
2092	95% Gamma Approximate UCL					5.704						
2093	95% Adjusted Gamma UCL					6.479						
2094	**Note: DL/2 is not a recommended method.**											
2095												
2096	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
2097	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
2098	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2099												
2100	c6s_eu1_mercury											
2101												
2102	**General Statistics**											
2103	Number of Valid Observations					21	Number of Distinct Observations					21
2104												
2105	**Raw Statistics**						**Log-transformed Statistics**					
2106	Minimum					0.026	Minimum of Log Data					-3.65
2107	Maximum					9.35	Maximum of Log Data					2.235
2108	Mean					0.966	Mean of log Data					-1.432
2109	Median					0.18	SD of log Data					1.647
2110	SD					2.082						
2111	Coefficient of Variation					2.156						
2112	Skewness					3.611						
2113												
2114	**Relevant UCL Statistics**											
2115	**Normal Distribution Test**						**Lognormal Distribution Test**					
2116	Shapiro Wilk Test Statistic					0.49	Shapiro Wilk Test Statistic					0.929
2117	Shapiro Wilk Critical Value					0.908	Shapiro Wilk Critical Value					0.908
2118	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
2119												
2120	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
2121	95% Student's-t UCL					1.749	95% H-UCL					3.428
2122	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					2.371
2123	95% Adjusted-CLT UCL (Chen-1995)					2.095	97.5% Chebyshev (MVUE) UCL					3.045
2124	95% Modified-t UCL (Johnson-1978)					1.809	99% Chebyshev (MVUE) UCL					4.368
2125												
2126	**Gamma Distribution Test**						**Data Distribution**					
2127	k star (bias corrected)					0.427	**Data appear Lognormal at 5% Significance Level**					
2128	Theta Star					2.263						
2129	MLE of Mean					0.966						
2130	MLE of Standard Deviation					1.478						
2131	nu star					17.92						
2132	Approximate Chi Square Value (.05)					9.332	**Nonparametric Statistics**					
2133	Adjusted Level of Significance					0.0383	95% CLT UCL					1.713
2134	Adjusted Chi Square Value					8.858	95% Jackknife UCL					1.749
2135							95% Standard Bootstrap UCL					1.698
2136	Anderson-Darling Test Statistic					1.393	95% Bootstrap-t UCL					3.083
2137	Anderson-Darling 5% Critical Value					0.813	95% Hall's Bootstrap UCL					4.116
2138	Kolmogorov-Smirnov Test Statistic					0.21	95% Percentile Bootstrap UCL					1.778
2139	Kolmogorov-Smirnov 5% Critical Value					0.201	95% BCA Bootstrap UCL					2.263
2140	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					2.946
2141							97.5% Chebyshev(Mean, Sd) UCL					3.803
2142	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					5.486
2143	95% Approximate Gamma UCL					1.854						
2144	95% Adjusted Gamma UCL					1.953						
2145												
2146	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL					2.946
2147												
2148	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
2149	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
2150	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2151												
2152	**c6s_eu1_total pcbs**											
2153												
2154	**General Statistics**											
2155					Number of Valid Data	21					Number of Detected Data	13
2156					Number of Distinct Detected Data	13					Number of Non-Detect Data	8
2157											Percent Non-Detects	38.10%
2158												
2159	**Raw Statistics**						**Log-transformed Statistics**					
2160					Minimum Detected	0.0405					Minimum Detected	-3.206
2161					Maximum Detected	16.43					Maximum Detected	2.799
2162					Mean of Detected	2.2					Mean of Detected	-0.698
2163					SD of Detected	4.479					SD of Detected	1.871
2164					Minimum Non-Detect	0.037					Minimum Non-Detect	-3.297
2165					Maximum Non-Detect	0.0445					Maximum Non-Detect	-3.112
2166												
2167	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	9
2168	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	12
2169	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	42.86%
2170												
2171	**UCL Statistics**											
2172	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
2173					Shapiro Wilk Test Statistic	0.532					Shapiro Wilk Test Statistic	0.954
2174					5% Shapiro Wilk Critical Value	0.866					5% Shapiro Wilk Critical Value	0.866
2175	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
2176												
2177	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
2178					DL/2 Substitution Method						DL/2 Substitution Method	
2179					Mean	1.37					Mean	-1.919
2180					SD	3.635					SD	2.155
2181					95% DL/2 (t) UCL	2.738					95% H-Stat (DL/2) UCL	12.53
2182												
2183					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
2184	**MLE yields a negative mean**										Mean in Log Scale	-2.477
2185											SD in Log Scale	2.778
2186											Mean in Original Scale	1.364
2187											SD in Original Scale	3.637
2188											95% t UCL	2.733
2189											95% Percentile Bootstrap UCL	2.814
2190											95% BCA Bootstrap UCL	3.655
2191												
2192	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
2193					k star (bias corrected)	0.387	**Data appear Gamma Distributed at 5% Significance Level**					
2194					Theta Star	5.684						
2195					nu star	10.06						
2196												
2197					A-D Test Statistic	0.583	**Nonparametric Statistics**					
2198					5% A-D Critical Value	0.803					Kaplan-Meier (KM) Method	
2199					K-S Test Statistic	0.803					Mean	1.378
2200					5% K-S Critical Value	0.252					SD	3.545
2201	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.805
2202											95% KM (t) UCL	2.766
2203	**Assuming Gamma Distribution**										95% KM (z) UCL	2.702
2204					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2.74
2205					Minimum	1E-12					95% KM (bootstrap t) UCL	7.207
2206					Maximum	16.43					95% KM (BCA) UCL	2.882
2207					Mean	1.41					95% KM (Percentile Bootstrap) UCL	2.786
2208					Median	0.165					95% KM (Chebyshev) UCL	4.887
2209					SD	3.622					97.5% KM (Chebyshev) UCL	6.405
2210					k star	0.112					99% KM (Chebyshev) UCL	9.388
2211					Theta star	12.59						
2212					Nu star	4.706	**Potential UCLs to Use**					
2213					AppChi2	1.019					95% KM (BCA) UCL	2.882
2214					95% Gamma Approximate UCL	6.513						
2215					95% Adjusted Gamma UCL	7.404						
2216	**Note: DL/2 is not a recommended method.**											
2217												
2218	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
2219	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
2220	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2221												
2222	c7n_eu1_mercury											
2223												
2224	General Statistics											
2225	Number of Valid Data					25	Number of Detected Data					24
2226	Number of Distinct Detected Data					21	Number of Non-Detect Data					1
2227							Percent Non-Detects					4.00%
2228												
2229	Raw Statistics						Log-transformed Statistics					
2230	Minimum Detected					0.011	Minimum Detected					-4.51
2231	Maximum Detected					1.4	Maximum Detected					0.336
2232	Mean of Detected					0.221	Mean of Detected					-2.333
2233	SD of Detected					0.351	SD of Detected					1.233
2234	Minimum Non-Detect					0.0068	Minimum Non-Detect					-4.991
2235	Maximum Non-Detect					0.0068	Maximum Non-Detect					-4.991
2236												
2237												
2238	UCL Statistics											
2239	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
2240	Shapiro Wilk Test Statistic					0.603	Shapiro Wilk Test Statistic					0.937
2241	5% Shapiro Wilk Critical Value					0.916	5% Shapiro Wilk Critical Value					0.916
2242	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
2243												
2244	Assuming Normal Distribution						Assuming Lognormal Distribution					
2245	DL/2 Substitution Method						DL/2 Substitution Method					
2246	Mean					0.212	Mean					-2.467
2247	SD					0.347	SD					1.381
2248	95% DL/2 (t) UCL					0.331	95% H-Stat (DL/2) UCL					0.515
2249												
2250	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
2251	Mean					0.204	Mean in Log Scale					-2.454
2252	SD					0.349	SD in Log Scale					1.351
2253	95% MLE (t) UCL					0.323	Mean in Original Scale					0.212
2254	95% MLE (Tiku) UCL					0.313	SD in Original Scale					0.347
2255							95% t UCL					0.331
2256							95% Percentile Bootstrap UCL					0.334
2257							95% BCA Bootstrap UCL					0.364
2258												
2259	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
2260	k star (bias corrected)					0.667	Data appear Lognormal at 5% Significance Level					
2261	Theta Star					0.332						
2262	nu star					31.99						
2263												
2264	A-D Test Statistic					1.53	Nonparametric Statistics					
2265	5% A-D Critical Value					0.784	Kaplan-Meier (KM) Method					
2266	K-S Test Statistic					0.784	Mean					0.213
2267	5% K-S Critical Value					0.185	SD					0.339
2268	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0693
2269							95% KM (t) UCL					0.331
2270	Assuming Gamma Distribution						95% KM (z) UCL					0.327
2271	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.331
2272	Minimum					1E-12	95% KM (bootstrap t) UCL					0.47
2273	Maximum					1.4	95% KM (BCA) UCL					0.339
2274	Mean					0.212	95% KM (Percentile Bootstrap) UCL					0.335
2275	Median					0.06	95% KM (Chebyshev) UCL					0.515
2276	SD					0.347	97.5% KM (Chebyshev) UCL					0.646
2277	k star					0.353	99% KM (Chebyshev) UCL					0.902
2278	Theta star					0.6						
2279	Nu star					17.67	Potential UCLs to Use					
2280	AppChi2					9.151	97.5% KM (Chebyshev) UCL					0.646
2281	95% Gamma Approximate UCL					0.41						
2282	95% Adjusted Gamma UCL					0.429						
2283	Note: DL/2 is not a recommended method.											
2284												
2285	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2286	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2287	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2288												
2289	c7n_eu1_total pcbs											
2290												
2291	**General Statistics**											
2292	Number of Valid Data					73	Number of Detected Data					33
2293	Number of Distinct Detected Data					32	Number of Non-Detect Data					40
2294							Percent Non-Detects					54.79%
2295												
2296	**Raw Statistics**						**Log-transformed Statistics**					
2297	Minimum Detected					0.036	Minimum Detected					-3.324
2298	Maximum Detected					5.015	Maximum Detected					1.612
2299	Mean of Detected					0.441	Mean of Detected					-1.93
2300	SD of Detected					0.969	SD of Detected					1.289
2301	Minimum Non-Detect					0.0345	Minimum Non-Detect					-3.367
2302	Maximum Non-Detect					0.057	Maximum Non-Detect					-2.865
2303												
2304	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					48
2305	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					25
2306	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					65.75%
2307												
2308	**UCL Statistics**											
2309	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
2310	Shapiro Wilk Test Statistic					0.466	Shapiro Wilk Test Statistic					0.854
2311	5% Shapiro Wilk Critical Value					0.931	5% Shapiro Wilk Critical Value					0.931
2312	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
2313												
2314	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
2315	DL/2 Substitution Method						DL/2 Substitution Method					
2316	Mean					0.21	Mean					-3.045
2317	SD					0.68	SD					1.335
2318	95% DL/2 (t) UCL					0.342	95% H-Stat (DL/2) UCL					0.175
2319												
2320	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2321	**MLE yields a negative mean**						Mean in Log Scale					-3.831
2322							SD in Log Scale					2.038
2323							Mean in Original Scale					0.202
2324							SD in Original Scale					0.682
2325							95% t UCL					0.335
2326							95% Percentile Bootstrap UCL					0.341
2327							95% BCA Bootstrap UCL					0.404
2328												
2329	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
2330	k star (bias corrected)					0.531	**Data do not follow a Discernable Distribution (0.05)**					
2331	Theta Star					0.829						
2332	nu star					35.05						
2333												
2334	A-D Test Statistic					3.566	**Nonparametric Statistics**					
2335	5% A-D Critical Value					0.805	Kaplan-Meier (KM) Method					
2336	K-S Test Statistic					0.805	Mean					0.219
2337	5% K-S Critical Value					0.161	SD					0.673
2338	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					0.0799
2339							95% KM (t) UCL					0.352
2340	**Assuming Gamma Distribution**						95% KM (z) UCL					0.35
2341	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.35
2342	Minimum					0.036	95% KM (bootstrap t) UCL					0.543
2343	Maximum					5.015	95% KM (BCA) UCL					0.372
2344	Mean					0.443	95% KM (Percentile Bootstrap) UCL					0.364
2345	Median					0.422	95% KM (Chebyshev) UCL					0.567
2346	SD					0.647	97.5% KM (Chebyshev) UCL					0.718
2347	k star					1.094	99% KM (Chebyshev) UCL					1.014
2348	Theta star					0.404						
2349	Nu star					159.8	**Potential UCLs to Use**					
2350	AppChi2					131.5	95% KM (BCA) UCL					0.372
2351	95% Gamma Approximate UCL					0.538						
2352	95% Adjusted Gamma UCL					0.54						
2353	**Note: DL/2 is not a recommended method.**											
2354												
2355	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
2356	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
2357	**For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2358												
2359	c7s_eu1_mercury											
2360												
2361	**General Statistics**											
2362	Number of Valid Observations					26	Number of Distinct Observations					24
2363												
2364	**Raw Statistics**						**Log-transformed Statistics**					
2365	Minimum					0.0075	Minimum of Log Data					-4.893
2366	Maximum					2.975	Maximum of Log Data					1.09
2367	Mean					0.185	Mean of log Data					-2.872
2368	Median					0.0415	SD of log Data					1.191
2369	SD					0.575						
2370	Coefficient of Variation					3.1						
2371	Skewness					4.941						
2372												
2373	**Relevant UCL Statistics**											
2374	**Normal Distribution Test**						**Lognormal Distribution Test**					
2375	Shapiro Wilk Test Statistic					0.295	Shapiro Wilk Test Statistic					0.875
2376	Shapiro Wilk Critical Value					0.92	Shapiro Wilk Critical Value					0.92
2377	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
2378												
2379	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
2380	95% Student's-t UCL					0.378	95% H-UCL					0.222
2381	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					0.242
2382	95% Adjusted-CLT UCL (Chen-1995)					0.488	97.5% Chebyshev (MVUE) UCL					0.3
2383	95% Modified-t UCL (Johnson-1978)					0.396	99% Chebyshev (MVUE) UCL					0.412
2384												
2385	**Gamma Distribution Test**						**Data Distribution**					
2386	k star (bias corrected)					0.495	**Data do not follow a Discernable Distribution (0.05)**					
2387	Theta Star					0.375						
2388	MLE of Mean					0.185						
2389	MLE of Standard Deviation					0.264						
2390	nu star					25.72						
2391	Approximate Chi Square Value (.05)					15.17	**Nonparametric Statistics**					
2392	Adjusted Level of Significance					0.0398	95% CLT UCL					0.371
2393	Adjusted Chi Square Value					14.63	95% Jackknife UCL					0.378
2394							95% Standard Bootstrap UCL					0.372
2395	Anderson-Darling Test Statistic					3.475	95% Bootstrap-t UCL					1.517
2396	Anderson-Darling 5% Critical Value					0.806	95% Hall's Bootstrap UCL					1.042
2397	Kolmogorov-Smirnov Test Statistic					0.313	95% Percentile Bootstrap UCL					0.404
2398	Kolmogorov-Smirnov 5% Critical Value					0.181	95% BCA Bootstrap UCL					0.532
2399	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					0.677
2400							97.5% Chebyshev(Mean, Sd) UCL					0.889
2401	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					1.307
2402	95% Approximate Gamma UCL					0.314						
2403	95% Adjusted Gamma UCL					0.326						
2404												
2405	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL					0.677
2406												
2407	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
2408	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
2409	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A B C D E	F	G H I J K	L
2410				
2411	c7s_eu1_total pcbs			
2412				
2413	General Statistics			
2414	Number of Valid Data	77	Number of Detected Data	31
2415	Number of Distinct Detected Data	31	Number of Non-Detect Data	46
2416			Percent Non-Detects	59.74%
2417				
2418	Raw Statistics		Log-transformed Statistics	
2419	Minimum Detected	0.0415	Minimum Detected	-3.182
2420	Maximum Detected	9.85	Maximum Detected	2.287
2421	Mean of Detected	1.237	Mean of Detected	-1.19
2422	SD of Detected	2.361	SD of Detected	1.672
2423	Minimum Non-Detect	0.0345	Minimum Non-Detect	-3.367
2424	Maximum Non-Detect	0.0405	Maximum Non-Detect	-3.206
2425				
2426	Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	46
2427	For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	31
2428	Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	59.74%
2429				
2430	UCL Statistics			
2431	Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
2432	Shapiro Wilk Test Statistic	0.564	Shapiro Wilk Test Statistic	0.899
2433	5% Shapiro Wilk Critical Value	0.929	5% Shapiro Wilk Critical Value	0.929
2434	Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
2435				
2436	Assuming Normal Distribution		Assuming Lognormal Distribution	
2437	DL/2 Substitution Method		DL/2 Substitution Method	
2438	Mean	0.509	Mean	-2.858
2439	SD	1.6	SD	1.733
2440	95% DL/2 (t) UCL	0.813	95% H-Stat (DL/2) UCL	0.477
2441				
2442	Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
2443	MLE yields a negative mean		Mean in Log Scale	-4.109
2444			SD in Log Scale	2.826
2445			Mean in Original Scale	0.501
2446			SD in Original Scale	1.603
2447			95% t UCL	0.805
2448			95% Percentile Bootstrap UCL	0.825
2449			95% BCA Bootstrap UCL	0.969
2450				
2451	Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
2452	k star (bias corrected)	0.436	Data do not follow a Discernable Distribution (0.05)	
2453	Theta Star	2.835		
2454	nu star	27.05		
2455				
2456	A-D Test Statistic	2.087	Nonparametric Statistics	
2457	5% A-D Critical Value	0.819	Kaplan-Meier (KM) Method	
2458	K-S Test Statistic	0.819	Mean	0.523
2459	5% K-S Critical Value	0.168	SD	1.586
2460	Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.184
2461			95% KM (t) UCL	0.829
2462	Assuming Gamma Distribution		95% KM (z) UCL	0.825
2463	Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.823
2464	Minimum	0.0415	95% KM (bootstrap t) UCL	1.126
2465	Maximum	9.85	95% KM (BCA) UCL	0.866
2466	Mean	1.225	95% KM (Percentile Bootstrap) UCL	0.853
2467	Median	1.163	95% KM (Chebyshev) UCL	1.323
2468	SD	1.504	97.5% KM (Chebyshev) UCL	1.67
2469	k star	0.951	99% KM (Chebyshev) UCL	2.35
2470	Theta star	1.288		
2471	Nu star	146.5	Potential UCLs to Use	
2472	AppChi2	119.5	95% KM (Chebyshev) UCL	1.323
2473	95% Gamma Approximate UCL	1.502		
2474	95% Adjusted Gamma UCL	1.508		
2475	Note: DL/2 is not a recommended method.			
2476				
2477	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
2478	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
2479	For additional insight, the user may want to consult a statistician.			

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2480												
2481	c8n_eu1_mercury											
2482												
2483	General Statistics											
2484	Number of Valid Observations					6	Number of Distinct Observations					6
2485												
2486	Raw Statistics						Log-transformed Statistics					
2487	Minimum					0.019	Minimum of Log Data					-3.963
2488	Maximum					5.2	Maximum of Log Data					1.649
2489	Mean					1.232	Mean of log Data					-2.008
2490	Median					0.0365	SD of log Data					2.51
2491	SD					2.109						
2492	Coefficient of Variation					1.713						
2493	Skewness					1.794						
2494												
2495												
2496	Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!											
2497												
2498	It is suggested to collect at least 8 to 10 observations using these statistical methods!											
2499	If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.											
2500												
2501												
2502	Warning: There are only 6 Values in this data											
2503	Note: It should be noted that even though bootstrap methods may be performed on this data set,											
2504	the resulting calculations may not be reliable enough to draw conclusions											
2505												
2506	The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.											
2507												
2508	Relevant UCL Statistics											
2509	Normal Distribution Test						Lognormal Distribution Test					
2510	Shapiro Wilk Test Statistic					0.687	Shapiro Wilk Test Statistic					0.768
2511	Shapiro Wilk Critical Value					0.788	Shapiro Wilk Critical Value					0.788
2512	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
2513												
2514	Assuming Normal Distribution						Assuming Lognormal Distribution					
2515	95% Student's-t UCL					2.967	95% H-UCL					147253
2516	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					4.735
2517	95% Adjusted-CLT UCL (Chen-1995)					3.322	97.5% Chebyshev (MVUE) UCL					6.335
2518	95% Modified-t UCL (Johnson-1978)					3.072	99% Chebyshev (MVUE) UCL					9.479
2519												
2520	Gamma Distribution Test						Data Distribution					
2521	k star (bias corrected)					0.266	Data do not follow a Discernable Distribution (0.05)					
2522	Theta Star					4.632						
2523	MLE of Mean					1.232						
2524	MLE of Standard Deviation					2.389						
2525	nu star					3.19						
2526	Approximate Chi Square Value (.05)					0.431	Nonparametric Statistics					
2527	Adjusted Level of Significance					0.0122	95% CLT UCL					2.648
2528	Adjusted Chi Square Value					0.195	95% Jackknife UCL					2.967
2529							95% Standard Bootstrap UCL					2.52
2530	Anderson-Darling Test Statistic					0.835	95% Bootstrap-t UCL					256.2
2531	Anderson-Darling 5% Critical Value					0.765	95% Hall's Bootstrap UCL					148
2532	Kolmogorov-Smirnov Test Statistic					0.39	95% Percentile Bootstrap UCL					2.613
2533	Kolmogorov-Smirnov 5% Critical Value					0.356	95% BCA Bootstrap UCL					2.961
2534	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					4.985
2535							97.5% Chebyshev(Mean, Sd) UCL					6.61
2536	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					9.8
2537	95% Approximate Gamma UCL					9.116						
2538	95% Adjusted Gamma UCL					20.15						
2539												
2540	Potential UCL to Use						Use 95% Hall's Bootstrap UCL					148
2541	Recommended UCL exceeds the maximum observation											
2542	In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL											
2543												
2544	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2545	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
2546	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2547												
2548	c8n_eu1_total pcbs											
2549												
2550	General Statistics											
2551	Number of Valid Data					24	Number of Detected Data					18
2552	Number of Distinct Detected Data					18	Number of Non-Detect Data					6
2553							Percent Non-Detects					25.00%
2554												
2555	Raw Statistics						Log-transformed Statistics					
2556	Minimum Detected					0.0365	Minimum Detected					-3.31
2557	Maximum Detected					8.13	Maximum Detected					2.096
2558	Mean of Detected					1.739	Mean of Detected					-0.548
2559	SD of Detected					2.13	SD of Detected					1.794
2560	Minimum Non-Detect					0.035	Minimum Non-Detect					-3.352
2561	Maximum Non-Detect					0.0385	Maximum Non-Detect					-3.257
2562												
2563	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					7
2564	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					17
2565	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					29.17%
2566												
2567	UCL Statistics											
2568	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
2569	Shapiro Wilk Test Statistic					0.785	Shapiro Wilk Test Statistic					0.901
2570	5% Shapiro Wilk Critical Value					0.897	5% Shapiro Wilk Critical Value					0.897
2571	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
2572												
2573	Assuming Normal Distribution						Assuming Lognormal Distribution					
2574	DL/2 Substitution Method						DL/2 Substitution Method					
2575	Mean					1.309	Mean					-1.41
2576	SD					1.983	SD					2.17
2577	95% DL/2 (t) UCL					2.003	95% H-Stat (DL/2) UCL					18.62
2578												
2579	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
2580	Mean					0.809	Mean in Log Scale					-1.541
2581	SD					2.492	SD in Log Scale					2.351
2582	95% MLE (t) UCL					1.68	Mean in Original Scale					1.307
2583	95% MLE (Tiku) UCL					1.717	SD in Original Scale					1.984
2584							95% t UCL					2.002
2585							95% Percentile Bootstrap UCL					1.977
2586							95% BCA Bootstrap UCL					2.132
2587												
2588	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
2589	k star (bias corrected)					0.509	Data appear Gamma Distributed at 5% Significance Level					
2590	Theta Star					3.42						
2591	nu star					18.31						
2592												
2593	A-D Test Statistic					0.714	Nonparametric Statistics					
2594	5% A-D Critical Value					0.794	Kaplan-Meier (KM) Method					
2595	K-S Test Statistic					0.794	Mean					1.314
2596	5% K-S Critical Value					0.214	SD					1.938
2597	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.407
2598							95% KM (t) UCL					2.011
2599	Assuming Gamma Distribution						95% KM (z) UCL					1.983
2600	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.004
2601	Minimum					1E-12	95% KM (bootstrap t) UCL					2.31
2602	Maximum					8.13	95% KM (BCA) UCL					2.05
2603	Mean					1.304	95% KM (Percentile Bootstrap) UCL					2.026
2604	Median					0.161	95% KM (Chebyshev) UCL					3.088
2605	SD					1.986	97.5% KM (Chebyshev) UCL					3.856
2606	k star					0.121	99% KM (Chebyshev) UCL					5.364
2607	Theta star					10.8						
2608	Nu star					5.796	Potential UCLs to Use					
2609	AppChi2					1.536	95% KM (Chebyshev) UCL					3.088
2610	95% Gamma Approximate UCL					4.92						
2611	95% Adjusted Gamma UCL					5.444						
2612	Note: DL/2 is not a recommended method.											
2613												
2614	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2615	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2616	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2617												
2618	c8s_eu1_mercury											
2619												
2620	General Statistics											
2621	Number of Valid Observations					2	Number of Distinct Observations					2
2622												
2623												
2624	Warning: This data set only has 2 observations!											
2625	Data set is too small to compute reliable and meaningful statistics and estimates!											
2626	The data set for variable c8s_eu1_mercury was not processed!											
2627												
2628	It is suggested to collect at least 8 to 10 observations before using these statistical methods!											
2629	If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2630												
2631	c8s_eu1_total pcbs											
2632												
2633	General Statistics											
2634	Number of Valid Data					20	Number of Detected Data					10
2635	Number of Distinct Detected Data					10	Number of Non-Detect Data					10
2636							Percent Non-Detects					50.00%
2637												
2638	Raw Statistics						Log-transformed Statistics					
2639	Minimum Detected					0.046	Minimum Detected					-3.079
2640	Maximum Detected					3.64	Maximum Detected					1.292
2641	Mean of Detected					0.617	Mean of Detected					-1.744
2642	SD of Detected					1.173	SD of Detected					1.5
2643	Minimum Non-Detect					0.035	Minimum Non-Detect					-3.352
2644	Maximum Non-Detect					0.051	Maximum Non-Detect					-2.976
2645												
2646	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					11
2647	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					9
2648	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					55.00%
2649												
2650	UCL Statistics											
2651	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
2652	Shapiro Wilk Test Statistic					0.566	Shapiro Wilk Test Statistic					0.81
2653	5% Shapiro Wilk Critical Value					0.842	5% Shapiro Wilk Critical Value					0.842
2654	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
2655												
2656	Assuming Normal Distribution						Assuming Lognormal Distribution					
2657	DL/2 Substitution Method						DL/2 Substitution Method					
2658	Mean					0.318	Mean					-2.863
2659	SD					0.864	SD					1.546
2660	95% DL/2 (t) UCL					0.652	95% H-Stat (DL/2) UCL					0.654
2661												
2662	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2663	MLE yields a negative mean						Mean in Log Scale					-3.738
2664							SD in Log Scale					2.323
2665							Mean in Original Scale					0.31
2666							SD in Original Scale					0.867
2667							95% t UCL					0.645
2668							95% Percentile Bootstrap UCL					0.658
2669							95% BCA Bootstrap UCL					0.94
2670												
2671	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
2672	k star (bias corrected)					0.419	Data do not follow a Discernable Distribution (0.05)					
2673	Theta Star					1.471						
2674	nu star					8.383						
2675												
2676	A-D Test Statistic					1.357	Nonparametric Statistics					
2677	5% A-D Critical Value					0.777	Kaplan-Meier (KM) Method					
2678	K-S Test Statistic					0.777	Mean					0.331
2679	5% K-S Critical Value					0.281	SD					0.837
2680	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.197
2681							95% KM (t) UCL					0.672
2682	Assuming Gamma Distribution						95% KM (z) UCL					0.656
2683	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.661
2684	Minimum					1E-12	95% KM (bootstrap t) UCL					5.062
2685	Maximum					3.64	95% KM (BCA) UCL					0.758
2686	Mean					0.489	95% KM (Percentile Bootstrap) UCL					0.682
2687	Median					0.274	95% KM (Chebyshev) UCL					1.191
2688	SD					0.849	97.5% KM (Chebyshev) UCL					1.563
2689	k star					0.318	99% KM (Chebyshev) UCL					2.294
2690	Theta star					1.535						
2691	Nu star					12.73	Potential UCLs to Use					
2692	AppChi2					5.714	95% KM (BCA) UCL					0.758
2693	95% Gamma Approximate UCL					1.089						
2694	95% Adjusted Gamma UCL					1.164						
2695	Note: DL/2 is not a recommended method.											
2696												
2697	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2698	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2699	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2700												
2701	c9n_eu1_mercury											
2702												
2703	**General Statistics**											
2704					Number of Valid Observations	20					Number of Distinct Observations	20
2705												
2706	**Raw Statistics**						**Log-transformed Statistics**					
2707					Minimum	0.0315					Minimum of Log Data	-3.458
2708					Maximum	2.785					Maximum of Log Data	1.024
2709					Mean	0.382					Mean of log Data	-2.332
2710					Median	0.056					SD of log Data	1.402
2711					SD	0.843						
2712					Coefficient of Variation	2.206						
2713					Skewness	2.648						
2714												
2715	**Relevant UCL Statistics**											
2716	**Normal Distribution Test**						**Lognormal Distribution Test**					
2717					Shapiro Wilk Test Statistic	0.457					Shapiro Wilk Test Statistic	0.736
2718					Shapiro Wilk Critical Value	0.905					Shapiro Wilk Critical Value	0.905
2719	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
2720												
2721	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
2722					95% Student's-t UCL	0.708					95% H-UCL	0.74
2723	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	0.622
2724					95% Adjusted-CLT UCL (Chen-1995)	0.811					97.5% Chebyshev (MVUE) UCL	0.788
2725					95% Modified-t UCL (Johnson-1978)	0.726					99% Chebyshev (MVUE) UCL	1.115
2726												
2727	**Gamma Distribution Test**						**Data Distribution**					
2728					k star (bias corrected)	0.431	**Data do not follow a Discernable Distribution (0.05)**					
2729					Theta Star	0.886						
2730					MLE of Mean	0.382						
2731					MLE of Standard Deviation	0.582						
2732					nu star	17.26						
2733					Approximate Chi Square Value (.05)	8.856	**Nonparametric Statistics**					
2734					Adjusted Level of Significance	0.038					95% CLT UCL	0.692
2735					Adjusted Chi Square Value	8.382					95% Jackknife UCL	0.708
2736											95% Standard Bootstrap UCL	0.686
2737					Anderson-Darling Test Statistic	3.393					95% Bootstrap-t UCL	1.594
2738					Anderson-Darling 5% Critical Value	0.809					95% Hall's Bootstrap UCL	1.957
2739					Kolmogorov-Smirnov Test Statistic	0.323					95% Percentile Bootstrap UCL	0.703
2740					Kolmogorov-Smirnov 5% Critical Value	0.206					95% BCA Bootstrap UCL	0.872
2741	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	1.203
2742											97.5% Chebyshev(Mean, Sd) UCL	1.559
2743	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	2.257
2744					95% Approximate Gamma UCL	0.744						
2745					95% Adjusted Gamma UCL	0.787						
2746												
2747	**Potential UCL to Use**										Use 95% Chebyshev (Mean, Sd) UCL	1.203
2748												
2749	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
2750	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
2751	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2752												
2753	c9n_eu1_total pcbs											
2754	General Statistics											
2755	Number of Valid Data					20	Number of Detected Data					7
2756	Number of Distinct Detected Data					7	Number of Non-Detect Data					13
2757							Percent Non-Detects					65.00%
2758												
2759	Raw Statistics						Log-transformed Statistics					
2760	Minimum Detected					0.0575	Minimum Detected					-2.856
2761	Maximum Detected					4.455	Maximum Detected					1.494
2762	Mean of Detected					1.342	Mean of Detected					-1.042
2763	SD of Detected					1.764	SD of Detected					1.976
2764	Minimum Non-Detect					0.037	Minimum Non-Detect					-3.297
2765	Maximum Non-Detect					0.0415	Maximum Non-Detect					-3.182
2766												
2767	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					13
2768	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					7
2769	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					65.00%
2770												
2771	Warning: There are only 7 Detected Values in this data											
2772	Note: It should be noted that even though bootstrap may be performed on this data set											
2773	the resulting calculations may not be reliable enough to draw conclusions											
2774												
2775	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
2776												
2777												
2778	UCL Statistics											
2779	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
2780	Shapiro Wilk Test Statistic					0.787	Shapiro Wilk Test Statistic					0.797
2781	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803
2782	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
2783												
2784	Assuming Normal Distribution						Assuming Lognormal Distribution					
2785	DL/2 Substitution Method						DL/2 Substitution Method					
2786	Mean					0.482	Mean					-2.916
2787	SD					1.184	SD					1.795
2788	95% DL/2 (t) UCL					0.94	95% H-Stat (DL/2) UCL					1.374
2789												
2790	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2791	MLE yields a negative mean						Mean in Log Scale					-5.235
2792							SD in Log Scale					3.481
2793							Mean in Original Scale					0.47
2794							SD in Original Scale					1.189
2795							95% t UCL					0.93
2796							95% Percentile Bootstrap UCL					0.971
2797							95% BCA Bootstrap UCL					1.069
2798												
2799	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
2800	k star (bias corrected)					0.369	Data appear Gamma Distributed at 5% Significance Level					
2801	Theta Star					3.639						
2802	nu star					5.162						
2803												
2804	A-D Test Statistic					0.735	Nonparametric Statistics					
2805	5% A-D Critical Value					0.755	Kaplan-Meier (KM) Method					
2806	K-S Test Statistic					0.755	Mean					0.507
2807	5% K-S Critical Value					0.328	SD					1.144
2808	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.276
2809							95% KM (t) UCL					0.985
2810	Assuming Gamma Distribution						95% KM (z) UCL					0.961
2811	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.958
2812	Minimum					0.0575	95% KM (bootstrap t) UCL					1.618
2813	Maximum					4.455	95% KM (BCA) UCL					1.05
2814	Mean					1.349	95% KM (Percentile Bootstrap) UCL					1.005
2815	Median					1.19	95% KM (Chebyshev) UCL					1.711
2816	SD					1.177	97.5% KM (Chebyshev) UCL					2.233
2817	k star					0.901	99% KM (Chebyshev) UCL					3.256
2818	Theta star					1.497						
2819	Nu star					36.05	Potential UCLs to Use					
2820	AppChi2					23.31	95% KM (t) UCL					0.985
2821	95% Gamma Approximate UCL					2.087						
2822	95% Adjusted Gamma UCL					2.162						
2823	Note: DL/2 is not a recommended method.											
2824												
2825	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2826	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
2827	For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
2828												
2829	c9s_eu1_mercury											
2830												
2831	General Statistics											
2832	Number of Valid Observations					20	Number of Distinct Observations					18
2833												
2834	Raw Statistics						Log-transformed Statistics					
2835	Minimum					0.0395	Minimum of Log Data					-3.231
2836	Maximum					0.7	Maximum of Log Data					-0.357
2837	Mean					0.233	Mean of log Data					-1.835
2838	Median					0.209	SD of log Data					0.948
2839	SD					0.187						
2840	Coefficient of Variation					0.805						
2841	Skewness					0.835						
2842												
2843	Relevant UCL Statistics											
2844	Normal Distribution Test						Lognormal Distribution Test					
2845	Shapiro Wilk Test Statistic					0.878	Shapiro Wilk Test Statistic					0.899
2846	Shapiro Wilk Critical Value					0.905	Shapiro Wilk Critical Value					0.905
2847	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
2848												
2849	Assuming Normal Distribution						Assuming Lognormal Distribution					
2850	95% Student's-t UCL					0.305	95% H-UCL					0.436
2851	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					0.491
2852	95% Adjusted-CLT UCL (Chen-1995)					0.31	97.5% Chebyshev (MVUE) UCL					0.599
2853	95% Modified-t UCL (Johnson-1978)					0.307	99% Chebyshev (MVUE) UCL					0.81
2854												
2855	Gamma Distribution Test						Data Distribution					
2856	k star (bias corrected)					1.282	Data Follow Appr. Gamma Distribution at 5% Significance Level					
2857	Theta Star					0.182						
2858	MLE of Mean					0.233						
2859	MLE of Standard Deviation					0.206						
2860	nu star					51.3						
2861	Approximate Chi Square Value (.05)					35.85	Nonparametric Statistics					
2862	Adjusted Level of Significance					0.038	95% CLT UCL					0.302
2863	Adjusted Chi Square Value					34.83	95% Jackknife UCL					0.305
2864							95% Standard Bootstrap UCL					0.301
2865	Anderson-Darling Test Statistic					0.814	95% Bootstrap-t UCL					0.315
2866	Anderson-Darling 5% Critical Value					0.758	95% Hall's Bootstrap UCL					0.309
2867	Kolmogorov-Smirnov Test Statistic					0.19	95% Percentile Bootstrap UCL					0.304
2868	Kolmogorov-Smirnov 5% Critical Value					0.198	95% BCA Bootstrap UCL					0.308
2869	Data follow Appr. Gamma Distribution at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					0.415
2870							97.5% Chebyshev(Mean, Sd) UCL					0.494
2871	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					0.649
2872	95% Approximate Gamma UCL					0.333						
2873	95% Adjusted Gamma UCL					0.343						
2874												
2875	Potential UCL to Use						Use 95% Approximate Gamma UCL					0.333
2876												
2877	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2878	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
2879	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-1

