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EPA Superfund
Record of Decision:

JACKSONVILLE ASH SITE
EPA ID: FLSFN0407002
OU 01
JACKSONVILLE, FL
08/24/2006

RECORD OF DECISION
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

JACKSONVILLE ASH SITE
JACKSONVILLE, DUVAL COUNTY, FLORIDA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA, GEORGIA

August 2006

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LIST OF ACRONYMS and ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Regulations
ATV	Alternate Toxicity Value
BDL	Below the laboratory Detection Limit
BHHRA	Baseline Human Health Risk Assessment
bls	below land surface
bgs	below ground surface
CAR	Corrective Action Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	Contaminant (or Chemical) of Concern
COEJ	Community Organized for Environmental Justice
COPC	Contaminant of Potential Concern
COPEC	Contaminant of Potential Ecological Concern
CSF	Carcinogenic Slope Factor
cys	cubic yards (also see yd^3)
DQO	Data Quality Objectives
EPA	United States Environmental Protection Agency
EPA-OTS	EPA Region 4 Office of Technical Services
EPS	Exposure Pathway Scenarios
ERA	Ecological Risk Assessment
EPC	Exposure Point Concentration
ESD	Explanation of Significant Differences
ESI	Expanded Site Inspection
ESV	Ecological screening values
FDEP	Florida Department of Environmental Protection
HEAST	Health Effects Assessment Summary Tables
HI	Hazard Index
HQ	Hazard Quotient
GCTL	Florida Groundwater Cleanup Target Level
IRIS	Integrated Risk Information System
JEA	Jacksonville Electric Corporation
LOAEL	Lowest Observed Adverse Effects Level
MCL	Maximum Contaminant Level
MEP	Maximum Extent Practicable
mg/kg	milligrams per kilogram or parts per million (ppm)
NCEA	National Center for Environmental Assessment
NCP	National Contingency Plan
NOAA	National Oceanic and Atmospheric Administration
NOAEL	No Observed Adverse Effects Level
NPL	National Priority List
OU1	Operable Unit 1
OU2	Operable Unit 2
O&M	Operation and Maintenance
PA	Preliminary Assessment

PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCOPEC	Preliminary Contaminant of Potential Ecological Concern
ppb	parts per billion
PRP	Potentially Responsible Party
ppm	parts per million
PRG	EPA Region 9 Preliminary Remediation Goals
RAO	Remedial Action Objectives
RBC	EPA Region 3 Risk Based Concentrations
RBCA	Risk Based Corrective Action
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RG	Remedial Goals (i.e., cleanup levels)
ROD	Record of Decision
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act of 1986
SAS	Superfund Alternative Site
SCTL	Florida Soil Cleanup Target Level
SDWA	Safe Drinking Water Act
SESD	EPA Region 4 Science and Ecosystem Support Division
SI	Site Inspection
SQL	Sample Quantification Limit
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TAT	Technical Assistance Team
TCDD	tetrachlorodibenzodioxin
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxicity Equivalence Quotient
µg/kg	micrograms per kilogram
µg/L	micrograms per Liter
US	United States
US FWS	United States Fish and Wildlife Service
VOCs	Volatile Organic Compounds
yd^3	cubic yards
XRF	X-ray fluorescence
<	less than

PART 1: THE DECLARATION

1.1 Site Name and Location

This Record of Decision (ROD) is for the Jacksonville Ash Superfund Site (Site) which includes three separate locations (sites) of former waste processing and/or disposal facilities operated or used by the City of Jacksonville, Florida. EPA grouped the three locations under one site designation because they have common sources and types of waste and to ensure consistency in the approach to site investigation and cleanup. Included are two former city incinerators at Forest Street and at 5th and Cleveland and a former dump site that is now occupied by Lonnie C. Miller, Sr. Park. All three sites are in the northwest portion of Jacksonville in Duval County, Florida. The U.S. Environmental Protection Agency (EPA) Site Identification Number is FLSFN0407002.

1.2 Statement of Basis and Purpose

This decision document presents the Selected Remedy for the Jacksonville Ash Superfund Alternative Site (the "Site"), which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Contingency Plan (NCP). This decision is based on the Administrative Record for the Site. In accordance with 40 CFR § 300.435, as the support agency, the Florida Department of Environmental Protection (FDEP) has been offered the opportunity to provide input during this process. FDEP does not object to the selected remedy.

1.3 Assessment of Site

The response action selected in this ROD is necessary to protect the public health or welfare and the environment from actual or threatened releases of hazardous substances to the environment.

1.4 Description of Selected Remedy

The overall cleanup strategy for this Site is to prevent the human and ecological exposure to contaminated soil by excavation, soil covers and institutional controls. The major components for the Selected Remedy include:

- ☐ Prevention of human exposure to surface soil contaminated above Remedial Goals (i.e., cleanup levels) is provided by soil removal as needed to allow for installation of a 2 foot thick soil cover. In residential areas the selected remedy will consist of the removal of any contamination above the remedial goals (RGs) in the upper 2 feet of soil to be followed by backfill with a soil cover as needed to provide two feet of uncontaminated soil.
- ☐ Temporary Relocation will be provided to eligible residents upon their request.
- ☐ Excavation will be followed by restoration activities e.g., backfilling with clean soil, replacement of flower beds, trees, shrubs, grass, etc.).

- ☐ Stabilization of the banks of McCoy's Creek, Ribault River and Hogan Creek (e.g., clear banks, excavate soil to achieve acceptable side slopes, dispose of excavated soil/material properly, installation of erosion controls to prevent erosion of ash/contamination into creek, etc.).
- ☐ Place geotextile (or other membrane) topped with gravel under residential houses with open crawlspaces (that can be accessed by children) with exceedences of human health RGs to further prevent direct contact with the soil
- ☐ Institute groundwater monitoring to verify the "No Action" decision for the groundwater
- ☐ Solidification/stabilization of excavated soil exceeding the limits of Toxicity Characterization Leaching Procedures (TCLP). An estimated 36,300 cubic yards of excavated soil/ash will need to be solidified/stabilized pursuant to the RCRA treatment standard requirements at 40 CFR § 268 prior to disposal at an appropriate Subtitle D Landfill.
- ☐ Imposition of institutional controls to control exposure to remaining soil contamination above the RGs below 2 feet, under the soil cover and under buildings, roads, driveways, sidewalks, asphalt or concrete which maintain a break in the exposure pathway. Where contamination will remain at depth below two feet a marker such as snow fencing will be used to indicate its presence.

1.5 Statutory Determinations

The Selected Remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted every five years from construction completion. The objective of these five year reviews will be to confirm that the remedy is, or will be, protective of human health and the environment. If found to be unprotective, then corrective actions to bring the remedy to a protectiveness level will be taken.

The contaminated soils at the Site are not considered to be "principal threat wastes" because the constituents of concern (COCs) are not found at highly toxic concentrations that pose a significant risk to either human or ecological receptors, and the contaminated soil can be reliably contained. However, the selected remedy satisfies the statutory preference for treatment as a principal element of the remedy because a small percentage of the excavated soil contains hazardous characteristics requiring it to be considered a RCRA hazardous waste and in need of treatment pursuant to RCRA treatment standard requirements at 40 CFR § 268.

1.6 Data Certification Checklist

The following information is further discussed in the Parts 3 through 9 of the Record of Decision. Additional information can be found in the Administrative Record file for this Site.

- ✓ COCs and their respective concentrations
- ✓ Baseline risks represented by the COC
- ✓ Remedial Goals (i.e., cleanup levels) established for COCs and the basis for these levels
- ✓ How source materials constituting principal threats are addressed
- ✓ Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the Baseline Risk Assessment and ROD
- ✓ Potential land and groundwater use that will be available at the site as a result of the Selected Remedy
- ✓ Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected
- ✓ Key factor(s) that led to selecting the remedy (i.e. describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision)

1.7 Authorizing Signatures

Beverly H Banister | 8/24/06

Beverly H. Banister, Acting Director
Waste Management Division

Date

PART 2: INTRODUCTION TO THE SITE AND STATEMENT OF PURPOSE

2.1 Site Name, Location, and Brief Description

This Record of Decision (ROD) is for the Jacksonville Ash Superfund Site (Site) which includes three separate locations (sites) of former waste processing and/or disposal facilities operated or used by the City of Jacksonville, Florida. EPA grouped the three locations under one site designation because they have common sources and types of waste and to ensure consistency in the approach to site investigation and cleanup. Included are former city incinerators located at Forest Street and at 5th and Cleveland and a former dump site that is now occupied by Lonnie C. Miller, Sr. Park. All three sites are in the northwest portion of Jacksonville in Duval County, Florida (See Figure 1). The U.S. Environmental Protection Agency (EPA) Site Identification Number is FLSFN0407002. EPA is the lead agency for this Site.

2.1.1 Forest Street Incinerator

The former Forest Street incinerator site occupies approximately 27 acres in an area of mixed residential and industrial land use, approximately one mile west of Jacksonville's central business district. The site is located at latitude 30˚19'35" north and longitude 81˚40' 58" west. The City of Jacksonville operated the Forest Street municipal incinerator from the 1910s until the 1960s. Although some of the ash waste was taken to other dump sites for disposal, a considerable amount was apparently deposited at and near the incinerator. The incinerator ash contains several COCs, but the main drivers for the cleanup are lead, arsenic, polycyclic aromatic hydrocarbons (PAHs) and dioxin.

The former incinerator area is now enclosed by a chain link fence to prevent access. The site also includes adjoining land used or potentially affected by waste handling or ash disposal activities, including the present location of the Forest Park Head Start School on the west portion of the site, a city park facility in the south portion of the site and surrounding residential properties (see Figure 2).

2.1.2 5th and Cleveland Incinerator

The City of Jacksonville operated another municipal incinerator from the 1910s to the 1960s in an area just north of the intersection of 5th and Cleveland streets, approximately one mile northwest of downtown Jacksonville. The site is located at latitude 30˚20'37" north and longitude 81˚40'14" west. The approximately 36 acre site includes the former incinerator location and other areas impacted by the ash. The incinerator ash contains several COCs, but the main drivers for the cleanup are lead, arsenic, PAHs and dioxin.

Portions of the site are now occupied by the Emmett C. Reed Community Center, a pool, playground, and picnic areas, and city baseball diamond and basketball courts. Ash, containing glass and metal fragments was disposed in several areas near the incinerator, including the present location of the park and baseball field, next to the community center, and along the east side of Francis Street. Ash is also found in some of the residential areas surrounding the former incinerator site (see Figure 3).

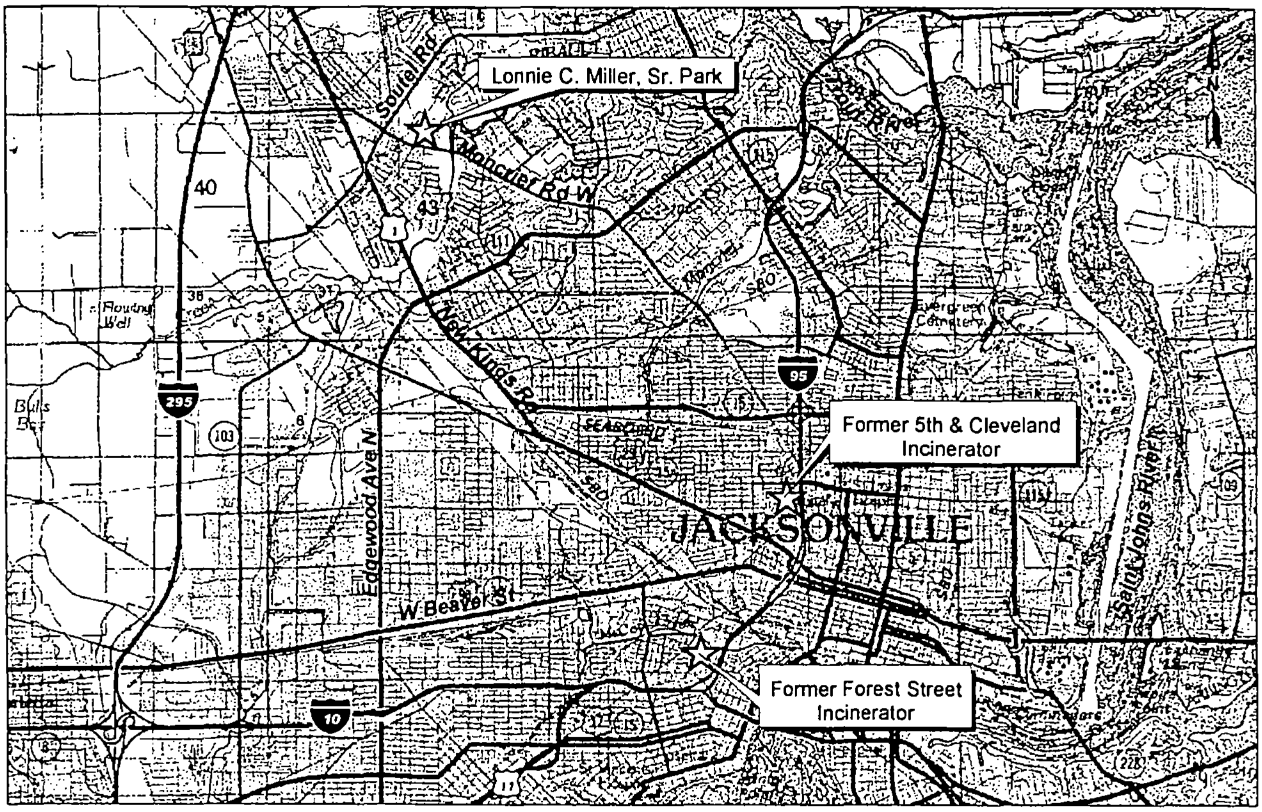


Figure 1 - Jacksonville Ash Site Locations

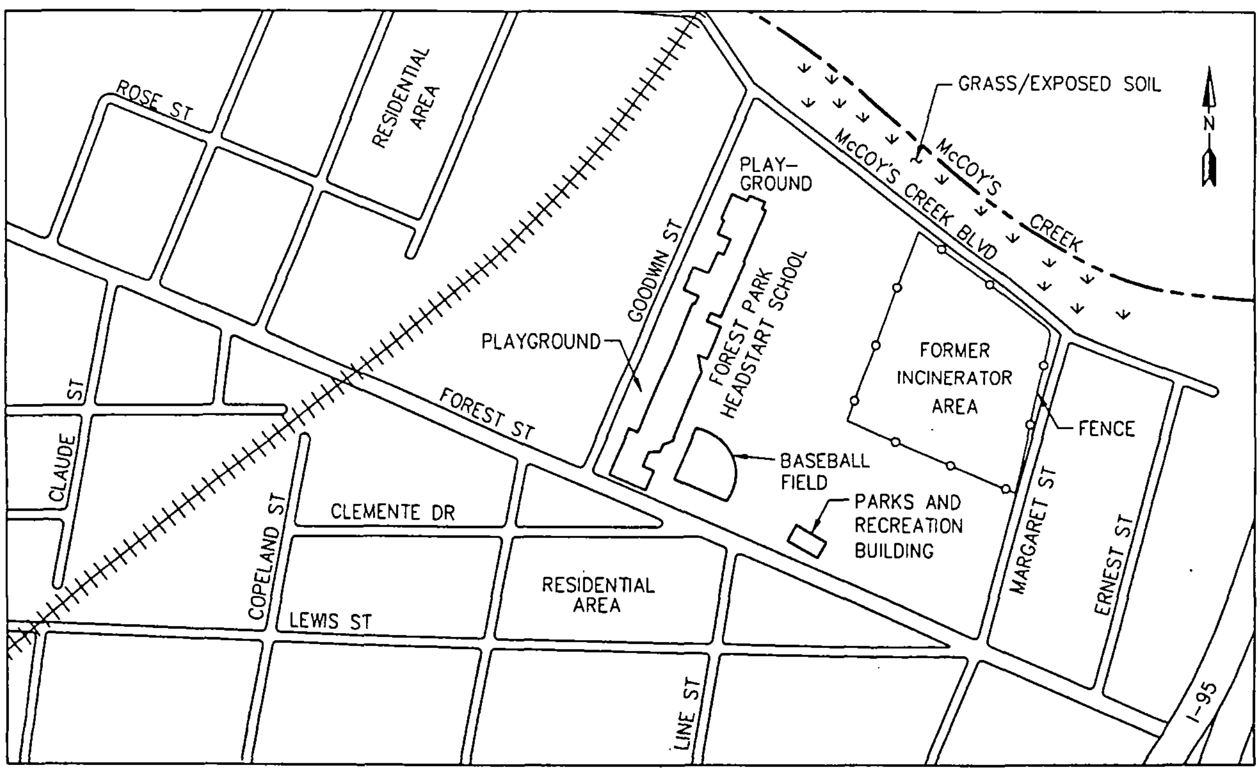


Figure 2 - Former Forest Street Incinerator Site Detail

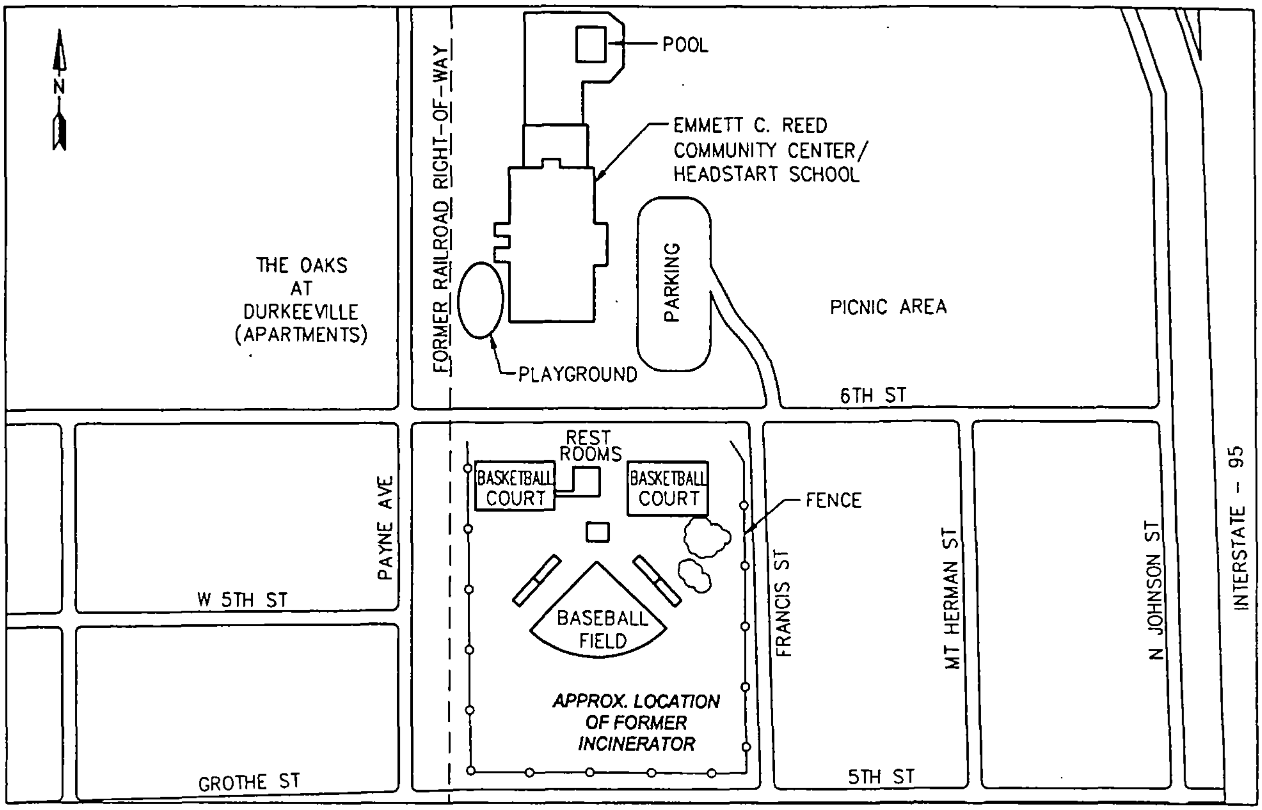


Figure 3 - Former 5th and Cleveland Incinerator Site Detail

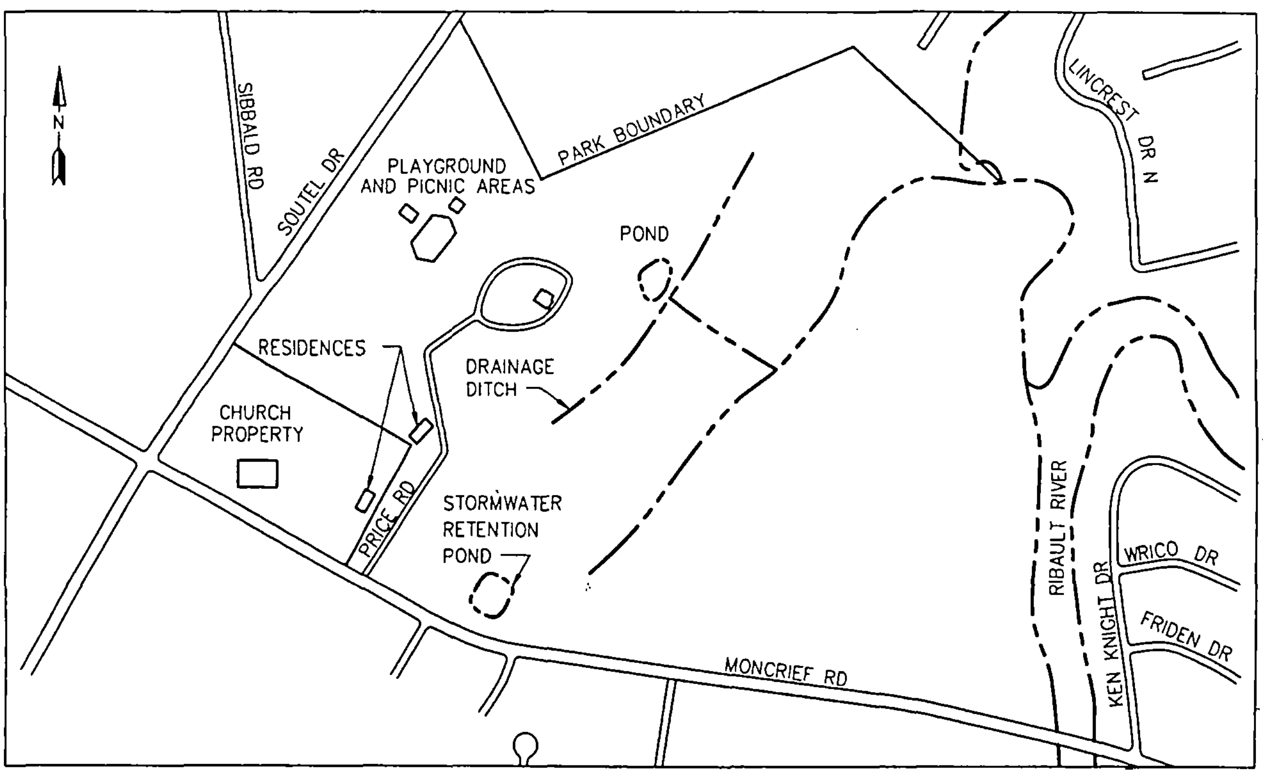


Figure 4 - Lonnie C. Miller, Sr. Park Site Detail

2.1.3 Lonnie C. Miller, Sr. Park

Lonnie C. Miller, Sr. Park is located northeast of the intersection of Moncrief Road and Soutel Drive, approximately five miles northwest of downtown Jacksonville. The approximately 108 acre site is located at latitude 30˚23'30" north and longitude 81˚43'32" west. From the 1940s to the 1960s, the owners operated a dump on a portion of the land, which was formerly used for agricultural purposes. The City of Jacksonville disposed of incinerator ash waste, and other parties reportedly disposed of septic sludge and other wastes at the dump site. The incinerator ash contains several COCs but the main drivers for the cleanup are lead, arsenic, PAHs and dioxin.

In the late 1980s, the City of Jacksonville purchased a large portion of the privately owned land to develop a regional park. The park includes a picnic shelter, playground, and walking areas. The Ribault River borders the east side of the park, flowing northeast to the Trout River (see Figure 4).

2.2 Site History and Enforcement Activities (Activities that lead to current problem)

The City of Jacksonville operated the Forest Street and 5th & Cleveland municipal incinerators from the 1910s until the 1960s. The resulting incinerator ash contains lead and other inorganic constituents such as arsenic. The burning process also generated organic constituents such as polyaromatic hydrocarbons (PAHs) and dioxin. Although a considerable amount of the incinerator ash was disposed of in dump sites such as Lonnie C. Miller, Sr., Park and Brown's Dump (a separate Superfund Alternative Site with similar ash contamination), a considerable amount of ash was disposed of around the former incinerators including the spread of ash contamination into surrounding residential properties.

In May 1999, EPA sent Special Notice Letters to the City of Jacksonville identifying them as a Potentially Responsible Parties (PRP) to the Jacksonville Ash site. The City was asked to voluntarily enter into an Administrative Order by Consent (AOC) with EPA to perform a Remedial Investigation and Feasibility Study (RI/FS) for the Jacksonville Ash Site. The City of Jacksonville agreed, and the Order was signed and work began September 1, 1999. Therefore, this Site was never listed on the National Priorities List (NPL); rather, it is a Superfund Alternative Site (SAS) which, pursuant to the 1999 AOC, is consistent with the National Contingency Plan (NCP) for the required RI/FS. Site remediation is to be funded by the City of Jacksonville. The lead agency for this Site is the EPA.

2.3 Previous Investigations

What became the Jacksonville Ash Site has been investigated as separate sites several times over the years. The following is a summary of key involvement by EPA, the Florida Department of Environmental Protection (FDEP) and the Agency for Toxic Substances and Disease Registry (ATSDR) before the RI/FS was started. ATSDR has continued to make health assessments after the start of the RI/FS as new RI data was collected and evaluated.

2.3.1 Preliminary Assessments, 1994-1996

In the Fall of 1996, The Florida Department of Environmental Protection (FDEP) conducted Preliminary Assessments (PAs) at the 5th & Cleveland Incinerator, Forest Street Incinerator, and Lonnie C. Miller, Sr. Park, respectively. All three assessments concluded that the soil exposure pathways at each site were of major concern due to the presence of ash material, its unknown extent at the sites, and historical data that indicates elevated heavy metals (including lead and arsenic) are present in municipal incinerator ash. The 5th & Cleveland Incinerator, Forest Street Incinerator, and the Lonnie C. Miller, Sr. Park sites were recommended for further CERCLA action. Details of these assessments and other State investigations are in the following:

- Preliminary Contamination Assessment Report (CAR), Forest Street Incinerator, November 3, 1994, RSDI Environmental, Inc.
- Contamination Assessment Report Summary (CAR), Forest Street Incinerator, November 20, 1995, Dominion Environmental Geosciences
- Forest Street Incinerator Site: Soil Data, June 10, 1996, Dominion Environmental Geosciences
- Preliminary Assessment Report 5th & Cleveland Incinerator, October 31, 1996 (FDEP)
- Preliminary Assessment Report, Forest Street Incinerator, November 26, 1996 (FDEP)
- Preliminary Assessment Report, Lonnie C. Miller, Sr., Park, December 24, 1996 (FDEP)

After a February 1996 site visit at the 5th & Cleveland site, FDEP requested that the City of Jacksonville implement interim measures to cover exposed areas of ash and ash-contaminated soil with gravel, compost or sod. The interim cover was implemented at 5th & Cleveland site by time of the submittal of the October 31, 1996, Preliminary Assessment Report.

The site discovery forms for the Forest Street and 5th & Cleveland Incinerator sites were sent to EPA on September 29, 1996. The Lonnie C. Miller, Sr. Park site discovery was December 18, 1996.

2.3.2 Site Inspection Reports, 1997

In 1997, EPA conducted a series of sampling events, analyzing for metals, organics, pesticides/PCBs, and dioxins in soils, surface water, sediments and groundwater at each of the three sites. Three separate Site Inspection (SI) Reports were completed in December 1997 that presented the results and conclusions.

- Site Inspection Report, 5th & Cleveland Incinerator, December 1, 1997 (EPA)
- Site Inspection Report, Forest Street Incinerator, December 1, 1997 (EPA)
- Site Inspection Report, Lonnie C. Miller, Sr., Park, December 31, 1997 (EPA)

For each of the three sites the soil exposure pathways are of major concern because of the direct exposure risk to elevated levels of lead and arsenic. The groundwater migration pathway is of possible concern at all three sites due to the detection of elevated levels of inorganic constituents in the surficial aquifer. The surface water migration pathway is of possible concern at the Forest Street Incinerator and Lonnie C. Miller, Sr. Park sites because of elevated levels of arsenic and lead detected in sediment samples from McCoy's Creek and Ribault River. All three sites were recommended for further CERCLA action.

2.3.3 ATSDR Health Consultations, 1996-2003

In November 1996, EPA requested the Agency for Toxic Substances and Disease Registry (ATSDR) to perform a Health Consultation for the 5th & Cleveland Incinerator site using existing data to evaluate the potential for health effects in children from exposure to lead in the soils. It concluded that the limited sampling and analyses that were conducted show that lead is present at levels of public health concern; however, the sampling is not adequate to characterize the nature and extent of contamination. ATSDR also concluded that the temporary measures implemented at the site (covering the ash with gravel, sod and compost) are effective in minimizing potential exposures to contaminants in the ash, though not considered to be protective in the long-term. ATSDR recommended that the temporary measures be adequately maintained to minimize potential exposure, until the nature and extent of contamination has been characterized and permanent remedial actions are implemented.

In January 1997, EPA requested ATSDR to perform a Health Consultation for the Forest Street Incinerator site. It concluded that the site is a public health hazard and long-term incidental soil ingestion by children or adult trespassers on the most contaminated part of the site (the northeast quadrant where the former incinerator was located) could interfere with proper blood formation. It also concluded that the concentrations of the other metals found in the soil are not a public health hazard. ATSDR recommended that access be restricted to the area where the former incinerator had been. They also recommended that the surface soils be sampled for complex organic chemicals (including PAHs and PCBs) and that the vegetables grown in the contaminated soils be tested.

In September, 1999, ATSDR performed a Health Consultation for Lonnie C. Miller, Sr. Park. ATSDR found no apparent public health hazard based on available data. ATSDR recommended additional sampling to supplement existing data.

In December, 1999, ATSDR performed a Health Consultation for 5th & Cleveland site. ATSDR found that concentrations of lead and antimony in one soil sample that are a public health hazard. ATSDR recommended maintaining the soil and grass cover in this area and additional sampling to fully characterize the site.

In May, 2001, ATSDR performed a Health Consultation for Lonnie C. Miller, Sr. Park using the latest data from the Phase I RI sampling. ATSDR concluded that there is no immediate health threat because of the distribution of ash contamination, visitor activity patterns, the presence of a heavy vegetation cover at the park, and the blood lead levels collected from children by the Duval County Department of Health that indicate few exceedences of the CDC guidelines for safe blood lead levels. ATSDR recommended the development of a long term remediation strategy, restricting access to lead concentrations over 1,000 mg/kg, and maintaining the vegetation cover in areas of contamination. Based on this health consultation, EPA requested the installation of a fence to separate the highest contamination in the eastern portion of the park from the western portion where most visitor activity takes place. The City of Jacksonville erected the fence restricting access to the highest levels of contamination at the park.

In January, 2002, ATSDR performed a Health Consultation for the 5th & Cleveland site using the latest data from the Phase I RI sampling. ATSDR concluded that the levels of lead pose a long term threat public health threat if children frequently come in contact with the contaminated soil. They further concluded that the interim measures to restrict exposure to the contamination for lead greater than 1,000 mg/kg (covering the ash with gravel, sod and compost) and lead greater than 400 mg/kg (vegetation cover) are effective in preventing short term health threats and these interim measures should be maintained. The Health Consultation also referenced the blood lead levels measured by the Duval County Department of Health that indicate few exceedences of the CDC guidelines for safe blood lead levels.

In January, 2002, ATSDR performed a Health Consultation for the Forest Street site using the latest data from the Phase I RI sampling. ATSDR concluded that the levels of lead pose a long term threat public health threat if children frequently come in contact with the contaminated soil. They further concluded that the interim measures to restrict exposure to the contamination for lead greater than 1,000 mg/kg (covering the ash with gravel, sod and compost) and lead greater than 400 mg/kg (vegetation cover) are effective in preventing short term health threats and these interim measures should be maintained. The Health Consultation also referenced the blood lead levels measured by the Duval County Department of Health that indicate few exceedences of the CDC guidelines for safe blood lead levels.

In the Fall of 2002, ATSDR evaluated the analytical data for health hazards in the playground and picnic area of Lonnie C. Miller, Sr., Park. The Health Consultation dated October 8, 2002, states that there is no health hazard in the area of the park that is outside the temporary fence separating the contaminated eastern section of the park.

In September, 2003, ATSDR performed a Health Consultation for the 5th & Cleveland site to evaluation the health hazard from eating vegetables grown in the ash contamination at all three sites. The data for the evaluation was collected by EPA in January, 2002, from three gardens at the 5th & Cleveland site with varying concentration of lead, other metals and PAHs. ATSDR concluded that the levels of metals and PAHs in the collard and mustard greens (the vegetables evaluated) are not likely to cause illness and present no apparent public health hazard. An unacceptable long term health risk was possible from direct exposure to lead in the soil above EPA's recommended residential clean up goal of 400 mg/kg. ATSDR recommended that gardeners in the area use good gardening and food preparation practices (wash hands and food) to minimize exposure to garden soil.