Pro-UCL Outputs - Primary COPCs, 0-1 Ft BGS

2880				
2881	c9s_eu1_total pcbs			
2882				
2883	**General Statistics**			
2884	Number of Valid Data	20	Number of Detected Data	11
2885	Number of Distinct Detected Data	11	Number of Non-Detect Data	9
2886			Percent Non-Detects	45.00%
2887				
2888	**Raw Statistics**		**Log-transformed Statistics**	
2889	Minimum Detected	0.126	Minimum Detected	-2.071
2890	Maximum Detected	0.44	Maximum Detected	-0.821
2891	Mean of Detected	0.281	Mean of Detected	-1.321
2892	SD of Detected	0.091	SD of Detected	0.354
2893	Minimum Non-Detect	0.0385	Minimum Non-Detect	-3.257
2894	Maximum Non-Detect	0.041	Maximum Non-Detect	-3.194
2895				
2896	Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
2897	For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
2898	Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.00%
2899				
2900	**UCL Statistics**			
2901	**Normal Distribution Test with Detected Values Only**		**Lognormal Distribution Test with Detected Values Only**	
2902	Shapiro Wilk Test Statistic	0.98	Shapiro Wilk Test Statistic	0.955
2903	5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
2904	**Data appear Normal at 5% Significance Level**		**Data appear Lognormal at 5% Significance Level**	
2905				
2906	**Assuming Normal Distribution**		**Assuming Lognormal Distribution**	
2907	DL/2 Substitution Method		DL/2 Substitution Method	
2908	Mean	0.164	Mean	-2.49
2909	SD	0.149	SD	1.351
2910	95% DL/2 (t) UCL	0.221	95% H-Stat (DL/2) UCL	0.552
2911				
2912	Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
2913	Mean	0.101	Mean in Log Scale	-1.725
2914	SD	0.225	SD in Log Scale	0.536
2915	95% MLE (t) UCL	0.188	Mean in Original Scale	0.204
2916	95% MLE (Tiku) UCL	0.204	SD in Original Scale	0.11
2917			95% t UCL	0.247
2918			95% Percentile Bootstrap UCL	0.246
2919			95% BCA Bootstrap UCL	0.251
2920				
2921	**Gamma Distribution Test with Detected Values Only**		**Data Distribution Test with Detected Values Only**	
2922	k star (bias corrected)	7.06	**Data appear Normal at 5% Significance Level**	
2923	Theta Star	0.0398		
2924	nu star	155.3		
2925				
2926	A-D Test Statistic	0.207	**Nonparametric Statistics**	
2927	5% A-D Critical Value	0.73	Kaplan-Meier (KM) Method	
2928	K-S Test Statistic	0.73	Mean	0.211
2929	5% K-S Critical Value	0.255	SD	0.101
2930	**Data appear Gamma Distributed at 5% Significance Level**		SE of Mean	0.0236
2931			95% KM (t) UCL	0.252
2932	**Assuming Gamma Distribution**		95% KM (z) UCL	0.25
2933	Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.251
2934	Minimum	0.126	95% KM (bootstrap t) UCL	0.25
2935	Maximum	0.44	95% KM (BCA) UCL	0.289
2936	Mean	0.27	95% KM (Percentile Bootstrap) UCL	0.277
2937	Median	0.262	95% KM (Chebyshev) UCL	0.314
2938	SD	0.0746	97.5% KM (Chebyshev) UCL	0.359
2939	k star	11.29	99% KM (Chebyshev) UCL	0.446
2940	Theta star	0.0239		
2941	Nu star	451.8	**Potential UCLs to Use**	
2942	AppChi2	403.5	95% KM (t) UCL	0.252
2943	95% Gamma Approximate UCL	0.302	95% KM (Percentile Bootstrap) UCL	0.277
2944	95% Adjusted Gamma UCL	0.305		
2945	**Note: DL/2 is not a recommended method.**			
2946				
2947	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**			
2948	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**			
2949	**For additional insight, the user may want to consult a statistician.**			
2950				

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
1				**General UCL Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**2,3,7,8-TCDD TEQ (Mammal)**											
10												
11	**General Statistics**											
12					Number of Valid Data	112					Number of Detected Data	108
13					Number of Distinct Detected Data	108					Number of Non-Detect Data	4
14											Percent Non-Detects	3.57%
15												
16	**Raw Statistics**						**Log-transformed Statistics**					
17					Minimum Detected	2.561E-06					Minimum Detected	-12.88
18					Maximum Detected	0.000174					Maximum Detected	-8.657
19					Mean of Detected	2.195E-05					Mean of Detected	-11.12
20					SD of Detected	2.53E-05					SD of Detected	0.868
21					Minimum Non-Detect	9.24E-07					Minimum Non-Detect	-13.89
22					Maximum Non-Detect	2.474E-06					Maximum Non-Detect	-12.91
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	4
25	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	108
26	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	3.57%
27												
28	**UCL Statistics**											
29	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
30					Lilliefors Test Statistic	0.261					Lilliefors Test Statistic	0.0864
31					5% Lilliefors Critical Value	0.0853					5% Lilliefors Critical Value	0.0853
32	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
33												
34	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
35					DL/2 Substitution Method						DL/2 Substitution Method	
36					Mean	0.0000212					Mean	-11.22
37					SD	2.515E-05					SD	1.005
38					95% DL/2 (t) UCL	2.514E-05					95% H-Stat (DL/2) UCL	2.741E-05
39												
40					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
41					Mean	2.072E-05					Mean in Log Scale	-11.19
42					SD	2.566E-05					SD in Log Scale	0.936
43					95% MLE (t) UCL	2.474E-05					Mean in Original Scale	2.123E-05
44					95% MLE (Tiku) UCL	2.444E-05					SD in Original Scale	2.512E-05
45											95% t UCL	2.517E-05
46											95% Percentile Bootstrap UCL	2.547E-05
47											95% BCA Bootstrap UCL	2.64E-05
48											95% H UCL	2.58E-05
49												
50	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
51					k star (bias corrected)	1.379	**Data do not follow a Discernable Distribution (0.05)**					
52					Theta Star	1.592E-05						
53					nu star	297.9						
54												
55					A-D Test Statistic	2.279	**Nonparametric Statistics**					
56					5% A-D Critical Value	0.772					Kaplan-Meier (KM) Method	
57					K-S Test Statistic	0.772					Mean	2.126E-05
58					5% K-S Critical Value	0.0892					SD	2.499E-05
59	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	2.373E-06
60											95% KM (t) UCL	2.519E-05
61	**Assuming Gamma Distribution**										95% KM (z) UCL	2.516E-05
62					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	2.519E-05
63					Minimum	0.000001					95% KM (bootstrap t) UCL	2.678E-05
64					Maximum	0.000174					95% KM (BCA) UCL	2.502E-05
65					Mean	2.12E-05					95% KM (Percentile Bootstrap) UCL	2.545E-05
66					Median	1.576E-05					95% KM (Chebyshev) UCL	0.0000316
67					SD	2.515E-05					97.5% KM (Chebyshev) UCL	3.608E-05
68					k star	1.21					99% KM (Chebyshev) UCL	4.487E-05
69					Theta star	1.752E-05						

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
70					Nu star	271.1	**Potential UCLs to Use**					
71					AppChi2	234					95% KM (BCA) UCL	2.502E-05
72	95% Gamma Approximate UCL (Use when n >= 40)					2.457E-05						
73	95% Adjusted Gamma UCL (Use when n < 40)					2.461E-05						
74	**Note: DL/2 is not a recommended method.**											
75												
76	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
77	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
78	**For additional insight, the user may want to consult a statistician.**											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
79	**Aluminum**											
80												
81	**General Statistics**											
82	Number of Valid Observations					15	Number of Distinct Observations					15
83												
84	**Raw Statistics**						**Log-transformed Statistics**					
85	Minimum					6795	Minimum of Log Data					8.824
86	Maximum					17200	Maximum of Log Data					9.753
87	Mean					11215	Mean of log Data					9.287
88	Geometric Mean					10793	SD of log Data					0.283
89	Median					10700						
90	SD					3322						
91	Std. Error of Mean					857.8						
92	Coefficient of Variation					0.296						
93	Skewness					0.809						
94												
95	**Relevant UCL Statistics**											
96	**Normal Distribution Test**						**Lognormal Distribution Test**					
97	Shapiro Wilk Test Statistic					0.883	Shapiro Wilk Test Statistic					0.928
98	Shapiro Wilk Critical Value					0.881	Shapiro Wilk Critical Value					0.881
99	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
100												
101	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
102	95% Student's-t UCL					12726	95% H-UCL					12938
103	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					14806
104	95% Adjusted-CLT UCL (Chen-1995)					12818	97.5% Chebyshev (MVUE) UCL					16365
105	95% Modified-t UCL (Johnson-1978)					12756	99% Chebyshev (MVUE) UCL					19427
106												
107	**Gamma Distribution Test**						**Data Distribution**					
108	k star (bias corrected)					10.59	**Data appear Normal at 5% Significance Level**					
109	Theta Star					1059						
110	MLE of Mean					11215						
111	MLE of Standard Deviation					3446						
112	nu star					317.7						
113	Approximate Chi Square Value (.05)					277.5	**Nonparametric Statistics**					
114	Adjusted Level of Significance					0.0324	95% CLT UCL					12626
115	Adjusted Chi Square Value					272.8	95% Jackknife UCL					12726
116							95% Standard Bootstrap UCL					12548
117	Anderson-Darling Test Statistic					0.579	95% Bootstrap-t UCL					12997
118	Anderson-Darling 5% Critical Value					0.737	95% Hall's Bootstrap UCL					12661
119	Kolmogorov-Smirnov Test Statistic					0.167	95% Percentile Bootstrap UCL					12588
120	Kolmogorov-Smirnov 5% Critical Value					0.221	95% BCA Bootstrap UCL					12712
121	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					14954
122							97.5% Chebyshev(Mean, Sd) UCL					16572
123	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					19750
124	95% Approximate Gamma UCL (Use when n >= 40)					12844						
125	95% Adjusted Gamma UCL (Use when n < 40)					13062						
126												
127	**Potential UCL to Use**						Use 95% Student's-t UCL					12726
128												
129	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
130	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
131	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
132	Arsenic											
133												
134	**General Statistics**											
135	Number of Valid Observations					82	Number of Distinct Observations					67
136												
137	**Raw Statistics**						**Log-transformed Statistics**					
138	Minimum					2.75	Minimum of Log Data					1.012
139	Maximum					18.5	Maximum of Log Data					2.918
140	Mean					6.864	Mean of log Data					1.839
141	Geometric Mean					6.292	SD of log Data					0.403
142	Median					5.85						
143	SD					3.22						
144	Std. Error of Mean					0.356						
145	Coefficient of Variation					0.469						
146	Skewness					1.712						
147												
148	**Relevant UCL Statistics**											
149	**Normal Distribution Test**						**Lognormal Distribution Test**					
150	Lilliefors Test Statistic					0.204	Lilliefors Test Statistic					0.14
151	Lilliefors Critical Value					0.0978	Lilliefors Critical Value					0.0978
152	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
153												
154	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
155	95% Student's-t UCL					7.456	95% H-UCL					7.392
156	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					8.184
157	95% Adjusted-CLT UCL (Chen-1995)					7.521	97.5% Chebyshev (MVUE) UCL					8.776
158	95% Modified-t UCL (Johnson-1978)					7.467	99% Chebyshev (MVUE) UCL					9.939
159												
160	**Gamma Distribution Test**						**Data Distribution**					
161	k star (bias corrected)					5.698	**Data do not follow a Discernable Distribution (0.05)**					
162	Theta Star					1.205						
163	MLE of Mean					6.864						
164	MLE of Standard Deviation					2.876						
165	nu star					934.4						
166	Approximate Chi Square Value (.05)					864.5	**Nonparametric Statistics**					
167	Adjusted Level of Significance					0.0471	95% CLT UCL					7.449
168	Adjusted Chi Square Value					863.3	95% Jackknife UCL					7.456
169							95% Standard Bootstrap UCL					7.443
170	Anderson-Darling Test Statistic					1.863	95% Bootstrap-t UCL					7.543
171	Anderson-Darling 5% Critical Value					0.754	95% Hall's Bootstrap UCL					7.483
172	Kolmogorov-Smirnov Test Statistic					0.166	95% Percentile Bootstrap UCL					7.453
173	Kolmogorov-Smirnov 5% Critical Value					0.0988	95% BCA Bootstrap UCL					7.552
174	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					8.414
175							97.5% Chebyshev(Mean, Sd) UCL					9.085
176	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					10.4
177	95% Approximate Gamma UCL (Use when n >= 40)					7.419						
178	95% Adjusted Gamma UCL (Use when n < 40)					7.43						
179												
180	**Potential UCL to Use**						Use 95% Student's-t UCL					7.456
181							or 95% Modified-t UCL					7.467
182												
183	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
184	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
185	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
186	**Benzo(a)anthracene**											
187												
188	**General Statistics**											
189	Number of Valid Data					15	Number of Detected Data					7
190	Number of Distinct Detected Data					7	Number of Non-Detect Data					8
191							Percent Non-Detects					53.33%
192												
193	**Raw Statistics**						**Log-transformed Statistics**					
194	Minimum Detected					0.019	Minimum Detected					-3.963
195	Maximum Detected					0.205	Maximum Detected					-1.587
196	Mean of Detected					0.0848	Mean of Detected					-2.84
197	SD of Detected					0.0781	SD of Detected					0.938
198	Minimum Non-Detect					0.35	Minimum Non-Detect					-1.05
199	Maximum Non-Detect					0.38	Maximum Non-Detect					-0.968
200												
201	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					15
202	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
203	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
204												
205	**Warning: There are only 7 Detected Values in this data**											
206	**Note: It should be noted that even though bootstrap may be performed on this data set**											
207	**the resulting calculations may not be reliable enough to draw conclusions**											
208												
209	**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**											
210												
211												
212	**UCL Statistics**											
213	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
214	Shapiro Wilk Test Statistic					0.781	Shapiro Wilk Test Statistic					0.907
215	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803
216	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
217												
218	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
219	DL/2 Substitution Method						DL/2 Substitution Method					
220	Mean					0.136	Mean					-2.238
221	SD					0.0713	SD					0.847
222	95% DL/2 (t) UCL					0.168	95% H-Stat (DL/2) UCL					0.269
223												
224	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
225	**MLE method failed to converge properly**						Mean in Log Scale					-2.84
226							SD in Log Scale					0.729
227							Mean in Original Scale					0.0751
228							SD in Original Scale					0.0578
229							95% t UCL					0.101
230							95% Percentile Bootstrap UCL					0.0993
231							95% BCA Bootstrap UCL					0.105
232							95% H-UCL					0.12
233												
234	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
235	k star (bias corrected)					0.945	**Data appear Gamma Distributed at 5% Significance Level**					
236	Theta Star					0.0897						
237	nu star					13.23						
238												
239	A-D Test Statistic					0.477	**Nonparametric Statistics**					
240	5% A-D Critical Value					0.721	Kaplan-Meier (KM) Method					
241	K-S Test Statistic					0.721	Mean					0.0848
242	5% K-S Critical Value					0.317	SD					0.0723
243	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					0.0295
244							95% KM (t) UCL					0.137
245	**Assuming Gamma Distribution**						95% KM (z) UCL					0.133
246	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.139
247	Minimum					0.019	95% KM (bootstrap t) UCL					0.266
248	Maximum					0.205	95% KM (BCA) UCL					0.136
249	Mean					0.0843	95% KM (Percentile Bootstrap) UCL					0.135
250	Median					0.0655	95% KM (Chebyshev) UCL					0.213
251	SD					0.0615	97.5% KM (Chebyshev) UCL					0.269
252	k star					1.606	99% KM (Chebyshev) UCL					0.379
253	Theta star					0.0525						
254	Nu star					48.17	**Potential UCLs to Use**					

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
255	AppChi2					33.24	95% KM (t) UCL					0.137
256	95% Gamma Approximate UCL (Use when n >= 40)					0.122						
257	95% Adjusted Gamma UCL (Use when n < 40)					0.128						
258	Note: DL/2 is not a recommended method.											
259												
260	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
261	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
262	For additional insight, the user may want to consult a statistician.											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
263	Benzo(a)pyrene											
264												
265	General Statistics											
266	Number of Valid Data					15	Number of Detected Data					6
267	Number of Distinct Detected Data					6	Number of Non-Detect Data					9
268							Percent Non-Detects					60.00%
269												
270	Raw Statistics						Log-transformed Statistics					
271	Minimum Detected					0.0215	Minimum Detected					-3.84
272	Maximum Detected					0.207	Maximum Detected					-1.575
273	Mean of Detected					0.071	Mean of Detected					-2.939
274	SD of Detected					0.0687	SD of Detected					0.791
275	Minimum Non-Detect					0.35	Minimum Non-Detect					-1.05
276	Maximum Non-Detect					0.38	Maximum Non-Detect					-0.968
277												
278	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					15
279	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
280	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
281												
282	Warning: There are only 6 Detected Values in this data											
283	Note: It should be noted that even though bootstrap may be performed on this data set											
284	the resulting calculations may not be reliable enough to draw conclusions											
285												
286	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
287												
288												
289	UCL Statistics											
290	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
291	Shapiro Wilk Test Statistic					0.719	Shapiro Wilk Test Statistic					0.925
292	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
293	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
294												
295	Assuming Normal Distribution						Assuming Lognormal Distribution					
296	DL/2 Substitution Method						DL/2 Substitution Method					
297	Mean					0.137	Mean					-2.203
298	SD					0.0692	SD					0.781
299	95% DL/2 (t) UCL					0.168	95% H-Stat (DL/2) UCL					0.248
300												
301	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
302	MLE method failed to converge properly						Mean in Log Scale					-2.939
303							SD in Log Scale					0.61
304							Mean in Original Scale					0.064
305							SD in Original Scale					0.047
306							95% t UCL					0.0853
307							95% Percentile Bootstrap UCL					0.0836
308							95% BCA Bootstrap UCL					0.0926
309							95% H-UCL					0.0912
310												
311	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
312	k star (bias corrected)					1.037	Data appear Gamma Distributed at 5% Significance Level					
313	Theta Star					0.0684						
314	nu star					12.45						
315												
316	A-D Test Statistic					0.48	Nonparametric Statistics					
317	5% A-D Critical Value					0.705	Kaplan-Meier (KM) Method					
318	K-S Test Statistic					0.705	Mean					0.071
319	5% K-S Critical Value					0.336	SD					0.0627
320	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.028
321							95% KM (t) UCL					0.12
322	Assuming Gamma Distribution						95% KM (z) UCL					0.117
323	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.123
324	Minimum					0.0189	95% KM (bootstrap t) UCL					0.228
325	Maximum					0.207	95% KM (BCA) UCL					0.125
326	Mean					0.071	95% KM (Percentile Bootstrap) UCL					0.12
327	Median					0.066	95% KM (Chebyshev) UCL					0.193
328	SD					0.0513	97.5% KM (Chebyshev) UCL					0.246
329	k star					1.841	99% KM (Chebyshev) UCL					0.35
330	Theta star					0.0386						
331	Nu star					55.23	Potential UCLs to Use					

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
332	AppChi2					39.15	95% KM (t) UCL					0.12
333	95% Gamma Approximate UCL (Use when n >= 40)					0.1						
334	95% Adjusted Gamma UCL (Use when n < 40)					0.105						
335	Note: DL/2 is not a recommended method.											
336												
337	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
338	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
339	For additional insight, the user may want to consult a statistician.											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
340	Benzo(b)fluoranthene											
341												
342	General Statistics											
343	Number of Valid Data					15	Number of Detected Data					6
344	Number of Distinct Detected Data					6	Number of Non-Detect Data					9
345							Percent Non-Detects					60.00%
346												
347	Raw Statistics						Log-transformed Statistics					
348	Minimum Detected					0.026	Minimum Detected					-3.65
349	Maximum Detected					0.0825	Maximum Detected					-2.495
350	Mean of Detected					0.0491	Mean of Detected					-3.087
351	SD of Detected					0.0203	SD of Detected					0.421
352	Minimum Non-Detect					0.35	Minimum Non-Detect					-1.05
353	Maximum Non-Detect					0.38	Maximum Non-Detect					-0.968
354												
355	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					15
356	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
357	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
358												
359	Warning: There are only 6 Detected Values in this data											
360	Note: It should be noted that even though bootstrap may be performed on this data set											
361	the resulting calculations may not be reliable enough to draw conclusions											
362												
363	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
364												
365												
366	UCL Statistics											
367	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
368	Shapiro Wilk Test Statistic					0.943	Shapiro Wilk Test Statistic					0.963
369	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
370	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
371												
372	Assuming Normal Distribution						Assuming Lognormal Distribution					
373	DL/2 Substitution Method						DL/2 Substitution Method					
374	Mean					0.128	Mean					-2.262
375	SD					0.0679	SD					0.741
376	95% DL/2 (t) UCL					0.159	95% H-Stat (DL/2) UCL					0.219
377												
378	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
379	MLE method failed to converge properly						Mean in Log Scale					-3.087
380							SD in Log Scale					0.329
381							Mean in Original Scale					0.048
382							SD in Original Scale					0.0157
383							95% t UCL					0.0551
384							95% Percentile Bootstrap UCL					0.0546
385							95% BCA Bootstrap UCL					0.0553
386							95% H-UCL					0.057
387												
388	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
389	k star (bias corrected)					3.639	Data appear Normal at 5% Significance Level					
390	Theta Star					0.0135						
391	nu star					43.67						
392												
393	A-D Test Statistic					0.234	Nonparametric Statistics					
394	5% A-D Critical Value					0.698	Kaplan-Meier (KM) Method					
395	K-S Test Statistic					0.698	Mean					0.0491
396	5% K-S Critical Value					0.333	SD					0.0186
397	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0083
398							95% KM (t) UCL					0.0637
399	Assuming Gamma Distribution						95% KM (z) UCL					0.0627
400	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0645
401	Minimum					0.026	95% KM (bootstrap t) UCL					0.0678
402	Maximum					0.0825	95% KM (BCA) UCL					0.0627
403	Mean					0.0499	95% KM (Percentile Bootstrap) UCL					0.0635
404	Median					0.0517	95% KM (Chebyshev) UCL					0.0852
405	SD					0.0157	97.5% KM (Chebyshev) UCL					0.101
406	k star					8.303	99% KM (Chebyshev) UCL					0.132
407	Theta star					0.00601						
408	Nu star					249.1	Potential UCLs to Use					

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
409	AppChi2					213.5	95% KM (t) UCL					0.0637
410	95% Gamma Approximate UCL (Use when n >= 40)					0.0582	95% KM (Percentile Bootstrap) UCL					0.0635
411	95% Adjusted Gamma UCL (Use when n < 40)					0.0593						
412	Note: DL/2 is not a recommended method.											
413												
414	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
415	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
416	For additional insight, the user may want to consult a statistician.											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
417	Benzo(k)fluoranthene											
418												
419	General Statistics											
420					Number of Valid Data	15					Number of Detected Data	6
421					Number of Distinct Detected Data	6					Number of Non-Detect Data	9
422											Percent Non-Detects	60.00%
423												
424	Raw Statistics						Log-transformed Statistics					
425					Minimum Detected	0.022					Minimum Detected	-3.817
426					Maximum Detected	0.206					Maximum Detected	-1.58
427					Mean of Detected	0.0757					Mean of Detected	-2.884
428					SD of Detected	0.0685					SD of Detected	0.841
429					Minimum Non-Detect	0.35					Minimum Non-Detect	-1.05
430					Maximum Non-Detect	0.38					Maximum Non-Detect	-0.968
431												
432	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	15
433	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
434	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
435												
436	Warning: There are only 6 Detected Values in this data											
437	Note: It should be noted that even though bootstrap may be performed on this data set											
438	the resulting calculations may not be reliable enough to draw conclusions											
439												
440	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
441												
442												
443	UCL Statistics											
444	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
445					Shapiro Wilk Test Statistic	0.795					Shapiro Wilk Test Statistic	0.928
446					5% Shapiro Wilk Critical Value	0.788					5% Shapiro Wilk Critical Value	0.788
447	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
448												
449	Assuming Normal Distribution						Assuming Lognormal Distribution					
450					DL/2 Substitution Method						DL/2 Substitution Method	
451					Mean	0.139					Mean	-2.181
452					SD	0.0672					SD	0.778
453					95% DL/2 (t) UCL	0.169					95% H-Stat (DL/2) UCL	0.253
454												
455					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
456	MLE method failed to converge properly										Mean in Log Scale	-2.884
457											SD in Log Scale	0.652
458											Mean in Original Scale	0.0685
459											SD in Original Scale	0.0487
460											95% t UCL	0.0906
461											95% Percentile Bootstrap UCL	0.0903
462											95% BCA Bootstrap UCL	0.0952
463											95% H-UCL	0.102
464												
465	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
466					k star (bias corrected)	1.013	Data appear Normal at 5% Significance Level					
467					Theta Star	0.0747						
468					nu star	12.15						
469												
470					A-D Test Statistic	0.362	Nonparametric Statistics					
471					5% A-D Critical Value	0.706					Kaplan-Meier (KM) Method	
472					K-S Test Statistic	0.706					Mean	0.0757
473					5% K-S Critical Value	0.336					SD	0.0625
474	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	0.028
475											95% KM (t) UCL	0.125
476	Assuming Gamma Distribution										95% KM (z) UCL	0.122
477					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.128
478					Minimum	0.0198					95% KM (bootstrap t) UCL	0.194
479					Maximum	0.206					95% KM (BCA) UCL	0.127
480					Mean	0.0756					95% KM (Percentile Bootstrap) UCL	0.123
481					Median	0.0754					95% KM (Chebyshev) UCL	0.198
482					SD	0.0526					97.5% KM (Chebyshev) UCL	0.25
483					k star	1.804					99% KM (Chebyshev) UCL	0.354
484					Theta star	0.0419						
485					Nu star	54.12	Potential UCLs to Use					

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
486					AppChi2	38.22					95% KM (t) UCL	0.125
487					95% Gamma Approximate UCL (Use when n >= 40)	0.107					95% KM (Percentile Bootstrap) UCL	0.123
488					95% Adjusted Gamma UCL (Use when n < 40)	0.112						
489	Note: DL/2 is not a recommended method.											
490												
491	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
492	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
493	For additional insight, the user may want to consult a statistician.											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
494	Chromium											
495												
496	General Statistics											
497	Number of Valid Observations					82	Number of Distinct Observations					72
498												
499	Raw Statistics						Log-transformed Statistics					
500	Minimum					6	Minimum of Log Data					1.792
501	Maximum					67.45	Maximum of Log Data					4.211
502	Mean					16.93	Mean of log Data					2.682
503	Geometric Mean					14.61	SD of log Data					0.527
504	Median					13.48						
505	SD					10.44						
506	Std. Error of Mean					1.153						
507	Coefficient of Variation					0.617						
508	Skewness					2.023						
509												
510	Relevant UCL Statistics											
511	Normal Distribution Test						Lognormal Distribution Test					
512	Lilliefors Test Statistic					0.16	Lilliefors Test Statistic					0.0877
513	Lilliefors Critical Value					0.0978	Lilliefors Critical Value					0.0978
514	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
515												
516	Assuming Normal Distribution						Assuming Lognormal Distribution					
517	95% Student's-t UCL					18.85	95% H-UCL					18.71
518	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					21.25
519	95% Adjusted-CLT UCL (Chen-1995)					19.1	97.5% Chebyshev (MVUE) UCL					23.2
520	95% Modified-t UCL (Johnson-1978)					18.89	99% Chebyshev (MVUE) UCL					27.02
521												
522	Gamma Distribution Test						Data Distribution					
523	k star (bias corrected)					3.43	Data appear Lognormal at 5% Significance Level					
524	Theta Star					4.936						
525	MLE of Mean					16.93						
526	MLE of Standard Deviation					9.141						
527	nu star					562.4						
528	Approximate Chi Square Value (.05)					508.4	Nonparametric Statistics					
529	Adjusted Level of Significance					0.0471	95% CLT UCL					18.83
530	Adjusted Chi Square Value					507.5	95% Jackknife UCL					18.85
531							95% Standard Bootstrap UCL					18.83
532	Anderson-Darling Test Statistic					1.373	95% Bootstrap-t UCL					19.15
533	Anderson-Darling 5% Critical Value					0.757	95% Hall's Bootstrap UCL					19.25
534	Kolmogorov-Smirnov Test Statistic					0.116	95% Percentile Bootstrap UCL					18.82
535	Kolmogorov-Smirnov 5% Critical Value					0.0992	95% BCA Bootstrap UCL					19.05
536	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					21.96
537							97.5% Chebyshev(Mean, Sd) UCL					24.13
538	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					28.4
539	95% Approximate Gamma UCL (Use when n >= 40)					18.73						
540	95% Adjusted Gamma UCL (Use when n < 40)					18.76						
541												
542	Potential UCL to Use						Use 95% H-UCL					18.71
543												
544	ProUCL computes and outputs H-statistic based UCLs for historical reasons only.											
545	H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.											
546	It is therefore recommended to avoid the use of H-statistic based 95% UCLs.											
547	Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.											
548												
549	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
550	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
551	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
552	Chrysene											
553												
554	General Statistics											
555					Number of Valid Data	15					Number of Detected Data	8
556					Number of Distinct Detected Data	8					Number of Non-Detect Data	7
557											Percent Non-Detects	46.67%
558												
559	Raw Statistics						Log-transformed Statistics					
560					Minimum Detected	0.0265					Minimum Detected	-3.631
561					Maximum Detected	0.192					Maximum Detected	-1.653
562					Mean of Detected	0.09					Mean of Detected	-2.667
563					SD of Detected	0.0673					SD of Detected	0.785
564					Minimum Non-Detect	0.35					Minimum Non-Detect	-1.05
565					Maximum Non-Detect	0.38					Maximum Non-Detect	-0.968
566												
567	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	15
568	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
569	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
570												
571	Warning: There are only 8 Detected Values in this data											
572	Note: It should be noted that even though bootstrap may be performed on this data set											
573	the resulting calculations may not be reliable enough to draw conclusions											
574												
575	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
576												
577												
578	UCL Statistics											
579	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
580					Shapiro Wilk Test Statistic	0.836					Shapiro Wilk Test Statistic	0.912
581					5% Shapiro Wilk Critical Value	0.818					5% Shapiro Wilk Critical Value	0.818
582	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
583												
584	Assuming Normal Distribution						Assuming Lognormal Distribution					
585					DL/2 Substitution Method						DL/2 Substitution Method	
586					Mean	0.132					Mean	-2.221
587					SD	0.0669					SD	0.743
588					95% DL/2 (t) UCL	0.163					95% H-Stat (DL/2) UCL	0.229
589												
590					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
591	MLE method failed to converge properly										Mean in Log Scale	-2.667
592											SD in Log Scale	0.625
593											Mean in Original Scale	0.0832
594											SD in Original Scale	0.0528
595											95% t UCL	0.107
596											95% Percentile Bootstrap UCL	0.107
597											95% BCA Bootstrap UCL	0.109
598											95% H-UCL	0.122
599												
600	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
601					k star (bias corrected)	1.384	Data appear Normal at 5% Significance Level					
602					Theta Star	0.065						
603					nu star	22.14						
604												
605					A-D Test Statistic	0.365	Nonparametric Statistics					
606					5% A-D Critical Value	0.724					Kaplan-Meier (KM) Method	
607					K-S Test Statistic	0.724					Mean	0.09
608					5% K-S Critical Value	0.297					SD	0.063
609	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	0.0238
610											95% KM (t) UCL	0.132
611	Assuming Gamma Distribution										95% KM (z) UCL	0.129
612					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.133
613					Minimum	0.0265					95% KM (bootstrap t) UCL	0.171
614					Maximum	0.192					95% KM (BCA) UCL	0.131
615					Mean	0.0911					95% KM (Percentile Bootstrap) UCL	0.131
616					Median	0.0936					95% KM (Chebyshev) UCL	0.194
617					SD	0.054					97.5% KM (Chebyshev) UCL	0.239
618					k star	2.363					99% KM (Chebyshev) UCL	0.327
619					Theta star	0.0385						
620					Nu star	70.9	Potential UCLs to Use					