2.4 Implementation History of Remedial Investigation (RI), Baseline Human Health Risk Assessment, Ecological Risk Assessment, Feasibility Study

2.4.1 RI Phase I, 1999-2000

With the signing of an AOC in September 1999, the City of Jacksonville agreed to perform of a Remedial Investigation/Feasibility Study (RI/FS). The goal of the RI is to determine the nature and extent of contamination at the Site. In 1999 the City of Jacksonville submitted a Work Plan which contains the sampling strategy, methods and goals. After review by EPA, FDEP and Technical Assistance Plan (TAP) community group, the final Work Plan was approved by EPA in April, 2000.

An RI/FS Kickoff public meeting was held on May 1, 2000. The RI Work Plan was implemented in summer, 2000. The draft RI Report presenting the results of the Phase I sampling was submitted in November, 2000. After review by EPA, FDEP and the TAP community group, EPA requested additional parcel-by-parcel RI sampling on January 17, 2001 to determine the need for remediation on a parcel-by-parcel basis.

2.4.2 RI Phase II, 2001-2003

The City of Jacksonville agreed to conduct the additional parcel-by-parcel RI sampling in June, 2001. After review by EPA, FDEP and the TAP community group, EPA approved the additional RI sampling Work Plan in September, 2001. Additional RI sampling started in October 2001.

The sampling took longer than expected due to difficulties in getting signed Access Agreements. On two occasions (September/December 2001), the City mailed Access Agreements to properties targeted for the additional soil sampling. The first mailing went to the mailing address of the property targeted for sampling. The second mailing went to the owner/occupant at the physical address of the property. The second request from the City was followed by a December 2001 EPA Fact Sheet on the Access Agreement.

In May 2002, the EPA walked through the neighborhood talking to residents who had not returned previous requests for access, asking for access and answering the community's questions on the Access Agreements and the importance of the additional sampling. The City of Jacksonville also sent people door-to-door seeking access.

In March 2002, U.S. Congresswoman Corrine Brown sent a letter to individuals who had not signed the Access Agreements. Representative Brown's letter encouraged people to sign the Access Agreement so sampling could take place to determine if incinerator ash and contaminated soil are present.

At properties where access was granted, Phase n soil sampling was carried out. With an acceptable number of parcels sampled in early 2002, the following major actions occurred:

- EPA called for the November 2000 draft Remedial Investigation Report to be rewritten to include the information collected during Phase II. The Remedial Investigation Report was revised and EPA approved the final version (Revision 2) dated December, 2004.
- EPA approved the Human Health Baseline Risk Assessments.
- EPA approved the Ecological Risk Assessments.
- Additional background dioxin sampling was performed in late 2002 and early 2003.
- Additional groundwater sampling was performed in early 2003.

The December, 2004 RI Report was approved. The RI allows the following conclusions to be drawn:

- Soil is contaminated at levels of concern at all three sites.
- Sediment is contaminated at McCoy's Creek at Forest Street Incinerator and Ribault River at Lonnie C. Miller, Sr. Park. However, because constituents of concern concentrations are at

levels similar to sediment background concentrations upstream from the sites, active remediation is not needed.

- Groundwater is not contaminated at levels of concern at any of the three sites.
- Surface water is not contaminated at levels of concern at any of the three sites

2.4.3 Baseline Human Health Risk Assessment (BHHRA), 1999-2003

The Baseline Human Health Risk Assessment was performed by an EPA contractor under an RI/FS Work Assignment. The BHHRAs with the following dates were approved by EPA:

- 5th & Cleveland Incinerator, September 27, 2002
- Forest Street Incinerator, March, 2003
- Lonnie C. Miller, Sr. Park, March, 2003.

These documents conclude that unacceptable risk exists in soil and groundwater for COCs. The COCs are the contaminants that the BHHRAs have determined present a possible risk to human health. These risks are well defined and there are no additional assessments required to develop remedial goals (RGs) for the identified COCs. The Baseline Risk Assessment allows the following conclusions to be drawn:

- Soil is contaminated at levels supportive of cleanup at all three sites.
- Groundwater is contaminated at levels of concern at all three sites, although subsequent sampling during the RI has shown that groundwater is not contaminated at levels that are a threat to human health.
- Surface water is not contaminated at levels of concern at any of the three sites

The risks are discussed in more detail in Part 5 of this ROD.

2.4.4 Ecological Risk Assessment, 1999-2003

The Ecological Risk Assessments (ERAs) were performed by an EPA contractor, under an RI/FS Work Assignment. The ERAs with the following dates were approved by EPA:

- 5th & Cleveland, March 31, 2003
- Forest Street Incinerator, March 31, 2003
- Lonnie C. Miller, Sr. Park, September 12, 2003

These documents conclude that surface water does not contain ecologically significant concentrations of contamination and is therefore not considered to be a medium of ecological concern at the site. However, concentrations of contaminants of potential ecological concern (COPEC) in surface soil present a risk to terrestrial communities (land dwelling animals) at all three sites. COPECs in sediment present a possible risk to aquatic communities (water dwelling animals) and viable insectivore (insect eating) and piscivore (fish eating) communities at all three sites, if significantly higher than background sediments concentrations from upstream. These risks are well defined and there are no additional ecological evaluations or assessments required to develop preliminary remedial goals (PRGs) for these contaminated media. PRGs are conservative constituent concentrations developed in the ERA that present a possible threat to the environment. Additional biological studies could be conducted to determine site specific cleanup goals by refining the conservative PRGs in the ERA.

The risks are discussed in more detail in Part 6 of the ROD.

2.4.5 Feasibility Study, 2004-2005

With the finalization of the Risk Assessments and completion of Phases I and II of the Remedial Investigation (i.e., with the sampling of a significant number of targeted parcels), the next step in the cleanup agreement with the City is performance of the Feasibility Study.

The following is a listing of the main events which have occurred with regard to the Feasibility Study:

- Feasibility Study (revision 0) was submitted in November 2004 and reviewed
- Feasibility Study (revision 1) was submitted in May 2005 and approved in July 2005

The FS findings are discussed in more detail in Part 7 and 8 of the ROD.

2.4.6 RI Phase III, 2003-2005

It was recognized that several provisions of Florida's risk based corrective action (RBCA) statute (F.S. § 376.30701), enacted on June 20, 2003, would impact Superfund cleanups conducted in Florida. Impacts from this law (along with a desire to collect information needed for quicker implementation of the cleanup) necessitate an additional round of sampling at certain parcels (i.e., Phase HI).

Phase III sampling actions are to occur concurrent with selection of the cleanup approach and remedial design/remedial action activities. Exceedances of applicable RGs delineated during the Phase III sampling will be included for remediation.

2.5 Enforcement Activities

In May 1999, EPA sent Special Notice Letters to the City of Jacksonville identifying them as a Potentially Responsible Parties (PRP) to the Jacksonville Ash site. The City was asked to voluntarily enter into an AOC with EPA to perform a Remedial Investigation and Feasibility Study (RI/FS) for the Jacksonville Ash Site. The City of Jacksonville agreed, and the Order was signed and work began September 1, 1999. Therefore, this Site was never listed on the National Priorities List (NPL); rather, it is a Superfund Alternative Site (SAS) which, pursuant to the 1999 AOC, is consistent with the National Contingency Plan (NCP) for the required remedial investigation/feasibility study. Site remediation is to be funded by the City of Jacksonville. The lead agency for this Site is the EPA.

2.6 Scope and Role of Operable Unit and Other Response Actions

The remediation of the Jacksonville Ash Site is presented in this Record of Decision (ROD). There are two operable units at the Forest Street Incinerator site and 5th & Cleveland Incinerator site of the Jacksonville Ash Site. The remedy and remedial goals presented in this ROD will be effective for both operable units. The area included in Operable Unit 1 (OU1) is presented in the Remedial Investigation Report dated December 2004 and Feasibility Study dated May 2005 (see Figures 5 and 6). The size of OU1 may change somewhat after Phase in RI sampling is completed. The Lonnie C. Miller, Sr. Park site has only one operable unit.

During sampling for air-borne contaminants, small areas of ash were found in the sampling areas located approximately 3000 feet to the east of the Forest Street and 5th & Cleveland Incinerator sites. The air-borne soil sampling did not indicate wide spread lead contamination, but small areas where ash was dumped. It was decided that these areas did not represent a high risk and that sampling and remediation of the main sites immediately around the incinerators were of higher priority. The soils to be sampled and evaluated for remediation that are located east of Hogan's Creek (5th & Cleveland) and east of Chelsea Street (Forest Street) are considered Operable Unit 2 (OU2). Any other work needed to complete the investigation and remediation of the Jacksonville Ash Site will also be included in OU 2 (see Figures 5 and 6).

EPA acknowledges that there can be a separate cooperative cleanup agreement for the Site between the PRP and FDEP or other regulatory agencies. EPA further acknowledges that the PRP is not prevented from doing additional cleanup concurrent with the CERCLA action as long as additional cleanup does not interfere with or impede the CERCLA action. Examples of such additional cleanup may include cleanup of the Site to FDEP soil cleanup target levels that are based on acute toxicity, removal of non-hazardous solid waste, and inclusion of the Site in an area-wide program to reduce or eliminate contamination in the river basin of Hogan's Creek.

2.6.1 Non-Time Critical Removal

The City of Jacksonville requested a non-time critical removal (NTC Removal) that would allow the construction of a tennis facility at the Emmett Reed Park at 5th & Cleveland site (see Figure 6) using a Federal Parks and Recreation Grant for $500,000 and remove the long term threat to human health. The Engineering Evaluation/Cost Analysis (EE/CA) and Action Memorandum were completed in August 9, 2004. The AOC was signed by the City of Jacksonville on June 20, 2005. The City of Jacksonville is paying for NTC Removal.


Legend
Forest Street Incinerator Site
Operable Unit 1
Operable Unit 2
Forest Street Former Incinerator Area
Soil Borings
Airborne Soil Samples
Background Soil Borings
Parcel Lines
Streets

RCD Figure 5


Legend
5th and Cleveland Incinerator Site
Operable Unit 1
Non-Time Critical Removal Area
5th and Cleveland Former Incinerator Area
Soil Borings
Airborne Soil Samples
Parcel Lines
Streets
9TH
MC CONIHE
7TH
STEELE
BLUE
BARNETT
WILCOX
EAVERSON
CLEVELAND
FRANCIS
MT HERMAN
REIMAN
I 95
RAMP
VENUS
JAMES HALL
ARCH
8TH
CALHOUN
BOULEVARD
PERRY
6TH
5TH
4TH
3RD
GROTHE
HART
WOLFE
MYRTLE
PAYNE
JOHNSON
DAVIS
NADIA
LOUISIANA
ILLINOIS
LEE
MADISON
PRINCE
1ST
KINGS
BRADY
UNION
WINDLE
LOGAN
MORGAN
BEAVER
VEGA
STATE
BLANCHE
MINNIE
DEWITT
ELLIS
HOBSON
HAYWOOD
CAROLINE
JEFFERSON
BROAD
PEARL
BETHEL BAPTIST
NORTH
10TH

ROD Figure 6

PART 3: SUMMARY OF ENVIRONMENTAL CONTAMINATION

3.1 Site Overview

The Jacksonville Ash Superfund Site (Site) which includes three separate locations (sites) of former waste processing and/or disposal facilities operated or used by the City of Jacksonville, Florida. EPA grouped the three locations under one site designation because they have common sources and types of waste and to ensure consistency in the approach to site investigation and cleanup. Included are former city incinerators at the Forest Street site and at 5th and Cleveland site and a former dump site that is now occupied by Lonnie C. Miller, Sr. Park.

3.1.1 Forest Street Incinerator

The former Forest Street incinerator site occupies approximately 27 acres in an area of mixed residential and industrial land use, approximately one mile west of Jacksonville's central business district. The City of Jacksonville operated the Forest Street municipal incinerator from the 1910s until the 1960s. Although some of the ash waste was taken to other dump sites for disposal, a considerable amount was apparently deposited at and near the incinerator. The incinerator ash contains several COCs, but the main drivers for the cleanup are lead, arsenic, PAHs and dioxin.

The former incinerator area is now enclosed by a chain link fence to prevent access. The site also includes adjoining land used or potentially affected by waste handling or ash disposal activities, including the present location of the Forest Park Head Start School on the west portion of the site, a city park facility in the south portion of the site and surrounding residential properties.

3.1.2 5th and Cleveland Incinerator

The City of Jacksonville operated another municipal incinerator from the 1910s to the 1960s in an area just north of the intersection of 5th and Cleveland streets, approximately one mile northwest of downtown Jacksonville. The approximately 36 acre site includes the former incinerator location and other areas impacted by the ash. The incinerator ash contains several COCs, but the main drivers for the cleanup are lead, arsenic, PAHs and dioxin.

Portions of the site are now occupied by the Emmett C. Reed Community Center, pool, playground, and picnic areas, and city baseball diamond and basketball courts. Ash, containing glass and metal fragments, was disposed in several areas near the incinerator, including the present location of the park and baseball field, next to the community center, and along the east side of Francis Street. Ash is also found in some of the residential areas surrounding the former incinerator site.

3.1.3 Lonnie C. Miller, Sr. Park

Lonnie C. Miller, Sr. Park is located northeast of the intersection of Moncrief Road and Soutel Drive, approximately five miles northwest of downtown Jacksonville and occupies approximately

108 acres. From the 1940s to the 1960s, the owners operated a dump on a portion of the land, which was formerly used for agricultural purposes. The City of Jacksonville disposed of incinerator ash waste, and other parties reportedly disposed of septic sludge and other wastes at the dump site. The incinerator ash contains several COCs but the main drivers for the cleanup are lead, arsenic, PAHs and dioxin.

In the late 1980s, the City of Jacksonville purchased a large portion of the privately owned land to develop a regional park. The park includes a picnic shelter, playground, and walking areas. The Ribault River which borders the east side of the park, flows northeast to the Trout River.

3.2 Sampling Strategy

During the RI, the following media were sampled: surface soil, subsurface soil, sediment, surface water and groundwater. The RI consisted of what ultimately became three phases.

Phase I included surface water, sediment and groundwater sampling and the following soil sampling events:

- Tier 1 (Delineation) Soil Sampling
- Tier 2 (Delineation) Soil Sampling
- Characterization Soil Sampling
- Airborne Particulate Sampling

Tier 1 soil samples were analyzed by X-ray fluorescence (XRF) for lead to two feet at 6 inch intervals (four samples) to determine the extent of lead and ash contamination. Tier 2 soil samples were 5-point composited samples to two feet, one residential yard or lot further out than the last Tier 1 sample with XRF lead measurements less than 300 mg/kg.

Tier 2 soil samples were used to prove that the residential properties at the edge of the sites were not contaminated. The individual discrete Tier 2 soil samples and central composite for each of the four depth intervals were analyzed for XRF lead and visually for ash. The 0-6 inch Tier 2 soil samples was sent to the laboratory to be analyzed for full Target Analyte List (TAL) and 20 % Target Compound List (TCL) except VOCs but including dioxin and furans. Both Tier 1 and 2 locations had a single boring advanced to the water table for visual examination for ash.

Characterization soil samples were obtained in areas of known ash deposits to determine the composition of the ash and to define vertical extent. The characterization borings were advanced at one foot intervals to one foot below the ash with each interval visually checked for ash and for XRF lead. At least three soil samples from the surface (0-6 inches), within the ash and one foot below the ash were collected for laboratory analyses. Of the three (sometimes four) soil samples per characterization boring, 30% were analyzed for full TAL and 15% for TCL (except VOCs) including dioxin and furans.

Airborne particulate soil sampling was conducted at the two former incinerator sites. Based on the historical wind rose of prevalent wind directions and a simple EPA modeling of the possible areas of particulate deposition, soil samples were collected at 8 large particulate locations approximately

1,500 to 2,000 feet east of the former incinerator locations at the Forest Street and 5th & Cleveland sites. Eight small paniculate soil samples were collected approximately 3,500 to 4,500 feet east of the former incinerator locations. A boring at each location was advanced to the water table at one foot intervals and visually checked for ash and XRF lead. The 0-6 inch surface samples were sent to the laboratory and analyzed for TAL metals, PAHs and 25% for dioxin and furans.

Phase II consisted of groundwater sampling and the following soil sampling event:

- Parcel-by-Parcel Soil Sampling (i.e., residential lot by lot sampling)

Around the time the June 2003 Feasibility Study was submitted, it was recognized an additional round of RI sampling at certain parcels would be worthwhile (i.e., RI Phase III). Phase III will began in late 2005 and consisted of the following:

- Parcel-by-Parcel soil sampling (i.e., residential lot by lot sampling) of those properties not previously sampled (mainly due to failure to obtain access) and re-sampling of property where information on constituent concentrations are incomplete.

Information collected during the Phase III RI will be used to further refine the areas needing remediation. Any properties identified in Phase III sampling will be addressed in a manner consistent with the selected remedy.

3.3 Known and/or Suspected Sources of Contamination

The source of contamination is incinerator ash from the City of Jacksonville municipal incinerators at Forest Street and 5th & Cleveland, which was deposited around the incinerator sites and at the Lonnie C. Miller, Sr. Park site. Although the ash is identified by the presence of glass and metal fragments (collectively referred to as "clinkers") and contains metals such as lead and arsenic and organics such as PAHs and dioxins.