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
621					AppChi2	52.51					95% KM (t) UCL	0.132
622			95% Gamma Approximate UCL (Use when n >= 40)			0.123				95% KM (Percentile Bootstrap) UCL		0.131
623			95% Adjusted Gamma UCL (Use when n < 40)			0.128						
624	**Note: DL/2 is not a recommended method.**											
625												
626	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
627	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
628	**For additional insight, the user may want to consult a statistician.**											

TABLE I-2

Pro-UCL Outputs - Other COPCs

629	Cobalt			
630				
631	**General Statistics**			
632	Number of Valid Observations	82	Number of Distinct Observations	70
633				
634	**Raw Statistics**		**Log-transformed Statistics**	
635	Minimum	3.15	Minimum of Log Data	1.147
636	Maximum	25.2	Maximum of Log Data	3.227
637	Mean	8.815	Mean of log Data	2.102
638	Geometric Mean	8.181	SD of log Data	0.387
639	Median	8.15		
640	SD	3.616		
641	Std. Error of Mean	0.399		
642	Coefficient of Variation	0.41		
643	Skewness	1.605		
644				
645	**Relevant UCL Statistics**			
646	**Normal Distribution Test**		**Lognormal Distribution Test**	
647	Lilliefors Test Statistic	0.12	Lilliefors Test Statistic	0.0536
648	Lilliefors Critical Value	0.0978	Lilliefors Critical Value	0.0978
649	**Data not Normal at 5% Significance Level**		**Data appear Lognormal at 5% Significance Level**	
650				
651	**Assuming Normal Distribution**		**Assuming Lognormal Distribution**	
652	95% Student's-t UCL	9.479	95% H-UCL	9.521
653	**95% UCLs (Adjusted for Skewness)**		95% Chebyshev (MVUE) UCL	10.51
654	95% Adjusted-CLT UCL (Chen-1995)	9.547	97.5% Chebyshev (MVUE) UCL	11.24
655	95% Modified-t UCL (Johnson-1978)	9.491	99% Chebyshev (MVUE) UCL	12.68
656				
657	**Gamma Distribution Test**		**Data Distribution**	
658	k star (bias corrected)	6.625	**Data appear Gamma Distributed at 5% Significance Level**	
659	Theta Star	1.33		
660	MLE of Mean	8.815		
661	MLE of Standard Deviation	3.425		
662	nu star	1087		
663	Approximate Chi Square Value (.05)	1011	**Nonparametric Statistics**	
664	Adjusted Level of Significance	0.0471	95% CLT UCL	9.471
665	Adjusted Chi Square Value	1010	95% Jackknife UCL	9.479
666			95% Standard Bootstrap UCL	9.463
667	Anderson-Darling Test Statistic	0.297	95% Bootstrap-t UCL	9.581
668	Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	9.623
669	Kolmogorov-Smirnov Test Statistic	0.0684	95% Percentile Bootstrap UCL	9.485
670	Kolmogorov-Smirnov 5% Critical Value	0.0987	95% BCA Bootstrap UCL	9.532
671	**Data appear Gamma Distributed at 5% Significance Level**		95% Chebyshev(Mean, Sd) UCL	10.56
672			97.5% Chebyshev(Mean, Sd) UCL	11.31
673	**Assuming Gamma Distribution**		99% Chebyshev(Mean, Sd) UCL	12.79
674	95% Approximate Gamma UCL (Use when n >= 40)	9.473		
675	95% Adjusted Gamma UCL (Use when n < 40)	9.485		
676				
677	**Potential UCL to Use**		Use 95% Approximate Gamma UCL	9.473
678				
679	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**			
680	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**			
681	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**			

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
682	Indeno(1,2,3-cd)pyrene											
683												
684	General Statistics											
685	Number of Valid Data					15	Number of Detected Data					4
686	Number of Distinct Detected Data					4	Number of Non-Detect Data					11
687							Percent Non-Detects					73.33%
688												
689	Raw Statistics						Log-transformed Statistics					
690	Minimum Detected					0.0355	Minimum Detected					-3.338
691	Maximum Detected					0.2	Maximum Detected					-1.609
692	Mean of Detected					0.0803	Mean of Detected					-2.819
693	SD of Detected					0.0801	SD of Detected					0.821
694	Minimum Non-Detect					0.35	Minimum Non-Detect					-1.05
695	Maximum Non-Detect					0.39	Maximum Non-Detect					-0.942
696												
697	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					15
698	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
699	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
700												
701	Warning: There are only 4 Distinct Detected Values in this data											
702	Note: It should be noted that even though bootstrap may be performed on this data set											
703	the resulting calculations may not be reliable enough to draw conclusions											
704												
705	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
706												
707												
708	UCL Statistics											
709	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
710	Shapiro Wilk Test Statistic					0.691	Shapiro Wilk Test Statistic					0.762
711	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748
712	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
713												
714	Assuming Normal Distribution						Assuming Lognormal Distribution					
715	DL/2 Substitution Method						DL/2 Substitution Method					
716	Mean					0.155	Mean					-2.001
717	SD					0.0598	SD					0.637
718	95% DL/2 (t) UCL					0.182	95% H-Stat (DL/2) UCL					0.242
719												
720	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
721	MLE method failed to converge properly						Mean in Log Scale					-2.819
722							SD in Log Scale					0.547
723							Mean in Original Scale					0.0696
724							SD in Original Scale					0.0456
725							95% t UCL					0.0903
726							95% Percentile Bootstrap UCL					0.0898
727							95% BCA Bootstrap UCL					0.096
728							95% H-UCL					0.0944
729												
730	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
731	k star (bias corrected)					0.625	Data Follow Appr. Gamma Distribution at 5% Significance Level					
732	Theta Star					0.128						
733	nu star					5.001						
734												
735	A-D Test Statistic					0.7	Nonparametric Statistics					
736	5% A-D Critical Value					0.661	Kaplan-Meier (KM) Method					
737	K-S Test Statistic					0.661	Mean					0.0803
738	5% K-S Critical Value					0.398	SD					0.0694
739	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					0.04
740							95% KM (t) UCL					0.151
741	Assuming Gamma Distribution						95% KM (z) UCL					0.146
742	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.159
743	Minimum					0.0149	95% KM (bootstrap t) UCL					0.819
744	Maximum					0.2	95% KM (BCA) UCL					0.159
745	Mean					0.0775	95% KM (Percentile Bootstrap) UCL					0.15
746	Median					0.0718	95% KM (Chebyshev) UCL					0.255
747	SD					0.0546	97.5% KM (Chebyshev) UCL					0.33
748	k star					1.719	99% KM (Chebyshev) UCL					0.479
749	Theta star					0.0451						
750	Nu star					51.57	Potential UCLs to Use					

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
751					AppChi2	36.07					95% KM (t) UCL	0.151
752	95% Gamma Approximate UCL (Use when n >= 40)					0.111						
753	95% Adjusted Gamma UCL (Use when n < 40)					N/A						
754	Note: DL/2 is not a recommended method.											
755												
756	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
757	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
758	For additional insight, the user may want to consult a statistician.											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
759	Iron											
760												
761	General Statistics											
762	Number of Valid Observations					15	Number of Distinct Observations					15
763												
764	Raw Statistics						Log-transformed Statistics					
765	Minimum					9820	Minimum of Log Data					9.192
766	Maximum					42800	Maximum of Log Data					10.66
767	Mean					19228	Mean of log Data					9.753
768	Geometric Mean					17209	SD of log Data					0.462
769	Median					14450						
770	SD					10561						
771	Std. Error of Mean					2727						
772	Coefficient of Variation					0.549						
773	Skewness					1.626						
774												
775	Relevant UCL Statistics											
776	Normal Distribution Test						Lognormal Distribution Test					
777	Shapiro Wilk Test Statistic					0.768	Shapiro Wilk Test Statistic					0.895
778	Shapiro Wilk Critical Value					0.881	Shapiro Wilk Critical Value					0.881
779	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
780												
781	Assuming Normal Distribution						Assuming Lognormal Distribution					
782	95% Student's-t UCL					24031	95% H-UCL					24592
783	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					29130
784	95% Adjusted-CLT UCL (Chen-1995)					24936	97.5% Chebyshev (MVUE) UCL					33513
785	95% Modified-t UCL (Johnson-1978)					24222	99% Chebyshev (MVUE) UCL					42124
786												
787	Gamma Distribution Test						Data Distribution					
788	k star (bias corrected)					3.778	Data Follow Appr. Gamma Distribution at 5% Significance Level					
789	Theta Star					5089						
790	MLE of Mean					19228						
791	MLE of Standard Deviation					9892						
792	nu star					113.3						
793	Approximate Chi Square Value (.05)					89.77	Nonparametric Statistics					
794	Adjusted Level of Significance					0.0324	95% CLT UCL					23713
795	Adjusted Chi Square Value					87.19	95% Jackknife UCL					24031
796							95% Standard Bootstrap UCL					23550
797	Anderson-Darling Test Statistic					0.817	95% Bootstrap-t UCL					28241
798	Anderson-Darling 5% Critical Value					0.739	95% Hall's Bootstrap UCL					45125
799	Kolmogorov-Smirnov Test Statistic					0.2	95% Percentile Bootstrap UCL					23737
800	Kolmogorov-Smirnov 5% Critical Value					0.222	95% BCA Bootstrap UCL					24823
801	Data follow Appr. Gamma Distribution at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					31114
802							97.5% Chebyshev(Mean, Sd) UCL					36257
803	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					46360
804	95% Approximate Gamma UCL (Use when n >= 40)					24278						
805	95% Adjusted Gamma UCL (Use when n < 40)					24997						
806												
807	Potential UCL to Use						Use 95% Approximate Gamma UCL					24278
808												
809	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
810	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
811	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-2

Pro-UCL Outputs - Other COPCs

	A	B	C	D	E	F	G	H	I	J	K	L
812	Manganese											
813												
814	**General Statistics**											
815					Number of Valid Observations	82					Number of Distinct Observations	79
816												
817	**Raw Statistics**						**Log-transformed Statistics**					
818					Minimum	188					Minimum of Log Data	5.236
819					Maximum	4310					Maximum of Log Data	8.369
820					Mean	856.9					Mean of log Data	6.552
821					Geometric Mean	700.4					SD of log Data	0.628
822					Median	745.8						
823					SD	634.6						
824					Std. Error of Mean	70.08						
825					Coefficient of Variation	0.741						
826					Skewness	2.716						
827												
828	**Relevant UCL Statistics**											
829	**Normal Distribution Test**						**Lognormal Distribution Test**					
830					Lilliefors Test Statistic	0.186					Lilliefors Test Statistic	0.0677
831					Lilliefors Critical Value	0.0978					Lilliefors Critical Value	0.0978
832	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
833												
834	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
835					95% Student's-t UCL	973.5					95% H-UCL	976.1
836	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	1129
837					95% Adjusted-CLT UCL (Chen-1995)	994.6					97.5% Chebyshev (MVUE) UCL	1250
838					95% Modified-t UCL (Johnson-1978)	977					99% Chebyshev (MVUE) UCL	1487
839												
840	**Gamma Distribution Test**						**Data Distribution**					
841					k star (bias corrected)	2.547	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
842					Theta Star	336.5						
843					MLE of Mean	856.9						
844					MLE of Standard Deviation	536.9						
845					nu star	417.7						
846					Approximate Chi Square Value (.05)	371.3	**Nonparametric Statistics**					
847					Adjusted Level of Significance	0.0471					95% CLT UCL	972.1
848					Adjusted Chi Square Value	370.5					95% Jackknife UCL	973.5
849											95% Standard Bootstrap UCL	973.1
850					Anderson-Darling Test Statistic	0.803					95% Bootstrap-t UCL	1002
851					Anderson-Darling 5% Critical Value	0.761					95% Hall's Bootstrap UCL	1039
852					Kolmogorov-Smirnov Test Statistic	0.0989					95% Percentile Bootstrap UCL	971.2
853					Kolmogorov-Smirnov 5% Critical Value	0.0996					95% BCA Bootstrap UCL	1012
854	**Data follow Appr. Gamma Distribution at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	1162
855											97.5% Chebyshev(Mean, Sd) UCL	1295
856	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	1554
857					95% Approximate Gamma UCL (Use when n >= 40)	963.9						
858					95% Adjusted Gamma UCL (Use when n < 40)	965.9						
859												
860	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	963.9
861												
862	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
863	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
864	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	**User Selected Options**											
3	From File			soil 0_4.wst								
4	Full Precision			OFF								
5	Confidence Coefficient			95%								
6	Number of Bootstrap Operations			2000								
7												
8												
9	c1_eu2_total pcbs											
10												
11	**General Statistics**											
12	Number of Valid Observations					28	Number of Distinct Observations					28
13												
14	**Raw Statistics**						**Log-transformed Statistics**					
15	Minimum					0.115	Minimum of Log Data					-2.163
16	Maximum					172.2	Maximum of Log Data					5.148
17	Mean					47.93	Mean of log Data					3.374
18	Median					36.36	SD of log Data					1.39
19	SD					41.35						
20	Coefficient of Variation					0.863						
21	Skewness					1.581						
22												
23	**Relevant UCL Statistics**											
24	**Normal Distribution Test**						**Lognormal Distribution Test**					
25	Shapiro Wilk Test Statistic					0.85	Shapiro Wilk Test Statistic					0.786
26	Shapiro Wilk Critical Value					0.924	Shapiro Wilk Critical Value					0.924
27	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
28												
29	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
30	95% Student's-t UCL					61.24	95% H-UCL					169.9
31	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					173.6
32	95% Adjusted-CLT UCL (Chen-1995)					63.28	97.5% Chebyshev (MVUE) UCL					217.5
33	95% Modified-t UCL (Johnson-1978)					61.63	99% Chebyshev (MVUE) UCL					303.8
34												
35	**Gamma Distribution Test**						**Data Distribution**					
36	k star (bias corrected)					1.047	**Data appear Gamma Distributed at 5% Significance Level**					
37	Theta Star					45.78						
38	MLE of Mean					47.93						
39	MLE of Standard Deviation					46.84						
40	nu star					58.63						
41	Approximate Chi Square Value (.05)					42.03	**Nonparametric Statistics**					
42	Adjusted Level of Significance					0.0404	95% CLT UCL					60.78
43	Adjusted Chi Square Value					41.16	95% Jackknife UCL					61.24
44							95% Standard Bootstrap UCL					60.25
45	Anderson-Darling Test Statistic					0.384	95% Bootstrap-t UCL					65.19
46	Anderson-Darling 5% Critical Value					0.771	95% Hall's Bootstrap UCL					65.69
47	Kolmogorov-Smirnov Test Statistic					0.111	95% Percentile Bootstrap UCL					60.82
48	Kolmogorov-Smirnov 5% Critical Value					0.17	95% BCA Bootstrap UCL					63.14
49	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					81.99
50							97.5% Chebyshev(Mean, Sd) UCL					96.73
51	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					125.7
52	95% Approximate Gamma UCL					66.86						
53	95% Adjusted Gamma UCL					68.28						
54												
55	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					66.86
56												
57	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
58	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
59	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
60												
61	c2n_eu1_mercury											
62												
63	**General Statistics**											
64					Number of Valid Observations	14					Number of Distinct Observations	13
65												
66	**Raw Statistics**						**Log-transformed Statistics**					
67					Minimum	0.0194					Minimum of Log Data	-3.942
68					Maximum	1.65					Maximum of Log Data	0.501
69					Mean	0.374					Mean of log Data	-2.247
70					Median	0.054					SD of log Data	1.61
71					SD	0.573						
72					Coefficient of Variation	1.534						
73					Skewness	1.42						
74												
75	**Relevant UCL Statistics**											
76	**Normal Distribution Test**						**Lognormal Distribution Test**					
77					Shapiro Wilk Test Statistic	0.655					Shapiro Wilk Test Statistic	0.783
78					Shapiro Wilk Critical Value	0.874					Shapiro Wilk Critical Value	0.874
79	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
80												
81	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
82					95% Student's-t UCL	0.645					95% H-UCL	2.205
83	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	1.013
84					95% Adjusted-CLT UCL (Chen-1995)	0.688					97.5% Chebyshev (MVUE) UCL	1.311
85					95% Modified-t UCL (Johnson-1978)	0.655					99% Chebyshev (MVUE) UCL	1.896
86												
87	**Gamma Distribution Test**						**Data Distribution**					
88					k star (bias corrected)	0.443	**Data do not follow a Discernable Distribution (0.05)**					
89					Theta Star	0.845						
90					MLE of Mean	0.374						
91					MLE of Standard Deviation	0.562						
92					nu star	12.39						
93					Approximate Chi Square Value (.05)	5.486	**Nonparametric Statistics**					
94					Adjusted Level of Significance	0.0312					95% CLT UCL	0.626
95					Adjusted Chi Square Value	4.889					95% Jackknife UCL	0.645
96											95% Standard Bootstrap UCL	0.617
97					Anderson-Darling Test Statistic	1.877					95% Bootstrap-t UCL	0.808
98					Anderson-Darling 5% Critical Value	0.793					95% Hall's Bootstrap UCL	0.593
99					Kolmogorov-Smirnov Test Statistic	0.393					95% Percentile Bootstrap UCL	0.634
100					Kolmogorov-Smirnov 5% Critical Value	0.242					95% BCA Bootstrap UCL	0.689
101	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	1.042
102											97.5% Chebyshev(Mean, Sd) UCL	1.331
103	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	1.898
104					95% Approximate Gamma UCL	0.844						
105					95% Adjusted Gamma UCL	0.947						
106												
107	**Potential UCL to Use**										Use 99% Chebyshev (Mean, Sd) UCL	1.898
108	**Recommended UCL exceeds the maximum observation**											
109												
110	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
111	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
112	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
113												
114	c2n_eu1_total pcbs											
115												
116	**General Statistics**											
117					Number of Valid Data	14					Number of Detected Data	7
118					Number of Distinct Detected Data	7					Number of Non-Detect Data	7
119											Percent Non-Detects	50.00%
120												
121	**Raw Statistics**						**Log-transformed Statistics**					
122					Minimum Detected	0.0435					Minimum Detected	-3.135
123					Maximum Detected	171.3					Maximum Detected	5.143
124					Mean of Detected	27.46					Mean of Detected	0.187
125					SD of Detected	63.67					SD of Detected	3.096
126					Minimum Non-Detect	0.0375					Minimum Non-Detect	-3.283
127					Maximum Non-Detect	0.047					Maximum Non-Detect	-3.058
128												
129	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	8
130	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	6
131	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	57.14%
132												
133	**Warning: There are only 7 Detected Values in this data**											
134	**Note: It should be noted that even though bootstrap may be performed on this data set**											
135	**the resulting calculations may not be reliable enough to draw conclusions**											
136												
137	**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**											
138												
139												
140	**UCL Statistics**											
141	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
142					Shapiro Wilk Test Statistic	0.516					Shapiro Wilk Test Statistic	0.925
143					5% Shapiro Wilk Critical Value	0.803					5% Shapiro Wilk Critical Value	0.803
144	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
145												
146	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
147					DL/2 Substitution Method						DL/2 Substitution Method	
148					Mean	13.74					Mean	-1.862
149					SD	45.54					SD	2.992
150					95% DL/2 (t) UCL	35.3					95% H-Stat (DL/2) UCL	3616
151												
152					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
153	**MLE yields a negative mean**										Mean in Log Scale	-4.161
154											SD in Log Scale	5.063
155											Mean in Original Scale	13.73
156											SD in Original Scale	45.54
157											95% t UCL	35.29
158											95% Percentile Bootstrap UCL	36.93
159											95% BCA Bootstrap UCL	50.63
160												
161	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
162					k star (bias corrected)	0.227	**Data appear Gamma Distributed at 5% Significance Level**					
163					Theta Star	121.1						
164					nu star	3.175						
165												
166					A-D Test Statistic	0.559	**Nonparametric Statistics**					
167					5% A-D Critical Value	0.81					Kaplan-Meier (KM) Method	
168					K-S Test Statistic	0.81					Mean	13.75
169					5% K-S Critical Value	0.34					SD	43.88
170	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	12.67
171											95% KM (t) UCL	36.19
172	**Assuming Gamma Distribution**										95% KM (z) UCL	34.59
173					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	35.3
174					Minimum	1E-12					95% KM (bootstrap t) UCL	717.4
175					Maximum	171.3					95% KM (BCA) UCL	37.04
176					Mean	16.46					95% KM (Percentile Bootstrap) UCL	38.11
177					Median	1.054					95% KM (Chebyshev) UCL	68.97
178					SD	45					97.5% KM (Chebyshev) UCL	92.86
179					k star	0.147					99% KM (Chebyshev) UCL	139.8
180					Theta star	111.6						
181					Nu star	4.129	**Potential UCLs to Use**					

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
182					AppChi2	0.773					95% KM (t) UCL	36.19
183					95% Gamma Approximate UCL	87.91						
184					95% Adjusted Gamma UCL	112.3						
185	Note: DL/2 is not a recommended method.											
186												
187	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
188	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
189	For additional insight, the user may want to consult a statistician.											

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
190												
191	c4n_eu1_mercury											
192												
193	General Statistics											
194	Number of Valid Observations					53	Number of Distinct Observations					52
195												
196	Raw Statistics						Log-transformed Statistics					
197	Minimum					0.0293	Minimum of Log Data					-3.532
198	Maximum					8.95	Maximum of Log Data					2.192
199	Mean					1.262	Mean of log Data					-0.526
200	Median					0.59	SD of log Data					1.271
201	SD					1.843						
202	Coefficient of Variation					1.461						
203	Skewness					2.607						
204												
205	Relevant UCL Statistics											
206	Normal Distribution Test						Lognormal Distribution Test					
207	Lilliefors Test Statistic					0.325	Lilliefors Test Statistic					0.102
208	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122
209	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
210												
211	Assuming Normal Distribution						Assuming Lognormal Distribution					
212	95% Student's-t UCL					1.686	95% H-UCL					2.12
213	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					2.53
214	95% Adjusted-CLT UCL (Chen-1995)					1.775	97.5% Chebyshev (MVUE) UCL					3.066
215	95% Modified-t UCL (Johnson-1978)					1.701	99% Chebyshev (MVUE) UCL					4.119
216												
217	Gamma Distribution Test						Data Distribution					
218	k star (bias corrected)					0.753	Data appear Lognormal at 5% Significance Level					
219	Theta Star					1.676						
220	MLE of Mean					1.262						
221	MLE of Standard Deviation					1.454						
222	nu star					79.8						
223	Approximate Chi Square Value (.05)					60.22	Nonparametric Statistics					
224	Adjusted Level of Significance					0.0455	95% CLT UCL					1.678
225	Adjusted Chi Square Value					59.74	95% Jackknife UCL					1.686
226							95% Standard Bootstrap UCL					1.674
227	Anderson-Darling Test Statistic					1.605	95% Bootstrap-t UCL					1.875
228	Anderson-Darling 5% Critical Value					0.791	95% Hall's Bootstrap UCL					1.784
229	Kolmogorov-Smirnov Test Statistic					0.185	95% Percentile Bootstrap UCL					1.729
230	Kolmogorov-Smirnov 5% Critical Value					0.127	95% BCA Bootstrap UCL					1.791
231	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					2.365
232							97.5% Chebyshev(Mean, Sd) UCL					2.843
233	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					3.781
234	95% Approximate Gamma UCL					1.672						
235	95% Adjusted Gamma UCL					1.685						
236												
237	Potential UCL to Use						Use 95% H-UCL					2.12
238												
239	ProUCL computes and outputs H-statistic based UCLs for historical reasons only.											
240	H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.											
241	It is therefore recommended to avoid the use of H-statistic based 95% UCLs.											
242	Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.											
243												
244	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
245	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
246	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
247												
248	c4n_eu1_total pcbs											
249	**General Statistics**											
250	Number of Valid Data					53	Number of Detected Data					50
251	Number of Distinct Detected Data					50	Number of Non-Detect Data					3
252							Percent Non-Detects					5.66%
253												
254	**Raw Statistics**						**Log-transformed Statistics**					
255	Minimum Detected					0.043	Minimum Detected					-3.147
256	Maximum Detected					15.97	Maximum Detected					2.771
257	Mean of Detected					2.87	Mean of Detected					0.0628
258	SD of Detected					3.988	SD of Detected					1.5
259	Minimum Non-Detect					0.0395	Minimum Non-Detect					-3.231
260	Maximum Non-Detect					0.0415	Maximum Non-Detect					-3.182
261												
262	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
263	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
264	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
265												
266	**UCL Statistics**											
267	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
268	Shapiro Wilk Test Statistic					0.707	Shapiro Wilk Test Statistic					0.956
269	5% Shapiro Wilk Critical Value					0.947	5% Shapiro Wilk Critical Value					0.947
270	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
271												
272	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
273	DL/2 Substitution Method						DL/2 Substitution Method					
274	Mean					2.709	Mean					-0.161
275	SD					3.928	SD					1.724
276	95% DL/2 (t) UCL					3.613	95% H-Stat (DL/2) UCL					8.161
277												
278	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
279	Mean					2.571	Mean in Log Scale					-0.136
280	SD					4.054	SD in Log Scale					1.67
281	95% MLE (t) UCL					3.503	Mean in Original Scale					2.71
282	95% MLE (Tiku) UCL					3.436	SD in Original Scale					3.928
283							95% t UCL					3.613
284							95% Percentile Bootstrap UCL					3.604
285							95% BCA Bootstrap UCL					3.692
286												
287	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
288	k star (bias corrected)					0.596	**Data appear Lognormal at 5% Significance Level**					
289	Theta Star					4.814						
290	nu star					59.62						
291												
292	A-D Test Statistic					1.805	**Nonparametric Statistics**					
293	5% A-D Critical Value					0.804	Kaplan-Meier (KM) Method					
294	K-S Test Statistic					0.804	Mean					2.71
295	5% K-S Critical Value					0.131	SD					3.89
296	**Data not Gamma Distributed at 5% Significance Level**						SE of Mean					0.54
297							95% KM (t) UCL					3.614
298	**Assuming Gamma Distribution**						95% KM (z) UCL					3.598
299	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.612
300	Minimum					1E-12	95% KM (bootstrap t) UCL					3.797
301	Maximum					15.97	95% KM (BCA) UCL					3.699
302	Mean					2.708	95% KM (Percentile Bootstrap) UCL					3.591
303	Median					0.665	95% KM (Chebyshev) UCL					5.063
304	SD					3.929	97.5% KM (Chebyshev) UCL					6.081
305	k star					0.276	99% KM (Chebyshev) UCL					8.081
306	Theta star					9.819						
307	Nu star					29.23	**Potential UCLs to Use**					
308	AppChi2					17.89	97.5% KM (Chebyshev) UCL					6.081
309	95% Gamma Approximate UCL					4.425						
310	95% Adjusted Gamma UCL					4.487						
311	**Note: DL/2 is not a recommended method.**											
312												
313	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
314	**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**											
315	**For additional insight, the user may want to consult a statistician.**											

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
316												
317	c5n_eu1_mercury											
318												
319	General Statistics											
320	Number of Valid Observations					12	Number of Distinct Observations					11
321												
322	Raw Statistics						Log-transformed Statistics					
323	Minimum					0.038	Minimum of Log Data					-3.27
324	Maximum					2.2	Maximum of Log Data					0.788
325	Mean					1.064	Mean of log Data					-0.668
326	Median					1.23	SD of log Data					1.62
327	SD					0.856						
328	Coefficient of Variation					0.804						
329	Skewness					-0.0451						
330												
331	Relevant UCL Statistics											
332	Normal Distribution Test						Lognormal Distribution Test					
333	Shapiro Wilk Test Statistic					0.865	Shapiro Wilk Test Statistic					0.792
334	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
335	Data appear Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
336												
337	Assuming Normal Distribution						Assuming Lognormal Distribution					
338	95% Student's-t UCL					1.507	95% H-UCL					14.43
339	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					5.031
340	95% Adjusted-CLT UCL (Chen-1995)					1.467	97.5% Chebyshev (MVUE) UCL					6.535
341	95% Modified-t UCL (Johnson-1978)					1.507	99% Chebyshev (MVUE) UCL					9.489
342												
343	Gamma Distribution Test						Data Distribution					
344	k star (bias corrected)					0.664	Data appear Normal at 5% Significance Level					
345	Theta Star					1.602						
346	MLE of Mean					1.064						
347	MLE of Standard Deviation					1.306						
348	nu star					15.94						
349	Approximate Chi Square Value (.05)					7.917	Nonparametric Statistics					
350	Adjusted Level of Significance					0.029	95% CLT UCL					1.47
351	Adjusted Chi Square Value					7.07	95% Jackknife UCL					1.507
352							95% Standard Bootstrap UCL					1.461
353	Anderson-Darling Test Statistic					0.901	95% Bootstrap-t UCL					1.49
354	Anderson-Darling 5% Critical Value					0.763	95% Hall's Bootstrap UCL					1.426
355	Kolmogorov-Smirnov Test Statistic					0.276	95% Percentile Bootstrap UCL					1.448
356	Kolmogorov-Smirnov 5% Critical Value					0.254	95% BCA Bootstrap UCL					1.439
357	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					2.14
358							97.5% Chebyshev(Mean, Sd) UCL					2.606
359	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					3.521
360	95% Approximate Gamma UCL					2.141						
361	95% Adjusted Gamma UCL					2.398						
362												
363	Potential UCL to Use						Use 95% Student's-t UCL					1.507
364												
365	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
366	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
367	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-3

Pro-UCL Outputs - Primary COPCs, 0-4 Ft BGS

	A	B	C	D	E	F	G	H	I	J	K	L
368												
369	c5n_eu1_total pcbs											
370												
371	**General Statistics**											
372	Number of Valid Observations					12	Number of Distinct Observations					12
373												
374	**Raw Statistics**						**Log-transformed Statistics**					
375	Minimum					0.0565	Minimum of Log Data					-2.874
376	Maximum					22.58	Maximum of Log Data					3.117
377	Mean					3.829	Mean of log Data					-0.109
378	Median					1.205	SD of log Data					2.063
379	SD					6.477						
380	Coefficient of Variation					1.692						
381	Skewness					2.591						
382												
383	**Relevant UCL Statistics**											
384	**Normal Distribution Test**						**Lognormal Distribution Test**					
385	Shapiro Wilk Test Statistic					0.638	Shapiro Wilk Test Statistic					0.923
386	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
387	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
388												
389	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
390	95% Student's-t UCL					7.186	95% H-UCL					179.6
391	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					19.21
392	95% Adjusted-CLT UCL (Chen-1995)					8.398	97.5% Chebyshev (MVUE) UCL					25.33
393	95% Modified-t UCL (Johnson-1978)					7.419	99% Chebyshev (MVUE) UCL					37.36
394												
395	**Gamma Distribution Test**						**Data Distribution**					
396	k star (bias corrected)					0.39	**Data appear Gamma Distributed at 5% Significance Level**					
397	Theta Star					9.821						
398	MLE of Mean					3.829						
399	MLE of Standard Deviation					6.132						
400	nu star					9.356						
401	Approximate Chi Square Value (.05)					3.543	**Nonparametric Statistics**					
402	Adjusted Level of Significance					0.029	95% CLT UCL					6.904
403	Adjusted Chi Square Value					3.018	95% Jackknife UCL					7.186
404							95% Standard Bootstrap UCL					6.786
405	Anderson-Darling Test Statistic					0.354	95% Bootstrap-t UCL					14.29
406	Anderson-Darling 5% Critical Value					0.796	95% Hall's Bootstrap UCL					19.26
407	Kolmogorov-Smirnov Test Statistic					0.172	95% Percentile Bootstrap UCL					7.044
408	Kolmogorov-Smirnov 5% Critical Value					0.26	95% BCA Bootstrap UCL					8.79
409	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					11.98
410							97.5% Chebyshev(Mean, Sd) UCL					15.5
411	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					22.43
412	95% Approximate Gamma UCL					10.11						
413	95% Adjusted Gamma UCL					11.87						
414												
415	**Potential UCL to Use**						Use 95% Adjusted Gamma UCL					11.87
416												
417	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
418	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
419	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
420												