3.4 Surface and Subsurface Soil Contamination

During Phase I of the RI, surface soil samples were obtained from 777 locations in 2000 through 2002. The intent of the soil sampling effort was to delineate the ash source areas and the perimeter of the source areas through visual observation, XRP screening for lead, and laboratory analysis for inorganics and organics. There were also 60 background soil locations sampled. The background samples were obtained for the three Jacksonville Ash sites and the Brown's Dump site (a separate SAS with similar ash contamination), from surface and subsurface soil not affected by site activities. Of the 777 sample locations, a subset were analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) and dioxin.

During Phase II of the RI, a total of 932 parcels of property were sampled. Each sampling event at a parcel consisted of a central boring and 4 outer borings designed to spatially represent a land parcel, lot or backyard. The one central boring was sampled to the water table and checked for visual ash and XRF lead. The four additional corner borings were sampled to 2 feet and checked for visual ash and XRF lead. Any discreet sample with XRF lead measurements in the range of 200-400 mg/kg were analyzed in the laboratory for lead and arsenic. A five-point soil composite sample (0-6 inches bls) was also collected from each parcel. The composite samples were examined in the field for visual ash and XRP lead. In addition, some of the surface soil composite samples were submitted to the laboratory for analysis of TAL metals (20 percent), PAHs (10 percent) and dioxins/furans (10 percent).

Surface and subsurface soils are contaminated with constituents associated with ash (e.g., lead, arsenic, PAHs, etc). Appendix C of the ROD contains tables with the occurrence and distribution of the Phase I RI soil sampling constituents of potential concern. Figures 7, 8 and 9 presents the location of ash from Phase 1 of the RI. Figures 10, 11 and 12 present the distribution of lead (measured by XRF) as determined during Phase I of the RI. Figures 13, 14 and 15 show the distribution of lead and other COC exceedences of RGs on a parcel-by-parcel basis from the Phase II RI. Figures 16, 17 and 18 show the areas that are set for remediation for OU1 based on information to date. The size of these areas may change somewhat based on any additional data collected during the Phase III RI sampling or during the remedial design or remedial action. The estimated volume of surface and subsurface soil contaminated at concentrations above RGs at all three sites is approximately 1,323,000 cubic yards.

The samples for air-borne surface soil deposition were obtained in areas located approximately 1,500 to 2,000 feet (large particulate) and 3,500 to 4,500 feet (small participate) east of the former incinerator sites at Forest Street and 5th & Cleveland. The sampling results at the Forest Street large particulate locations show 2 of the 9 soil samples have lead above 400 ppm, arsenic above 2.1 ppm and PAHs above the background levels. Dioxin was above the dioxin background of 8.8 ppm in 2 of the 2 samples analyzed for dioxin. The sampling results at the 5th & Cleveland large particulate locations show none of the 8 soil samples have lead above 400 ppm or arsenic above 2.1 ppm. PAHs above the background levels were found in 1 of the 8 samples. Dioxin was above the dioxin background of 8.8 ppm in 2 of the 3 samples analyzed for dioxin. These results did not indicate wide spread air-borne deposition above remedial goals, however the soil sampling for OU1 has expanded to encompass the large particulate sampling areas. Remediation of these areas will take place along with the rest of OU1.

The sampling results at the Forest Street small particulate locations show 4 of the 9 soil samples have lead above 400 ppm, 5 of the 9 soil samples have arsenic above 2.1 ppm and 3 of the 9 soil samples have PAHs above the background levels. Dioxin was above the dioxin background of 8.8 ppm in 2 of the 2 samples analyzed for dioxin. The sampling results at the 5th & Cleveland small particulate locations show 1 of the 8 soil samples have lead above 400 ppm. None of the small particulate soil samples have arsenic above 2.1 ppm or PAHs above the background levels. Dioxin was not found above the dioxin background of 8.8 ppm in the 1 sample analyzed for dioxin. These results did not indicate wide spread air-borne deposition above remedial goals, however small deposits of ash were identified in some areas. These small deposits are thought to be dumping areas and not from air deposition. The small particulate sampling areas are proposed for additional sampling during the OU2 sampling and will be remediated as part of OU2.

3.5.1 Forest Street Incinerator

During RI sampling events in 2000, a total of 8 sediment samples and 7 sediment background samples were obtained from McCoy's Creek. All 15 samples were analyzed for TAL metals, SVOCs, pesticides and polychlorinated biphenyls (PCBs). Three samples were also analyzed for dioxins and VOCs.

Table 1 lists the constituents detected by sediment analysis.

3.5.2 5th and Cleveland Incinerator

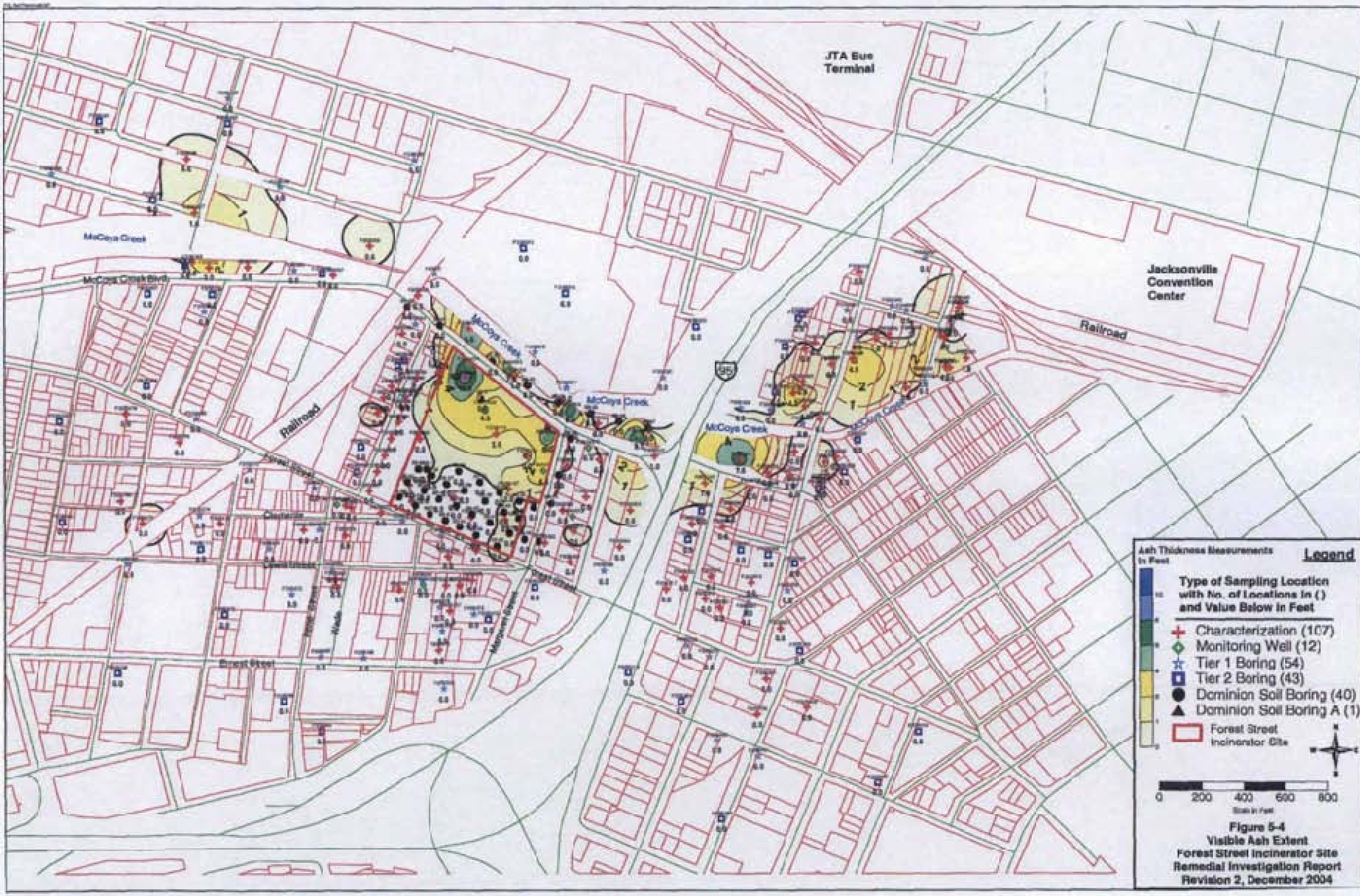
During RI sampling events in 2000, a total of 14 sediment samples were obtained from the drainage ditch, underground culvert and Hogan's Creek. All 14 samples were analyzed for TAL metals, SVOCs, pesticides and polychlorinated biphenyls (PCBs). Two samples were also analyzed for dioxins and VOCs.

Table 2 lists the constituents detected by sediment analysis.

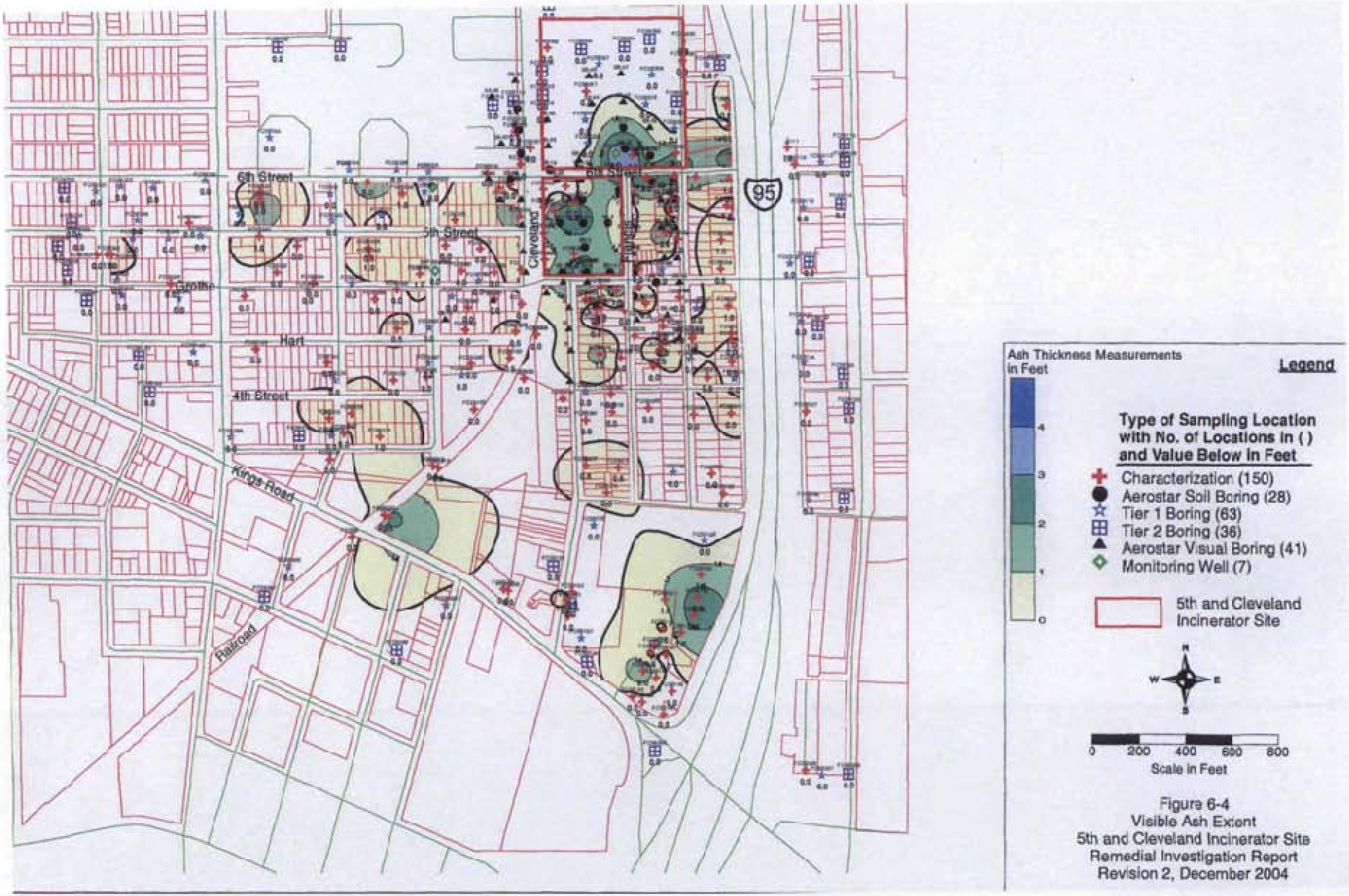
3.5.3 Lonnie C. Miller, Sr. Park

During RI sampling events in 2000, a total of 26 sediment samples and 8 sediment background samples were obtained from the drainage ditch in the park and the Ribault River. All 34 samples were analyzed for TAL metals, SVOCs, pesticides and polychlorinated biphenyls (PCBs). Eight samples were analyzed for VOCs. Five samples were analyzed for dioxin by screening method (Method 4425) and one sample by lab method (Method 8290).

Table 3 lists the constituents detected by sediment analysis.


JTA Bus Terminal
Jacksonville Convention Center
Railroad
McCoys Creek
McCoys Creek Blvd
Ash Thickness Measurements in Feet
Legend
Type of Sampling Location with No. of Locations in () and Value Below in Feet
Characterization (107)
Monitoring Well (12)
Tier 1 Boring (54)
Tier 2 Boring (43)
Dominion Soil Boring (40)
Dominion Soil Boring A (1)
Forest Street Incinerator Site
0 200 400 600 800
Figure 5-4
Visible Ash Extent
Forest Street Incinerator Site
Remedial Investigation Report
Revision 2, December 2004

ROD Figure 7


6th Street
5th Street
Grothe
Hart
4th Street
Kings Road
Railroad
Cleveland
Phillips
95
Ash Thickness Measurements in Feet
Legend
4
3
2
1
0
Type of Sampling Location with No. of Locations in ( ) and Value Below in Feet
Characterization (150)
Aerostar Soil Boring (28)
Tier 1 Boring (63)
Tier 2 Boring (36)
Aerostar Visual Boring (41)
Monitoring Well (7)
5th and Cleveland Incinerator Site
N
W
E
S
0
200
400
600
800
Scale in Feet
Figure 6-4
Visible Ash Extent
5th and Cleveland Incinerator Site
Remedial Investigation Report
Revision 2, December 2004