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3	From File			WorkSheet.wst								
4	Full Precision			OFF								
5	Confidence Coefficient			95%								
6	Number of Bootstrap Operations			2000								
7												
8												
9	Total PCBs-EU1											
10												
11	General Statistics											
12	Number of Valid Data					15	Number of Detected Data					10
13	Number of Distinct Detected Data					10	Number of Non-Detect Data					5
14							Percent Non-Detects					33.33%
15												
16	Raw Statistics						Log-transformed Statistics					
17	Minimum Detected					0.11	Minimum Detected					-2.212
18	Maximum Detected					126.5	Maximum Detected					4.84
19	Mean of Detected					32.02	Mean of Detected					1.084
20	SD of Detected					50.85	SD of Detected					2.736
21	Minimum Non-Detect					0.0415	Minimum Non-Detect					-3.182
22	Maximum Non-Detect					0.044	Maximum Non-Detect					-3.124
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					5
25	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					10
26	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					33.33%
27												
28	UCL Statistics											
29	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
30	Shapiro Wilk Test Statistic					0.673	Shapiro Wilk Test Statistic					0.889
31	5% Shapiro Wilk Critical Value					0.842	5% Shapiro Wilk Critical Value					0.842
32	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
33												
34	Assuming Normal Distribution						Assuming Lognormal Distribution					
35	DL/2 Substitution Method						DL/2 Substitution Method					
36	Mean					21.35	Mean					-0.562
37	SD					43.66	SD					3.258
38	95% DL/2 (t) UCL					41.21	95% H-Stat (DL/2) UCL					55229
39												
40	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
41	Mean					7.366	Mean in Log Scale					-1.169
42	SD					55.82	SD in Log Scale					3.98
43	95% MLE (t) UCL					32.75	Mean in Original Scale					21.35
44	95% MLE (Tiku) UCL					34.41	SD in Original Scale					43.66
45							95% t UCL					41.2
46							95% Percentile Bootstrap UCL					40.12
47							95% BCA Bootstrap UCL					44.9
48							95% H UCL					7948039
49												
50	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
51	k star (bias corrected)					0.27	Data appear Gamma Distributed at 5% Significance Level					
52	Theta Star					118.4						
53	nu star					5.406						
54												
55	A-D Test Statistic					0.749	Nonparametric Statistics					
56	5% A-D Critical Value					0.817	Kaplan-Meier (KM) Method					
57	K-S Test Statistic					0.817	Mean					21.38
58	5% K-S Critical Value					0.288	SD					42.16
59	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					11.48
60							95% KM (t) UCL					41.59
61	Assuming Gamma Distribution						95% KM (z) UCL					40.26
62	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					41.21
63	Minimum					0.000001	95% KM (bootstrap t) UCL					60.57
64	Maximum					126.5	95% KM (BCA) UCL					42.49
65	Mean					21.34	95% KM (Percentile Bootstrap) UCL					40.31
66	Median					0.257	95% KM (Chebyshev) UCL					71.4
67	SD					43.66	97.5% KM (Chebyshev) UCL					93.05
68	k star					0.136	99% KM (Chebyshev) UCL					135.6
69	Theta star					156.5						
70	Nu star					4.091	Potential UCLs to Use					
71	AppChi2					0.758	95% KM (BCA) UCL					42.49
72	95% Gamma Approximate UCL (Use when n >= 40)					115.2						
73	95% Adjusted Gamma UCL (Use when n < 40)					144.8						
74	Note: DL/2 is not a recommended method.											
75												
76	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
77	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
78	For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
79	Total PCBs-EU2											
80												
81	General Statistics											
82					Number of Valid Data	45					Number of Detected Data	44
83					Number of Distinct Detected Data	43					Number of Non-Detect Data	1
84											Percent Non-Detects	2.22%
85												
86	Raw Statistics						Log-transformed Statistics					
87					Minimum Detected	0.0715					Minimum Detected	-2.638
88					Maximum Detected	89.5					Maximum Detected	4.494
89					Mean of Detected	11.34					Mean of Detected	1.555
90					SD of Detected	17.37					SD of Detected	1.495
91					Minimum Non-Detect	0.039					Minimum Non-Detect	-3.244
92					Maximum Non-Detect	0.039					Maximum Non-Detect	-3.244
93												
94												
95	UCL Statistics											
96	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
97					Shapiro Wilk Test Statistic	0.616					Shapiro Wilk Test Statistic	0.959
98					5% Shapiro Wilk Critical Value	0.944					5% Shapiro Wilk Critical Value	0.944
99	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
100												
101	Assuming Normal Distribution						Assuming Lognormal Distribution					
102					DL/2 Substitution Method						DL/2 Substitution Method	
103					Mean	11.09					Mean	1.433
104					SD	17.25					SD	1.689
105					95% DL/2 (t) UCL	15.41					95% H-Stat (DL/2) UCL	39.91
106												
107					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
108					Mean	10.85					Mean in Log Scale	1.471
109					SD	17.33					SD in Log Scale	1.581
110					95% MLE (t) UCL	15.19					Mean in Original Scale	11.09
111					95% MLE (Tiku) UCL	14.81					SD in Original Scale	17.25
112											95% t UCL	15.41
113											95% Percentile Bootstrap UCL	15.36
114											95% BCA Bootstrap UCL	16.9
115											95% H UCL	31.79
116												
117	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
118					k star (bias corrected)	0.661	Data appear Lognormal at 5% Significance Level					
119					Theta Star	17.16						
120					nu star	58.14						
121												
122					A-D Test Statistic	0.824	Nonparametric Statistics					
123					5% A-D Critical Value	0.795					Kaplan-Meier (KM) Method	
124					K-S Test Statistic	0.795					Mean	11.09
125					5% K-S Critical Value	0.139					SD	17.06
126	Data not Gamma Distributed at 5% Significance Level										SE of Mean	2.572
127											95% KM (t) UCL	15.41
128	Assuming Gamma Distribution										95% KM (z) UCL	15.32
129					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	15.41
130					Minimum	0.000001					95% KM (bootstrap t) UCL	17.88
131					Maximum	89.5					95% KM (BCA) UCL	15.65
132					Mean	11.09					95% KM (Percentile Bootstrap) UCL	15.33
133					Median	6.11					95% KM (Chebyshev) UCL	22.3
134					SD	17.25					97.5% KM (Chebyshev) UCL	27.15
135					k star	0.508					99% KM (Chebyshev) UCL	36.68
136					Theta star	21.84						
137					Nu star	45.69	Potential UCLs to Use					
138					AppChi2	31.19					95% KM (Chebyshev) UCL	22.3
139					95% Gamma Approximate UCL (Use when n >= 40)	16.25						
140					95% Adjusted Gamma UCL (Use when n < 40)	16.46						
141	Note: DL/2 is not a recommended method.											
142												
143	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
144	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
145	For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
146	Total PCBs-EU3											
147												
148	General Statistics											
149	Number of Valid Observations					12	Number of Distinct Observations					12
150												
151	Raw Statistics						Log-transformed Statistics					
152	Minimum					0.165	Minimum of Log Data					-1.802
153	Maximum					42.9	Maximum of Log Data					3.759
154	Mean					9.57	Mean of log Data					0.9
155	Geometric Mean					2.458	SD of log Data					1.988
156	Median					3.638						
157	SD					13.87						
158	Std. Error of Mean					4.005						
159	Coefficient of Variation					1.45						
160	Skewness					1.681						
161												
162	Relevant UCL Statistics											
163	Normal Distribution Test						Lognormal Distribution Test					
164	Shapiro Wilk Test Statistic					0.732	Shapiro Wilk Test Statistic					0.927
165	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
166	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
167												
168	Assuming Normal Distribution						Assuming Lognormal Distribution					
169	95% Student's-t UCL					16.76	95% H-UCL					342.2
170	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					45.99
171	95% Adjusted-CLT UCL (Chen-1995)					18.23	97.5% Chebyshev (MVUE) UCL					60.53
172	95% Modified-t UCL (Johnson-1978)					17.09	99% Chebyshev (MVUE) UCL					89.09
173												
174	Gamma Distribution Test						Data Distribution					
175	k star (bias corrected)					0.409	Data appear Gamma Distributed at 5% Significance Level					
176	Theta Star					23.38						
177	MLE of Mean					9.57						
178	MLE of Standard Deviation					14.96						
179	nu star					9.823						
180	Approximate Chi Square Value (.05)					3.831	Nonparametric Statistics					
181	Adjusted Level of Significance					0.029	95% CLT UCL					16.16
182	Adjusted Chi Square Value					3.281	95% Jackknife UCL					16.76
183							95% Standard Bootstrap UCL					15.83
184	Anderson-Darling Test Statistic					0.39	95% Bootstrap-t UCL					22.66
185	Anderson-Darling 5% Critical Value					0.79	95% Hall's Bootstrap UCL					18.78
186	Kolmogorov-Smirnov Test Statistic					0.158	95% Percentile Bootstrap UCL					16.57
187	Kolmogorov-Smirnov 5% Critical Value					0.26	95% BCA Bootstrap UCL					17.97
188	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					27.03
189							97.5% Chebyshev(Mean, Sd) UCL					34.58
190	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					49.42
191	95% Approximate Gamma UCL (Use when n >= 40)					24.53						
192	95% Adjusted Gamma UCL (Use when n < 40)					28.65						
193												
194	Potential UCL to Use						Use 95% Adjusted Gamma UCL					28.65
195												
196	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
197	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
198	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
199	Total PCBs-EU4											
200												
201	General Statistics											
202					Number of Valid Data	14					Number of Detected Data	7
203					Number of Distinct Detected Data	7					Number of Non-Detect Data	7
204											Percent Non-Detects	50.00%
205												
206	Raw Statistics						Log-transformed Statistics					
207					Minimum Detected	0.054					Minimum Detected	-2.919
208					Maximum Detected	4.63					Maximum Detected	1.533
209					Mean of Detected	1.885					Mean of Detected	-0.149
210					SD of Detected	1.809					SD of Detected	1.691
211					Minimum Non-Detect	0.0405					Minimum Non-Detect	-3.206
212					Maximum Non-Detect	0.047					Maximum Non-Detect	-3.058
213												
214	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	7
215	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	7
216	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	50.00%
217												
218	Warning: There are only 7 Detected Values in this data											
219	Note: It should be noted that even though bootstrap may be performed on this data set											
220	the resulting calculations may not be reliable enough to draw conclusions											
221												
222	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
223												
224												
225	UCL Statistics											
226	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
227					Shapiro Wilk Test Statistic	0.898					Shapiro Wilk Test Statistic	0.895
228					5% Shapiro Wilk Critical Value	0.803					5% Shapiro Wilk Critical Value	0.803
229	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
230												
231	Assuming Normal Distribution						Assuming Lognormal Distribution					
232					DL/2 Substitution Method						DL/2 Substitution Method	
233					Mean	0.953					Mean	-1.988
234					SD	1.564					SD	2.227
235					95% DL/2 (t) UCL	1.693					95% H-Stat (DL/2) UCL	39.1
236												
237					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
238	MLE yields a negative mean										Mean in Log Scale	-2.408
239											SD in Log Scale	2.631
240											Mean in Original Scale	0.948
241											SD in Original Scale	1.567
242											95% t UCL	1.689
243											95% Percentile Bootstrap UCL	1.635
244											95% BCA Bootstrap UCL	1.846
245											95% H-UCL	224.1
246												
247	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
248					k star (bias corrected)	0.531	Data appear Normal at 5% Significance Level					
249					Theta Star	3.548						
250					nu star	7.437						
251												
252					A-D Test Statistic	0.273	Nonparametric Statistics					
253					5% A-D Critical Value	0.736					Kaplan-Meier (KM) Method	
254					K-S Test Statistic	0.736					Mean	0.969
255					5% K-S Critical Value	0.323					SD	1.497
256	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	0.432
257											95% KM (t) UCL	1.735
258	Assuming Gamma Distribution										95% KM (z) UCL	1.68
259					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	1.677
260					Minimum	0.000001					95% KM (bootstrap t) UCL	2.097
261					Maximum	4.63					95% KM (BCA) UCL	2.116
262					Mean	0.942					95% KM (Percentile Bootstrap) UCL	1.875
263					Median	0.027					95% KM (Chebyshev) UCL	2.853
264					SD	1.571					97.5% KM (Chebyshev) UCL	3.668
265					k star	0.138					99% KM (Chebyshev) UCL	5.269
266					Theta star	6.823						
267					Nu star	3.867	Potential UCLs to Use					
268					AppChi2	0.67					95% KM (t) UCL	1.735
269					95% Gamma Approximate UCL (Use when n >= 40)	5.44					95% KM (Percentile Bootstrap) UCL	1.875
270					95% Adjusted Gamma UCL (Use when n < 40)	7.022						
271	Note: DL/2 is not a recommended method.											
272												
273	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
274	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
275	For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
276	Total PCBs-EU5											
277												
278	General Statistics											
279	Number of Valid Data					22	Number of Detected Data					18
280	Number of Distinct Detected Data					18	Number of Non-Detect Data					4
281							Percent Non-Detects					18.18%
282												
283	Raw Statistics						Log-transformed Statistics					
284	Minimum Detected					0.051	Minimum Detected					-2.976
285	Maximum Detected					16.25	Maximum Detected					2.788
286	Mean of Detected					2.231	Mean of Detected					-0.483
287	SD of Detected					3.992	SD of Detected					1.733
288	Minimum Non-Detect					0.0395	Minimum Non-Detect					-3.231
289	Maximum Non-Detect					0.0425	Maximum Non-Detect					-3.158
290												
291	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					4
292	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					18
293	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					18.18%
294												
295	UCL Statistics											
296	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
297	Shapiro Wilk Test Statistic					0.595	Shapiro Wilk Test Statistic					0.953
298	5% Shapiro Wilk Critical Value					0.897	5% Shapiro Wilk Critical Value					0.897
299	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
300												
301	Assuming Normal Distribution						Assuming Lognormal Distribution					
302	DL/2 Substitution Method						DL/2 Substitution Method					
303	Mean					1.829	Mean					-1.103
304	SD					3.696	SD					2.06
305	95% DL/2 (t) UCL					3.185	95% H-Stat (DL/2) UCL					19.02
306												
307	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
308	Mean					1.31	Mean in Log Scale					-1.208
309	SD					4.131	SD in Log Scale					2.216
310	95% MLE (t) UCL					2.825	Mean in Original Scale					1.827
311	95% MLE (Tiku) UCL					2.779	SD in Original Scale					3.697
312							95% t UCL					3.183
313							95% Percentile Bootstrap UCL					3.153
314							95% BCA Bootstrap UCL					3.917
315							95% H UCL					31.6
316												
317	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
318	k star (bias corrected)					0.449	Data appear Gamma Distributed at 5% Significance Level					
319	Theta Star					4.963						
320	nu star					16.18						
321												
322	A-D Test Statistic					0.667	Nonparametric Statistics					
323	5% A-D Critical Value					0.801	Kaplan-Meier (KM) Method					
324	K-S Test Statistic					0.801	Mean					1.834
325	5% K-S Critical Value					0.215	SD					3.608
326	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.792
327							95% KM (t) UCL					3.196
328	Assuming Gamma Distribution						95% KM (z) UCL					3.136
329	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.188
330	Minimum					0.000001	95% KM (bootstrap t) UCL					5.28
331	Maximum					16.25	95% KM (BCA) UCL					3.254
332	Mean					1.825	95% KM (Percentile Bootstrap) UCL					3.223
333	Median					0.213	95% KM (Chebyshev) UCL					5.285
334	SD					3.698	97.5% KM (Chebyshev) UCL					6.778
335	k star					0.21	99% KM (Chebyshev) UCL					9.71
336	Theta star					8.679						
337	Nu star					9.252	Potential UCLs to Use					
338	AppChi2					3.48	95% KM (Chebyshev) UCL					5.285
339	95% Gamma Approximate UCL (Use when n >= 40)					4.852						
340	95% Adjusted Gamma UCL (Use when n < 40)					5.245						
341	Note: DL/2 is not a recommended method.											
342												
343	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
344	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
345	For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
346	Total PCBs-EU13											
347												
348	General Statistics											
349					Number of Valid Data	14					Number of Detected Data	7
350					Number of Distinct Detected Data	7					Number of Non-Detect Data	7
351											Percent Non-Detects	50.00%
352												
353	Raw Statistics						Log-transformed Statistics					
354					Minimum Detected	0.0435					Minimum Detected	-3.135
355					Maximum Detected	0.246					Maximum Detected	-1.404
356					Mean of Detected	0.131					Mean of Detected	-2.221
357					SD of Detected	0.0796					SD of Detected	0.704
358					Minimum Non-Detect	0.0355					Minimum Non-Detect	-3.338
359					Maximum Non-Detect	0.039					Maximum Non-Detect	-3.244
360												
361	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	7
362	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	7
363	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	50.00%
364												
365	Warning: There are only 7 Detected Values in this data											
366	Note: It should be noted that even though bootstrap may be performed on this data set											
367	the resulting calculations may not be reliable enough to draw conclusions											
368												
369	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
370												
371												
372	UCL Statistics											
373	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
374					Shapiro Wilk Test Statistic	0.919					Shapiro Wilk Test Statistic	0.899
375					5% Shapiro Wilk Critical Value	0.803					5% Shapiro Wilk Critical Value	0.803
376	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
377												
378	Assuming Normal Distribution						Assuming Lognormal Distribution					
379					DL/2 Substitution Method						DL/2 Substitution Method	
380					Mean	0.0749					Mean	-3.105
381					SD	0.0797					SD	1.034
382					95% DL/2 (t) UCL	0.113					95% H-Stat (DL/2) UCL	0.173
383												
384					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
385					Mean	0.0375					Mean in Log Scale	-3.206
386					SD	0.119					SD in Log Scale	1.147
387					95% MLE (t) UCL	0.0937					Mean in Original Scale	0.0735
388					95% MLE (Tiku) UCL	0.107					SD in Original Scale	0.0809
389											95% t UCL	0.112
390											95% Percentile Bootstrap UCL	0.109
391											95% BCA Bootstrap UCL	0.115
392											95% H UCL	0.206
393												
394	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
395					k star (bias corrected)	1.678	Data appear Normal at 5% Significance Level					
396					Theta Star	0.0783						
397					nu star	23.49						
398												
399					A-D Test Statistic	0.332	Nonparametric Statistics					
400					5% A-D Critical Value	0.713					Kaplan-Meier (KM) Method	
401					K-S Test Statistic	0.713					Mean	0.0874
402					5% K-S Critical Value	0.314					SD	0.0682
403	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	0.0197
404											95% KM (t) UCL	0.122
405	Assuming Gamma Distribution										95% KM (z) UCL	0.12
406					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.121
407					Minimum	0.000001					95% KM (bootstrap t) UCL	0.132
408					Maximum	0.246					95% KM (BCA) UCL	0.137
409					Mean	0.0657					95% KM (Percentile Bootstrap) UCL	0.132
410					Median	0.0218					95% KM (Chebyshev) UCL	0.173
411					SD	0.087					97.5% KM (Chebyshev) UCL	0.21
412					k star	0.162					99% KM (Chebyshev) UCL	0.283
413					Theta star	0.405						
414					Nu star	4.54	Potential UCLs to Use					
415					AppChi2	0.946					95% KM (t) UCL	0.122
416					95% Gamma Approximate UCL (Use when n >= 40)	0.315					95% KM (Percentile Bootstrap) UCL	0.132
417					95% Adjusted Gamma UCL (Use when n < 40)	0.397						
418	Note: DL/2 is not a recommended method.											
419												
420	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
421	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
422	For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
423	Total PCBs-EU14											
424												
425	General Statistics											
426					Number of Valid Data	17					Number of Detected Data	7
427					Number of Distinct Detected Data	7					Number of Non-Detect Data	10
428											Percent Non-Detects	58.82%
429												
430	Raw Statistics						Log-transformed Statistics					
431					Minimum Detected	0.0415					Minimum Detected	-3.182
432					Maximum Detected	0.215					Maximum Detected	-1.537
433					Mean of Detected	0.101					Mean of Detected	-2.475
434					SD of Detected	0.0692					SD of Detected	0.624
435					Minimum Non-Detect	0.035					Minimum Non-Detect	-3.352
436					Maximum Non-Detect	0.0405					Maximum Non-Detect	-3.206
437												
438	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	10
439	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	7
440	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	58.82%
441												
442	Warning: There are only 7 Detected Values in this data											
443	Note: It should be noted that even though bootstrap may be performed on this data set											
444	the resulting calculations may not be reliable enough to draw conclusions											
445												
446	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
447												
448												
449	UCL Statistics											
450	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
451					Shapiro Wilk Test Statistic	0.784					Shapiro Wilk Test Statistic	0.881
452					5% Shapiro Wilk Critical Value	0.803					5% Shapiro Wilk Critical Value	0.803
453	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
454												
455	Assuming Normal Distribution						Assuming Lognormal Distribution					
456					DL/2 Substitution Method						DL/2 Substitution Method	
457					Mean	0.0527					Mean	-3.35
458					SD	0.0593					SD	0.848
459					95% DL/2 (t) UCL	0.0778					95% H-Stat (DL/2) UCL	0.084
460												
461					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
462					Mean	0.0137					Mean in Log Scale	-3.617
463					SD	0.0967					SD in Log Scale	1.075
464					95% MLE (t) UCL	0.0546					Mean in Original Scale	0.0488
465					95% MLE (Tiku) UCL	0.0708					SD in Original Scale	0.0617
466											95% t UCL	0.0749
467											95% Percentile Bootstrap UCL	0.0734
468											95% BCA Bootstrap UCL	0.0824
469											95% H UCL	0.101
470												
471	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
472					k star (bias corrected)	1.779	Data appear Gamma Distributed at 5% Significance Level					
473					Theta Star	0.0566						
474					nu star	24.91						
475												
476					A-D Test Statistic	0.617	Nonparametric Statistics					
477					5% A-D Critical Value	0.712					Kaplan-Meier (KM) Method	
478					K-S Test Statistic	0.712					Mean	0.0659
479					5% K-S Critical Value	0.314					SD	0.0504
480	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	0.0132
481											95% KM (t) UCL	0.0889
482	Assuming Gamma Distribution										95% KM (z) UCL	0.0876
483					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0853
484					Minimum	0.000001					95% KM (bootstrap t) UCL	0.132
485					Maximum	0.215					95% KM (BCA) UCL	0.0999
486					Mean	0.0415					95% KM (Percentile Bootstrap) UCL	0.0946
487					Median	0.000001					95% KM (Chebyshev) UCL	0.123
488					SD	0.0664					97.5% KM (Chebyshev) UCL	0.148
489					k star	0.147					99% KM (Chebyshev) UCL	0.197
490					Theta star	0.281						
491					Nu star	5.011	Potential UCLs to Use					
492					AppChi2	1.157					95% KM (t) UCL	0.0889
493					95% Gamma Approximate UCL (Use when n >= 40)	0.18						
494					95% Adjusted Gamma UCL (Use when n < 40)	0.213						
495	Note: DL/2 is not a recommended method.											
496												
497	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
498	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
499	For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
500	Mercury-EU1											
501												
502	**General Statistics**											
503	Number of Valid Observations					15	Number of Distinct Observations					14
504												
505	**Raw Statistics**						**Log-transformed Statistics**					
506	Minimum					0.0305	Minimum of Log Data					-3.49
507	Maximum					18.85	Maximum of Log Data					2.937
508	Mean					3.3	Mean of log Data					-0.886
509	Median					0.23	SD of log Data					2.259
510	SD					6.289						
511	Std. Error of Mean					1.624						
512	Coefficient of Variation					1.906						
513	Skewness					2.153						
514												
515	**Relevant UCL Statistics**											
516	**Normal Distribution Test**						**Lognormal Distribution Test**					
517	Shapiro Wilk Test Statistic					0.574	Shapiro Wilk Test Statistic					0.886
518	Shapiro Wilk Critical Value					0.881	Shapiro Wilk Critical Value					0.881
519	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
520												
521	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
522	95% Student's-t UCL					6.159	95% H-UCL					113.2
523	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					13.29
524	95% Adjusted-CLT UCL (Chen-1995)					6.935	97.5% Chebyshev (MVUE) UCL					17.57
525	95% Modified-t UCL (Johnson-1978)					6.31	99% Chebyshev (MVUE) UCL					25.96
526												
527	**Gamma Distribution Test**						**Data Distribution**					
528	k star (bias corrected)					0.306	**Data appear Lognormal at 5% Significance Level**					
529	Theta Star					10.78						
530	MLE of Mean					3.3						
531	MLE of Standard Deviation					5.965						
532	nu star					9.179						
533	Approximate Chi Square Value (.05)					3.435	**Nonparametric Statistics**					
534	Adjusted Level of Significance					0.0324	95% CLT UCL					5.97
535	Adjusted Chi Square Value					3.016	95% Jackknife UCL					6.159
536							95% Standard Bootstrap UCL					5.874
537	Anderson-Darling Test Statistic					1.176	95% Bootstrap-t UCL					13.15
538	Anderson-Darling 5% Critical Value					0.83	95% Hall's Bootstrap UCL					19.19
539	Kolmogorov-Smirnov Test Statistic					0.279	95% Percentile Bootstrap UCL					6.049
540	Kolmogorov-Smirnov 5% Critical Value					0.239	95% BCA Bootstrap UCL					6.869
541	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					10.38
542							97.5% Chebyshev(Mean, Sd) UCL					13.44
543	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					19.46
544	95% Approximate Gamma UCL					8.816						
545	95% Adjusted Gamma UCL					10.04						
546												
547	**Potential UCL to Use**						Use 99% Chebyshev (Mean, Sd) UCL					19.46
548	**Recommended UCL exceeds the maximum observation**											
549												
550	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
551	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
552	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
553	Mercury-EU10											
554												
555	General Statistics											
556					Number of Valid Observations	5					Number of Distinct Observations	5
557												
558	Raw Statistics						Log-transformed Statistics					
559					Minimum	0.031					Minimum of Log Data	-3.474
560					Maximum	1.4					Maximum of Log Data	0.336
561					Mean	0.607					Mean of log Data	-1.332
562					Median	0.33					SD of log Data	1.682
563					SD	0.647						
564					Std. Error of Mean	0.289						
565					Coefficient of Variation	1.065						
566					Skewness	0.529						
567												
568												
569	Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!											
570												
571	It is suggested to collect at least 8 to 10 observations using these statistical methods!											
572	If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.											
573												
574												
575	Warning: There are only 5 Values in this data											
576	Note: It should be noted that even though bootstrap methods may be performed on this data set,											
577	the resulting calculations may not be reliable enough to draw conclusions											
578												
579	The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.											
580												
581	Relevant UCL Statistics											
582	Normal Distribution Test						Lognormal Distribution Test					
583					Shapiro Wilk Test Statistic	0.835					Shapiro Wilk Test Statistic	0.907
584					Shapiro Wilk Critical Value	0.762					Shapiro Wilk Critical Value	0.762
585	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
586												
587	Assuming Normal Distribution						Assuming Lognormal Distribution					
588					95% Student's-t UCL	1.224					95% H-UCL	862.3
589	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	2.703
590					95% Adjusted-CLT UCL (Chen-1995)	1.156					97.5% Chebyshev (MVUE) UCL	3.57
591					95% Modified-t UCL (Johnson-1978)	1.235					99% Chebyshev (MVUE) UCL	5.273
592												
593	Gamma Distribution Test						Data Distribution					
594					k star (bias corrected)	0.422	Data appear Normal at 5% Significance Level					
595					Theta Star	1.438						
596					MLE of Mean	0.607						
597					MLE of Standard Deviation	0.934						
598					nu star	4.223						
599					Approximate Chi Square Value (.05)	0.812	Nonparametric Statistics					
600					Adjusted Level of Significance	0.0086					95% CLT UCL	1.083
601					Adjusted Chi Square Value	0.344					95% Jackknife UCL	1.224
602											95% Standard Bootstrap UCL	1.024
603					Anderson-Darling Test Statistic	0.355					95% Bootstrap-t UCL	2.513
604					Anderson-Darling 5% Critical Value	0.7					95% Hall's Bootstrap UCL	7.304
605					Kolmogorov-Smirnov Test Statistic	0.248					95% Percentile Bootstrap UCL	1.066
606					Kolmogorov-Smirnov 5% Critical Value	0.367					95% BCA Bootstrap UCL	1.086
607	Data appear Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	1.868
608											97.5% Chebyshev(Mean, Sd) UCL	2.413
609	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	3.484
610					95% Approximate Gamma UCL	3.159						
611					95% Adjusted Gamma UCL	7.454						
612												
613	Potential UCL to Use										Use 95% Student's-t UCL	1.224
614												
615	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
616	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
617	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
618	Mercury-EU12											
619												
620	General Statistics											
621	Number of Valid Observations					5	Number of Distinct Observations					5
622												
623	Raw Statistics						Log-transformed Statistics					
624	Minimum					0.017	Minimum of Log Data					-4.075
625	Maximum					0.15	Maximum of Log Data					-1.897
626	Mean					0.0574	Mean of log Data					-3.136
627	Median					0.038	SD of log Data					0.798
628	SD					0.0531						
629	Std. Error of Mean					0.0238						
630	Coefficient of Variation					0.925						
631	Skewness					1.958						
632												
633												
634	Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!											
635												
636	It is suggested to collect at least 8 to 10 observations using these statistical methods!											
637	If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.											
638												
639												
640	Warning: There are only 5 Values in this data											
641	Note: It should be noted that even though bootstrap methods may be performed on this data set,											
642	the resulting calculations may not be reliable enough to draw conclusions											
643												
644	The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.											
645												
646	Relevant UCL Statistics											
647	Normal Distribution Test						Lognormal Distribution Test					
648	Shapiro Wilk Test Statistic					0.762	Shapiro Wilk Test Statistic					0.949
649	Shapiro Wilk Critical Value					0.762	Shapiro Wilk Critical Value					0.762
650	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
651												
652	Assuming Normal Distribution						Assuming Lognormal Distribution					
653	95% Student's-t UCL					0.108	95% H-UCL					0.301
654	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					0.14
655	95% Adjusted-CLT UCL (Chen-1995)					0.119	97.5% Chebyshev (MVUE) UCL					0.176
656	95% Modified-t UCL (Johnson-1978)					0.112	99% Chebyshev (MVUE) UCL					0.248
657												
658	Gamma Distribution Test						Data Distribution					
659	k star (bias corrected)					0.912	Data appear Normal at 5% Significance Level					
660	Theta Star					0.0629						
661	MLE of Mean					0.0574						
662	MLE of Standard Deviation					0.0601						
663	nu star					9.123						
664	Approximate Chi Square Value (.05)					3.401	Nonparametric Statistics					
665	Adjusted Level of Significance					0.0086	95% CLT UCL					0.0965
666	Adjusted Chi Square Value					2.064	95% Jackknife UCL					0.108
667							95% Standard Bootstrap UCL					0.0925
668	Anderson-Darling Test Statistic					0.406	95% Bootstrap-t UCL					0.218
669	Anderson-Darling 5% Critical Value					0.685	95% Hall's Bootstrap UCL					0.291
670	Kolmogorov-Smirnov Test Statistic					0.278	95% Percentile Bootstrap UCL					0.0998
671	Kolmogorov-Smirnov 5% Critical Value					0.361	95% BCA Bootstrap UCL					0.106
672	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					0.161
673							97.5% Chebyshev(Mean, Sd) UCL					0.206
674	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					0.294
675	95% Approximate Gamma UCL					0.154						
676	95% Adjusted Gamma UCL					0.254						
677												
678	Potential UCL to Use						Use 95% Student's-t UCL					0.108
679												
680	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
681	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
682	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
683	Mercury-EU14											
684												
685	General Statistics											
686	Number of Valid Observations					6	Number of Distinct Observations					6
687												
688	Raw Statistics						Log-transformed Statistics					
689	Minimum					0.034	Minimum of Log Data					-3.381
690	Maximum					0.26	Maximum of Log Data					-1.347
691	Mean					0.107	Mean of log Data					-2.5
692	Median					0.077	SD of log Data					0.783
693	SD					0.0864						
694	Std. Error of Mean					0.0353						
695	Coefficient of Variation					0.811						
696	Skewness					1.365						
697												
698												
699	Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!											
700												
701	It is suggested to collect at least 8 to 10 observations using these statistical methods!											
702	If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.											
703												
704												
705	Warning: There are only 6 Values in this data											
706	Note: It should be noted that even though bootstrap methods may be performed on this data set,											
707	the resulting calculations may not be reliable enough to draw conclusions											
708												
709	The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.											
710												
711	Relevant UCL Statistics											
712	Normal Distribution Test						Lognormal Distribution Test					
713	Shapiro Wilk Test Statistic					0.858	Shapiro Wilk Test Statistic					0.955
714	Shapiro Wilk Critical Value					0.788	Shapiro Wilk Critical Value					0.788
715	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
716												
717	Assuming Normal Distribution						Assuming Lognormal Distribution					
718	95% Student's-t UCL					0.178	95% H-UCL					0.37
719	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					0.251
720	95% Adjusted-CLT UCL (Chen-1995)					0.186	97.5% Chebyshev (MVUE) UCL					0.314
721	95% Modified-t UCL (Johnson-1978)					0.181	99% Chebyshev (MVUE) UCL					0.437
722												
723	Gamma Distribution Test						Data Distribution					
724	k star (bias corrected)					1.148	Data appear Normal at 5% Significance Level					
725	Theta Star					0.0927						
726	MLE of Mean					0.107						
727	MLE of Standard Deviation					0.0994						
728	nu star					13.78						
729	Approximate Chi Square Value (.05)					6.421	Nonparametric Statistics					
730	Adjusted Level of Significance					0.0122	95% CLT UCL					0.165
731	Adjusted Chi Square Value					4.726	95% Jackknife UCL					0.178
732							95% Standard Bootstrap UCL					0.16
733	Anderson-Darling Test Statistic					0.277	95% Bootstrap-t UCL					0.256
734	Anderson-Darling 5% Critical Value					0.704	95% Hall's Bootstrap UCL					0.462
735	Kolmogorov-Smirnov Test Statistic					0.196	95% Percentile Bootstrap UCL					0.166
736	Kolmogorov-Smirnov 5% Critical Value					0.336	95% BCA Bootstrap UCL					0.171
737	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					0.26
738							97.5% Chebyshev(Mean, Sd) UCL					0.327
739	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					0.457
740	95% Approximate Gamma UCL					0.229						
741	95% Adjusted Gamma UCL					0.31						
742												
743	Potential UCL to Use						Use 95% Student's-t UCL					0.178
744												
745	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
746	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
747	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
748	Mercury-EU2											
749												
750	**General Statistics**											
751	Number of Valid Observations					45	Number of Distinct Observations					39
752												
753	**Raw Statistics**						**Log-transformed Statistics**					
754	Minimum					0.0645	Minimum of Log Data					-2.741
755	Maximum					11.45	Maximum of Log Data					2.438
756	Mean					2.439	Mean of log Data					0.383
757	Median					1.99	SD of log Data					1.168
758	SD					2.496						
759	Std. Error of Mean					0.372						
760	Coefficient of Variation					1.023						
761	Skewness					2.278						
762												
763	**Relevant UCL Statistics**											
764	**Normal Distribution Test**						**Lognormal Distribution Test**					
765	Shapiro Wilk Test Statistic					0.755	Shapiro Wilk Test Statistic					0.932
766	Shapiro Wilk Critical Value					0.945	Shapiro Wilk Critical Value					0.945
767	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
768												
769	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
770	95% Student's-t UCL					3.064	95% H-UCL					4.559
771	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					5.452
772	95% Adjusted-CLT UCL (Chen-1995)					3.186	97.5% Chebyshev (MVUE) UCL					6.586
773	95% Modified-t UCL (Johnson-1978)					3.085	99% Chebyshev (MVUE) UCL					8.813
774												
775	**Gamma Distribution Test**						**Data Distribution**					
776	k star (bias corrected)					1.06	**Data appear Gamma Distributed at 5% Significance Level**					
777	Theta Star					2.3						
778	MLE of Mean					2.439						
779	MLE of Standard Deviation					2.369						
780	nu star					95.43						
781	Approximate Chi Square Value (.05)					73.9	**Nonparametric Statistics**					
782	Adjusted Level of Significance					0.0447	95% CLT UCL					3.051
783	Adjusted Chi Square Value					73.27	95% Jackknife UCL					3.064
784							95% Standard Bootstrap UCL					3.046
785	Anderson-Darling Test Statistic					0.343	95% Bootstrap-t UCL					3.331
786	Anderson-Darling 5% Critical Value					0.775	95% Hall's Bootstrap UCL					3.458
787	Kolmogorov-Smirnov Test Statistic					0.0793	95% Percentile Bootstrap UCL					3.091
788	Kolmogorov-Smirnov 5% Critical Value					0.135	95% BCA Bootstrap UCL					3.208
789	**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL					4.061
790							97.5% Chebyshev(Mean, Sd) UCL					4.763
791	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					6.141
792	95% Approximate Gamma UCL					3.15						
793	95% Adjusted Gamma UCL					3.177						
794												
795	**Potential UCL to Use**						Use 95% Approximate Gamma UCL					3.15
796												
797	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
798	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
799	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
800	Mercury-EU3											
801												
802	**General Statistics**											
803					Number of Valid Observations	12					Number of Distinct Observations	12
804												
805	**Raw Statistics**						**Log-transformed Statistics**					
806					Minimum	0.177					Minimum of Log Data	-1.732
807					Maximum	9.15					Maximum of Log Data	2.214
808					Mean	2.602					Mean of log Data	0.335
809					Median	1.415					SD of log Data	1.251
810					SD	2.815						
811					Std. Error of Mean	0.813						
812					Coefficient of Variation	1.082						
813					Skewness	1.397						
814												
815	**Relevant UCL Statistics**											
816	**Normal Distribution Test**						**Lognormal Distribution Test**					
817					Shapiro Wilk Test Statistic	0.829					Shapiro Wilk Test Statistic	0.973
818					Shapiro Wilk Critical Value	0.859					Shapiro Wilk Critical Value	0.859
819	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
820												
821	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
822					95% Student's-t UCL	4.062					95% H-UCL	10.98
823	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	7.494
824					95% Adjusted-CLT UCL (Chen-1995)	4.289					97.5% Chebyshev (MVUE) UCL	9.54
825					95% Modified-t UCL (Johnson-1978)	4.117					99% Chebyshev (MVUE) UCL	13.56
826												
827	**Gamma Distribution Test**						**Data Distribution**					
828					k star (bias corrected)	0.758	**Data appear Gamma Distributed at 5% Significance Level**					
829					Theta Star	3.434						
830					MLE of Mean	2.602						
831					MLE of Standard Deviation	2.989						
832					nu star	18.19						
833					Approximate Chi Square Value (.05)	9.528	**Nonparametric Statistics**					
834					Adjusted Level of Significance	0.029					95% CLT UCL	3.939
835					Adjusted Chi Square Value	8.587					95% Jackknife UCL	4.062
836											95% Standard Bootstrap UCL	3.886
837					Anderson-Darling Test Statistic	0.235					95% Bootstrap-t UCL	4.767
838					Anderson-Darling 5% Critical Value	0.759					95% Hall's Bootstrap UCL	4.753
839					Kolmogorov-Smirnov Test Statistic	0.159					95% Percentile Bootstrap UCL	3.946
840					Kolmogorov-Smirnov 5% Critical Value	0.253					95% BCA Bootstrap UCL	4.375
841	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	6.145
842											97.5% Chebyshev(Mean, Sd) UCL	7.678
843	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	10.69
844					95% Approximate Gamma UCL	4.968						
845					95% Adjusted Gamma UCL	5.513						
846												
847	**Potential UCL to Use**										Use 95% Approximate Gamma UCL	4.968
848												
849	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
850	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
851	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
852	Mercury-EU4											
853												
854	General Statistics											
855					Number of Valid Observations	14					Number of Distinct Observations	14
856												
857	Raw Statistics						Log-transformed Statistics					
858					Minimum	0.015					Minimum of Log Data	-4.2
859					Maximum	2.3					Maximum of Log Data	0.833
860					Mean	0.499					Mean of log Data	-1.928
861					Median	0.0785					SD of log Data	1.766
862					SD	0.697						
863					Std. Error of Mean	0.186						
864					Coefficient of Variation	1.398						
865					Skewness	1.601						
866												
867	Relevant UCL Statistics											
868	Normal Distribution Test						Lognormal Distribution Test					
869					Shapiro Wilk Test Statistic	0.737					Shapiro Wilk Test Statistic	0.881
870					Shapiro Wilk Critical Value	0.874					Shapiro Wilk Critical Value	0.874
871	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
872												
873	Assuming Normal Distribution						Assuming Lognormal Distribution					
874					95% Student's-t UCL	0.829					95% H-UCL	5.435
875	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	1.839
876					95% Adjusted-CLT UCL (Chen-1995)	0.89					97.5% Chebyshev (MVUE) UCL	2.396
877					95% Modified-t UCL (Johnson-1978)	0.842					99% Chebyshev (MVUE) UCL	3.489
878												
879	Gamma Distribution Test						Data Distribution					
880					k star (bias corrected)	0.451	Data appear Lognormal at 5% Significance Level					
881					Theta Star	1.105						
882					MLE of Mean	0.499						
883					MLE of Standard Deviation	0.742						
884					nu star	12.63						
885					Approximate Chi Square Value (.05)	5.645	Nonparametric Statistics					
886					Adjusted Level of Significance	0.0312					95% CLT UCL	0.805
887					Adjusted Chi Square Value	5.039					95% Jackknife UCL	0.829
888											95% Standard Bootstrap UCL	0.799
889					Anderson-Darling Test Statistic	0.916					95% Bootstrap-t UCL	0.989
890					Anderson-Darling 5% Critical Value	0.792					95% Hall's Bootstrap UCL	0.861
891					Kolmogorov-Smirnov Test Statistic	0.266					95% Percentile Bootstrap UCL	0.819
892					Kolmogorov-Smirnov 5% Critical Value	0.241					95% BCA Bootstrap UCL	0.893
893	Data not Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	1.311
894											97.5% Chebyshev(Mean, Sd) UCL	1.662
895	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	2.353
896					95% Approximate Gamma UCL	1.116						
897					95% Adjusted Gamma UCL	1.25						
898												
899	Potential UCL to Use										Use 99% Chebyshev (Mean, Sd) UCL	2.353
900	Recommended UCL exceeds the maximum observation											
901												
902	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
903	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
904	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
905	Mercury-EU5											
906	**General Statistics**											
907	Number of Valid Observations					22	Number of Distinct Observations					22
908												
909	**Raw Statistics**						**Log-transformed Statistics**					
910	Minimum					0.037	Minimum of Log Data					-3.297
911	Maximum					4.25	Maximum of Log Data					1.447
912	Mean					0.971	Mean of log Data					-0.988
913	Median					0.35	SD of log Data					1.507
914	SD					1.295						
915	Std. Error of Mean					0.276						
916	Coefficient of Variation					1.334						
917	Skewness					1.491						
918												
919	**Relevant UCL Statistics**											
920	**Normal Distribution Test**						**Lognormal Distribution Test**					
921	Shapiro Wilk Test Statistic					0.721	Shapiro Wilk Test Statistic					0.942
922	Shapiro Wilk Critical Value					0.911	Shapiro Wilk Critical Value					0.911
923	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
924												
925	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
926	95% Student's-t UCL					1.446	95% H-UCL					3.495
927	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL					2.839
928	95% Adjusted-CLT UCL (Chen-1995)					1.518	97.5% Chebyshev (MVUE) UCL					3.613
929	95% Modified-t UCL (Johnson-1978)					1.46	99% Chebyshev (MVUE) UCL					5.132
930												
931	**Gamma Distribution Test**						**Data Distribution**					
932	k star (bias corrected)					0.582	Data Follow Appr. Gamma Distribution at 5% Significance Level					
933	Theta Star					1.666						
934	MLE of Mean					0.971						
935	MLE of Standard Deviation					1.272						
936	nu star					25.62						
937	Approximate Chi Square Value (.05)					15.09	**Nonparametric Statistics**					
938	Adjusted Level of Significance					0.0386	95% CLT UCL					1.425
939	Adjusted Chi Square Value					14.49	95% Jackknife UCL					1.446
940							95% Standard Bootstrap UCL					1.432
941	Anderson-Darling Test Statistic					0.795	95% Bootstrap-t UCL					1.587
942	Anderson-Darling 5% Critical Value					0.792	95% Hall's Bootstrap UCL					1.433
943	Kolmogorov-Smirnov Test Statistic					0.16	95% Percentile Bootstrap UCL					1.405
944	Kolmogorov-Smirnov 5% Critical Value					0.194	95% BCA Bootstrap UCL					1.502
945	Data follow Appr. Gamma Distribution at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					2.174
946							97.5% Chebyshev(Mean, Sd) UCL					2.695
947	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL					3.718
948	95% Approximate Gamma UCL					1.648						
949	95% Adjusted Gamma UCL					1.717						
950												
951	Potential UCL to Use						Use 95% Approximate Gamma UCL					1.648
952												
953	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
954	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
955	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
956	Mercury-EU7											
957												
958	**General Statistics**											
959					Number of Valid Observations	11					Number of Distinct Observations	11
960												
961	**Raw Statistics**						**Log-transformed Statistics**					
962					Minimum	0.0295					Minimum of Log Data	-3.525
963					Maximum	0.375					Maximum of Log Data	-0.981
964					Mean	0.0834					Mean of log Data	-2.811
965					Median	0.052					SD of log Data	0.72
966					SD	0.0994						
967					Std. Error of Mean	0.03						
968					Coefficient of Variation	1.193						
969					Skewness	3.015						
970												
971	**Relevant UCL Statistics**											
972	**Normal Distribution Test**						**Lognormal Distribution Test**					
973					Shapiro Wilk Test Statistic	0.541					Shapiro Wilk Test Statistic	0.822
974					Shapiro Wilk Critical Value	0.85					Shapiro Wilk Critical Value	0.85
975	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
976												
977	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
978					95% Student's-t UCL	0.138					95% H-UCL	0.138
979	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	0.15
980					95% Adjusted-CLT UCL (Chen-1995)	0.162					97.5% Chebyshev (MVUE) UCL	0.182
981					95% Modified-t UCL (Johnson-1978)	0.142					99% Chebyshev (MVUE) UCL	0.246
982												
983	**Gamma Distribution Test**						**Data Distribution**					
984					k star (bias corrected)	1.282	Data do not follow a Discernable Distribution (0.05)					
985					Theta Star	0.065						
986					MLE of Mean	0.0834						
987					MLE of Standard Deviation	0.0736						
988					nu star	28.21						
989					Approximate Chi Square Value (.05)	17.09	**Nonparametric Statistics**					
990					Adjusted Level of Significance	0.0278					95% CLT UCL	0.133
991					Adjusted Chi Square Value	15.69					95% Jackknife UCL	0.138
992											95% Standard Bootstrap UCL	0.13
993					Anderson-Darling Test Statistic	1.216					95% Bootstrap-t UCL	0.335
994					Anderson-Darling 5% Critical Value	0.741					95% Hall's Bootstrap UCL	0.361
995					Kolmogorov-Smirnov Test Statistic	0.325					95% Percentile Bootstrap UCL	0.141
996					Kolmogorov-Smirnov 5% Critical Value	0.259					95% BCA Bootstrap UCL	0.173
997	Data not Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	0.214
998											97.5% Chebyshev(Mean, Sd) UCL	0.271
999	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	0.382
1000					95% Approximate Gamma UCL	0.138						
1001					95% Adjusted Gamma UCL	0.15						
1002												
1003	Potential UCL to Use										Use 95% Chebyshev (Mean, Sd) UCL	0.214
1004												
1005	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1006	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1007	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

TABLE I-4

Pro-UCL Outputs - tPCBs, Agricultural EUs

	A	B	C	D	E	F	G	H	I	J	K	L
1008	Mercury-EU9											
1009												
1010	General Statistics											
1011					Number of Valid Observations	8					Number of Distinct Observations	8
1012												
1013	Raw Statistics						Log-transformed Statistics					
1014					Minimum	0.02					Minimum of Log Data	-3.912
1015					Maximum	0.19					Maximum of Log Data	-1.661
1016					Mean	0.0999					Mean of log Data	-2.471
1017					Median	0.091					SD of log Data	0.691
1018					SD	0.0535						
1019					Std. Error of Mean	0.0189						
1020					Coefficient of Variation	0.535						
1021					Skewness	0.354						
1022												
1023												
1024	Warning: There are only 8 Values in this data											
1025	Note: It should be noted that even though bootstrap methods may be performed on this data set,											
1026	the resulting calculations may not be reliable enough to draw conclusions											
1027												
1028	The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.											
1029												
1030	Relevant UCL Statistics											
1031	Normal Distribution Test						Lognormal Distribution Test					
1032					Shapiro Wilk Test Statistic	0.978					Shapiro Wilk Test Statistic	0.902
1033					Shapiro Wilk Critical Value	0.818					Shapiro Wilk Critical Value	0.818
1034	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1035												
1036	Assuming Normal Distribution						Assuming Lognormal Distribution					
1037					95% Student's-t UCL	0.136					95% H-UCL	0.218
1038	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	0.216
1039					95% Adjusted-CLT UCL (Chen-1995)	0.134					97.5% Chebyshev (MVUE) UCL	0.264
1040					95% Modified-t UCL (Johnson-1978)	0.136					99% Chebyshev (MVUE) UCL	0.359
1041												
1042	Gamma Distribution Test						Data Distribution					
1043					k star (bias corrected)	2.041	Data appear Normal at 5% Significance Level					
1044					Theta Star	0.049						
1045					MLE of Mean	0.0999						
1046					MLE of Standard Deviation	0.0699						
1047					nu star	32.66						
1048					Approximate Chi Square Value (.05)	20.6	Nonparametric Statistics					
1049					Adjusted Level of Significance	0.0195					95% CLT UCL	0.131
1050					Adjusted Chi Square Value	18.21					95% Jackknife UCL	0.136
1051											95% Standard Bootstrap UCL	0.13
1052					Anderson-Darling Test Statistic	0.241					95% Bootstrap-t UCL	0.142
1053					Anderson-Darling 5% Critical Value	0.721					95% Hall's Bootstrap UCL	0.14
1054					Kolmogorov-Smirnov Test Statistic	0.191					95% Percentile Bootstrap UCL	0.13
1055					Kolmogorov-Smirnov 5% Critical Value	0.296					95% BCA Bootstrap UCL	0.129
1056	Data appear Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	0.182
1057											97.5% Chebyshev(Mean, Sd) UCL	0.218
1058	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	0.288
1059					95% Approximate Gamma UCL	0.158						
1060					95% Adjusted Gamma UCL	0.179						
1061												
1062	Potential UCL to Use										Use 95% Student's-t UCL	0.136
1063												
1064	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1065	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
1066	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											

APPENDIX J

DIRECT CONTACT RAGS 7 TABLES

TABLE J-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU2	Ingestion	Total PCBs	4.61E+01	mg/kg	6.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	4.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.2
			Ingestion Total								1E-06					0.2
			PCB Dioxin-like Congener TEQ Ingestion		9.32E-05	mg/kg	1.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	8.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.01
			Dermal	Total PCBs	4.61E+01	mg/kg	2.7E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	5E-06	1.9E-05	mg/kg-day	2.0E-05	mg/kg-day	0.9
			Dermal Total								5E-06					0.9
			PCB Dioxin-like Congener TEQ Dermal		9.32E-05	mg/kg	5.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-07	3.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.05
		C1-EU2 Total									7E-06					1
		Surface Soil at C2N-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	2.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-07	1.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.08
				Mercury	1.33E+00	mg/kg	6.0E-08	mg/kg-day	NA	---	NA	4.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								4E-07					0.08
			PCB Dioxin-like Congener TEQ Ingestion		3.29E-05	mg/kg	4.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-08	3.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
			Dermal	Total PCBs	1.63E+01	mg/kg	9.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	6.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.3
				Mercury	1.33E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-06					0.3
			PCB Dioxin-like Congener TEQ Dermal		3.29E-05	mg/kg	1.9E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	1.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.02
		C2N-EU1 Total									3E-06					0.4
		Surface Soil at C3N-EU1	Ingestion	Total PCBs	2.32E+01	mg/kg	3.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-07	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
				Mercury	3.32E+00	mg/kg	1.5E-07	mg/kg-day	NA	---	NA	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.004
			Ingestion Total								6E-07					0.1
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-05	mg/kg	5.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-08	3.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.006
			Dermal	Total PCBs	2.32E+01	mg/kg	1.3E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-06	9.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.5
				Mercury	3.32E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-06					0.5
			PCB Dioxin-like Congener TEQ Dermal		4.14E-05	mg/kg	2.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-07	1.7E-11	mg/kg-day	7.0E-10	mg/kg-day	0.02
		C3N-EU1 Total									4E-06					0.6
		Surface Soil at C3N-EU2	Ingestion	Total PCBs	3.69E+01	mg/kg	5.0E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	3.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.2
				Mercury	4.62E+00	mg/kg	2.1E-07	mg/kg-day	NA	---	NA	1.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.005
			Ingestion Total								1E-06					0.2
			PCB Dioxin-like Congener TEQ Ingestion		9.70E-05	mg/kg	1.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	9.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.01
			Dermal	Total PCBs	3.69E+01	mg/kg	2.1E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-06	1.5E-05	mg/kg-day	2.0E-05	mg/kg-day	0.7
				Mercury	4.62E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-06					0.7
			PCB Dioxin-like Congener TEQ Dermal		9.70E-05	mg/kg	5.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-07	3.9E-11	mg/kg-day	7.0E-10	mg/kg-day	0.06
		C3N-EU2 Total									6E-06					1

TABLE J-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4N-EU1	Ingestion	Total PCBs	8.12E+00	mg/kg	1.1E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	7.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
				Mercury	2.28E+00	mg/kg	1.0E-07	mg/kg-day	NA	---	NA	7.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								2E-07					0.04
			PCB Dioxin-like Congener TEQ Ingestion		1.84E-05	mg/kg	2.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	1.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	8.12E+00	mg/kg	4.7E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	9E-07	3.3E-06	mg/kg-day	2.0E-05	mg/kg-day	0.2
				Mercury	2.28E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								9E-07					0.2
			PCB Dioxin-like Congener TEQ Dermal		1.84E-05	mg/kg	1.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	7.4E-12	mg/kg-day	7.0E-10	mg/kg-day	0.01
		C4N-EU1 Total									1E-06					0.2
		Surface Soil at C4N-EU2	Ingestion	Total PCBs	8.50E+00	mg/kg	1.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	8.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
				Mercury	2.74E+00	mg/kg	1.2E-07	mg/kg-day	NA	---	NA	8.7E-07	mg/kg-day	3.0E-04	mg/kg-day	0.003
			Ingestion Total								2E-07					0.04
			PCB Dioxin-like Congener TEQ Ingestion		1.79E-05	mg/kg	2.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	1.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	8.50E+00	mg/kg	4.9E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	3.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.2
				Mercury	2.74E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-06					0.2
			PCB Dioxin-like Congener TEQ Dermal		1.79E-05	mg/kg	1.0E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	7.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.01
		C4N-EU2 Total									1E-06					0.2
		Surface Soil at C4S-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	2.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-07	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.08
				Mercury	3.47E+00	mg/kg	1.6E-07	mg/kg-day	NA	---	NA	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.004
			Ingestion Total								4E-07					0.08
			PCB Dioxin-like Congener TEQ Ingestion		3.98E-05	mg/kg	5.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-08	3.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.005
			Dermal	Total PCBs	1.63E+01	mg/kg	9.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	6.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.3
				Mercury	3.47E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-06					0.3
			PCB Dioxin-like Congener TEQ Dermal		3.98E-05		2.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-07	1.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.02
		C4S-EU1 Total									3E-06					0.4
		Surface Soil at C4S-EU2	Ingestion	Total PCBs	2.51E+00	mg/kg	3.4E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-08	2.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	1.27E+00	mg/kg	5.7E-08	mg/kg-day	NA	---	NA	4.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								7E-08					0.01
			PCB Dioxin-like Congener TEQ Ingestion		5.12E-06	mg/kg	7.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	4.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0007
			Dermal	Total PCBs	2.51E+00	mg/kg	1.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-07	1.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.05
				Mercury	1.27E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-07					0.05
			PCB Dioxin-like Congener TEQ Dermal		5.12E-06	mg/kg	2.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-08	2.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
		C4S-EU2 Total									4E-07					0.07

TABLE J-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4S-EU3	Ingestion	Total PCBs	5.50E+00	mg/kg	7.5E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	5.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	1.69E+00	mg/kg	7.6E-08	mg/kg-day	NA	---	NA	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								1E-07					0.03
			PCB Dioxin-like Congener TEQ Ingestion		1.11E-05	mg/kg	1.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	1.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	5.50E+00	mg/kg	3.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-07	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
				Mercury	1.69E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								6E-07					0.1
			PCB Dioxin-like Congener TEQ Dermal		1.11E-05	mg/kg	6.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-08	4.5E-12	mg/kg-day	7.0E-10	mg/kg-day	0.006
		C4S-EU3 Total									9E-07					0.1
		Surface Soil at C5N-EU1	Ingestion	Total PCBs	6.05E+00	mg/kg	8.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	5.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	1.51E+00	mg/kg	6.8E-08	mg/kg-day	NA	---	NA	4.8E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								2E-07					0.03
			PCB Dioxin-like Congener TEQ Ingestion		1.22E-05	mg/kg	1.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	1.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	6.05E+00	mg/kg	3.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-07	2.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
				Mercury	1.51E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								7E-07					0.1
			PCB Dioxin-like Congener TEQ Dermal		1.22E-05	mg/kg	7.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-08	4.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.007
		C5N-EU1 Total									1E-06					0.2
		Surface Soil at C5S-EU1	Ingestion	Total PCBs	1.33E+00	mg/kg	1.8E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-08	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	8.86E-01	mg/kg	4.0E-08	mg/kg-day	NA	---	NA	2.8E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0009
			Ingestion Total								4E-08					0.007
			PCB Dioxin-like Congener TEQ Ingestion		2.63E-06	mg/kg	3.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-09	2.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	1.33E+00	mg/kg	7.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	5.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	8.86E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-07					0.03
			PCB Dioxin-like Congener TEQ Dermal		2.63E-06	mg/kg	1.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	1.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C5S-EU1 Total									2E-07					0.04
		Surface Soil at C6N-EU1	Ingestion	Total PCBs	2.14E+00	mg/kg	2.9E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-08	2.0E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	1.41E+00	mg/kg	6.4E-08	mg/kg-day	NA	---	NA	4.5E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								6E-08					0.01
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-06	mg/kg	5.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-09	3.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0006
			Dermal	Total PCBs	2.14E+00	mg/kg	1.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	8.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
				Mercury	1.41E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-07					0.04
			PCB Dioxin-like Congener TEQ Dermal		4.14E-06	mg/kg	2.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	1.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C6N-EU1 Total									3E-07					0.06

TABLE J-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C6S-EU1	Ingestion	Total PCBs	2.88E+00	mg/kg	3.9E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	8E-08	2.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	2.95E+00	mg/kg	1.3E-07	mg/kg-day	NA	---	NA	9.3E-07	mg/kg-day	3.0E-04	mg/kg-day	0.003
			Ingestion Total								8E-08					0.02
			PCB Dioxin-like Congener TEQ Ingestion		5.84E-06	mg/kg	7.9E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	5.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0008
			Dermal	Total PCBs	2.88E+00	mg/kg	1.7E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-07	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.06
				Mercury	2.95E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-07					0.06
			PCB Dioxin-like Congener TEQ Dermal		5.84E-06	mg/kg	3.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-08	2.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
		C6S-EU1 Total									5E-07					0.08
		Surface Soil at C7S-EU1	Ingestion	Total PCBs	1.32E+00	mg/kg	1.8E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-08	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	6.77E-01	mg/kg	3.1E-08	mg/kg-day	NA	---	NA	2.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0007
			Ingestion Total								4E-08					0.007
			PCB Dioxin-like Congener TEQ Ingestion		2.61E-06	mg/kg	3.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-09	2.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	1.32E+00	mg/kg	7.6E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	5.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	6.77E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-07					0.03
			PCB Dioxin-like Congener TEQ Dermal		2.61E-06	mg/kg	1.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	1.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C7S-EU1 Total									2E-07					0.04
		Surface Soil at C8N-EU1	Ingestion	Total PCBs	3.09E+00	mg/kg	4.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	8E-08	2.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	1.57E+00	mg/kg	7.1E-08	mg/kg-day	NA	---	NA	5.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								8E-08					0.02
			PCB Dioxin-like Congener TEQ Ingestion		7.22E-06	mg/kg	9.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	6.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
			Dermal	Total PCBs	3.09E+00	mg/kg	1.8E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-07	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.06
				Mercury	1.57E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-07					0.06
			PCB Dioxin-like Congener TEQ Dermal		7.22E-06	mg/kg	4.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-08	2.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
		C8N-EU1 Total									5E-07					0.08

TABLE J-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU2	Ingestion	Total PCBs	4.61E+01	mg/kg	1.2E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	2.8E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
			Ingestion Total								2E-06					0.1
			PCB Dioxin-like Congener TEQ Ingestion		9.32E-05	mg/kg	2.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-07	5.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.008
			Dermal	Total PCBs	4.61E+01	mg/kg	8.0E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	1.9E-06	mg/kg-day	2.0E-05	mg/kg-day	0.09
			Dermal Total								2E-06					0.09
			PCB Dioxin-like Congener TEQ Dermal		9.32E-05	mg/kg	1.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	3.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.005
		C1-EU2 Total									5E-06					0.2
		Surface Soil at C2N-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	4.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	9E-07	1.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.05
				Mercury	1.33E+00	mg/kg	1.2E-07	mg/kg-day	NA	---	NA	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0009
			Ingestion Total								9E-07					0.05
			PCB Dioxin-like Congener TEQ Ingestion		3.29E-05	mg/kg	8.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	2.0E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
			Dermal	Total PCBs	1.63E+01	mg/kg	2.8E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-07	6.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	1.33E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								6E-07					0.03
			PCB Dioxin-like Congener TEQ Dermal		3.29E-05	mg/kg	5.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-08	1.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C2N-EU1 Total									2E-06					0.09
		Surface Soil at C3N-EU1	Ingestion	Total PCBs	2.32E+01	mg/kg	6.1E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.07
				Mercury	3.32E+00	mg/kg	2.9E-07	mg/kg-day	NA	---	NA	6.8E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								1E-06					0.07
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-05	mg/kg	1.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	2.5E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
			Dermal	Total PCBs	2.32E+01	mg/kg	4.0E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	8E-07	9.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.05
				Mercury	3.32E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								8E-07					0.05
			PCB Dioxin-like Congener TEQ Dermal		4.14E-05	mg/kg	7.1E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-08	1.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C3N-EU1 Total									2E-06					0.1
		Surface Soil at C3N-EU2	Ingestion	Total PCBs	3.69E+01	mg/kg	9.6E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.11
				Mercury	4.62E+00	mg/kg	4.0E-07	mg/kg-day	NA	---	NA	9.4E-07	mg/kg-day	3.0E-04	mg/kg-day	0.003
			Ingestion Total								2E-06					0.1
			PCB Dioxin-like Congener TEQ Ingestion		9.70E-05	mg/kg	2.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-07	5.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.008
			Dermal	Total PCBs	3.69E+01	mg/kg	6.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	1.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.07
				Mercury	4.62E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-06					0.07
			PCB Dioxin-like Congener TEQ Dermal		9.70E-05		1.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	3.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.006
		C3N-EU2 Total									4E-06					0.2

TABLE J-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4N-EU1	Ingestion	Total PCBs	8.12E+00	mg/kg	2.1E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-07	5.0E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	2.28E+00	mg/kg	2.0E-07	mg/kg-day	NA	---	NA	4.6E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								4E-07					0.03
			PCB Dioxin-like Congener TEQ Ingestion		1.84E-05	mg/kg	4.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-08	1.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	8.12E+00	mg/kg	1.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-07	3.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	2.28E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-07					0.02
			PCB Dioxin-like Congener TEQ Dermal		1.84E-05	mg/kg	3.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-08	7.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
		C4N-EU1 Total									8E-07					0.05
		Surface Soil at C4N-EU2	Ingestion	Total PCBs	8.50E+00	mg/kg	2.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-07	5.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	2.74E+00	mg/kg	2.4E-07	mg/kg-day	NA	---	NA	5.6E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								4E-07					0.03
			PCB Dioxin-like Congener TEQ Ingestion		1.79E-05	mg/kg	4.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-08	1.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	8.50E+00	mg/kg	1.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-07	3.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	2.74E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-07					0.02
			PCB Dioxin-like Congener TEQ Dermal		1.79E-05	mg/kg	3.1E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-08	7.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
		C4N-EU2 Total									8E-07					0.05
		Surface Soil at C4S-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	4.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	9E-07	1.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.05
				Mercury	3.47E+00	mg/kg	3.0E-07	mg/kg-day	NA	---	NA	7.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								9E-07					0.05
			PCB Dioxin-like Congener TEQ Ingestion		3.98E-05	mg/kg	1.0E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	2.4E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
			Dermal	Total PCBs	1.63E+01	mg/kg	2.8E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-07	6.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	3.47E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								6E-07					0.03
			PCB Dioxin-like Congener TEQ Dermal		3.98E-05	mg/kg	6.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-08	1.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C4S-EU1 Total									2E-06					0.09
		Surface Soil at C4S-EU2	Ingestion	Total PCBs	2.51E+00	mg/kg	6.6E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	0.008
				Mercury	1.27E+00	mg/kg	1.1E-07	mg/kg-day	NA	---	NA	2.6E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0009
			Ingestion Total								1E-07					0.009
			PCB Dioxin-like Congener TEQ Ingestion		5.12E-06	mg/kg	1.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	3.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	2.51E+00	mg/kg	4.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	9E-08	1.0E-07	mg/kg-day	2.0E-05	mg/kg-day	0.005
				Mercury	1.27E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								9E-08					0.005
			PCB Dioxin-like Congener TEQ Dermal		5.12E-06	mg/kg	8.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	2.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
		C4S-EU2 Total									2E-07					0.01

TABLE J-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4S-EU3	Ingestion	Total PCBs	5.50E+00	mg/kg	1.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-07	3.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	1.69E+00	mg/kg	1.5E-07	mg/kg-day	NA	---	NA	3.4E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								3E-07					0.02
			PCB Dioxin-like Congener TEQ Ingestion		1.11E-05	mg/kg	2.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-08	6.8E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
			Dermal	Total PCBs	5.50E+00	mg/kg	9.5E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	2.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	1.69E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-07					0.01
			PCB Dioxin-like Congener TEQ Dermal		1.11E-05	mg/kg	1.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	4.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0006
		C4S-EU3 Total									5E-07					0.03
		Surface Soil at C5N-EU1	Ingestion	Total PCBs	6.05E+00	mg/kg	1.6E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-07	3.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	1.51E+00	mg/kg	1.3E-07	mg/kg-day	NA	---	NA	3.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								3E-07					0.02
			PCB Dioxin-like Congener TEQ Ingestion		1.22E-05	mg/kg	3.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-08	7.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
			Dermal	Total PCBs	6.05E+00	mg/kg	1.0E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	2.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	1.51E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-07					0.01
			PCB Dioxin-like Congener TEQ Dermal		1.22E-05	mg/kg	2.1E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	4.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0007
		C5N-EU1 Total									6E-07					0.03
		Surface Soil at C5S-EU1	Ingestion	Total PCBs	1.33E+00	mg/kg	3.5E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-08	8.1E-08	mg/kg-day	2.0E-05	mg/kg-day	0.004
				Mercury	8.86E-01	mg/kg	7.7E-08	mg/kg-day	NA	---	NA	1.8E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0006
			Ingestion Total								7E-08					0.005
			PCB Dioxin-like Congener TEQ Ingestion		2.63E-06	mg/kg	6.9E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	1.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	1.33E+00	mg/kg	2.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	5E-08	5.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	8.86E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								5E-08					0.003
			PCB Dioxin-like Congener TEQ Dermal		2.63E-06	mg/kg	4.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-09	1.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C5S-EU1 Total									1E-07					0.008
		Surface Soil at C6N-EU1	Ingestion	Total PCBs	2.14E+00	mg/kg	5.6E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.007
				Mercury	1.41E+00	mg/kg	1.2E-07	mg/kg-day	NA	---	NA	2.9E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								1E-07					0.007
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-06	mg/kg	1.1E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	2.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	2.14E+00	mg/kg	3.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-08	8.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.004
				Mercury	1.41E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								7E-08					0.004
			PCB Dioxin-like Congener TEQ Dermal		4.14E-06	mg/kg	7.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	1.7E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C6N-EU1 Total									2E-07					0.01

TABLE J-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C6S-EU1	Ingestion	Total PCBs	2.88E+00	mg/kg	7.5E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	1.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.009
				Mercury	2.95E+00	mg/kg	2.6E-07	mg/kg-day	NA	---	NA	6.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								2E-07					0.01
			PCB Dioxin-like Congener TEQ Ingestion		5.84E-06	mg/kg	1.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	3.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
			Dermal	Total PCBs	2.88E+00	mg/kg	5.0E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	2.95E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-07					0.006
			PCB Dioxin-like Congener TEQ Dermal		5.84E-06	mg/kg	1.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	2.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
		C6S-EU1 Total									3E-07					0.02
		Surface Soil at C7S-EU1	Ingestion	Total PCBs	1.32E+00	mg/kg	3.5E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-08	8.1E-08	mg/kg-day	2.0E-05	mg/kg-day	0.004
				Mercury	6.77E-01	mg/kg	5.9E-08	mg/kg-day	NA	---	NA	1.4E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0005
			Ingestion Total								7E-08					0.004
			PCB Dioxin-like Congener TEQ Ingestion		2.61E-06	mg/kg	6.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	1.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	1.32E+00	mg/kg	2.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	5E-08	5.3E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	6.77E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								5E-08					0.003
			PCB Dioxin-like Congener TEQ Dermal		2.61E-06	mg/kg	4.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-09	1.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C7S-EU1 Total									1E-07					0.008
		Surface Soil at C8N-EU1	Ingestion	Total PCBs	3.09E+00	mg/kg	8.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	1.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.009
				Mercury	1.57E+00	mg/kg	1.4E-07	mg/kg-day	NA	---	NA	3.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								2E-07					0.01
			PCB Dioxin-like Congener TEQ Ingestion		7.22E-06	mg/kg	1.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	4.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0006
			Dermal	Total PCBs	3.09E+00	mg/kg	5.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	1.57E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-07					0.006
			PCB Dioxin-like Congener TEQ Dermal		7.22E-06	mg/kg	1.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	2.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
		C8N-EU1 Total									3E-07					0.02