ROD Figure 8

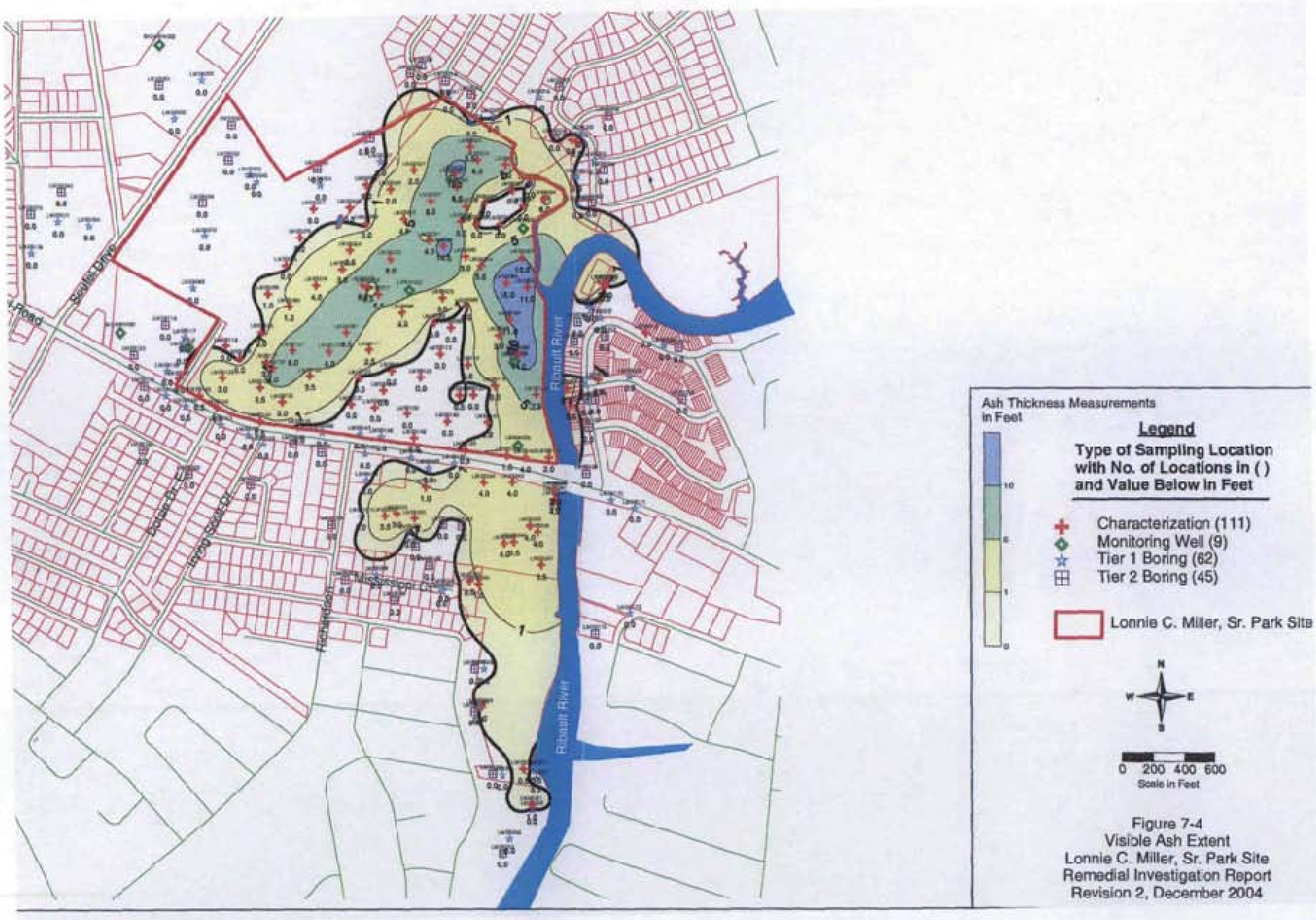
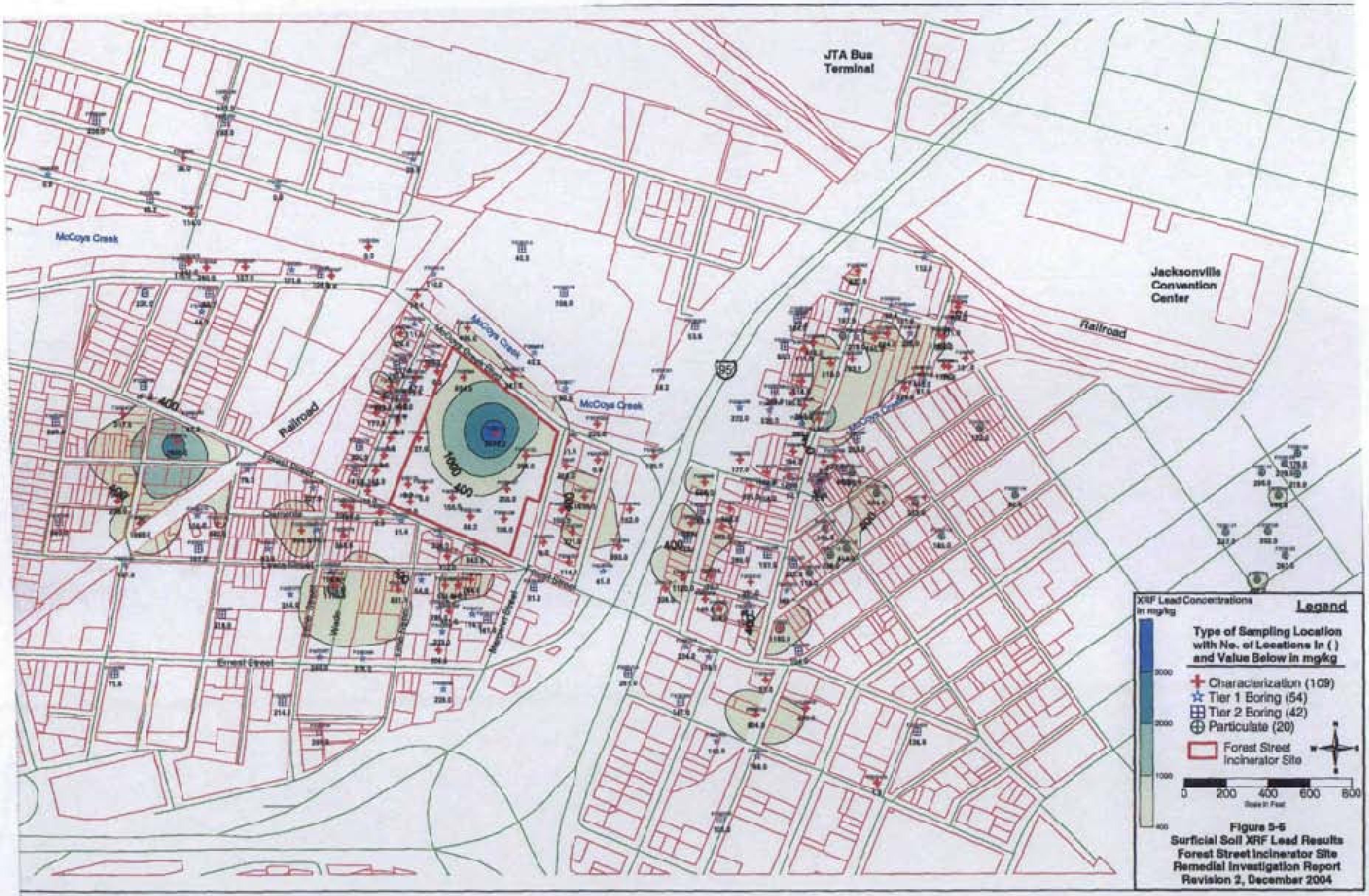


Figure 7-4
Visible Ash Extent
Lonnie C. Miller, Sr. Park Site
Remedial Investigation Report
Revision 2, December 2004

ROD Figure 9



ROD Figure 10

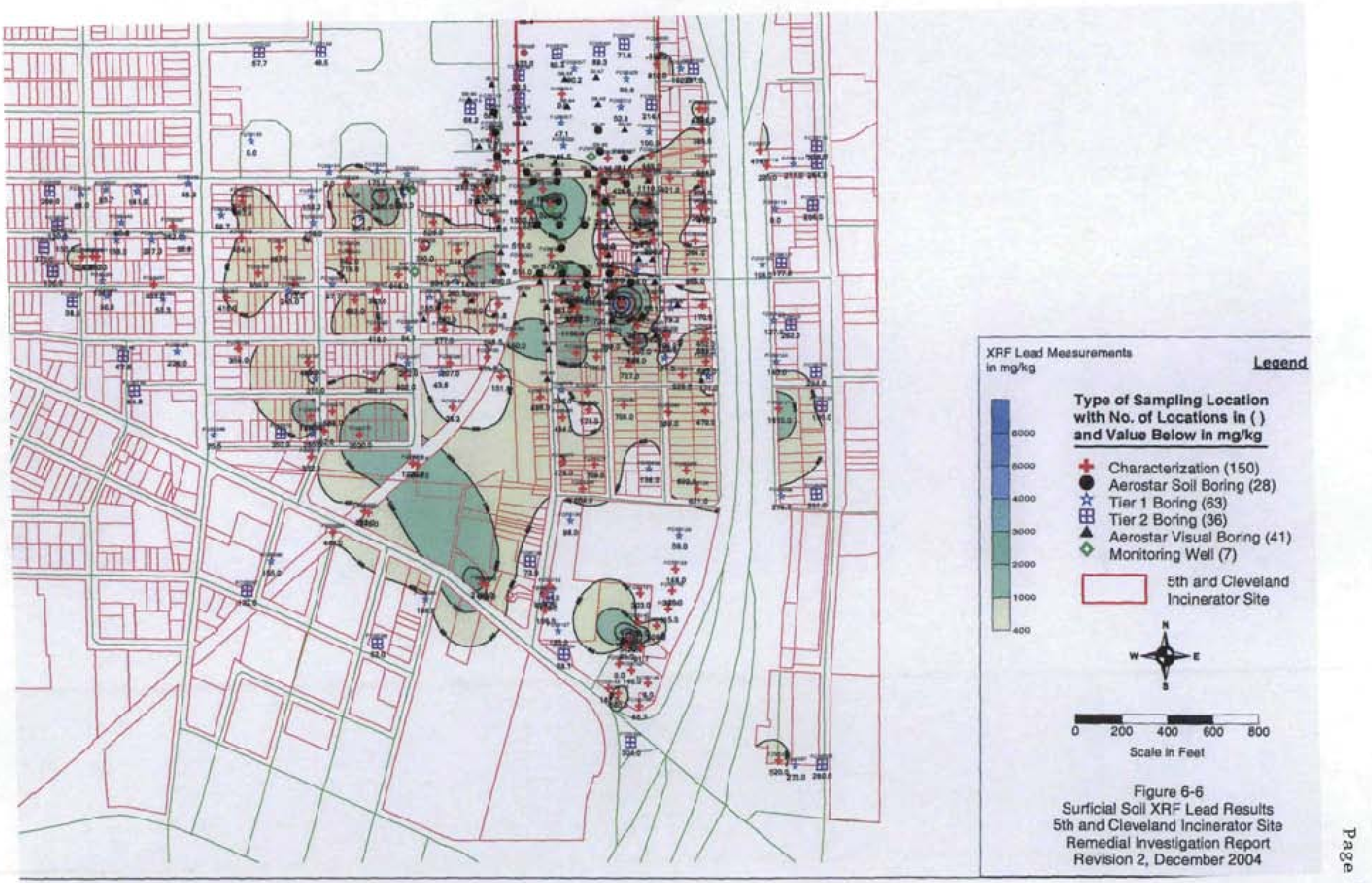


Figure 6-6
Surficial Soil XRF Lead Results
5th and Cleveland Incinerator Site
Remedial Investigation Report
Revision 2, December 2004

ROD Figure 11

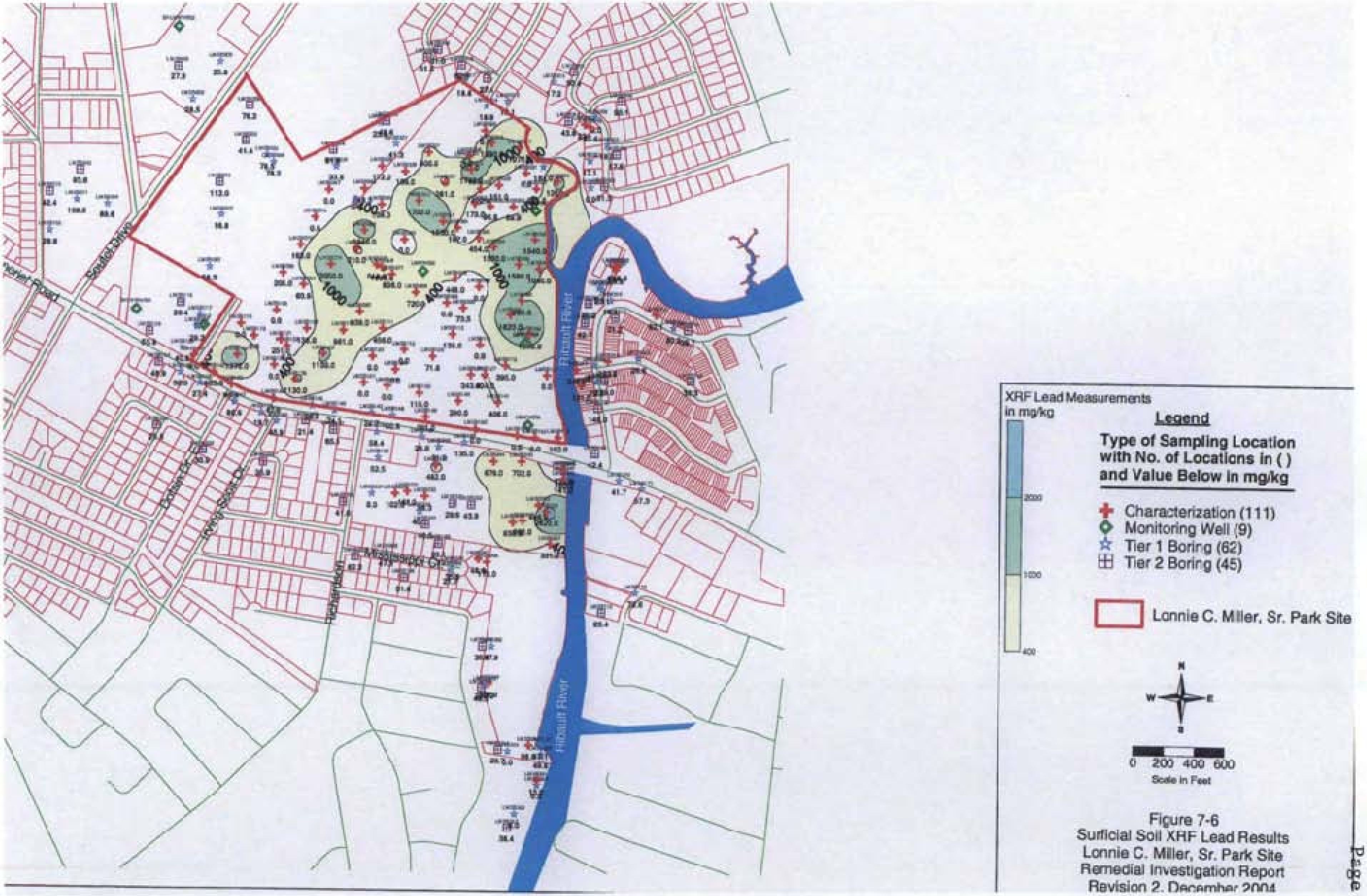
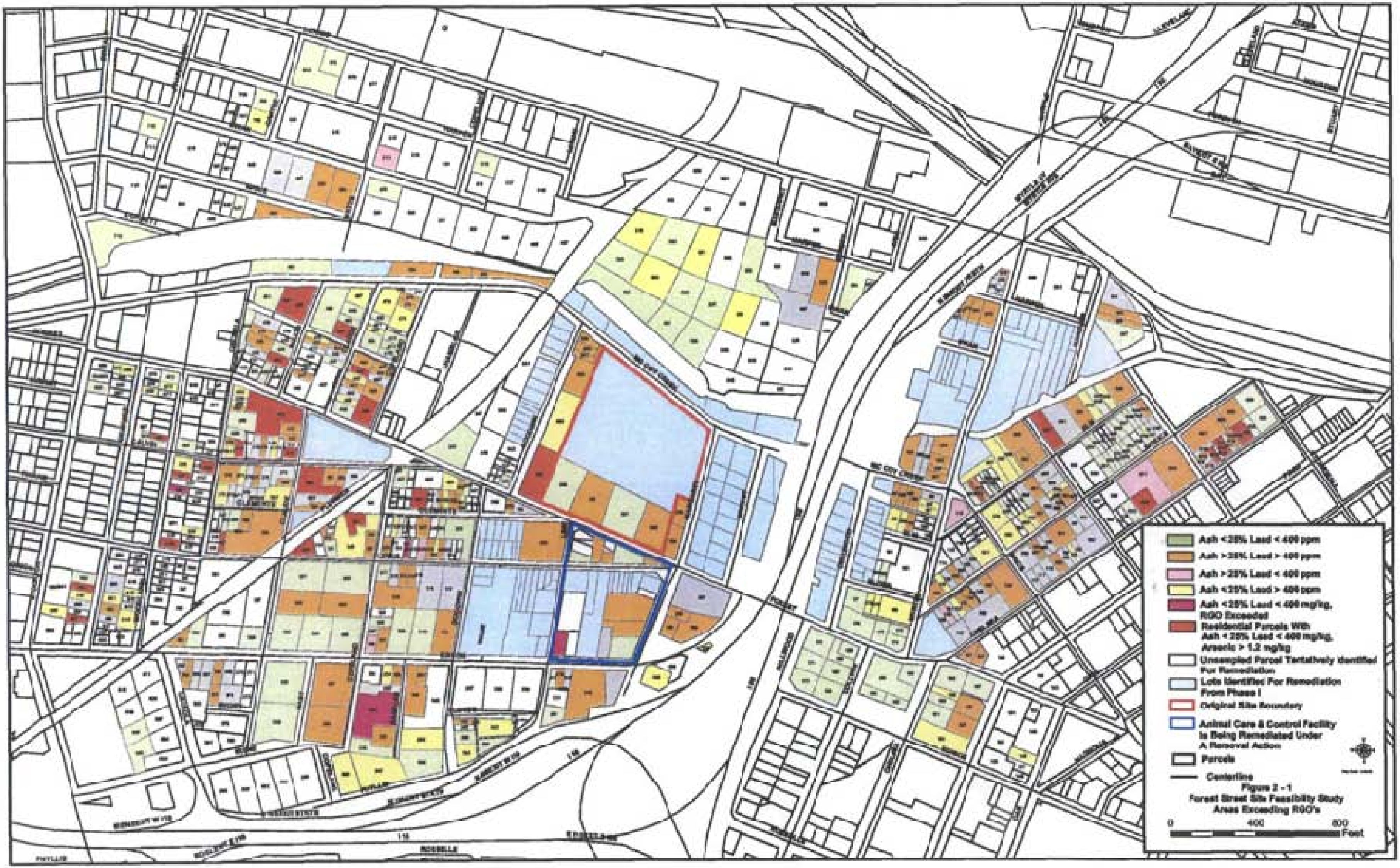
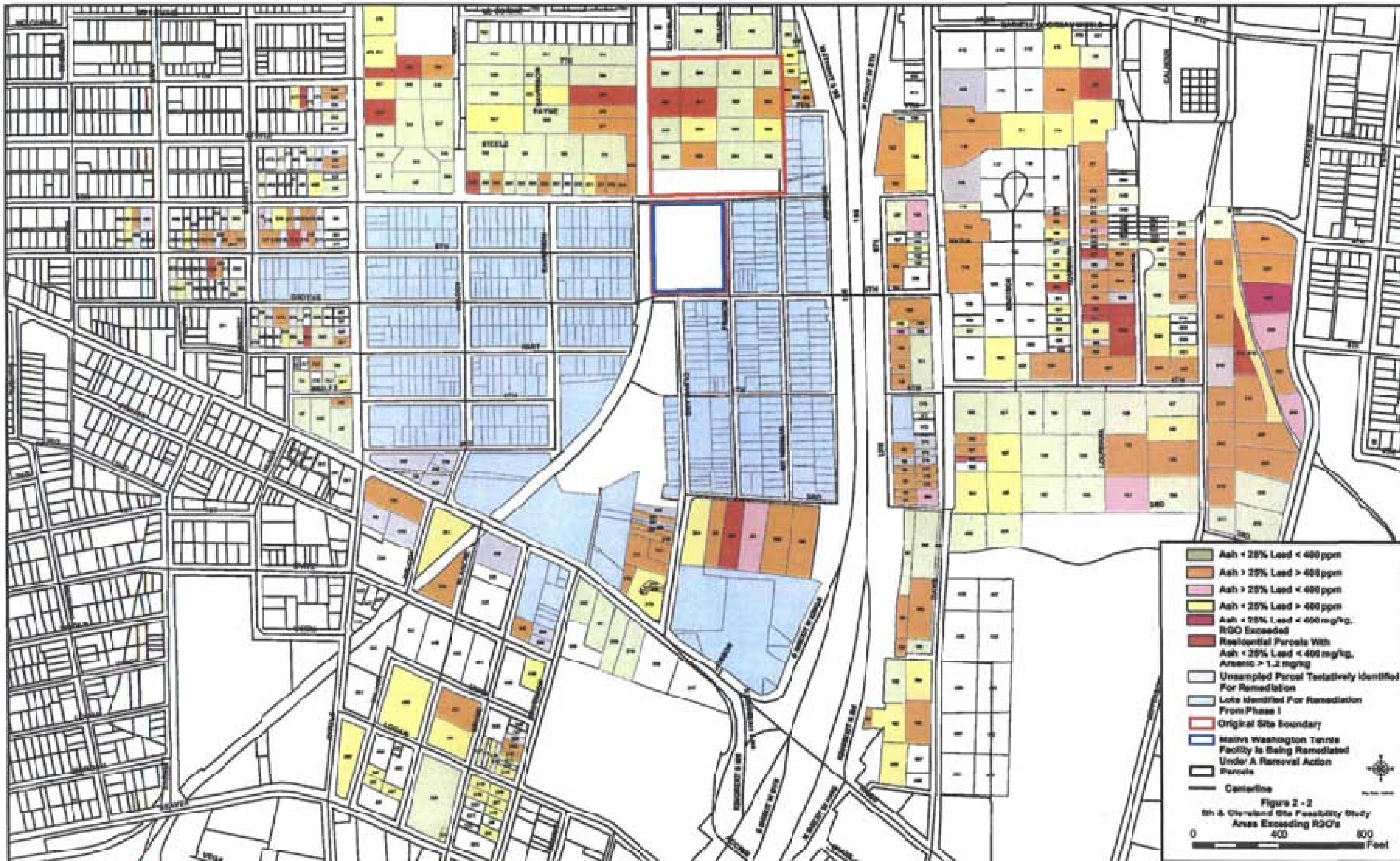