TABLE J-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU1	Ingestion	Total PCBs	1.05E+01	mg/kg	1.0E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	1.2E-05	mg/kg-day	6.0E-05	mg/kg-day	0.2
			Ingestion Total								2E-06					0.2
			PCB Dioxin-like Congener TEQ Ingestion		2.11E-05	mg/kg	2.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-07	2.4E-11	mg/kg-day	7.0E-10	mg/kg-day	0.03
			Dermal	Total PCBs	1.05E+01	mg/kg	8.6E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	1.0E-05	mg/kg-day	6.0E-05	mg/kg-day	0.2
			Dermal Total								2E-06					0.2
			PCB Dioxin-like Congener TEQ Dermal		2.11E-05	mg/kg	1.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	2.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.03
		C1-EU1 Total									4E-06					0.4
		Surface Soil at C3S-EU1	Ingestion	Total PCBs	1.95E+01	mg/kg	1.9E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-06	2.2E-05	mg/kg-day	6.0E-05	mg/kg-day	0.4
				Mercury	8.96E+00	mg/kg	2.9E-06	mg/kg-day	NA	---	NA	3.4E-05	mg/kg-day	3.0E-03	mg/kg-day	0.01
			Ingestion Total								4E-06					0.4
			PCB Dioxin-like Congener TEQ Ingestion		3.93E-05	mg/kg	3.8E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-07	4.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.06
			Dermal	Total PCBs	1.95E+01	mg/kg	1.6E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-06	1.9E-05	mg/kg-day	6.0E-05	mg/kg-day	0.3
				Mercury	8.96E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
			Dermal Total								3E-06					0.3
			PCB Dioxin-like Congener TEQ Dermal		3.93E-05	mg/kg	3.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-07	3.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.05
		C3S-EU1 Total									8E-06					0.8
		Surface Soil at C3S-EU2	Ingestion	Total PCBs	2.36E+01	mg/kg	2.3E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	5E-06	2.7E-05	mg/kg-day	6.0E-05	mg/kg-day	0.4
				Mercury	3.90E+00	mg/kg	1.3E-06	mg/kg-day	NA	---	NA	1.5E-05	mg/kg-day	3.0E-03	mg/kg-day	0.005
			Ingestion Total								5E-06					0.5
			PCB Dioxin-like Congener TEQ Ingestion		1.07E-04	mg/kg	1.0E-11	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-06	1.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.2
			Dermal	Total PCBs	2.36E+01	mg/kg	1.9E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-06	2.3E-05	mg/kg-day	6.0E-05	mg/kg-day	0.4
				Mercury	3.90E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
			Dermal Total								4E-06					0.4
			PCB Dioxin-like Congener TEQ Dermal		1.07E-04	mg/kg	8.8E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-06	1.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.1
		C3S-EU2 Total									1E-05					1

TABLE J-4
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU1	Ingestion	Total PCBs	1.05E+01	mg/kg	2.8E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-07	2.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
			Ingestion Total								6E-07					0.1
			PCB Dioxin-like Congener TEQ Ingestion		2.11E-05	mg/kg	5.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-08	4.0E-12	mg/kg-day	7.0E-10	mg/kg-day	0.006
			Dermal	Total PCBs	1.05E+01	mg/kg	1.2E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	8.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.4
			Dermal Total								2E-06					0.4
			PCB Dioxin-like Congener TEQ Dermal		2.11E-05	mg/kg	2.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-07	1.7E-11	mg/kg-day	7.0E-10	mg/kg-day	0.02
		C1-EU1 Total									3E-06					0.6
		Surface Soil at C3S-EU1	Ingestion	Total PCBs	1.95E+01	mg/kg	5.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	3.7E-06	mg/kg-day	2.0E-05	mg/kg-day	0.2
				Mercury	8.96E+00	mg/kg	8.1E-07	mg/kg-day	NA	---	NA	5.7E-06	mg/kg-day	3.0E-04	mg/kg-day	0.02
			Ingestion Total								1E-06					0.2
			PCB Dioxin-like Congener TEQ Ingestion		3.93E-05	mg/kg	1.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	7.5E-12	mg/kg-day	7.0E-10	mg/kg-day	0.01
			Dermal	Total PCBs	1.95E+01	mg/kg	2.2E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-06	1.6E-05	mg/kg-day	2.0E-05	mg/kg-day	0.8
				Mercury	8.96E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-06					0.8
			PCB Dioxin-like Congener TEQ Dermal		3.93E-05	mg/kg	4.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-07	3.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.05
		C3S-EU1 Total									6E-06					1
		Surface Soil at C3S-EU2	Ingestion	Total PCBs	2.36E+01	mg/kg	6.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	4.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.2
				Mercury	3.90E+00	mg/kg	3.5E-07	mg/kg-day	NA	---	NA	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.008
			Ingestion Total								1E-06					0.2
			PCB Dioxin-like Congener TEQ Ingestion		1.07E-04	mg/kg	2.9E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-07	2.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.03
			Dermal	Total PCBs	2.36E+01	mg/kg	2.7E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	5E-06	1.9E-05	mg/kg-day	2.0E-05	mg/kg-day	1
				Mercury	3.90E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								5E-06					1
			PCB Dioxin-like Congener TEQ Dermal		1.07E-04	mg/kg	1.2E-11	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-06	8.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.1
		C3S-EU2 Total									9E-06					1

TABLE J-5

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU1	Ingestion	Total PCBs	1.05E+01	mg/kg	5.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	0.06
			Ingestion Total								1E-06					0.06
			PCB Dioxin-like Congener TEQ Ingestion		2.11E-05	mg/kg	1.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	2.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
			Dermal	Total PCBs	1.05E+01	mg/kg	3.6E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-07	8.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
			Dermal Total								7E-07					0.04
			PCB Dioxin-like Congener TEQ Dermal		2.11E-05	mg/kg	7.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-08	1.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C1-EU1 Total									2E-06					0.1
		Surface Soil at C3S-EU1	Ingestion	Total PCBs	1.95E+01	mg/kg	1.0E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	2.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
				Mercury	8.96E+00	mg/kg	1.6E-06	mg/kg-day	NA	---	NA	3.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.01
			Ingestion Total								2E-06					0.1
			PCB Dioxin-like Congener TEQ Ingestion		3.93E-05	mg/kg	2.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-07	4.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.007
			Dermal	Total PCBs	1.95E+01	mg/kg	6.7E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.08
				Mercury	8.96E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-06					0.08
			PCB Dioxin-like Congener TEQ Dermal		3.93E-05	mg/kg	1.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	3.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.005
		C3S-EU1 Total									4E-06					0.2
		Surface Soil at C3S-EU2	Ingestion	Total PCBs	2.36E+01	mg/kg	1.2E-06	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	2.9E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
				Mercury	3.90E+00	mg/kg	6.8E-07	mg/kg-day	NA	---	NA	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.005
			Ingestion Total								2E-06					0.1
			PCB Dioxin-like Congener TEQ Ingestion		1.07E-04	mg/kg	5.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-07	1.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.02
			Dermal	Total PCBs	2.36E+01	mg/kg	8.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	1.9E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
				Mercury	3.90E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-06					0.1
			PCB Dioxin-like Congener TEQ Dermal		1.07E-04	mg/kg	3.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-07	8.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.01
		C3S-EU2 Total									5E-06					0.3

TABLE J-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU2	Ingestion	Total PCBs	4.61E+01	mg/kg	7.8E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	8E-08	5.5E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
			Ingestion Total								8E-08					0.03
			PCB Dioxin-like Congener TEQ Ingestion		9.32E-05	mg/kg	1.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	1.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	4.61E+01	mg/kg	1.3E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-07	9.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.05
			Dermal Total								1E-07					0.05
			PCB Dioxin-like Congener TEQ Dermal		9.32E-05	mg/kg	2.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	1.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
		C1-EU2 Total									3E-07					0.08
		Surface Soil at C2N-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	2.8E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-08	1.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	1.33E+00	mg/kg	7.5E-09	mg/kg-day	NA	---	NA	5.3E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								3E-08					0.01
			PCB Dioxin-like Congener TEQ Ingestion		3.29E-05	mg/kg	5.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-09	3.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0006
			Dermal	Total PCBs	1.63E+01	mg/kg	4.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-08	3.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	1.33E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								5E-08					0.02
			PCB Dioxin-like Congener TEQ Dermal		3.29E-05	mg/kg	9.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	6.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0009
		C2N-EU1 Total									1E-07					0.03
		Surface Soil at C3N-EU1	Ingestion	Total PCBs	2.32E+01	mg/kg	3.9E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-08	2.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	3.32E+00	mg/kg	1.9E-08	mg/kg-day	NA	---	NA	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0004
			Ingestion Total								4E-08					0.01
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-05	mg/kg	7.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	4.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0007
			Dermal	Total PCBs	2.32E+01	mg/kg	6.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	7E-08	4.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	3.32E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								7E-08					0.02
			PCB Dioxin-like Congener TEQ Dermal		4.14E-05	mg/kg	1.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	8.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
		C3N-EU1 Total									2E-07					0.05
		Surface Soil at C3N-EU2	Ingestion	Total PCBs	3.69E+01	mg/kg	6.2E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	6E-08	4.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	4.62E+00	mg/kg	2.6E-08	mg/kg-day	NA	---	NA	1.8E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0006
			Ingestion Total								6E-08					0.02
			PCB Dioxin-like Congener TEQ Ingestion		9.70E-05	mg/kg	1.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	1.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	3.69E+01	mg/kg	1.1E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-07	7.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
				Mercury	4.62E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-07					0.04
			PCB Dioxin-like Congener TEQ Dermal		9.70E-05	mg/kg	2.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-08	2.0E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
		C3N-EU2 Total									3E-07					0.08

TABLE J-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4N-EU1	Ingestion	Total PCBs	8.12E+00	mg/kg	1.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	9.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.005
				Mercury	2.28E+00	mg/kg	1.3E-08	mg/kg-day	NA	---	NA	9.0E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0003
			Ingestion Total								1E-08					0.005
			PCB Dioxin-like Congener TEQ Ingestion		1.84E-05	mg/kg	3.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	2.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
			Dermal	Total PCBs	8.12E+00	mg/kg	2.3E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.008
				Mercury	2.28E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.008
			PCB Dioxin-like Congener TEQ Dermal		1.84E-05	mg/kg	5.3E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-09	3.7E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
		C4N-EU1 Total									6E-08					0.02
		Surface Soil at C4N-EU2	Ingestion	Total PCBs	8.50E+00	mg/kg	1.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	1.0E-07	mg/kg-day	2.0E-05	mg/kg-day	0.005
				Mercury	2.74E+00	mg/kg	1.5E-08	mg/kg-day	NA	---	NA	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0004
			Ingestion Total								1E-08					0.005
			PCB Dioxin-like Congener TEQ Ingestion		1.79E-05	mg/kg	3.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	2.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
			Dermal	Total PCBs	8.50E+00	mg/kg	2.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-08	1.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.009
				Mercury	2.74E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.009
			PCB Dioxin-like Congener TEQ Dermal		1.79E-05	mg/kg	5.2E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-09	3.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
		C4N-EU2 Total									6E-08					0.02
		Surface Soil at C4S-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	2.8E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-08	1.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	3.47E+00	mg/kg	2.0E-08	mg/kg-day	NA	---	NA	1.4E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0005
			Ingestion Total								3E-08					0.01
			PCB Dioxin-like Congener TEQ Ingestion		3.98E-05	mg/kg	6.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	4.7E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0007
			Dermal	Total PCBs	1.63E+01	mg/kg	4.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-08	3.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	3.47E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								5E-08					0.02
			PCB Dioxin-like Congener TEQ Dermal		3.98E-05	mg/kg	1.1E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	8.0E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
		C4S-EU1 Total									1E-07					0.03
		Surface Soil at C4S-EU2	Ingestion	Total PCBs	2.51E+00	mg/kg	4.3E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-09	3.0E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	1.27E+00	mg/kg	7.2E-09	mg/kg-day	NA	---	NA	5.0E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								4E-09					0.002
			PCB Dioxin-like Congener TEQ Ingestion		5.12E-06	mg/kg	8.7E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	6.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00009
			Dermal	Total PCBs	2.51E+00	mg/kg	7.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	7E-09	5.1E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	1.27E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								7E-09					0.003
			PCB Dioxin-like Congener TEQ Dermal		5.12E-06	mg/kg	1.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	1.0E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0001
		C4S-EU2 Total									2E-08					0.005

TABLE J-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4S-EU3	Ingestion	Total PCBs	5.50E+00	mg/kg	9.3E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	9E-09	6.5E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	1.69E+00	mg/kg	9.5E-09	mg/kg-day	NA	---	NA	6.7E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								9E-09					0.003
			PCB Dioxin-like Congener TEQ Ingestion		1.11E-05	mg/kg	1.9E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	1.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	5.50E+00	mg/kg	1.6E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-08	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	1.69E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.006
			PCB Dioxin-like Congener TEQ Dermal		1.11E-05	mg/kg	3.2E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	2.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
		C4S-EU3 Total									4E-08					0.01
		Surface Soil at C5N-EU1	Ingestion	Total PCBs	6.05E+00	mg/kg	1.0E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	7.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.004
				Mercury	1.51E+00	mg/kg	8.5E-09	mg/kg-day	NA	---	NA	6.0E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								1E-08					0.004
			PCB Dioxin-like Congener TEQ Ingestion		1.22E-05	mg/kg	2.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-09	1.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	6.05E+00	mg/kg	1.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	1.51E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.006
			PCB Dioxin-like Congener TEQ Dermal		1.22E-05	mg/kg	3.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-09	2.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
		C5N-EU1 Total									4E-08					0.01
		Surface Soil at C5S-EU1	Ingestion	Total PCBs	1.33E+00	mg/kg	2.3E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0008
				Mercury	8.86E-01	mg/kg	5.0E-09	mg/kg-day	NA	---	NA	3.5E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								2E-09					0.0009
			PCB Dioxin-like Congener TEQ Ingestion		2.63E-06	mg/kg	4.5E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-10	3.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00004
			Dermal	Total PCBs	1.33E+00	mg/kg	3.8E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-09	2.7E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	8.86E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-09					0.001
			PCB Dioxin-like Congener TEQ Dermal		2.63E-06	mg/kg	7.6E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	5.3E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00008
		C5S-EU1 Total									9E-09					0.003
		Surface Soil at C6N-EU1	Ingestion	Total PCBs	2.14E+00	mg/kg	3.6E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-09	2.5E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	1.41E+00	mg/kg	8.0E-09	mg/kg-day	NA	---	NA	5.6E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								4E-09					0.001
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-06	mg/kg	7.0E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-10	4.9E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00007
			Dermal	Total PCBs	2.14E+00	mg/kg	6.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	6E-09	4.3E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	1.41E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								6E-09					0.002
			PCB Dioxin-like Congener TEQ Dermal		4.14E-06	mg/kg	1.2E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	8.3E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
		C6N-EU1 Total									1E-08					0.004

TABLE J-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C6S-EU1	Ingestion	Total PCBs	2.88E+00	mg/kg	4.9E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-09	3.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	2.95E+00	mg/kg	1.7E-08	mg/kg-day	NA	---	NA	1.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0004
			Ingestion Total								5E-09					0.002
			PCB Dioxin-like Congener TEQ Ingestion		5.84E-06	mg/kg	9.9E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	6.9E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
			Dermal	Total PCBs	2.88E+00	mg/kg	8.3E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	8E-09	5.8E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	2.95E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								8E-09					0.003
			PCB Dioxin-like Congener TEQ Dermal		5.84E-06	mg/kg	1.7E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	1.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C6S-EU1 Total									2E-08					0.006
		Surface Soil at C7S-EU1	Ingestion	Total PCBs	1.32E+00	mg/kg	2.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0008
				Mercury	6.77E-01	mg/kg	3.8E-09	mg/kg-day	NA	---	NA	2.7E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00009
			Ingestion Total								2E-09					0.0009
			PCB Dioxin-like Congener TEQ Ingestion		2.61E-06	mg/kg	4.4E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-10	3.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00004
			Dermal	Total PCBs	1.32E+00	mg/kg	3.8E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-09	2.7E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	6.77E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-09					0.001
			PCB Dioxin-like Congener TEQ Dermal		2.61E-06	mg/kg	7.5E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	5.3E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00008
		C7S-EU1 Total									9E-09					0.003
		Surface Soil at C8N-EU1	Ingestion	Total PCBs	3.09E+00	mg/kg	5.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-09	3.7E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	1.57E+00	mg/kg	8.9E-09	mg/kg-day	NA	---	NA	6.2E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								5E-09					0.002
			PCB Dioxin-like Congener TEQ Ingestion		7.22E-06	mg/kg	1.2E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	8.6E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
			Dermal	Total PCBs	3.09E+00	mg/kg	8.9E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	9E-09	6.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	1.57E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								9E-09					0.003
			PCB Dioxin-like Congener TEQ Dermal		7.22E-06	mg/kg	2.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-09	1.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C8N-EU1 Total									2E-08					0.007

TABLE J-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU2	Ingestion	Total PCBs	4.61E+01	mg/kg	7.5E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	8E-08	3.5E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
			Ingestion Total								8E-08					0.02
			PCB Dioxin-like Congener TEQ Ingestion		9.32E-05	mg/kg	1.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	7.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
			Dermal	Total PCBs	4.61E+01	mg/kg	4.0E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-08	1.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.009
			Dermal Total								4E-08					0.009
			PCB Dioxin-like Congener TEQ Dermal		9.32E-05	mg/kg	8.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	3.8E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
		C1-EU2 Total									1E-07					0.03
		Surface Soil at C2N-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	2.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	1.33E+00	mg/kg	7.3E-09	mg/kg-day	NA	---	NA	3.4E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								3E-08					0.006
			PCB Dioxin-like Congener TEQ Ingestion		3.29E-05	mg/kg	5.4E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-09	2.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	1.63E+01	mg/kg	1.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	6.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	1.33E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-08					0.003
			PCB Dioxin-like Congener TEQ Dermal		3.29E-05	mg/kg	2.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	1.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C2N-EU1 Total									5E-08					0.01
		Surface Soil at C3N-EU1	Ingestion	Total PCBs	2.32E+01	mg/kg	3.8E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-08	1.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.009
				Mercury	3.32E+00	mg/kg	1.8E-08	mg/kg-day	NA	---	NA	8.4E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0003
			Ingestion Total								4E-08					0.009
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-05	mg/kg	6.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	3.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
			Dermal	Total PCBs	2.32E+01	mg/kg	2.0E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-08	9.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.005
				Mercury	3.32E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.005
			PCB Dioxin-like Congener TEQ Dermal		4.14E-05	mg/kg	3.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-09	1.7E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C3N-EU1 Total									7E-08					0.01
		Surface Soil at C3N-EU2	Ingestion	Total PCBs	3.69E+01	mg/kg	6.0E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	6E-08	2.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	4.62E+00	mg/kg	2.5E-08	mg/kg-day	NA	---	NA	1.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0004
			Ingestion Total								6E-08					0.01
			PCB Dioxin-like Congener TEQ Ingestion		9.70E-05	mg/kg	1.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	7.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
			Dermal	Total PCBs	3.69E+01	mg/kg	3.2E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-08	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	0.007
				Mercury	4.62E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-08					0.007
			PCB Dioxin-like Congener TEQ Dermal		9.70E-05	mg/kg	8.4E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	3.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0006
		C3N-EU2 Total									1E-07					0.02

TABLE J-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4N-EU1	Ingestion	Total PCBs	8.12E+00	mg/kg	1.3E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	6.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	2.28E+00	mg/kg	1.2E-08	mg/kg-day	NA	---	NA	5.8E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								1E-08					0.003
			PCB Dioxin-like Congener TEQ Ingestion		1.84E-05	mg/kg	3.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	1.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	8.12E+00	mg/kg	7.0E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	7E-09	3.3E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	2.28E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								7E-09					0.002
			PCB Dioxin-like Congener TEQ Dermal		1.84E-05	mg/kg	1.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	7.4E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
		C4N-EU1 Total									3E-08					0.005
		Surface Soil at C4N-EU2	Ingestion	Total PCBs	8.50E+00	mg/kg	1.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	6.5E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	2.74E+00	mg/kg	1.5E-08	mg/kg-day	NA	---	NA	7.0E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								1E-08					0.003
			PCB Dioxin-like Congener TEQ Ingestion		1.79E-05	mg/kg	2.9E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	1.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	8.50E+00	mg/kg	7.3E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	7E-09	3.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	2.74E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								7E-09					0.002
			PCB Dioxin-like Congener TEQ Dermal		1.79E-05	mg/kg	1.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	7.2E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
		C4N-EU2 Total									3E-08					0.005
		Surface Soil at C4S-EU1	Ingestion	Total PCBs	1.63E+01	mg/kg	2.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	3.47E+00	mg/kg	1.9E-08	mg/kg-day	NA	---	NA	8.8E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0003
			Ingestion Total								3E-08					0.007
			PCB Dioxin-like Congener TEQ Ingestion		3.98E-05	mg/kg	6.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-09	3.0E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	1.63E+01	mg/kg	1.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	6.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	3.47E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-08					0.003
			PCB Dioxin-like Congener TEQ Dermal		3.98E-05	mg/kg	3.4E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	1.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C4S-EU1 Total									5E-08					0.01
		Surface Soil at C4S-EU2	Ingestion	Total PCBs	2.51E+00	mg/kg	4.1E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-09	1.9E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	1.27E+00	mg/kg	6.9E-09	mg/kg-day	NA	---	NA	3.2E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								4E-09					0.001
			PCB Dioxin-like Congener TEQ Ingestion		5.12E-06	mg/kg	8.4E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	3.9E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00006
			Dermal	Total PCBs	2.51E+00	mg/kg	2.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.0E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0005
				Mercury	1.27E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-09					0.0005
			PCB Dioxin-like Congener TEQ Dermal		5.12E-06	mg/kg	4.4E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-10	2.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00003
		C4S-EU2 Total									8E-09					0.002

TABLE J-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C4S-EU3	Ingestion	Total PCBs	5.50E+00	mg/kg	9.0E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	9E-09	4.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	1.69E+00	mg/kg	9.2E-09	mg/kg-day	NA	---	NA	4.3E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								9E-09					0.002
			PCB Dioxin-like Congener TEQ Ingestion		1.11E-05	mg/kg	1.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	8.4E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
			Dermal	Total PCBs	5.50E+00	mg/kg	4.7E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-09	2.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	1.69E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								5E-09					0.001
			PCB Dioxin-like Congener TEQ Dermal		1.11E-05	mg/kg	9.5E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	4.5E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00006
		C4S-EU3 Total									2E-08					0.004
		Surface Soil at C5N-EU1	Ingestion	Total PCBs	6.05E+00	mg/kg	9.9E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-08	4.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	1.51E+00	mg/kg	8.2E-09	mg/kg-day	NA	---	NA	3.8E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								1E-08					0.002
			PCB Dioxin-like Congener TEQ Ingestion		1.22E-05	mg/kg	2.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-09	9.3E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
			Dermal	Total PCBs	6.05E+00	mg/kg	5.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-09	2.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	1.51E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								5E-09					0.001
			PCB Dioxin-like Congener TEQ Dermal		1.22E-05	mg/kg	1.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	4.9E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00007
		C5N-EU1 Total									2E-08					0.004
		Surface Soil at C5S-EU1	Ingestion	Total PCBs	1.33E+00	mg/kg	2.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.0E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0005
				Mercury	8.86E-01	mg/kg	4.8E-09	mg/kg-day	NA	---	NA	2.3E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00008
			Ingestion Total								2E-09					0.0006
			PCB Dioxin-like Congener TEQ Ingestion		2.63E-06	mg/kg	4.3E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-10	2.0E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00003
			Dermal	Total PCBs	1.33E+00	mg/kg	1.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-09	5.4E-09	mg/kg-day	2.0E-05	mg/kg-day	0.0003
				Mercury	8.86E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-09					0.0003
			PCB Dioxin-like Congener TEQ Dermal		2.63E-06	mg/kg	2.3E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-10	1.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00002
		C5S-EU1 Total									4E-09					0.0009
		Surface Soil at C6N-EU1	Ingestion	Total PCBs	2.14E+00	mg/kg	3.5E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-09	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0008
				Mercury	1.41E+00	mg/kg	7.7E-09	mg/kg-day	NA	---	NA	3.6E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								3E-09					0.0009
			PCB Dioxin-like Congener TEQ Ingestion		4.14E-06	mg/kg	6.8E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-10	3.2E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00005
			Dermal	Total PCBs	2.14E+00	mg/kg	1.8E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	8.6E-09	mg/kg-day	2.0E-05	mg/kg-day	0.0004
				Mercury	1.41E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-09					0.0004
			PCB Dioxin-like Congener TEQ Dermal		4.14E-06	mg/kg	3.6E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-10	1.7E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00002
		C6N-EU1 Total									7E-09					0.001

TABLE J-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C6S-EU1	Ingestion	Total PCBs	2.88E+00	mg/kg	4.7E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-09	2.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	2.95E+00	mg/kg	1.6E-08	mg/kg-day	NA	---	NA	7.5E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								5E-09					0.001
			PCB Dioxin-like Congener TEQ Ingestion		5.84E-06	mg/kg	9.5E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	4.5E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00006
			Dermal	Total PCBs	2.88E+00	mg/kg	2.5E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0006
				Mercury	2.95E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-09					0.0006
			PCB Dioxin-like Congener TEQ Dermal		5.84E-06	mg/kg	5.0E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-10	2.4E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00003
		C6S-EU1 Total									9E-09					0.002
		Surface Soil at C7S-EU1	Ingestion	Total PCBs	1.32E+00	mg/kg	2.2E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.0E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0005
				Mercury	6.77E-01	mg/kg	3.7E-09	mg/kg-day	NA	---	NA	1.7E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00006
			Ingestion Total								2E-09					0.0006
			PCB Dioxin-like Congener TEQ Ingestion		2.61E-06	mg/kg	4.3E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-10	2.0E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00003
			Dermal	Total PCBs	1.32E+00	mg/kg	1.1E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-09	5.3E-09	mg/kg-day	2.0E-05	mg/kg-day	0.0003
				Mercury	6.77E-01	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-09					0.0003
			PCB Dioxin-like Congener TEQ Dermal		2.61E-06	mg/kg	2.3E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-10	1.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00002
		C7S-EU1 Total									4E-09					0.0009
		Surface Soil at C8N-EU1	Ingestion	Total PCBs	3.09E+00	mg/kg	5.1E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-09	2.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	1.57E+00	mg/kg	8.5E-09	mg/kg-day	NA	---	NA	4.0E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								5E-09					0.001
			PCB Dioxin-like Congener TEQ Ingestion		7.22E-06	mg/kg	1.2E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	5.5E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00008
			Dermal	Total PCBs	3.09E+00	mg/kg	2.7E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-09	1.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0006
				Mercury	1.57E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-09					0.0006
			PCB Dioxin-like Congener TEQ Dermal		7.22E-06	mg/kg	6.2E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-10	2.9E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00004
		C8N-EU1 Total									1E-08					0.002

TABLE J-8
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU1	Ingestion	Total PCBs	1.05E+01	mg/kg	1.3E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-07	1.5E-06	mg/kg-day	6.0E-05	mg/kg-day	0.02
			Ingestion Total								1E-07					0.02
			PCB Dioxin-like Congener TEQ Ingestion		2.11E-05	mg/kg	2.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	3.0E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
			Dermal	Total PCBs	1.05E+01	mg/kg	5.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	6E-08	6.7E-07	mg/kg-day	6.0E-05	mg/kg-day	0.01
			Dermal Total								6E-08					0.01
			PCB Dioxin-like Congener TEQ Dermal		2.11E-05	mg/kg	1.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	1.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C1-EU1 Total									2E-07					0.04
		Surface Soil at C3S-EU1	Ingestion	Total PCBs	1.95E+01	mg/kg	2.4E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-07	2.8E-06	mg/kg-day	6.0E-05	mg/kg-day	0.05
				Mercury	8.96E+00	mg/kg	3.6E-07	mg/kg-day	NA	---	NA	4.3E-06	mg/kg-day	3.0E-03	mg/kg-day	0.001
			Ingestion Total								2E-07					0.05
			PCB Dioxin-like Congener TEQ Ingestion		3.93E-05	mg/kg	4.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-08	5.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.008
			Dermal	Total PCBs	1.95E+01	mg/kg	1.1E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-07	1.2E-06	mg/kg-day	6.0E-05	mg/kg-day	0.02
				Mercury	8.96E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
			Dermal Total								1E-07					0.02
			PCB Dioxin-like Congener TEQ Dermal		3.93E-05	mg/kg	2.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	2.5E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
		C3S-EU1 Total									4E-07					0.08
		Surface Soil at C3S-EU2	Ingestion	Total PCBs	2.36E+01	mg/kg	2.9E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-07	3.4E-06	mg/kg-day	6.0E-05	mg/kg-day	0.06
				Mercury	3.90E+00	mg/kg	1.6E-07	mg/kg-day	NA	---	NA	1.8E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0006
			Ingestion Total								3E-07					0.06
			PCB Dioxin-like Congener TEQ Ingestion		1.07E-04	mg/kg	1.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	1.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.02
			Dermal	Total PCBs	2.36E+01	mg/kg	1.3E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-07	1.5E-06	mg/kg-day	6.0E-05	mg/kg-day	0.03
				Mercury	3.90E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
			Dermal Total								1E-07					0.03
			PCB Dioxin-like Congener TEQ Dermal		1.07E-04	mg/kg	5.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-08	6.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.01
		C3S-EU2 Total									7E-07					0.1

TABLE J-9
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU1	Ingestion	Total PCBs	1.05E+01	mg/kg	3.6E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-08	2.5E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
			Ingestion Total								4E-08					0.01
			PCB Dioxin-like Congener TEQ Ingestion		2.11E-05	mg/kg	7.2E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	5.0E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0007
			Dermal	Total PCBs	1.05E+01	mg/kg	6.0E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	6E-08	4.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
			Dermal Total								6E-08					0.02
			PCB Dioxin-like Congener TEQ Dermal		2.11E-05	mg/kg	1.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	8.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
		C1-EU1 Total									1E-07					0.04
		Surface Soil at C3S-EU1	Ingestion	Total PCBs	1.95E+01	mg/kg	6.6E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	7E-08	4.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	8.96E+00	mg/kg	1.0E-07	mg/kg-day	NA	---	NA	7.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								7E-08					0.03
			PCB Dioxin-like Congener TEQ Ingestion		3.93E-05	mg/kg	1.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	9.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
			Dermal	Total PCBs	1.95E+01	mg/kg	1.1E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-07	7.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
				Mercury	8.96E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-07					0.04
			PCB Dioxin-like Congener TEQ Dermal		3.93E-05	mg/kg	2.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-08	1.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C3S-EU1 Total									2E-07					0.07
		Surface Soil at C3S-EU2	Ingestion	Total PCBs	2.36E+01	mg/kg	8.0E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	8E-08	5.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	3.90E+00	mg/kg	4.4E-08	mg/kg-day	NA	---	NA	3.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								8E-08					0.03
			PCB Dioxin-like Congener TEQ Ingestion		1.07E-04	mg/kg	3.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-08	2.5E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
			Dermal	Total PCBs	2.36E+01	mg/kg	1.4E-07	mg/kg-day	1.0E+00	(mg/kg-day)-1	1E-07	9.5E-07	mg/kg-day	2.0E-05	mg/kg-day	0.05
				Mercury	3.90E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-07					0.05
			PCB Dioxin-like Congener TEQ Dermal		1.07E-04	mg/kg	6.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-08	4.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.006
		C3S-EU2 Total									3E-07					0.09

TABLE J-10
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at C1-EU1	Ingestion	Total PCBs	1.05E+01	mg/kg	3.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.008
			Ingestion Total								3E-08					0.008
			PCB Dioxin-like Congener TEQ Ingestion		2.11E-05	mg/kg	6.9E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	3.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
			Dermal	Total PCBs	1.05E+01	mg/kg	1.8E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-08	8.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.004
			Dermal Total								2E-08					0.004
			PCB Dioxin-like Congener TEQ Dermal		2.11E-05	mg/kg	3.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-09	1.7E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		C1-EU1 Total									7E-08					0.01
		Surface Soil at C3S-EU1	Ingestion	Total PCBs	1.95E+01	mg/kg	6.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	6E-08	3.0E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	8.96E+00	mg/kg	9.8E-08	mg/kg-day	NA	---	NA	4.6E-07	mg/kg-day	3.0E-04	mg/kg-day	0.002
			Ingestion Total								6E-08					0.02
			PCB Dioxin-like Congener TEQ Ingestion		3.93E-05	mg/kg	1.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	6.0E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0009
			Dermal	Total PCBs	1.95E+01	mg/kg	3.4E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.008
				Mercury	8.96E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-08					0.008
			PCB Dioxin-like Congener TEQ Dermal		3.93E-05	mg/kg	6.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	9E-09	3.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
		C3S-EU1 Total									1E-07					0.03
		Surface Soil at C3S-EU2	Ingestion	Total PCBs	2.36E+01	mg/kg	7.7E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	8E-08	3.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	3.90E+00	mg/kg	4.2E-08	mg/kg-day	NA	---	NA	2.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0007
			Ingestion Total								8E-08					0.02
			PCB Dioxin-like Congener TEQ Ingestion		1.07E-04	mg/kg	3.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-08	1.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	2.36E+01	mg/kg	4.1E-08	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-08	1.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	3.90E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-08					0.01
			PCB Dioxin-like Congener TEQ Dermal		1.07E-04	mg/kg	1.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	8.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
		C3S-EU2 Total									2E-07					0.03

TABLE J-11
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Total Soil	Total Soil at C1-EU2	Ingestion	Total PCBs	6.69E+01	mg/kg	3.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-08	2.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.1
			Ingestion Total								7E-08					0.1
			PCB Dioxin-like Congener TEQ Ingestion		1.35E-04	mg/kg	7.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	5.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.007
			Dermal	Total PCBs	6.69E+01	mg/kg	2.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-08	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.08
			Dermal Total								4E-08					0.08
			PCB Dioxin-like Congener TEQ Dermal		1.35E-04	mg/kg	4.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-09	3.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
		C1-EU2 Total									1E-07					0.2
		Total Soil at C2N-EU1	Ingestion	Total PCBs	3.62E+01	mg/kg	2.0E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-08	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.07
				Mercury	1.33E+00	mg/kg	2.5E-09	mg/kg-day	NA	---	NA	1.7E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0006
			Ingestion Total								4E-08					0.07
			PCB Dioxin-like Congener TEQ Ingestion		7.31E-05	mg/kg	4.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-09	2.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
			Dermal	Total PCBs	3.62E+01	mg/kg	1.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-08	8.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
				Mercury	1.33E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.04
			PCB Dioxin-like Congener TEQ Dermal		7.31E-05	mg/kg	2.4E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-09	1.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		C2N-EU1 Total									7E-08					0.1
		Total Soil at C4N-EU1	Ingestion	Total PCBs	6.08E+00	mg/kg	3.4E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-09	2.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	2.12E+00	mg/kg	3.9E-09	mg/kg-day	NA	---	NA	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0009
			Ingestion Total								7E-09					0.01
			PCB Dioxin-like Congener TEQ Ingestion		1.33E-05	mg/kg	7.4E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	5.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0007
			Dermal	Total PCBs	6.08E+00	mg/kg	2.0E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-09	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.007
				Mercury	2.12E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-09					0.007
			PCB Dioxin-like Congener TEQ Dermal		1.33E-05	mg/kg	4.4E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-10	3.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
		C4N-EU1 Total									1E-08					0.02
		Total Soil at C5N-EU1	Ingestion	Total PCBs	1.19E+01	mg/kg	6.6E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-08	4.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.02
				Mercury	1.51E+00	mg/kg	2.8E-09	mg/kg-day	NA	---	NA	1.9E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0006
			Ingestion Total								1E-08					0.02
			PCB Dioxin-like Congener TEQ Ingestion		2.39E-05	mg/kg	1.3E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	9.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.001
			Dermal	Total PCBs	1.19E+01	mg/kg	3.9E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	8E-09	2.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
				Mercury	1.51E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								8E-09					0.01
			PCB Dioxin-like Congener TEQ Dermal		2.39E-05	mg/kg	8.0E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	5.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0008
		C5N-EU1 Total									2E-08					0.04