Figure 7-6
Surficial Soil XRF Lead Results
Lonnie C. Miller, Sr. Park Site
Remedial Investigation Report
Revision 2, December 2004

ROD Figure 12

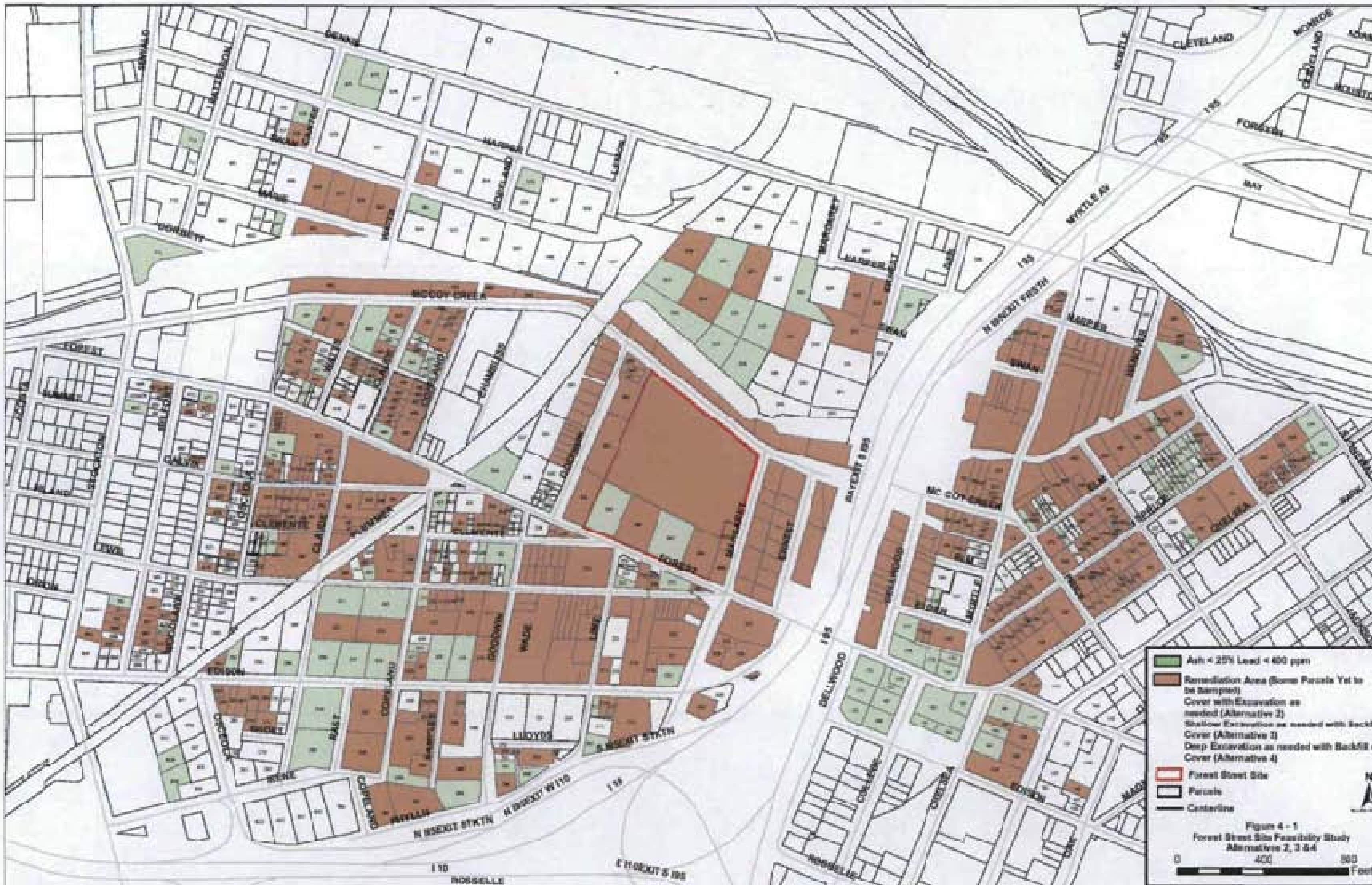


ROD Figure 13

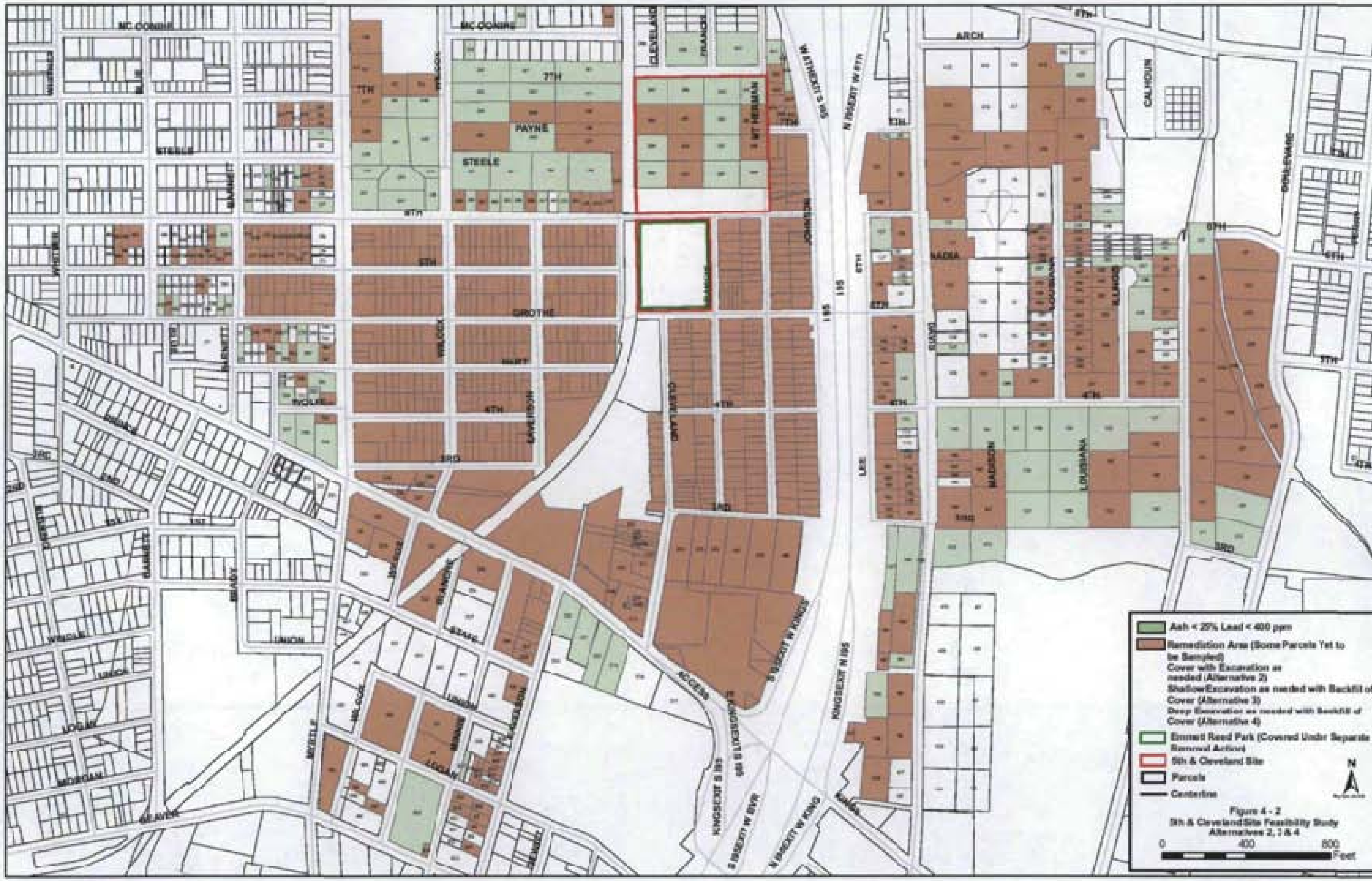


ROD Figure 14

ROD Figure 15



ROD Figure 16



ROD Figure 17

ROD Figure 18

Table 2-5
Sediment Sample Results and Selection of PCOPEC and COPEC
Forrest Street Site
Jacksonville Ash Superfund Site

ParameterName	Samples from Areas of Expected Contamination																Total Samples	Total Detections
	FSSW001		FSSW002		FSSW003		FSSW004		FSSW005		FSSW006		FSSW007		FSSW008			
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Dioxins (ng/KG)																		
ADJUSTED TEQ OF 2,3,7,8-TCDD	21.33	=							13.14	=			12.626	=			3	3
Inorganics mg/KG)																		
ALUMINUM	1100	=	2100	=	1700	=	4800	J	5200	J	1700	J	1200	J	590	J	8	8
ANTIMONY		UJ		UJ		UJ		U		U		U	14	J		U	8	1
ARSENIC	1.8	J	3.9	=	2.2	J	4.9	=	2.5	J	2.7	=	1.7	J	0.92	J	8	8
BARIUM	35	J	60	J	27	J	51	J	130	J	35	J	26	J	10	J	8	8
BERYLLIUM	0.14	J	0.2	J	0.14	J	0.34	J	1.2	J	0.19	J	0.089	J		U	8	7
CADMIUM	0.43	J	0.91	J	0.4	J	1	J	0.63	J	0.5	J	0.38	J	0.17	J	8	8
CALCIUM	45000	J	65000	J	29000	J	42000	=	94000	=	54000	=	34000	=	12000	=	8	8
CHROMIUM_TOTAL	11	=	20	=	9.3	=	15	=	12	=	29	=	9.1	=	3.9	=	8	8
COBALT	1.1	J	2	J	0.83	J	1.9	J	1.3	J	1	J	0.71	J	0.49	J	8	8
COPPER	16	=	28	=	13	=	58	=	17	=	21	=	12	=	12	=	8	8
IRON	3800	=	7800	=	3500	=	11000	=	4300	=	4700	=	3700	=	1600	=	8	8
LEAD	64	J	240	J	49	J	110	J	170	J	320	=	460	J	190	J	8	8
MAGNESIUM	1300	=	2300	=	1000	J	5600	=	4000	=	1400	=	1200	J	620	J	8	8
MANGANESE	74	=	130	=	60	=	100	J	180	J	60	J	56	J	20	J	8	8
NICKEL	3.1	J	5.3	J	2.9	J	5.4	J	6.6	J	3.3	J	2.6	J	1	J	8	8
POTASSIUM	150	J	240	J	270	J	780	J	760	J	350	J	220	J	140	J	8	8
SILVER	0.25	J		U		U		UJ	2.7	=		UJ		UJ		UJ	8	2
SODIUM	800	J	1600	J	1900	=	4900	=	1600	=	2400	J	1400	J	1900	J	8	8
VANADIUM	5	J	9.7	J	4.3	J	12	J	5.5	J	7.3	J	3.9	J	1.9	J	8	8
ZINC	480	J	770	J	390	J	480	=	480	=	480	=	400	=	300	=	8	8
MERCURY		UJ	0.087	J		UJ	0.22	=		U		U		U		U	8	2
Pesticides (ug/KG)																		
ALPHA-CHLORDANE	11	J	8.1	J	3	J	6.2	J	6	=	3.7	J	2.6	J	2.2	J	8	8
DIELDRIN	9.1	J		U	1.6	J		U	2.2	J		U		U		U	8	3
ENDRIN		U		U	0.7	J		U		U		U		U		U	8	1
ENDRIN ALDEHYDE		UJ		U	4.6	J		U		U		U		U		U	8	1
GAMMA-CHLORDANE	34	=	32	J	12	J	17	J	16	=	14	=	3.5	=	6	=	8	8
p,p'-DDD	5.7	=		U	1.2	J		U		U		U	5.2	=		U	8	3
p,p'-DDE	4.9	J	2	J	1.2	J	3.9	J	3.7	J	3.8	J	1.3	J	1.6	J	8	8
PCBs (ug/KG)																		
PCB-1248 (AROCHLOR 1248)	170	=		U		U		U		U		U		U		U	8	1
PCB-1254 (AROCHLOR 1254)	190	=		U		U		U		U		U		U		U	8	1
PCB-1260 (AROCHLOR 1260)	110	=		U		U	67	J	48	=	76	=	33	J	46	=	8	6
Volatile Organic Compounds (ug/KG)																		
1,4-DICHLOROBENZENE	9	J								U				U			3	1
ACETONE	160	=								UJ				UJ			3	1
CARBON DISULFIDE	4.1	J							5.5	J			20	=			3	3
METHYL ETHYL KETONE (2-BUTANONE)	26	=							22	=			14	=			3	3
TOLUENE	3.2	J								U				U			3	1
Semivolatile Organic Compounds (ug/KG)																		
ACENAPHTHYLENE		U		U		U	52	J		U		U		U		U	8	1
ANTHRACENE	46	J		U		U		U	120	J		U		U		U	8	2
BENZO(a)ANTHRACENE	240	J	140	J	200	J	340	J	610	=	120	J	100	J	100	J	8	8
BENZO(a)PYRENE	290	J		U	270	J	540	J	640	=	180	J	150	J	130	J	8	7
BENZO(b)FLUORANTHENE	270	J		U	310	J	580	J	570	=	210	J	150	J	160	J	8	7
BENZO(g,h,i)PERYLENE	260	J		U	230	J	500	J	480	J	180	J	150	J	130	J	8	7
BENZO(k)FLUORANTHENE	300	J		U	240	J	330	J	510	=	120	J	130	J	89	J	8	7
BENZYL BUTYL PHTHALATE	87	J		U	200	J		U		U		U		U	63	J	8	3
bis(2-ETHYLHEXYL) PHTHALATE		U		U	350	J		U		U		U		U		U	8	1
CARBAZOLE	42	J		U		U		U	32	J		U		U		U	8	2
CHRYSENE	350	J	240	J	280	J	440	J	670	=	170	J	160	J	140	J	8	8
DIBENZ(a,h)ANTHRACENE	77	J		U		U	210	J	120	J		U		U		U	8	3
DI-n-OCTYLPHTHALATE	110	J		U	100	J		U		U	81	J		U		U	8	3
FLUORANTHENE	680	=	340	J	320	J	460	J	1300	=	260	J	230	J	260	J	8	8
INDENO(1,2,3-c,d)PYRENE	270	J		U	220	J	300	J	310	J	100	J	110	J	96	J	8	7
PHENANTHRENE	220	J	88	J	88	J	120	J	330	J	61	J	63	J	57	J	8	8
PYRENE	480	=	370	J	380	J	770	=	1000	=	240	J	230	J	200	J	8	8
Physical Characteristics (mg/KG)																		
TOTAL ORGANIC CARBON	13000	=	20000	=	11000	=	40000	=	17000	=	6200	=	5500	=	4000	=	8	8

ParameterName	AOC Samples			Screening for PCOPC Selection				Refinement for Direct Exposure COPC Selection				
	Minimum Detected	Average Detected	Maximum Detected	Approved Screening Value	Total Detections > Screening Value	AOC Screening HQ Based on Maximum	Selected as PCOPC?	Approved Refinement Value	Total Detections > Refinement Value	AOC Refinement HQ Based on Maximum	Selected as COPC?	Rationale for selection as COPEC
Dioxins (ng/KG)												
ADJUSTED TEQ OF 2,3,7,8-TCDD	12.63	15.70	21.33	2.5	3	8.53	Yes	25	0	0.85	No	HQ was below 1
Inorganics mg/KG)												
ALUMINUM	590.00	2298.75	5200.00	-	-	-	Yes	-	-	-	Yes	No refinement value
ANTIMONY	14.00	14.00	14.00	2	1	7.00	Yes	25	0	0.56	No	HQ was below 1
ARSENIC	0.92	2.58	4.90	7.24	0	0.68	No					
BARIUM	10.00	46.75	130.00	-	-	-	Yes	200	0	0.65	No	HQ was below 1
BERYLLIUM	0.09	0.33	1.20	-	-	-	Yes	-	-	-	Yes	No refinement value
CADMIUM	0.17	0.55	1.00	0.676	2	1.48	Yes	3.5	0	0.29	No	HQ was below 1
CALCIUM	12000.00	46875.00	94000.00	-	-	-	Yes	-	-	-	No	Essential nutrient
CHROMIUM_TOTAL	3.90	13.68	29.00	52.3	0	0.55	No					
COBALT	0.49	1.17	2.00	50	0	0.04	No					
COPPER	12.00	21.88	58.00	18.7	3	2.99	Yes	108	0	0.52	No	HQ was below 1
IRON	1600.00	5050.00	11000.00	-	-	-	Yes	20000	0	0.55	No	HQ was below 1
LEAD	49.00	199.13	460.00	30.2	7	15.23	Yes	91.3	6	5.04	Yes	HQ greater than 1
MAGNESIUM	620.00	2177.50	5600.00	-	-	-	Yes	-	-	-	No	Essential nutrient
MANGANESE	20.00	85.00	180.00	-	-	-	Yes	460	0	0.39	No	HQ was below 1
NICKEL	1.00	3.78	6.60	15.9	0	0.42	No					
POTASSIUM	140.00	363.75	780.00	-	-	-	Yes	-	-	-	No	Essential nutrient
SILVER	0.25	1.48	2.70	0.733	1	3.68	Yes	1.77	1	1.53	No	Low magnitude of exceedance
SODIUM	800.00	2062.50	4900.00	-	-	-	Yes	-	-	-	No	Essential nutrient
VANADIUM	1.90	6.20	12.00	-	-	-	Yes	-	-	-	Yes	No refinement value
ZINC	300.00	487.50	770.00	124	7	6.21	Yes	270	8	2.85	Yes	HQ greater than 1
MERCURY	0.09	0.15	0.22	0.13	1	1.69	Yes	0.466	0	0.45	No	HQ was below 1
Pesticides (ug/KG)												
ALPHA-CHLORDANE	2.20	5.23	11.00	0.5	7	22.00	Yes	4.79	4	2.30	Yes	HQ greater than 1
DIELDRIN	1.60	4.30	9.10	0.02	3	455.00	Yes	4.3	1	2.12	Yes	HQ greater than 1
ENDRIN	0.70	0.70	0.70	0.02	1	35.00	Yes	62.4	0	0.01	No	HQ was below 1
ENDRIN ALDEHYDE	4.60	4.60	4.60	3200	0	0.001	No					
GAMMA-CHLORDANE	3.50	16.69	34.00	0.5	7	68.00	Yes	4.79	7	7.10	Yes	HQ greater than 1
p,p'-DDD	1.20	4.03	5.70	1.22	2	4.67	Yes	7.81	0	0.73	No	HQ was below 1
p,p'-DDE	1.20	2.80	4.90	2.07	4	2.37	Yes	6.75	0	0.73	No	HQ was below 1
PCBs (ug/KG)												
PCB-1248 (AROCHLOR 1248)	170.00	170.00	170.00	34.1	1	4.99	Yes	189	0	0.90	No	HQ was below 1
PCB-1254 (AROCHLOR 1254)	190.00	190.00	190.00	34.1	1	5.57	Yes	189	1	1.01	No	Low magnitude of exceedance
PCB-1260 (AROCHLOR 1260)	33.00	63.00	110.00	34.1	4	3.23	Yes	189	0	0.58	No	HQ was below 1
Volatile Organic Compounds (ug/KG)												
1,4-DICHLOROBENZENE	9.00	9.00	9.00	1450	0	0.01	No					
ACETONE	160.00	160.00	160.00	453.37	0	0.35	No					
CARBON DISULFIDE	4.10	9.87	20.00	133.97	0	0.15	No					
METHYL ETHYL KETONE (2-BUTANONE)	14.00	20.67	26.00	138.96	0	0.19	No					
TOLUENE	3.20	3.20	3.20	52500	0	0.0001	No					
Semivolatile Organic Compounds (ug/KG)												
ACENAPHTHYLENE	52.00	52.00	52.00	5.87	1	8.86	Yes	128	0	0.41	No	HQ was below 1
ANTHRACENE	46.00	83.00	120.00	46.9	1	2.56	Yes	245	0	0.49	No	HQ was below 1
BENZO(a)ANTHRACENE	100.00	231.25	610.00	74.8	7	8.16	Yes	385	1	1.58	No	Low magnitude of exceedance
BENZO(a)PYRENE	130.00	314.29	640.00	88.8	6	7.21	Yes	763	0	0.84	No	HQ was below 1
BENZO(b)FLUORANTHENE	150.00	321.43	580.00	10400	0	0.06	No					
BENZO(g,h,i)PERYLENE	130.00	277.86	500.00	170	5	2.94	Yes		-	-	Yes	No refinement value
BENZO(k)FLUORANTHENE	89.00	245.57	510.00	240	3	2.13	Yes	-	-	-	Yes	No refinement value
BENZYL BUTYL PHTHALATE	63.00	116.67	200.00	4190	0	0.05	No					
bis(2-ETHYLHEXYL) PHTHALATE	350.00	350.00	350.00	182	1	1.92	Yes	2647	0	0.13	No	HQ was below 1
CARBAZOLE	32.00	37.00	42.00	-	-	-	Yes	-	-	-	Yes	No refinement value
CHRYSENE	140.00	305.00	670.00	108	7	6.20	Yes	846	0	0.79	No	HQ was below 1
DIBENZ(a,h)ANTHRACENE	77.00	135.67	210.00	6.22	3	33.76	Yes	135	1	1.56	No	Low magnitude of exceedance
DI-n-OCTYLPHTHALATE	81.00	97.00	110.00	40600	0	0.0027	No					
FLUORANTHENE	230.00	487.50	1300.00	113	7	11.50	Yes	1494	0	0.87	No	HQ was below 1
INDENO(1,2,3-c,d)PYRENE	96.00	200.86	310.00	200	4	1.55	Yes		-	-	Yes	No refinement value
PHENANTHRENE	57.00	129.63	330.00	86.7	5	3.81	Yes	515	0	0.64	No	HQ was below 1
PYRENE	200.00	458.75	1000.00	153	7	6.54	Yes	875	1	1.14	No	Low magnitude of exceedance
Physical Characteristics (mg/KG)												
TOTAL ORGANIC CARBON	4000.00	14587.50	40000.00	-	-	-	No					

ROD Table 1

Notes

= Unqualified
U, Undetected
J, Estimated value
R, Data was rejected
Samples shown in yellow exceed screening value
Samples shown in orange exceed refinement value
Screened COPEC are blacked out

Table 2-5
Sediment Sample Results and Selection of PCOPEC and COPEC
Jacksonville Ash Superfund Site
5th and Cleveland
Page 1 of 1

ParameterName	Samples from Areas of Expected Contamination														AOC Samples					Screening for PCOPC Selection				Refinement for Direct Exposure COPC Selection				
	FCSW001		FCSW004		FCSW005		FCSW006		FCSW011		FCSW012		FCSW013		Total Samples	Total Detections	Minimum Detected	Average Detected	Maximum Detected	Approved Screening Value	Total Detections > Screening Value	AOC Screening HQ Based on Maximum	Selected as PCOPC?	Approved Refinement Value	Total Detections > Refinement Value	AOC Refinement HQ Based on Maximum	Selected as COPC?	Rationale for selection as COPEC
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q														
Dioxins (ng/KG)																												
ADJUSTED TEQ OF 2,3,7,8-TCDD					34.112	J					604 34	J			2	2	34 112	319 22	604 3364	2 5	2	241.73	Yes	25	2	24 17	Yes	HQ was above 1
Inorganics (mg/KG)																												
ALUMINUM	1500	=	500	=	400	=	260	=	430	=	9100	=	470	=	7	7	260 00	1808 57	9100 00	-	-	-	Yes	-	-	-	Yes	No refinement value
ANTIMONY		U		U		U		U		U	2.9	J		U	7	1	2 90	2 90	2 90	2	1	1.45	Yes	25	0	0 12	No	HQ was below 1
ARSENIC		U		U		U		U	0 85	J	12	=		U	7	2	0 85	6 43	12 00	7 24	1	1.66	Yes	17	0	0 71	No	HQ was below 1
BARIUM	15	J	5	J	3 5	J	4	J	8 5	J	280	=	21	J	7	7	3 50	48 14	280 00	-	-	-	Yes	200	1	1.40	Yes	Hot spot at FCSW012
BERYLLIUM		U		U		U		U		U	0 98	J		U	7	1	0 98	0 98	0 98	-	-	-	Yes	-	-	-	Yes	No refinement value
CADMIUM	0 24	J		U		U		U	0 53	J	2 7	J		U	7	3	0 24	1 10	2 70	0 678	1	3 99	Yes	3 5	0	0 77	No	HQ was below 1
CALCIUM	150000	=	14000	=	2000	=	2300	J	17000	J	43000	J	8400	J	7	7	2000 00	33814 29	150000 00		-	-	Yes	-	-	-	No	Essential nutrient
CHROMIUM, TOTAL	6 5	=	1 4	J	0 64	J	0 92	J	1 7	J	46	J	3 4	=	7	7	0 64	8 65	46 00	52 3	0	0 88	No	90	0	0 51	No	HQ was below 1
COBALT	0 35	J		U		U		U	0 27	J	4 5	J		U	7	3	0 27	1 71	4 50	50	0	0 09	No	[redacted]				
COPPER	7 2	J	2 1	J		U		U		U	190	=		U	7	3	2 10	68 43	190 00	18 7	1	10 16	Yes	108	1	1.76	Yes	Hot spot at FCSW012
IRON	2200	J	1100	J	670	J	590	=	3100	=	37000	=	2100	=	7	7	590 00	6680 00	37000 00	-		-	Yes	20000	1	1 85	Yes	Hot spot at FCSW012
LEAD	32	=	8 4	=	3 9	=	6 8	=	36	=	670	=	26	=	7	7	3 90	111 87	670 00	30 2	3	22 19	Yes	91 3	1	7.34	Yes	Hot spot at FCSW012
MAGNESIUM	1100	J	150	J	44	J	150	J	270	J	2100	J	360	J	7	7	44 00	596 29	2100 00	-	-	-	Yes	-	-	-	No	Essential nutrient
MANGANESE	28	J	35	J	3 3	J	3 8	J	27	=	180	J	14	=	7	7	3 30	41 53	180 00	-		-	Yes	480	0	0 39	No	HQ was below 1
NICKEL	1 8	J	0 49	J		U		U	0 82	J	23	J	1 1	J	7	5	0 49	5 44	23 00	15 9	1	1.45	Yes	42 8	0	0 54	No	HQ was below 1
POTASSIUM	130	J	22	J		U		U	36	J	330	J	37	J	7	5	22 00	111 00	330 00	-	-	-	Yes	-	-	-	No	Essential nutrient
SILVER		U		U		U		U		U		U	0 86	J	7	1	0 86	0 86	0 86	0 733	1	1.17	Yes	1 77	0	0 49	No	HQ was below 1
SODIUM	100	J	84	J		U		U	90	J	270	J		U	7	4	84 00	136 00	270 00		-	-	Yes	-		-	No	Essential nutrient
VANADIUM	5 4	J	1 5	J	0 87	J	1 3	J	2 2	J	47	=	2 3	J	7	7	0 87	8 65	47 00	-	-	-	Yes	-	-	-	Yes	No refinement value
ZINC	35	=	14	=	7 8	=	7 8	=		UJ	1100	=		UJ	7	5	7 60	232 68	1100 00	124	1	8 87	Yes	270	1	4 07	Yes	Hot spot at FCSW012
MERCURY	0 029	J	0 0076	J	0 0053	J		U	0 013	J	0 61	=	0 053	J	7	6	0 01	0 12	0 61	0 13	1	4 69	Yes	0 486	1	1.26	Yes	Hot spot at FCSW012
Pesticides (ug/KG)																												
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE		UJ		R		U		U		U	7.4	J		U	7	1	7 40	7 40	7 40	6	1	1 23	Yes	6	1	1.23	Yes	Hot spot at FCSW012
ALPHA-CHLORDANE		UJ		R		U		U	0 62	J	44	=	2 2	J	7	3	0 62	15 61	44 00	0 5	3	88 00	Yes	4 79	1	9 19	Yes	Hot spot at FCSW012
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)		UJ		R		U		U		U	20	=	8 1	J	7	2	8 10	14 05	20 00	71500	2	0 00	No	[redacted]				
DIELDRIN		UJ		R		U		U		U	13	J		U	7	1	13 00	13 00	13 00	0 02	1	650 00	Yes	4 3	1	3.02	Yes	Hot spot at FCSW012
GAMMA-CHLORDANE		UJ		R		U		U	1 6	J	53	J	3 5	J	7	3	1 60	19 37	53 00	0 5	3	106 00	Yes	4 79	1	11 06	Yes	Hot spot at FCSW012
p p'-DDE		UJ		R		U		U		U	18	=		U	7	1	18 00	18 00	18 00	2 07	1	8 70	Yes	6 75	1	2.67	Yes	Hot spot at FCSW012
p p'-DDT		UJ		R		UJ		UJ		UJ	45	J		UJ	7	1	45 00	45 00	45 00	1 19	1	37.82	Yes	4 77	1	9.43	Yes	Hot spot at FCSW012
Volatile Organic Compounds (ug/KG)																												
ACETONE					250	J					1200	J			2	2	250 00	725 00	1200 00	453 37	1	2.65	Yes	-	-	-	Yes	Hot spot at FCSW012
CARBON DISULFIDE					3 7	J					23	J			2	2	3 70	13 35	23 00	133 97	0	0 17	No	[redacted]				
CHLOROBENZENE						U					10	J			2	1	10 00	10 00	10 00	61 94	0	0 16	No					
METHYL ETHYL KETONE (2-BUTANONE)					61	J					500	=			2	2	61 00	280 50	500 00	136 96	1	3 65	Yes	-	-	-	Yes	Hot spot at FCSW012
Semivolatile Organic Compounds ug/KG)																												
4-BROMOPHENYL PHENYL ETHER		U		U		U		U	67	J		U		U	7	1	67 00	67 00	67 00	1550	0	0 04	No	[redacted]				
ANTHRACENE		U		U		U		U		U	190	J	120	J	7	2	120 00	155 00	190 00	46 9	2	4 05	Yes	245	0	0 78	No	HQ was below 1
BENZO(a)ANTHRACENE		U		U		U	45	J		U	1100	J	600	=	7	3	45 00	581 67	1100 00	74 8	2	14 71	Yes	385	2	2.86	Yes	Hot spot at FCSW012
BENZO(a)PYRENE	170	J	240	J		U	52	J		U	1500	J	610	=	7	5	52 00	514 40	1500 00	88 8	4	16 89	Yes	763	1	1.97	Yes	Hot spot at FCSW012
BENZO(b)FLUORANTHENE		U		U		U	54	J		U		U	630	J	7	2	54 00	342 00	630 00	10400	0	0 06	No	[redacted]				
BENZO(g h i)PERYLENE	130	J	180	J		U	34	J		U	1200	J		U	7	4	34 00	386 00	1200 00	170	2	7.06	Yes	-	-	-	Yes	Hot spot at FCSW012
BENZO(k)FLUORANTHENE		U		U		U	38	J		U	3000	=	840	=	7	3	38 00	1226 00	3000 00	240	2	12 50	Yes	-	-	-	Yes	Hot spot at FCSW012
BENZYL BUTYL PHTHALATE		UJ		UJ		U		U		U	240	J		U	7	1	240 00	240 00	240 00	4190	0	0 06	No	[redacted]				
bis(2-ETHYLHEXYL) PHTHALATE	380	J	290	J		U	140	J		U	4700	=		U	7	4	140 00	1377 50	4700 00	182	3	25 82	Yes	2647	1	1.78	Yes	Hot spot at FCSW012
CARBAZOLE		U	46	J		U		U		U	190	J		U	7	2	46 00	118 00	190 00	-	-	-	Yes	-	-	-	Yes	No refinement value
CHRYSENE		U		U		U	59	J		U	2000	=	780	=	7	3	59 00	946 33	2000 00	108	2	18 52	Yes	845	1	2.36	Yes	Hot spot at FCSW012
CRESOLS, M&P	320	J		U		U		U		U		U		U	7	1	320 00	320 00	320 00	0 808	1	396 04	Yes	-		-	No	Low magnitude of exceedance
DIBENZ(a h)ANTHRACENE		U	74	J		U		U		U	430	J		U	7	2	74 00	252 00	430 00	6 22	2	69 13	Yes	135	1	3 19	Yes	Hot spot at FCSW012
Di-n-BUTYL PHTHALATE		U	53	J		U		U		U		U		U	7	1	53 00	53 00	53 00	110 5	0	0 48	No	[redacted]				
FLUORANTHENE	210	J	630	=		U	180	J		U	3100	=	1600	=	7	5	180 00	1144 00	3100 00	113	5	27.43	Yes	1494	2	2.07	Yes	Hot spot at FCSW012
INDENO(1 2,3-c d)PYRENE	150	J	200	J		U		U		U	780	J		U	7	3	150 00	376 67	780 00	200	1	3 90	Yes	385	1	2 03	Yes	Hot spot at FCSW012
PHENANTHRENE	42	J	300	J	84	J	69	J	34	J	1100	J	630	=	7	7	34 00	324 14	1100 00	86 7	4	12.69	Yes	515	2	2.14	Yes	Hot spot at FCSW012
PYRENE	240	J	360	J		U	120	J		U	2900	=	1200	=	7	5	120 00	964 00	2900 00	153	4	18 95	Yes	846	2	3.43	Yes	Hot spot at FCSW012
Physical Characteristics (mg/KG)																												
TOTAL ORGANIC CARBON	9100	=	1600	=		U		U		U	190000	=	2600	=	7	4	1600 00	50825 00	190000 00									