TABLE J-12
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Total Soil	Total Soil at C1-EU2	Ingestion	Total PCBs	6.69E+01	mg/kg	2.8E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-09	2.0E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
			Ingestion Total								3E-09					0.01
			PCB Dioxin-like Congener TEQ Ingestion		1.35E-04	mg/kg	5.7E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-10	4.0E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0006
			Dermal	Total PCBs	6.69E+01	mg/kg	3.7E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	4E-09	2.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.01
			Dermal Total								4E-09					0.01
			PCB Dioxin-like Congener TEQ Dermal		1.35E-04	mg/kg	7.5E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	5.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0007
		C1-EU2 Total									8E-09					0.02
		Total Soil at C2N-EU1	Ingestion	Total PCBs	3.62E+01	mg/kg	1.5E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.005
				Mercury	1.33E+00	mg/kg	1.9E-10	mg/kg-day	NA	---	NA	1.3E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00004
			Ingestion Total								2E-09					0.005
			PCB Dioxin-like Congener TEQ Ingestion		7.31E-05	mg/kg	3.1E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-10	2.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
			Dermal	Total PCBs	3.62E+01	mg/kg	2.0E-09	mg/kg-day	1.0E+00	(mg/kg-day)-1	2E-09	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.007
				Mercury	1.33E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-09					0.007
			PCB Dioxin-like Congener TEQ Dermal		7.31E-05	mg/kg	4.0E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	5E-10	2.8E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
		C2N-EU1 Total									4E-09					0.01
		Total Soil at C4N-EU1	Ingestion	Total PCBs	6.08E+00	mg/kg	2.6E-10	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-10	1.8E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0009
				Mercury	2.12E+00	mg/kg	3.0E-10	mg/kg-day	NA	---	NA	2.1E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00007
			Ingestion Total								3E-10					0.001
			PCB Dioxin-like Congener TEQ Ingestion		1.33E-05	mg/kg	5.6E-16	mg/kg-day	1.3E+05	(mg/kg-day)-1	7E-11	3.9E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00006
			Dermal	Total PCBs	6.08E+00	mg/kg	3.4E-10	mg/kg-day	1.0E+00	(mg/kg-day)-1	3E-10	2.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	2.12E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-10					0.001
			PCB Dioxin-like Congener TEQ Dermal		1.33E-05	mg/kg	7.4E-16	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-10	5.2E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00007
		C4N-EU1 Total									8E-10					0.002
		Total Soil at C5N-EU1	Ingestion	Total PCBs	1.19E+01	mg/kg	5.0E-10	mg/kg-day	1.0E+00	(mg/kg-day)-1	5E-10	3.5E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	1.51E+00	mg/kg	2.1E-10	mg/kg-day	NA	---	NA	1.5E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00005
			Ingestion Total								5E-10					0.002
			PCB Dioxin-like Congener TEQ Ingestion		2.39E-05	mg/kg	1.0E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-10	7.0E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
			Dermal	Total PCBs	1.19E+01	mg/kg	6.6E-10	mg/kg-day	1.0E+00	(mg/kg-day)-1	7E-10	4.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	1.51E+00	mg/kg	NA	mg/kg-day	NA	---	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
			Dermal Total								7E-10					0.002
			PCB Dioxin-like Congener TEQ Dermal		2.39E-05	mg/kg	1.3E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-10	9.3E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
		C5N-EU1 Total									1E-09					0.004

TABLE J-13
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Farmer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at Ag-EU1	Ingestion	Total PCBs	4.25E+01	mg/kg	5.7E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	1.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.05
				Mercury	1.34E+01	mg/kg	6.0E-07	mg/kg-day	NA	---	NA	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.004
			Ingestion Total								1E-06					0.05
			PCB Dioxin-like Congener TEQ Ingestion		8.59E-05	mg/kg	1.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	2.0E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
			Dermal	Total PCBs	4.25E+01	mg/kg	7.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-06	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	0.07
				Mercury	1.34E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-06					0.07
			PCB Dioxin-like Congener TEQ Dermal		8.59E-05	mg/kg	1.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-07	2.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.004
		Ag-EU1 Total									3E-06					0.1
		Surface Soil at Ag-EU2	Ingestion	Total PCBs	2.23E+01	mg/kg	3.0E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-07	5.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	3.15E+00	mg/kg	1.4E-07	mg/kg-day	NA	---	NA	2.5E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0008
			Ingestion Total								6E-07					0.03
			PCB Dioxin-like Congener TEQ Ingestion		4.50E-05	mg/kg	6.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-08	1.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	2.23E+01	mg/kg	4.0E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	8E-07	6.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	3.15E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								8E-07					0.03
			PCB Dioxin-like Congener TEQ Dermal		4.50E-05	mg/kg	8.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	1.4E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
		Ag-EU2 Total									2E-06					0.07
		Surface Soil at Ag-EU3	Ingestion	Total PCBs	2.87E+01	mg/kg	3.8E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	8E-07	6.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.03
				Mercury	4.97E+00	mg/kg	2.2E-07	mg/kg-day	NA	---	NA	3.9E-07	mg/kg-day	3.0E-04	mg/kg-day	0.001
			Ingestion Total								8E-07					0.03
			PCB Dioxin-like Congener TEQ Ingestion		5.79E-05	mg/kg	7.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	1.4E-12	mg/kg-day	7.0E-10	mg/kg-day	0.002
			Dermal	Total PCBs	2.87E+01	mg/kg	5.1E-07	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-06	8.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.04
				Mercury	4.97E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-06					0.04
			PCB Dioxin-like Congener TEQ Dermal		5.79E-05	mg/kg	1.0E-12	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-07	1.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.003
		Ag-EU3 Total									2E-06					0.08
		Surface Soil at Ag-EU4	Ingestion	Total PCBs	1.74E+00	mg/kg	2.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	5E-08	4.1E-08	mg/kg-day	2.0E-05	mg/kg-day	0.002
				Mercury	1.66E+00	mg/kg	7.4E-08	mg/kg-day	NA	---	NA	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0004
			Ingestion Total								5E-08					0.002
			PCB Dioxin-like Congener TEQ Ingestion		3.45E-06	mg/kg	4.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-09	8.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.0001
			Dermal	Total PCBs	1.74E+00	mg/kg	3.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-08	5.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	1.66E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								6E-08					0.003
			PCB Dioxin-like Congener TEQ Dermal		3.45E-06	mg/kg	6.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-09	1.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		Ag-EU4 Total									1E-07					0.005

TABLE J-13
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Farmer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		Surface Soil at Ag-EU5	Ingestion	Total PCBs	5.29E+00	mg/kg	7.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	1.65E+00	mg/kg	7.4E-08	mg/kg-day	NA	---	NA	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0004
			Ingestion Total								1E-07					0.007
			PCB Dioxin-like Congener TEQ Ingestion		1.06E-05	mg/kg	1.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	2.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	5.29E+00	mg/kg	9.4E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.008
				Mercury	1.65E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-07					0.008
			PCB Dioxin-like Congener TEQ Dermal		1.06E-05	mg/kg	1.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	3.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
		Ag-EU5 Total									4E-07					0.02
		Surface Soil at Ag-EU6	Ingestion	Total PCBs	4.08E-02	mg/kg	5.5E-10	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-09	9.6E-10	mg/kg-day	2.0E-05	mg/kg-day	0.00005
				Mercury	2.14E-01	mg/kg	9.6E-09	mg/kg-day	NA	---	NA	1.7E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00006
			Ingestion Total								1E-09					0.0001
			PCB Dioxin-like Congener TEQ Ingestion		1.94E-08	mg/kg	2.6E-16	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-11	4.6E-16	mg/kg-day	7.0E-10	mg/kg-day	0.0000007
			Dermal	Total PCBs	4.08E-02	mg/kg	7.2E-10	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-09	1.3E-09	mg/kg-day	2.0E-05	mg/kg-day	0.00006
				Mercury	2.14E-01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-09					0.00006
			PCB Dioxin-like Congener TEQ Dermal		1.94E-08	mg/kg	3.4E-16	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-11	6.0E-16	mg/kg-day	7.0E-10	mg/kg-day	0.0000009
		Ag-EU6 Total									3E-09					0.0002
		Surface Soil at Ag-EU7	Ingestion	Total PCBs	7.97E-01	mg/kg	1.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-08	1.9E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0009
				Mercury	5.25E-01	mg/kg	2.3E-08	mg/kg-day	NA	---	NA	4.1E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								2E-08					0.001
			PCB Dioxin-like Congener TEQ Ingestion		1.55E-06	mg/kg	2.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-09	3.6E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00005
			Dermal	Total PCBs	7.97E-01	mg/kg	1.4E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-08	2.5E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	5.25E-01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								3E-08					0.001
			PCB Dioxin-like Congener TEQ Dermal		1.55E-06	mg/kg	2.7E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-09	4.8E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00007
		Ag-EU7 Total									6E-08					0.002
		Surface Soil at Ag-EU8	Ingestion	Total PCBs	4.44E-01	mg/kg	6.0E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-08	1.0E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0005
				Mercury	1.20E+00	mg/kg	5.4E-08	mg/kg-day	NA	---	NA	9.4E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0003
			Ingestion Total								1E-08					0.0008
			PCB Dioxin-like Congener TEQ Ingestion		8.34E-07	mg/kg	1.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	2.0E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00003
			Dermal	Total PCBs	4.44E-01	mg/kg	7.9E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-08	1.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0007
				Mercury	1.20E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.0007
			PCB Dioxin-like Congener TEQ Dermal		8.34E-07	mg/kg	1.5E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	2.6E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00004
		Ag-EU8 Total									3E-08					0.002

TABLE J-14
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Farmer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Surface Soil at Ag-EU1	Ingestion	Total PCBs	4.25E+01	mg/kg	7.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	1.34E+01	mg/kg	7.5E-08	mg/kg-day	NA	---	NA	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0004
			Ingestion Total								1E-07					0.007
			PCB Dioxin-like Congener TEQ Ingestion		8.59E-05	mg/kg	1.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	2.5E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0004
			Dermal	Total PCBs	4.25E+01	mg/kg	9.4E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-07	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.008
				Mercury	1.34E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-07					0.008
			PCB Dioxin-like Congener TEQ Dermal		8.59E-05	mg/kg	1.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	3.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0005
		Ag-EU1 Total									4E-07					0.02
		Surface Soil at Ag-EU2	Ingestion	Total PCBs	2.23E+01	mg/kg	3.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	7E-08	6.5E-08	mg/kg-day	2.0E-05	mg/kg-day	0.003
				Mercury	3.15E+00	mg/kg	1.8E-08	mg/kg-day	NA	---	NA	3.1E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0001
			Ingestion Total								7E-08					0.003
			PCB Dioxin-like Congener TEQ Ingestion		4.50E-05	mg/kg	7.6E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	1.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	2.23E+01	mg/kg	4.9E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	8.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.004
				Mercury	3.15E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-07					0.004
			PCB Dioxin-like Congener TEQ Dermal		4.50E-05	mg/kg	1.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	1.7E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
		Ag-EU2 Total									2E-07					0.008
		Surface Soil at Ag-EU3	Ingestion	Total PCBs	2.87E+01	mg/kg	4.8E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	8.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.004
				Mercury	4.97E+00	mg/kg	2.8E-08	mg/kg-day	NA	---	NA	4.9E-08	mg/kg-day	3.0E-04	mg/kg-day	0.0002
			Ingestion Total								1E-07					0.004
			PCB Dioxin-like Congener TEQ Ingestion		5.79E-05	mg/kg	9.7E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-08	1.7E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0002
			Dermal	Total PCBs	2.87E+01	mg/kg	6.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-07	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.006
				Mercury	4.97E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								1E-07					0.006
			PCB Dioxin-like Congener TEQ Dermal		5.79E-05	mg/kg	1.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-08	2.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0003
		Ag-EU3 Total									3E-07					0.01
		Surface Soil at Ag-EU4	Ingestion	Total PCBs	1.74E+00	mg/kg	2.9E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	6E-09	5.1E-09	mg/kg-day	2.0E-05	mg/kg-day	0.0003
				Mercury	1.66E+00	mg/kg	9.3E-09	mg/kg-day	NA	---	NA	1.6E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00005
			Ingestion Total								6E-09					0.0003
			PCB Dioxin-like Congener TEQ Ingestion		3.45E-06	mg/kg	5.8E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	8E-10	1.0E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00001
			Dermal	Total PCBs	1.74E+00	mg/kg	3.8E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	8E-09	6.7E-09	mg/kg-day	2.0E-05	mg/kg-day	0.0003
				Mercury	1.66E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								8E-09					0.0003
			PCB Dioxin-like Congener TEQ Dermal		3.45E-06	mg/kg	7.6E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	1E-09	1.3E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00002
		Ag-EU4 Total									2E-08					0.0007

TABLE J-14
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU4

Scenario Timeframe: Current/Future
Receptor Population: Farmer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
		Surface Soil at Ag-EU5	Ingestion	Total PCBs	5.29E+00	mg/kg	8.9E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-08	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0008
				Mercury	1.65E+00	mg/kg	9.2E-09	mg/kg-day	NA	---	NA	1.6E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00005
			Ingestion Total								2E-08					0.0008
			PCB Dioxin-like Congener TEQ Ingestion		1.06E-05	mg/kg	1.8E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-09	3.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00004
			Dermal	Total PCBs	5.29E+00	mg/kg	1.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-08	2.0E-08	mg/kg-day	2.0E-05	mg/kg-day	0.001
				Mercury	1.65E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-08					0.001
			PCB Dioxin-like Congener TEQ Dermal		1.06E-05	mg/kg	2.4E-14	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-09	4.1E-14	mg/kg-day	7.0E-10	mg/kg-day	0.00006
		Ag-EU5 Total									5E-08					0.002
		Surface Soil at Ag-EU6	Ingestion	Total PCBs	4.08E-02	mg/kg	6.8E-11	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-10	1.2E-10	mg/kg-day	2.0E-05	mg/kg-day	0.000006
				Mercury	2.14E-01	mg/kg	1.2E-09	mg/kg-day	NA	---	NA	2.1E-09	mg/kg-day	3.0E-04	mg/kg-day	0.000007
			Ingestion Total								1E-10					0.00001
			PCB Dioxin-like Congener TEQ Ingestion		1.94E-08	mg/kg	3.3E-17	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-12	5.7E-17	mg/kg-day	7.0E-10	mg/kg-day	0.00000008
			Dermal	Total PCBs	4.08E-02	mg/kg	9.0E-11	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-10	1.6E-10	mg/kg-day	2.0E-05	mg/kg-day	0.000008
				Mercury	2.14E-01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-10					0.000008
			PCB Dioxin-like Congener TEQ Dermal		1.94E-08	mg/kg	4.3E-17	mg/kg-day	1.3E+05	(mg/kg-day)-1	6E-12	7.5E-17	mg/kg-day	7.0E-10	mg/kg-day	0.0000001
		Ag-EU6 Total									3E-10					0.00002
		Surface Soil at Ag-EU7	Ingestion	Total PCBs	7.97E-01	mg/kg	1.3E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	3E-09	2.3E-09	mg/kg-day	2.0E-05	mg/kg-day	0.0001
				Mercury	5.25E-01	mg/kg	2.9E-09	mg/kg-day	NA	---	NA	5.1E-09	mg/kg-day	3.0E-04	mg/kg-day	0.00002
			Ingestion Total								3E-09					0.0001
			PCB Dioxin-like Congener TEQ Ingestion		1.55E-06	mg/kg	2.6E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	3E-10	4.5E-15	mg/kg-day	7.0E-10	mg/kg-day	0.000006
			Dermal	Total PCBs	7.97E-01	mg/kg	1.8E-09	mg/kg-day	2.0E+00	(mg/kg-day)-1	4E-09	3.1E-09	mg/kg-day	2.0E-05	mg/kg-day	0.0002
				Mercury	5.25E-01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								4E-09					0.0002
			PCB Dioxin-like Congener TEQ Dermal		1.55E-06	mg/kg	3.4E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	4E-10	6.0E-15	mg/kg-day	7.0E-10	mg/kg-day	0.000009
		Ag-EU7 Total									7E-09					0.0003
		Surface Soil at Ag-EU8	Ingestion	Total PCBs	4.44E-01	mg/kg	7.4E-10	mg/kg-day	2.0E+00	(mg/kg-day)-1	1E-09	1.3E-09	mg/kg-day	2.0E-05	mg/kg-day	0.00007
				Mercury	1.20E+00	mg/kg	6.7E-09	mg/kg-day	NA	---	NA	1.2E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00004
			Ingestion Total								1E-09					0.0001
			PCB Dioxin-like Congener TEQ Ingestion		8.34E-07	mg/kg	1.4E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-10	2.4E-15	mg/kg-day	7.0E-10	mg/kg-day	0.000003
			Dermal	Total PCBs	4.44E-01	mg/kg	9.8E-10	mg/kg-day	2.0E+00	(mg/kg-day)-1	2E-09	1.7E-09	mg/kg-day	2.0E-05	mg/kg-day	0.00009
				Mercury	1.20E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
			Dermal Total								2E-09					0.00009
			PCB Dioxin-like Congener TEQ Dermal		8.34E-07	mg/kg	1.8E-15	mg/kg-day	1.3E+05	(mg/kg-day)-1	2E-10	3.2E-15	mg/kg-day	7.0E-10	mg/kg-day	0.000005
		Ag-EU8 Total									4E-09					0.0002

APPENDIX K

DIRECT CONTACT RAGS 9 AND 10 TABLES

TABLE K-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	1E-06	---	5E-06	7E-06	Eyes, Immune system	0.2	---	0.9	1
		C1-EU2 Total		1E-06	---	5E-06	7E-06		0.2	---	0.9	1
		C1-EU2 PCB Dioxin-like Congener TEQ		2E-07	---	7E-07	9E-07	Developmental	0.01	---	0.05	0.07
		Surface Soil at C2N-EU1	Total PCBs	4E-07	---	2E-06	2E-06	Eyes, Immune system	0.08	---	0.3	0.4
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C2N-EU1 Total		4E-07	---	2E-06	2E-06		0.08	---	0.3	0.4
		C2N-EU1 PCB Dioxin-like Congener TEQ		6E-08	---	2E-07	3E-07	Developmental	0.004	---	0.02	0.02
		Surface Soil at C3N-EU1	Total PCBs	6E-07	---	3E-06	3E-06	Eyes, Immune system	0.1	---	0.5	0.6
			Mercury	---	---	---	---	Immune system	0.004	---	---	0.004
		C3N-EU1 Total		6E-07	---	3E-06	3E-06		0.1	---	0.5	0.6
		C3N-EU1 PCB Dioxin-like Congener TEQ		7E-08	---	3E-07	4E-07	Developmental	0.006	---	0.02	0.03
		Surface Soil at C3N-EU2	Total PCBs	1E-06	---	4E-06	5E-06	Eyes, Immune system	0.2	---	0.7	0.9
			Mercury	---	---	---	---	Immune system	0.005	---	---	0.005
		C3N-EU2 Total		1E-06	---	4E-06	5E-06		0.2	---	0.7	0.9
		C3N-EU2 PCB Dioxin-like Congener TEQ		2E-07	---	7E-07	9E-07	Developmental	0.01	---	0.06	0.07
		Surface Soil at C4N-EU1	Total PCBs	2E-07	---	9E-07	1E-06	Eyes, Immune system	0.04	---	0.2	0.2
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C4N-EU1 Total		2E-07	---	9E-07	1E-06		0.04	---	0.2	0.2
		C4N-EU1 PCB Dioxin-like Congener TEQ		3E-08	---	1E-07	2E-07	Developmental	0.002	---	0.01	0.01
		Surface Soil at C4N-EU2	Total PCBs	2E-07	---	1E-06	1E-06	Eyes, Immune system	0.04	---	0.2	0.2
			Mercury	---	---	---	---	Immune system	0.003	---	---	0.003
		C4N-EU2 Total		2E-07	---	1E-06	1E-06		0.04	---	0.2	0.2
		C4N-EU2 PCB Dioxin-like Congener TEQ		3E-08	---	1E-07	2E-07	Developmental	0.002	---	0.01	0.01
		Surface Soil at C4S-EU1	Total PCBs	4E-07	---	2E-06	2E-06	Eyes, Immune system	0.08	---	0.3	0.4
			Mercury	---	---	---	---	Immune system	0.004	---	---	0.004
		C4S-EU1 Total		4E-07	---	2E-06	2E-06		0.08	---	0.3	0.4
		C4S-EU1 PCB Dioxin-like Congener TEQ		7E-08	---	3E-07	4E-07	Developmental	0.005	---	0.02	0.03
		Surface Soil at C4S-EU2	Total PCBs	7E-08	---	3E-07	4E-07	Eyes, Immune system	0.01	---	0.05	0.06
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C4S-EU2 Total		7E-08	---	3E-07	4E-07		0.01	---	0.05	0.06
		C4S-EU2 PCB Dioxin-like Congener TEQ		9E-09	---	4E-08	5E-08	Developmental	0.0007	---	0.003	0.004
		Surface Soil at C4S-EU3	Total PCBs	1E-07	---	6E-07	8E-07	Eyes, Immune system	0.03	---	0.1	0.1
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C4S-EU3 Total		1E-07	---	6E-07	8E-07		0.03	---	0.1	0.1
		C4S-EU3 PCB Dioxin-like Congener TEQ		2E-08	---	8E-08	1E-07	Developmental	0.002	---	0.006	0.008
		Surface Soil at C5N-EU1	Total PCBs	2E-07	---	7E-07	9E-07	Eyes, Immune system	0.03	---	0.1	0.2
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C5N-EU1 Total		2E-07	---	7E-07	9E-07		0.03	---	0.1	0.2
		C5N-EU1 PCB Dioxin-like Congener TEQ		2E-08	---	9E-08	1E-07	Developmental	0.002	---	0.007	0.009

TABLE K-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C5S-EU1	Total PCBs	4E-08	---	2E-07	2E-07	Eyes, Immune system	0.006	---	0.03	0.03
			Mercury	---	---	---	---	Immune system	0.0009	---	---	0.0009
		C5S-EU1 Total		4E-08	---	2E-07	2E-07		0.007	---	0.03	0.03
		C5S-EU1 PCB Dioxin-like Congener TEQ		5E-09	---	2E-08	2E-08	Developmental	0.0004	---	0.002	0.002
		Surface Soil at C6N-EU1	Total PCBs	6E-08	---	2E-07	3E-07	Eyes, Immune system	0.01	---	0.04	0.05
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C6N-EU1 Total		6E-08	---	2E-07	3E-07		0.01	---	0.04	0.05
		C6N-EU1 PCB Dioxin-like Congener TEQ		7E-09	---	3E-08	4E-08	Developmental	0.0006	---	0.002	0.003
		Surface Soil at C6S-EU1	Total PCBs	8E-08	---	3E-07	4E-07	Eyes, Immune system	0.01	---	0.06	0.07
			Mercury	---	---	---	---	Immune system	0.003	---	---	0.003
		C6S-EU1 Total		8E-08	---	3E-07	4E-07		0.02	---	0.06	0.07
		C6S-EU1 PCB Dioxin-like Congener TEQ		1E-08	---	4E-08	5E-08	Developmental	0.0008	---	0.003	0.004
		Surface Soil at C7S-EU1	Total PCBs	4E-08	---	2E-07	2E-07	Eyes, Immune system	0.006	---	0.03	0.03
			Mercury	---	---	---	---	Immune system	0.0007	---	---	0.0007
		C7S-EU1 Total		4E-08	---	2E-07	2E-07		0.007	---	0.03	0.03
		C7S-EU1 PCB Dioxin-like Congener TEQ		5E-09	---	2E-08	2E-08	Developmental	0.0004	---	0.002	0.002
		Surface Soil at C8N-EU1	Total PCBs	8E-08	---	4E-07	4E-07	Eyes, Immune system	0.01	---	0.06	0.08
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C8N-EU1 Total		8E-08	---	4E-07	4E-07		0.02	---	0.06	0.08
		C8N-EU1 PCB Dioxin-like Congener TEQ		1E-08	---	5E-08	7E-08	Developmental	0.0010	---	0.004	0.005

TABLE K-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	2E-06	---	2E-06	4E-06	Eyes, Immune system	0.1	---	0.09	0.2
		C1-EU2 Total		2E-06	---	2E-06	4E-06		0.1	---	0.09	0.2
		C1-EU2 PCB Dioxin-like Congener TEQ		3E-07	---	2E-07	5E-07	Developmental	0.008	---	0.005	0.01
		Surface Soil at C2N-EU1	Total PCBs	9E-07	---	6E-07	1E-06	Eyes, Immune system	0.05	---	0.03	0.08
			Mercury	---	---	---	---	Immune system	0.0009	---	---	0.0009
		C2N-EU1 Total		9E-07	---	6E-07	1E-06		0.05	---	0.03	0.08
		C2N-EU1 PCB Dioxin-like Congener TEQ		1E-07	---	7E-08	2E-07	Developmental	0.003	---	0.002	0.005
		Surface Soil at C3N-EU1	Total PCBs	1E-06	---	8E-07	2E-06	Eyes, Immune system	0.07	---	0.05	0.1
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C3N-EU1 Total		1E-06	---	8E-07	2E-06		0.07	---	0.05	0.1
		C3N-EU1 PCB Dioxin-like Congener TEQ		1E-07	---	9E-08	2E-07	Developmental	0.004	---	0.002	0.006
		Surface Soil at C3N-EU2	Total PCBs	2E-06	---	1E-06	3E-06	Eyes, Immune system	0.1	---	0.07	0.2
			Mercury	---	---	---	---	Immune system	0.003	---	---	0.003
		C3N-EU2 Total		2E-06	---	1E-06	3E-06		0.1	---	0.07	0.2
		C3N-EU2 PCB Dioxin-like Congener TEQ		3E-07	---	2E-07	5E-07	Developmental	0.008	---	0.006	0.01
		Surface Soil at C4N-EU1	Total PCBs	4E-07	---	3E-07	7E-07	Eyes, Immune system	0.02	---	0.02	0.04
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C4N-EU1 Total		4E-07	---	3E-07	7E-07		0.03	---	0.02	0.04
		C4N-EU1 PCB Dioxin-like Congener TEQ		6E-08	---	4E-08	1E-07	Developmental	0.002	---	0.001	0.003
		Surface Soil at C4N-EU2	Total PCBs	4E-07	---	3E-07	7E-07	Eyes, Immune system	0.03	---	0.02	0.04
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C4N-EU2 Total		4E-07	---	3E-07	7E-07		0.03	---	0.02	0.04
		C4N-EU2 PCB Dioxin-like Congener TEQ		6E-08	---	4E-08	1E-07	Developmental	0.002	---	0.001	0.003
		Surface Soil at C4S-EU1	Total PCBs	9E-07	---	6E-07	1E-06	Eyes, Immune system	0.05	---	0.03	0.08
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C4S-EU1 Total		9E-07	---	6E-07	1E-06		0.05	---	0.03	0.09
		C4S-EU1 PCB Dioxin-like Congener TEQ		1E-07	---	9E-08	2E-07	Developmental	0.003	---	0.002	0.006
		Surface Soil at C4S-EU2	Total PCBs	1E-07	---	9E-08	2E-07	Eyes, Immune system	0.008	---	0.005	0.01
			Mercury	---	---	---	---	Immune system	0.0009	---	---	0.0009
		C4S-EU2 Total		1E-07	---	9E-08	2E-07		0.009	---	0.005	0.01
		C4S-EU2 PCB Dioxin-like Congener TEQ		2E-08	---	1E-08	3E-08	Developmental	0.0004	---	0.0003	0.0007
		Surface Soil at C4S-EU3	Total PCBs	3E-07	---	2E-07	5E-07	Eyes, Immune system	0.02	---	0.01	0.03
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C4S-EU3 Total		3E-07	---	2E-07	5E-07		0.02	---	0.01	0.03
		C4S-EU3 PCB Dioxin-like Congener TEQ		4E-08	---	2E-08	6E-08	Developmental	0.0010	---	0.0006	0.002
		Surface Soil at C5N-EU1	Total PCBs	3E-07	---	2E-07	5E-07	Eyes, Immune system	0.02	---	0.01	0.03
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C5N-EU1 Total		3E-07	---	2E-07	5E-07		0.02	---	0.01	0.03
		C5N-EU1 PCB Dioxin-like Congener TEQ		4E-08	---	3E-08	7E-08	Developmental	0.001	---	0.0007	0.002

TABLE K-2

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C5S-EU1	Total PCBs	7E-08	---	5E-08	1E-07	Eyes, Immune system	0.004	---	0.003	0.007
			Mercury	---	---	---	---	Immune system	0.0006	---	---	0.0006
		C5S-EU1 Total		7E-08	---	5E-08	1E-07		0.005	---	0.003	0.007
		C5S-EU1 PCB Dioxin-like Congener TEQ		9E-09	---	6E-09	1E-08	Developmental	0.0002	---	0.0002	0.0004
		Surface Soil at C6N-EU1	Total PCBs	1E-07	---	7E-08	2E-07	Eyes, Immune system	0.007	---	0.004	0.01
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C6N-EU1 Total		1E-07	---	7E-08	2E-07		0.007	---	0.004	0.01
		C6N-EU1 PCB Dioxin-like Congener TEQ		1E-08	---	9E-09	2E-08	Developmental	0.0004	---	0.0002	0.0006
		Surface Soil at C6S-EU1	Total PCBs	2E-07	---	1E-07	3E-07	Eyes, Immune system	0.009	---	0.006	0.01
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C6S-EU1 Total		2E-07	---	1E-07	3E-07		0.01	---	0.006	0.02
		C6S-EU1 PCB Dioxin-like Congener TEQ		2E-08	---	1E-08	3E-08	Developmental	0.0005	---	0.0003	0.0008
		Surface Soil at C7S-EU1	Total PCBs	7E-08	---	5E-08	1E-07	Eyes, Immune system	0.004	---	0.003	0.007
			Mercury	---	---	---	---	Immune system	0.0005	---	---	0.0005
		C7S-EU1 Total		7E-08	---	5E-08	1E-07		0.004	---	0.003	0.007
		C7S-EU1 PCB Dioxin-like Congener TEQ		9E-09	---	6E-09	1E-08	Developmental	0.0002	---	0.0002	0.0004
		Surface Soil at C8N-EU1	Total PCBs	2E-07	---	1E-07	3E-07	Eyes, Immune system	0.009	---	0.006	0.02
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C8N-EU1 Total		2E-07	---	1E-07	3E-07		0.01	---	0.006	0.02
		C8N-EU1 PCB Dioxin-like Congener TEQ		2E-08	---	2E-08	4E-08	Developmental	0.0006	---	0.0004	0.001

TABLE K-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	2E-06	---	2E-06	4E-06	Eyes, Immune system	0.2	---	0.2	0.4
		C1-EU1 Total		2E-06	---	2E-06	4E-06		0.2	---	0.2	0.4
		C1-EU1 PCB Dioxin-like Congener TEQ		3E-07	---	2E-07	5E-07	Developmental	0.03	---	0.03	0.06
		Surface Soil at C3S-EU1	Total PCBs	4E-06	---	3E-06	7E-06	Eyes, Immune system	0.4	---	0.3	0.7
			Mercury	---	---	---	---	Immune system	0.01	---	---	0.01
		C3S-EU1 Total		4E-06	---	3E-06	7E-06		0.4	---	0.3	0.7
		C3S-EU1 PCB Dioxin-like Congener TEQ		5E-07	---	4E-07	9E-07	Developmental	0.06	---	0.05	0.1
		Surface Soil at C3S-EU2	Total PCBs	5E-06	---	4E-06	8E-06	Eyes, Immune system	0.4	---	0.4	0.8
			Mercury	---	---	---	---	Immune system	0.005	---	---	0.005
		C3S-EU2 Total		5E-06	---	4E-06	8E-06		0.5	---	0.4	0.8
		C3S-EU2 PCB Dioxin-like Congener TEQ		1E-06	---	1E-06	3E-06	Developmental	0.2	---	0.1	0.3

TABLE K-4

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	6E-07	---	2E-06	3E-06	Eyes, Immune system	0.1	---	0.4	0.5
		C1-EU1 Total		6E-07	---	2E-06	3E-06		0.1	---	0.4	0.5
		C1-EU1 PCB Dioxin-like Congener TEQ		7E-08	---	3E-07	4E-07	Developmental	0.006	---	0.02	0.03
		Surface Soil at C3S-EU1	Total PCBs	1E-06	---	4E-06	6E-06	Eyes, Immune system	0.2	---	0.8	1
			Mercury	---	---	---	---	Immune system	0.02	---	---	0.02
		C3S-EU1 Total		1E-06	---	4E-06	6E-06		0.2	---	0.8	1
		C3S-EU1 PCB Dioxin-like Congener TEQ		1E-07	---	6E-07	7E-07	Developmental	0.01	---	0.05	0.06
		Surface Soil at C3S-EU2	Total PCBs	1E-06	---	5E-06	7E-06	Eyes, Immune system	0.2	---	1	1
			Mercury	---	---	---	---	Immune system	0.008	---	---	0.008
		C3S-EU2 Total		1E-06	---	5E-06	7E-06		0.2	---	1	1
		C3S-EU2 PCB Dioxin-like Congener TEQ		4E-07	---	2E-06	2E-06	Developmental	0.03	---	0.1	0.2

TABLE K-5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	1E-06	---	7E-07	2E-06	Eyes, Immune system	0.06	---	0.04	0.1
		C1-EU1 Total		1E-06	---	7E-07	2E-06		0.06	---	0.04	0.1
		C1-EU1 PCB Dioxin-like Congener TEQ		1E-07	---	9E-08	2E-07	Developmental	0.004	---	0.002	0.006
		Surface Soil at C3S-EU1	Total PCBs	2E-06	---	1E-06	3E-06	Eyes, Immune system	0.1	---	0.08	0.2
			Mercury	---	---	---	---	Immune system	0.01	---	---	0.01
		C3S-EU1 Total		2E-06	---	1E-06	3E-06		0.1	---	0.08	0.2
		C3S-EU1 PCB Dioxin-like Congener TEQ		3E-07	---	2E-07	4E-07	Developmental	0.007	---	0.005	0.01
		Surface Soil at C3S-EU2	Total PCBs	2E-06	---	2E-06	4E-06	Eyes, Immune system	0.1	---	0.1	0.2
			Mercury	---	---	---	---	Immune system	0.005	---	---	0.005
		C3S-EU2 Total		2E-06	---	2E-06	4E-06		0.1	---	0.10	0.2
		C3S-EU2 PCB Dioxin-like Congener TEQ		7E-07	---	5E-07	1E-06	Developmental	0.02	---	0.01	0.03

TABLE K-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	8E-08	---	1E-07	2E-07	Eyes, Immune system	0.03	---	0.05	0.07
		C1-EU2 Total		8E-08	---	1E-07	2E-07		0.03	---	0.05	0.07
		C1-EU2 PCB Dioxin-like Congener TEQ		2E-08	---	3E-08	6E-08	Developmental	0.002	---	0.003	0.004
		Surface Soil at C2N-EU1	Total PCBs	3E-08	---	5E-08	7E-08	Eyes, Immune system	0.010	---	0.02	0.03
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C2N-EU1 Total		3E-08	---	5E-08	7E-08		0.01	---	0.02	0.03
		C2N-EU1 PCB Dioxin-like Congener TEQ		7E-09	---	1E-08	2E-08	Developmental	0.0006	---	0.0009	0.002
		Surface Soil at C3N-EU1	Total PCBs	4E-08	---	7E-08	1E-07	Eyes, Immune system	0.01	---	0.02	0.04
			Mercury	---	---	---	---	Immune system	0.0004	---	---	0.0004
		C3N-EU1 Total		4E-08	---	7E-08	1E-07		0.01	---	0.02	0.04
		C3N-EU1 PCB Dioxin-like Congener TEQ		9E-09	---	2E-08	2E-08	Developmental	0.0007	---	0.001	0.002
		Surface Soil at C3N-EU2	Total PCBs	6E-08	---	1E-07	2E-07	Eyes, Immune system	0.02	---	0.04	0.06
			Mercury	---	---	---	---	Immune system	0.0006	---	---	0.0006
		C3N-EU2 Total		6E-08	---	1E-07	2E-07		0.02	---	0.04	0.06
		C3N-EU2 PCB Dioxin-like Congener TEQ		2E-08	---	4E-08	6E-08	Developmental	0.002	---	0.003	0.004
		Surface Soil at C4N-EU1	Total PCBs	1E-08	---	2E-08	4E-08	Eyes, Immune system	0.005	---	0.008	0.01
			Mercury	---	---	---	---	Immune system	0.0003	---	---	0.0003
		C4N-EU1 Total		1E-08	---	2E-08	4E-08		0.005	---	0.008	0.01
		C4N-EU1 PCB Dioxin-like Congener TEQ		4E-09	---	7E-09	1E-08	Developmental	0.0003	---	0.0005	0.0008
		Surface Soil at C4N-EU2	Total PCBs	1E-08	---	2E-08	4E-08	Eyes, Immune system	0.005	---	0.009	0.01
			Mercury	---	---	---	---	Immune system	0.0004	---	---	0.0004
		C4N-EU2 Total		1E-08	---	2E-08	4E-08		0.005	---	0.009	0.01
		C4N-EU2 PCB Dioxin-like Congener TEQ		4E-09	---	7E-09	1E-08	Developmental	0.0003	---	0.0005	0.0008
		Surface Soil at C4S-EU1	Total PCBs	3E-08	---	5E-08	7E-08	Eyes, Immune system	0.01	---	0.02	0.03
			Mercury	---	---	---	---	Immune system	0.0005	---	---	0.0005
		C4S-EU1 Total		3E-08	---	5E-08	7E-08		0.01	---	0.02	0.03
		C4S-EU1 PCB Dioxin-like Congener TEQ		9E-09	---	1E-08	2E-08	Developmental	0.0007	---	0.001	0.002
		Surface Soil at C4S-EU2	Total PCBs	4E-09	---	7E-09	1E-08	Eyes, Immune system	0.001	---	0.003	0.004
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C4S-EU2 Total		4E-09	---	7E-09	1E-08		0.002	---	0.003	0.004
		C4S-EU2 PCB Dioxin-like Congener TEQ		1E-09	---	2E-09	3E-09	Developmental	0.00009	---	0.0001	0.0002
		Surface Soil at C4S-EU3	Total PCBs	9E-09	---	2E-08	3E-08	Eyes, Immune system	0.003	---	0.006	0.009
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C4S-EU3 Total		9E-09	---	2E-08	3E-08		0.003	---	0.006	0.009
		C4S-EU3 PCB Dioxin-like Congener TEQ		2E-09	---	4E-09	7E-09	Developmental	0.0002	---	0.0003	0.0005
		Surface Soil at C5N-EU1	Total PCBs	1E-08	---	2E-08	3E-08	Eyes, Immune system	0.004	---	0.006	0.01
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C5N-EU1 Total		1E-08	---	2E-08	3E-08		0.004	---	0.006	0.01
		C5N-EU1 PCB Dioxin-like Congener TEQ		3E-09	---	5E-09	7E-09	Developmental	0.0002	---	0.0003	0.0006

TABLE K-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C5S-EU1	Total PCBs	2E-09	---	4E-09	6E-09	Eyes, Immune system	0.0008	---	0.001	0.002
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		C5S-EU1 Total		2E-09	---	4E-09	6E-09		0.0009	---	0.001	0.002
		C5S-EU1 PCB Dioxin-like Congener TEQ		6E-10	---	1E-09	2E-09	Developmental	0.00004	---	0.00008	0.0001
		Surface Soil at C6N-EU1	Total PCBs	4E-09	---	6E-09	1E-08	Eyes, Immune system	0.001	---	0.002	0.003
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C6N-EU1 Total		4E-09	---	6E-09	1E-08		0.001	---	0.002	0.004
		C6N-EU1 PCB Dioxin-like Congener TEQ		9E-10	---	2E-09	2E-09	Developmental	0.00007	---	0.0001	0.0002
		Surface Soil at C6S-EU1	Total PCBs	5E-09	---	8E-09	1E-08	Eyes, Immune system	0.002	---	0.003	0.005
			Mercury	---	---	---	---	Immune system	0.0004	---	---	0.0004
		C6S-EU1 Total		5E-09	---	8E-09	1E-08		0.002	---	0.003	0.005
		C6S-EU1 PCB Dioxin-like Congener TEQ		1E-09	---	2E-09	3E-09	Developmental	0.0001	---	0.0002	0.0003
		Surface Soil at C7S-EU1	Total PCBs	2E-09	---	4E-09	6E-09	Eyes, Immune system	0.0008	---	0.001	0.002
			Mercury	---	---	---	---	Immune system	0.00009	---	---	0.00009
		C7S-EU1 Total		2E-09	---	4E-09	6E-09		0.0009	---	0.001	0.002
		C7S-EU1 PCB Dioxin-like Congener TEQ		6E-10	---	1E-09	2E-09	Developmental	0.00004	---	0.00008	0.0001
		Surface Soil at C8N-EU1	Total PCBs	5E-09	---	9E-09	1E-08	Eyes, Immune system	0.002	---	0.003	0.005
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C8N-EU1 Total		5E-09	---	9E-09	1E-08		0.002	---	0.003	0.005
		C8N-EU1 PCB Dioxin-like Congener TEQ		2E-09	---	3E-09	4E-09	Developmental	0.0001	---	0.0002	0.0003

TABLE K-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	8E-08	---	4E-08	1E-07	Eyes, Immune system	0.02	---	0.009	0.03
		C1-EU2 Total		8E-08	---	4E-08	1E-07		0.02	---	0.009	0.03
		C1-EU2 PCB Dioxin-like Congener TEQ		2E-08	---	1E-08	3E-08	Developmental	0.001	---	0.0005	0.002
		Surface Soil at C2N-EU1	Total PCBs	3E-08	---	1E-08	4E-08	Eyes, Immune system	0.006	---	0.003	0.01
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		C2N-EU1 Total		3E-08	---	1E-08	4E-08		0.006	---	0.003	0.01
		C2N-EU1 PCB Dioxin-like Congener TEQ		7E-09	---	4E-09	1E-08	Developmental	0.0004	---	0.0002	0.0005
		Surface Soil at C3N-EU1	Total PCBs	4E-08	---	2E-08	6E-08	Eyes, Immune system	0.009	---	0.005	0.01
			Mercury	---	---	---	---	Immune system	0.0003	---	---	0.0003
		C3N-EU1 Total		4E-08	---	2E-08	6E-08		0.009	---	0.005	0.01
		C3N-EU1 PCB Dioxin-like Congener TEQ		9E-09	---	5E-09	1E-08	Developmental	0.0005	---	0.0002	0.0007
		Surface Soil at C3N-EU2	Total PCBs	6E-08	---	3E-08	9E-08	Eyes, Immune system	0.01	---	0.007	0.02
			Mercury	---	---	---	---	Immune system	0.0004	---	---	0.0004
		C3N-EU2 Total		6E-08	---	3E-08	9E-08		0.01	---	0.007	0.02
		C3N-EU2 PCB Dioxin-like Congener TEQ		2E-08	---	1E-08	3E-08	Developmental	0.001	---	0.0006	0.002
		Surface Soil at C4N-EU1	Total PCBs	1E-08	---	7E-09	2E-08	Eyes, Immune system	0.003	---	0.002	0.005
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C4N-EU1 Total		1E-08	---	7E-09	2E-08		0.003	---	0.002	0.005
		C4N-EU1 PCB Dioxin-like Congener TEQ		4E-09	---	2E-09	6E-09	Developmental	0.0002	---	0.0001	0.0003
		Surface Soil at C4N-EU2	Total PCBs	1E-08	---	7E-09	2E-08	Eyes, Immune system	0.003	---	0.002	0.005
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C4N-EU2 Total		1E-08	---	7E-09	2E-08		0.003	---	0.002	0.005
		C4N-EU2 PCB Dioxin-like Congener TEQ		4E-09	---	2E-09	6E-09	Developmental	0.0002	---	0.0001	0.0003
		Surface Soil at C4S-EU1	Total PCBs	3E-08	---	1E-08	4E-08	Eyes, Immune system	0.006	---	0.003	0.01
			Mercury	---	---	---	---	Immune system	0.0003	---	---	0.0003
		C4S-EU1 Total		3E-08	---	1E-08	4E-08		0.007	---	0.003	0.01
		C4S-EU1 PCB Dioxin-like Congener TEQ		8E-09	---	4E-09	1E-08	Developmental	0.0004	---	0.0002	0.0007
		Surface Soil at C4S-EU2	Total PCBs	4E-09	---	2E-09	6E-09	Eyes, Immune system	0.001	---	0.0005	0.001
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		C4S-EU2 Total		4E-09	---	2E-09	6E-09		0.001	---	0.0005	0.002
		C4S-EU2 PCB Dioxin-like Congener TEQ		1E-09	---	6E-10	2E-09	Developmental	0.00006	---	0.00003	0.00009
		Surface Soil at C4S-EU3	Total PCBs	9E-09	---	5E-09	1E-08	Eyes, Immune system	0.002	---	0.001	0.003
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		C4S-EU3 Total		9E-09	---	5E-09	1E-08		0.002	---	0.001	0.003
		C4S-EU3 PCB Dioxin-like Congener TEQ		2E-09	---	1E-09	4E-09	Developmental	0.0001	---	0.00006	0.0002
		Surface Soil at C5N-EU1	Total PCBs	1E-08	---	5E-09	2E-08	Eyes, Immune system	0.002	---	0.001	0.004
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		C5N-EU1 Total		1E-08	---	5E-09	2E-08		0.002	---	0.001	0.004
		C5N-EU1 PCB Dioxin-like Congener TEQ		3E-09	---	1E-09	4E-09	Developmental	0.0001	---	0.00007	0.0002

TABLE K-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C5S-EU1	Total PCBs	2E-09	---	1E-09	3E-09	Eyes, Immune system	0.0005	---	0.0003	0.0008
			Mercury	---	---	---	---	Immune system	0.00008	---	---	0.00008
		C5S-EU1 Total		2E-09	---	1E-09	3E-09		0.0006	---	0.0003	0.0009
		C5S-EU1 PCB Dioxin-like Congener TEQ		6E-10	---	3E-10	9E-10	Developmental	0.00003	---	0.00002	0.00004
		Surface Soil at C6N-EU1	Total PCBs	3E-09	---	2E-09	5E-09	Eyes, Immune system	0.0008	---	0.0004	0.001
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		C6N-EU1 Total		3E-09	---	2E-09	5E-09		0.0009	---	0.0004	0.001
		C6N-EU1 PCB Dioxin-like Congener TEQ		9E-10	---	5E-10	1E-09	Developmental	0.00005	---	0.00002	0.00007
		Surface Soil at C6S-EU1	Total PCBs	5E-09	---	2E-09	7E-09	Eyes, Immune system	0.001	---	0.0006	0.002
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		C6S-EU1 Total		5E-09	---	2E-09	7E-09		0.001	---	0.0006	0.002
		C6S-EU1 PCB Dioxin-like Congener TEQ		1E-09	---	7E-10	2E-09	Developmental	0.00006	---	0.00003	0.0001
		Surface Soil at C7S-EU1	Total PCBs	2E-09	---	1E-09	3E-09	Eyes, Immune system	0.0005	---	0.0003	0.0008
			Mercury	---	---	---	---	Immune system	0.00006	---	---	0.00006
		C7S-EU1 Total		2E-09	---	1E-09	3E-09		0.0006	---	0.0003	0.0008
		C7S-EU1 PCB Dioxin-like Congener TEQ		6E-10	---	3E-10	8E-10	Developmental	0.00003	---	0.00002	0.00004
		Surface Soil at C8N-EU1	Total PCBs	5E-09	---	3E-09	8E-09	Eyes, Immune system	0.001	---	0.0006	0.002
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		C8N-EU1 Total		5E-09	---	3E-09	8E-09		0.001	---	0.0006	0.002
		C8N-EU1 PCB Dioxin-like Congener TEQ		2E-09	---	8E-10	2E-09	Developmental	0.00008	---	0.00004	0.0001

TABLE K-8

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	1E-07	---	6E-08	2E-07	Eyes, Immune system	0.02	---	0.01	0.04
		C1-EU1 Total		1E-07	---	6E-08	2E-07		0.02	---	0.01	0.04
		C1-EU1 PCB Dioxin-like Congener TEQ		3E-08	---	2E-08	5E-08	Developmental	0.004	---	0.002	0.006
		Surface Soil at C3S-EU1	Total PCBs	2E-07	---	1E-07	3E-07	Eyes, Immune system	0.05	---	0.02	0.07
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C3S-EU1 Total		2E-07	---	1E-07	3E-07		0.05	---	0.02	0.07
		C3S-EU1 PCB Dioxin-like Congener TEQ		6E-08	---	3E-08	9E-08	Developmental	0.008	---	0.004	0.01
		Surface Soil at C3S-EU2	Total PCBs	3E-07	---	1E-07	4E-07	Eyes, Immune system	0.06	---	0.03	0.08
			Mercury	---	---	---	---	Immune system	0.0006	---	---	0.0006
		C3S-EU2 Total		3E-07	---	1E-07	4E-07		0.06	---	0.03	0.08
		C3S-EU2 PCB Dioxin-like Congener TEQ		2E-07	---	8E-08	2E-07	Developmental	0.02	---	0.01	0.03

TABLE K-9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	4E-08	---	6E-08	1E-07	Eyes, Immune system	0.01	---	0.02	0.03
		C1-EU1 Total		4E-08	---	6E-08	1E-07		0.01	---	0.02	0.03
		C1-EU1 PCB Dioxin-like Congener TEQ		9E-09	---	2E-08	3E-08	Developmental	0.0007	---	0.001	0.002
		Surface Soil at C3S-EU1	Total PCBs	7E-08	---	1E-07	2E-07	Eyes, Immune system	0.02	---	0.04	0.06
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C3S-EU1 Total		7E-08	---	1E-07	2E-07		0.03	---	0.04	0.06
		C3S-EU1 PCB Dioxin-like Congener TEQ		2E-08	---	3E-08	5E-08	Developmental	0.001	---	0.002	0.004
		Surface Soil at C3S-EU2	Total PCBs	8E-08	---	1E-07	2E-07	Eyes, Immune system	0.03	---	0.05	0.08
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		C3S-EU2 Total		8E-08	---	1E-07	2E-07		0.03	---	0.05	0.08
		C3S-EU2 PCB Dioxin-like Congener TEQ		5E-08	---	8E-08	1E-07	Developmental	0.004	---	0.006	0.01

TABLE K-10

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	3E-08	---	2E-08	5E-08	Eyes, Immune system	0.008	---	0.004	0.01
		C1-EU1 Total		3E-08	---	2E-08	5E-08		0.008	---	0.004	0.01
		C1-EU1 PCB Dioxin-like Congener TEQ		9E-09	---	5E-09	1E-08	Developmental	0.0005	---	0.0002	0.0007
		Surface Soil at C3S-EU1	Total PCBs	6E-08	---	3E-08	1E-07	Eyes, Immune system	0.01	---	0.008	0.02
			Mercury	---	---	---	---	Immune system	0.002	---	---	0.002
		C3S-EU1 Total		6E-08	---	3E-08	1E-07		0.02	---	0.008	0.02
		C3S-EU1 PCB Dioxin-like Congener TEQ		2E-08	---	9E-09	3E-08	Developmental	0.0009	---	0.0005	0.001
		Surface Soil at C3S-EU2	Total PCBs	8E-08	---	4E-08	1E-07	Eyes, Immune system	0.02	---	0.010	0.03
			Mercury	---	---	---	---	Immune system	0.0007	---	---	0.0007
		C3S-EU2 Total		8E-08	---	4E-08	1E-07		0.02	---	0.01	0.03
		C3S-EU2 PCB Dioxin-like Congener TEQ		5E-08	---	2E-08	7E-08	Developmental	0.002	---	0.001	0.004

TABLE K-11

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

ANNISTON PCB SITE

OU 4

Scenario Timeframe: Current/Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	7E-08	---	4E-08	1E-07	Eyes, Immune system	0.1	---	0.08	0.2
		C1-EU2 Total		7E-08	---	4E-08	1E-07		0.1	---	0.08	0.2
		C1-EU2 PCB Dioxin-like Congener TEQ		1E-08	---	6E-09	2E-08	Developmental	0.007	---	0.004	0.01
		Surface Soil at C2N-EU1	Total PCBs	4E-08	---	2E-08	6E-08	Eyes, Immune system	0.07	---	0.04	0.1
			Mercury	---	---	---	---	Immune system	0.0006	---	---	0.0006
		C2N-EU1 Total		4E-08	---	2E-08	6E-08		0.07	---	0.04	0.1
		C2N-EU1 PCB Dioxin-like Congener TEQ		5E-09	---	3E-09	8E-09	Developmental	0.004	---	0.002	0.006
		Surface Soil at C4N-EU1	Total PCBs	7E-09	---	4E-09	1E-08	Eyes, Immune system	0.01	---	0.007	0.02
			Mercury	---	---	---	---	Immune system	0.0009	---	---	0.0009
		C4N-EU1 Total		7E-09	---	4E-09	1E-08		0.01	---	0.007	0.02
		C4N-EU1 PCB Dioxin-like Congener TEQ		1E-09	---	6E-10	2E-09	Developmental	0.0007	---	0.0004	0.001
		Surface Soil at C5N-EU1	Total PCBs	1E-08	---	8E-09	2E-08	Eyes, Immune system	0.02	---	0.01	0.04
			Mercury	---	---	---	---	Immune system	0.0006	---	---	0.0006
		C5N-EU1 Total		1E-08	---	8E-09	2E-08		0.02	---	0.01	0.04
		C5N-EU1 PCB Dioxin-like Congener TEQ		2E-09	---	1E-09	3E-09	Developmental	0.001	---	0.0008	0.002

TABLE K-12

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

ANNISTON PCB SITE

OU 4

Scenario Timeframe: Current/Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	3E-09	---	4E-09	7E-09	Eyes, Immune system	0.01	---	0.01	0.02
		C1-EU2 Total		3E-09	---	4E-09	7E-09		0.01	---	0.01	0.02
		C1-EU2 PCB Dioxin-like Congener TEQ		7E-10	---	1E-09	2E-09	Developmental	0.0006	---	0.0007	0.001
		Surface Soil at C2N-EU1	Total PCBs	2E-09	---	2E-09	4E-09	Eyes, Immune system	0.005	---	0.007	0.01
			Mercury	---	---	---	---	Immune system	0.00004	---	---	0.00004
		C2N-EU1 Total		2E-09	---	2E-09	4E-09		0.005	---	0.007	0.01
		C2N-EU1 PCB Dioxin-like Congener TEQ		4E-10	---	5E-10	9E-10	Developmental	0.0003	---	0.0004	0.0007
		Surface Soil at C4N-EU1	Total PCBs	3E-10	---	3E-10	6E-10	Eyes, Immune system	0.0009	---	0.001	0.002
			Mercury	---	---	---	---	Immune system	0.00007	---	---	0.00007
		C4N-EU1 Total		3E-10	---	3E-10	6E-10		0.001	---	0.001	0.002
		C4N-EU1 PCB Dioxin-like Congener TEQ		7E-11	---	1E-10	2E-10	Developmental	0.00006	---	0.00007	0.0001
		Surface Soil at C5N-EU1	Total PCBs	5E-10	---	7E-10	1E-09	Eyes, Immune system	0.002	---	0.002	0.004
			Mercury	---	---	---	---	Immune system	0.00005	---	---	0.00005
		C5N-EU1 Total		5E-10	---	7E-10	1E-09		0.002	---	0.002	0.004
		C5N-EU1 PCB Dioxin-like Congener TEQ		1E-10	---	2E-10	3E-10	Developmental	0.0001	---	0.0001	0.0002

TABLE K-13
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Farmer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at Ag-EU1	Total PCBs	1E-06	---	2E-06	3E-06	Eyes, Immune system	0.05	---	0.07	0.1
			Mercury	---	---	---	---	Immune system	0.004	---	---	0.004
		Ag-EU1 Total		1E-06	---	2E-06	3E-06		0.05	---	0.07	0.1
		Ag-EU1 PCB Dioxin-like Congener TEQ		1E-07	---	2E-07	3E-07	Developmental	0.003	---	0.004	0.007
		Surface Soil at Ag-EU2	Total PCBs	6E-07	---	8E-07	1E-06	Eyes, Immune system	0.03	---	0.03	0.06
			Mercury	---	---	---	---	Immune system	0.0008	---	---	0.0008
		Ag-EU2 Total		6E-07	---	8E-07	1E-06		0.03	---	0.03	0.06
		Ag-EU2 PCB Dioxin-like Congener TEQ		8E-08	---	1E-07	2E-07	Developmental	0.002	---	0.002	0.004
		Surface Soil at Ag-EU3	Total PCBs	8E-07	---	1E-06	2E-06	Eyes, Immune system	0.03	---	0.04	0.08
			Mercury	---	---	---	---	Immune system	0.001	---	---	0.001
		Ag-EU3 Total		8E-07	---	1E-06	2E-06		0.03	---	0.04	0.08
		Ag-EU3 PCB Dioxin-like Congener TEQ		1E-07	---	1E-07	2E-07	Developmental	0.002	---	0.003	0.005
		Surface Soil at Ag-EU4	Total PCBs	5E-08	---	6E-08	1E-07	Eyes, Immune system	0.002	---	0.003	0.005
			Mercury	---	---	---	---	Immune system	0.0004	---	---	0.0004
		Ag-EU4 Total		5E-08	---	6E-08	1E-07		0.002	---	0.003	0.005
		Ag-EU4 PCB Dioxin-like Congener TEQ		6E-09	---	8E-09	1E-08	Developmental	0.0001	---	0.0002	0.0003
		Surface Soil at Ag-EU5	Total PCBs	1E-07	---	2E-07	3E-07	Eyes, Immune system	0.006	---	0.008	0.01
			Mercury	---	---	---	---	Immune system	0.0004	---	---	0.0004
		Ag-EU5 Total		1E-07	---	2E-07	3E-07		0.007	---	0.008	0.01
		Ag-EU5 PCB Dioxin-like Congener TEQ		2E-08	---	2E-08	4E-08	Developmental	0.0004	---	0.0005	0.0008
		Surface Soil at Ag-EU6	Total PCBs	1E-09	---	1E-09	3E-09	Eyes, Immune system	0.00005	---	0.00006	0.0001
			Mercury	---	---	---	---	Immune system	0.00006	---	---	0.00006
		Ag-EU6 Total		1E-09	---	1E-09	3E-09		0.0001	---	0.00006	0.0002
		Ag-EU6 PCB Dioxin-like Congener TEQ		3E-11	---	4E-11	8E-11	Developmental	0.0000007	---	0.0000009	0.000002
		Surface Soil at Ag-EU7	Total PCBs	2E-08	---	3E-08	5E-08	Eyes, Immune system	0.0009	---	0.001	0.002
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		Ag-EU7 Total		2E-08	---	3E-08	5E-08		0.001	---	0.001	0.002
		Ag-EU7 PCB Dioxin-like Congener TEQ		3E-09	---	4E-09	6E-09	Developmental	0.00005	---	0.00007	0.0001
		Surface Soil at Ag-EU8	Total PCBs	1E-08	---	2E-08	3E-08	Eyes, Immune system	0.0005	---	0.0007	0.001
			Mercury	---	---	---	---	Immune system	0.0003	---	---	0.0003
		Ag-EU8 Total		1E-08	---	2E-08	3E-08		0.0008	---	0.0007	0.002
		Ag-EU8 PCB Dioxin-like Congener TEQ		1E-09	---	2E-09	3E-09	Developmental	0.00003	---	0.00004	0.00006

TABLE K-14
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Farmer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at Ag-EU1	Total PCBs	1E-07	---	2E-07	3E-07	Eyes, Immune system	0.006	---	0.008	0.01
			Mercury	---	---	---	---	Immune system	0.0004	---	---	0.0004
		Ag-EU1 Total		1E-07	---	2E-07	3E-07		0.007	---	0.008	0.01
		Ag-EU1 PCB Dioxin-like Congener TEQ		2E-08	---	2E-08	4E-08	Developmental	0.0004	---	0.0005	0.0008
		Surface Soil at Ag-EU2	Total PCBs	7E-08	---	1E-07	2E-07	Eyes, Immune system	0.003	---	0.004	0.008
			Mercury	---	---	---	---	Immune system	0.0001	---	---	0.0001
		Ag-EU2 Total		7E-08	---	1E-07	2E-07		0.003	---	0.004	0.008
		Ag-EU2 PCB Dioxin-like Congener TEQ		1E-08	---	1E-08	2E-08	Developmental	0.0002	---	0.0002	0.0004
		Surface Soil at Ag-EU3	Total PCBs	1E-07	---	1E-07	2E-07	Eyes, Immune system	0.004	---	0.006	0.01
			Mercury	---	---	---	---	Immune system	0.0002	---	---	0.0002
		Ag-EU3 Total		1E-07	---	1E-07	2E-07		0.004	---	0.006	0.01
		Ag-EU3 PCB Dioxin-like Congener TEQ		1E-08	---	2E-08	3E-08	Developmental	0.0002	---	0.0003	0.0006
		Surface Soil at Ag-EU4	Total PCBs	6E-09	---	8E-09	1E-08	Eyes, Immune system	0.0003	---	0.0003	0.0006
			Mercury	---	---	---	---	Immune system	0.00005	---	---	0.00005
		Ag-EU4 Total		6E-09	---	8E-09	1E-08		0.0003	---	0.0003	0.0006
		Ag-EU4 PCB Dioxin-like Congener TEQ		8E-10	---	1E-09	2E-09	Developmental	0.00001	---	0.00002	0.00003
		Surface Soil at Ag-EU5	Total PCBs	2E-08	---	2E-08	4E-08	Eyes, Immune system	0.0008	---	0.001	0.002
			Mercury	---	---	---	---	Immune system	0.00005	---	---	0.00005
		Ag-EU5 Total		2E-08	---	2E-08	4E-08		0.0008	---	0.001	0.002
		Ag-EU5 PCB Dioxin-like Congener TEQ		2E-09	---	3E-09	5E-09	Developmental	0.00004	---	0.00006	0.0001
		Surface Soil at Ag-EU6	Total PCBs	1E-10	---	2E-10	3E-10	Eyes, Immune system	0.000006	---	0.000008	0.00001
			Mercury	---	---	---	---	Immune system	0.000007	---	---	0.000007
		Ag-EU6 Total		1E-10	---	2E-10	3E-10		0.00001	---	0.000008	0.00002
		Ag-EU6 PCB Dioxin-like Congener TEQ		4E-12	---	6E-12	1E-11	Developmental	0.00000008	---	0.0000001	0.0000002
		Surface Soil at Ag-EU7	Total PCBs	3E-09	---	4E-09	6E-09	Eyes, Immune system	0.0001	---	0.0002	0.0003
			Mercury	---	---	---	---	Immune system	0.00002	---	---	0.00002
		Ag-EU7 Total		3E-09	---	4E-09	6E-09		0.0001	---	0.0002	0.0003
		Ag-EU7 PCB Dioxin-like Congener TEQ		3E-10	---	4E-10	8E-10	Developmental	0.000006	---	0.000009	0.00002
		Surface Soil at Ag-EU8	Total PCBs	1E-09	---	2E-09	3E-09	Eyes, Immune system	0.00007	---	0.00009	0.0002
			Mercury	---	---	---	---	Immune system	0.00004	---	---	0.00004
		Ag-EU8 Total		1E-09	---	2E-09	3E-09		0.0001	---	0.00009	0.0002
		Ag-EU8 PCB Dioxin-like Congener TEQ		2E-10	---	2E-10	4E-10	Developmental	0.000003	---	0.000005	0.000008

TABLE K-15
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	1E-06	---	5E-06	7E-06	---	---	---	---	---
		C1-EU2 Total		1E-06	---	5E-06	7E-06		---	---	---	---
		Surface Soil at C2N-EU1	Total PCBs	---	---	2E-06	2E-06	---	---	---	---	---
		C2N-EU1 Total		---	---	2E-06	2E-06		---	---	---	---
		Surface Soil at C3N-EU1	Total PCBs	---	---	3E-06	3E-06	---	---	---	---	---
		C3N-EU1 Total		---	---	3E-06	3E-06		---	---	---	---
		Surface Soil at C3N-EU2	Total PCBs	---	---	4E-06	4E-06	---	---	---	---	---
		C3N-EU2 Total		---	---	4E-06	4E-06		---	---	---	---
		Surface Soil at C4S-EU1	Total PCBs	---	---	2E-06	2E-06	---	---	---	---	---
		C4S-EU1 Total		---	---	2E-06	2E-06		---	---	---	---

TABLE K-16
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (Low Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU2	Total PCBs	2E-06	---	2E-06	4E-06	---	---	---	---	---
		C1-EU2 Total		2E-06	---	2E-06	4E-06		---	---	---	---
		Surface Soil at C3N-EU1	Total PCBs	1E-06	---	---	1E-06	---	---	---	---	---
		C3N-EU1 Total		1E-06	---	---	1E-06		---	---	---	---
		Surface Soil at C3N-EU2	Total PCBs	2E-06	---	1E-06	3E-06	---	---	---	---	---
		C3N-EU2 Total		2E-06	---	1E-06	3E-06		---	---	---	---

TABLE K-17
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	2E-06	---	2E-06	4E-06	---	---	---	---	---
		C1-EU1 Total		2E-06	---	2E-06	4E-06		---	---	---	---
		Surface Soil at C3S-EU1	Total PCBs	4E-06	---	3E-06	7E-06	---	---	---	---	---
		C3S-EU1 Total		4E-06	---	3E-06	7E-06		---	---	---	---
		Total PCB Dioxin-like Congener TEQ C3S-EU1 Total		---	---	---	---	---	---	---	---	---
		Surface Soil at C3S-EU2	Total PCBs	5E-06	---	4E-06	8E-06	---	---	---	---	---
		C3S-EU2 Total		5E-06	---	4E-06	8E-06		---	---	---	---

TABLE K-18
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	---	---	2E-06	2E-06	---	---	---	---	---
		C1-EU1 Total		---	---	2E-06	2E-06		---	---	---	---
		Surface Soil at C3S-EU1	Total PCBs	1E-06	---	4E-06	6E-06	---	---	---	---	---
		C3S-EU1 Total		1E-06	---	4E-06	6E-06		---	---	---	---
		Surface Soil at C3S-EU2	Total PCBs	1E-06	---	5E-06	7E-06		---	---	---	---
		C3S-EU2 Total		1E-06	---	5E-06	7E-06		---	---	---	---
		Total PCB Dioxin-like Congener TEQ C3S-EU2 Total		---	---	2E-06	2E-06	---	---	---	---	---

TABLE K-19
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Recreational User (High Contact)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at C1-EU1	Total PCBs	1E-06	---	---	1E-06	---	---	---	---	---
		C1-EU1 Total		1E-06	---	---	1E-06		---	---	---	---
		Surface Soil at C3S-EU1	Total PCBs	2E-06	---	1E-06	3E-06	---	---	---	---	---
		C3S-EU1 Total		2E-06	---	1E-06	3E-06		---	---	---	---
		Surface Soil at C3S-EU2	Total PCBs	2E-06	---	2E-06	4E-06	---	---	---	---	---
		C3S-EU2 Total		2E-06	---	2E-06	4E-06		---	---	---	---

TABLE K-20
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
ANNISTON PCB SITE
OU 4

Scenario Timeframe: Current/Future
Receptor Population: Farmer
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil at Ag-EU1	Total PCBs	1E-06	---	2E-06	3E-06	---	---	---	---	---
		Ag-EU1 Total		1E-06	---	2E-06	3E-06	---	---	---	---	---
		Surface Soil at Ag-EU3	Total PCBs	---	---	1E-06	1E-06	---	---	---	---	---
		Ag-EU3 Total		---	---	1E-06	1E-06	---	---	---	---	---