ROD Table 2

Notes

= Unqualified
U Undetected
J Estimated value
R Data was rejected
Samples shown in yellow exceed screening value
Samples shown in orange exceed refinement value

Table 2-5
Sediment Sample Results and Selection of PCOPEC and COPEC
Jacksonville Ash Superfund Site
Lonnie C. Miller, Jr. Park
Page 1 of 2

Samples from Areas of Expected Contamination

Parameter Name	LMSW001 Result	Q	LMSW002 Result	Q	LMSW003 Result	Q	LMSW004 Result	Q	LMSW005 Result	Q	LMSW006 Result	Q	LMSW007 Result	Q	LMSW008 Result	Q	LMSW009 Result	Q
Dioxins (ng/KG)																		
ADJUSTED TEQ OF 2,3,7,8-TCDD					60.04	J					95.06	J						
TEQ OF 2,3,7,8-TCDD																		
Inorganics (mg/KG)																		
ALUMINUM	1400	=	1500	=	11000	=	1600	=	2200	=	5500	=	2500	=	3300	=	870	=
ANTIMONY	1.2	J		UJ		U	5.1	J	2.1	J		UJ		U	18	J		U
ARSENIC	2.7	=		U		U	10	=	5.7	=	6.4	J	2.1	J	12	=		U
BARIUM	69	=	8.5	J	37	J	57	J	81	=	630	=	57	J	240	=	64	=
BERYLLIUM	0.077	J		U	0.36	J		U		U	0.43	J	0.19	J	0.092	J		U
CADMIUM	1	J		U	0.47	J	2.9	J	1.2	J	3.2	J	0.45	J	2.7	J	0.39	J
CALCIUM	17000	=	950	J	14000	=	4200	=	2500	=	28000	=	3100	=	8500	=	2800	=
CHROMIUM, TOTAL	38	=	2.7	J	16	=	47	=	61	=	28	=	6.3	=	46	=	7.4	=
COBALT	0.91	J		U		U	5.3	J	1.1	J	2.6	J	0.87	J	3.7	J	0.43	J
COPPER	270	=	8.8	J	30	=	220	=	500	=	150	=	21	=	320	=	40	=
IRON	4500	=	1600	=	11000	=	84000	=	11000	=	69000	=	12000	=	58000	=	8600	=
LEAD	91	=	11	J	79	=	450	=	260	=	240	=	58	=	600	=	57	=
MAGNESIUM	270	J	210	J	1200	J	200	J	160	J	3400	J	290	J	670	J		U
MANGANESE	33	J	8.3	=	34	=	280	J	58	J	210	J	24	=	210	J	26	=
NICKEL	10	=	0.99	J	4.7	J	52	=	23	=	19	J	3.1	J	50	=	6.5	J
POTASSIUM	110	J	60	J	370	J	110	J	100	J	320	J	130	J	180	J	45	J
SELENIUM		U		U		U		U		U		U		U	1.6	=		U
SILVER	0.93	J		U		U	1.5	J	3.3	J	1.3	J		U	3.4	J	0.57	J
SODIUM		U		U		U		U		U		U		U	300	J		U
VANADIUM	4.7	J	1.9	J	17	J	3.2	J	4.3	J	54	=	8	J	6.9	J	2.9	J
ZINC	750	J	32	J	160	=	370	J	290	J	740	J	84	J	730	J	89	J
MERCURY	0.26	J	0.07	J	0.11	J	0.1	J	0.29	J	0.36	J	0.023	J	0.45	J	0.043	J
CYANIDE		U		U		U		U		U		U		U		U		U
Pesticides (ug/KG)																		
ALPHA CHLORDANE		R		UJ		U		UJ		R	13	J		UJ		R		U
GAMMA-CHLORDANE		R		UJ		U		UJ		R	19	J		UJ		R		U
p,p'-DDD		R		UJ		U		UJ		R	5.5	J		UJ		R		U
p,p'-DDE		R		UJ	1.6	J		UJ		R		UJ		UJ		R		U
p,p'-DDT		R		UJ		U		UJ		R	5.3	J		UJ		R		U
PCBs (ug/KG)																		
PCB-1260 (AROCHLOR 1260)		R		UJ		U		UJ		R	250	J		UJ		R		U
Volatile Organic Compounds (ug/KG)																		
ACETONE					200	=					1600	=					320	=
CARBON DISULFIDE					43	J						U						U
METHYL ETHYL KETONE (2-BUTANONE)					46	J					630	=					170	=
Semivolatile Organic Compounds (ug/KG)																		
ANTHRACENE		U		U		U		UJ		U		U		U		U		U
BENZO(a)ANTHRACENE		U		U		U		UJ		U		U		U	35	J		U
BENZO(a)PYRENE		U		U		U		UJ		U		U		U		U		U
BENZO(b)FLUORANTHENE		U		U		U		UJ		U		U		U		U		U
BENZO(g,h,i)PERYLENE		U		U		U		UJ		U	130	J		U		U		U
BENZO(k)FLUORANTHENE		U	67	J		U		UJ		U		U		U		U		U
BENZYL BUTYL PHTHALATE		U		U		U		UJ		U		U		U		U		U
bis(2-ETHYLHEXYL) PHTHALATE	100	J		U		U	2800	J	120	J	1700	=		U	73	J		U
CARBAZOLE		U		U		U		UJ		U		U		U		U		U
CHRYSENE		U		U		U		UJ		U	180	J		U	38	J		U
DIBENZ(a,h)ANTHRACENE		U		U		U		UJ		U		U		U		U		U
DIETHYL PHTHALATE		U		U		U		UJ		U		U	60	J		U		U
DI-n-BUTYL PHTHALATE		U	67	J		U		UJ		U		U	180	J		U		U
FLUORANTHENE		U		U		U		UJ		U		U		U		U		U
INDENO(1,2,3-c,d)PYRENE		U		U		U		UJ		U		U		U		U		U
PHENANTHRENE		U		U		U		UJ		U		U		U	29	J		U
PYRENE		U		U		U		UJ		U		U		U		U		U

Parameter Name	LMSW010 Result	Q	LMSW011 Result	Q	LMSW012 Result	Q	LMSW013 Result	Q	LMSW014 Result	Q	LMSW015 Result	Q	LMSW016 Result	Q	LMSW017 Result	Q	LMSW018 Result	Q
Dioxins (ng/KG)																		
ADJUSTED TEQ OF 2,3,7,8-TCDD							153.54	=										
TEQ OF 2,3,7,8-TCDD																		
Inorganics (mg/KG)																		
ALUMINUM	1500	=	1600	=	5100	=	620	=	3200	=	4500	=	3100	=	6200	=	3000	=
ANTIMONY	1.6	J		UJ		UJ		UJ		U		UJ		UJ		UJ		U
ARSENIC	4.5	=	13	=	17	=		U	2.3	J	2.3	J	1.8	J	3.9	J		U
BARIUM	130	J	490	J	380	=	4	J	36	J	35	J	28	J	36	J	31	J
BERYLLIUM	0.11	J	0.22	J		U		U	0.2	J	0.27	J	0.18	J	0.38	J	0.24	J
CADMIUM	1.2	J	0.85	J	1.5	J		U	0.59	J	0.61	J	0.42	J	0.69	J		U
CALCIUM	3200	=	8400	=	13000	=	12000	=	12000	J	5000	J	5000	J	4800	J	54000	J
CHROMIUM, TOTAL	20	=	15	=	28	J	7.3	J	9.7	J	13	=	9.1	=	18	=	5.2	J
COBALT	1.2	J	1.9	J		U	0.48	J	15	J	1.3	J	0.86	J	1.5	J	0.7	J
COPPER	110	=	110	=	160	J	2.5	J	22	J	29	=	23	=	30	=	5.9	J
IRON	18000	=	140000	=	110000	J	1500	=	9600	J	11000	=	8100	=	13000	=	3500	J
LEAD	110	J	130	J	180	J	8.4	=	38	J	52	J	47	J	78	J	12	J
MAGNESIUM	190	J	1500	J	4400	J	580	J	2100	J	2500	J	1400	J	3300	J	2400	J
MANGANESE	39	=	210	=	290	J	13	=	47	J	58	=	36	=	80	=	84	J
NICKEL	9.7	J	13	J	17	J	1	J	5.3	J	5.8	J	4.3	J	7.6	J	1.9	J
POTASSIUM	71	J	240	J	1100	J	73	J	710	J	770	J	430	J	1100	J	640	J
SELENIUM		U		U		U		U		U		U		U		U		U
SILVER	0.99	J	0.81	J	1.8	J		U		U		U		U		U		U
SODIUM		UJ	3200	J	12000	=	1000	J	6300	=	6600	=	3000	=	8400	=	7900	=
VANADIUM	5.4	J	15	J	26	J	2.7	J	7.9	J	9.9	J	7.1	J	17	J	5	J
ZINC	240	J	360	J	540	J	36	=	130	=	160	J	130	J	180	J	33	=
MERCURY	0.22	=	0.23	J	0.25	J	0.011	J		U	0.08	J	0.077	J	0.11	J		U
CYANIDE		U	2	J		U		U		U		U		U		U		U
Pesticides (ug/KG)																		
ALPHA CHLORDANE		R		R		U		U		U		UJ		UJ		UJ		U
GAMMA-CHLORDANE		R		R		U		U		U		UJ		UJ		UJ		U
p,p'-DDD		R		R		U		U		U		UJ		UJ		UJ		U
p,p'-DDE		R		R		U		U		U		UJ		UJ		UJ		U
p,p'-DDT		R		R		U		U		U		UJ		UJ		UJ		U
PCBs (ug/KG)																		
PCB-1260 (AROCHLOR 1260)		R		R		U		U		U		UJ		UJ		UJ		U
Volatile Organic Compounds (ug/KG)																		
ACETONE							67	=			230	=						
CARBON DISULFIDE							4.2	J			11	J						
METHYL ETHYL KETONE (2-BUTANONE)							22	=			47	=						
Semivolatile Organic Compounds (ug/KG)																		
ANTHRACENE		U		U		U	65	J		U		U		U		U		U
BENZO(a)ANTHRACENE		U	76	J	140	J	750	=	240	J	170	J	210	J	78	J		U
BENZO(a)PYRENE		U		U	150	J	780	=	260	J	190	J	300	J	120	J		U
BENZO(b)FLUORANTHENE		U	110	J	240	J	880	=	340	J	260	J	290	J	190	J		U
BENZO(g,h,i)PERYLENE		U		U		U	550	J	250	J	180	J	250	J		U		U
BENZO(k)FLUORANTHENE		U		U	170	J	890	=	340	J	220	J	300	J		U		U
BENZYL BUTYL PHTHALATE	94	J		U		U		U		UJ		U		U		U		U
bis(2-ETHYLHEXYL) PHTHALATE	710	=		U	1400	J	250	J	650	J	1100	=	360	J	1900	=		U
CARBAZOLE		U		U		U	86	J		U		U		U		U		U
CHRYSENE		U	92	J	210	J	1000	=	460	J	300	J	390	J	140	J		U
DIBENZ(a,h)ANTHRACENE		U		U		U	120	J		U		U		U		U		U
DIETHYL PHTHALATE		U		U		U		U		U		U		U		U		U
DI-n-BUTYL PHTHALATE	56	J	120	J		U		U		U		U	81	J		U		U
FLUORANTHENE		U		U	250	J	1300	=	540	J	270	J	570	J	150	J		U
INDENO(1,2,3-c,d)PYRENE		U		U		U	440	J	230	J		U	200	J		UJ		U
PHENANTHRENE		U		U		U	480	=	160	J	94	J	170	J		U		U
PYRENE		U		U		U	1500	=	660	J	440	J	580	J		U		U

Parameter Name	LMSW019 Result	Q	LMSW020 Result	Q	LMSW021 Result	Q	LMSW022 Result	Q	LMSW023 Result	Q	LMSW024 Result	Q	LMSW025 Result	Q	LMSW026 Result	Q
Dioxins (ng/KG)																
ADJUSTED TEQ OF 2,3,7,8-TCDD			644.84	=											192.13	J
TEQ OF 2,3,7,8-TCDD							2.0772	=								
Inorganics (mg/KG)																
ALUMINUM	11000	=	5200	=	10000	=	5000	=	15000	=	14000	=	14000	=	15000	=
ANTIMONY		U		UJ		UJ	1.7	J		UJ		UJ		U		U
ARSENIC	5.1	J	2.3	J	4.1	J	3.9	J	6.1	J	5	J	5.2	J	8	J
BARIUM	64	J	36	J	81	J	33	J	89	J	130	J	110	J	67	J
BERYLLIUM	0.66	J	0.34	J	0.61	J	0.32	J	0.87	J	0.71	J	0.76	J	0.88	J
CADMIUM	1.3	J	0.61	J	1.2	J	0.32	J	2.6	J	2.3	J	1.8	J	1.7	J
CALCIUM	5500	J	3600	J	6700	J	24000	J	11000	J	7800	J	8900	J	8300	J
CHROMIUM, TOTAL	28	J	12	=	27	=	10	=	53	=	37	=	38	=	43	J
COBALT	3.2	J	1.4	J	2.5	J	1.7	J	3.1	J	3.4	J	3.3	J	2.9	J
COPPER	39	J	20	=	41	=	15	J	80	=	71	=	60	=	57	J
IRON	18000	J	8700	=	17000	=	11000	=	24000	=	21000	=	25000	=	26000	J
LEAD	73	J	41	J	77	J	120	J	170	J	160	J	120	J	88	J
MAGNESIUM	4800	=	7000	=	3800	=	3300	J	6400	=	4900	=	4400	=	8200	=
MANGANESE	120	J	47	=	140	=	84	=	160	=	130	=	190	J	250	J
NICKEL	9.9	J	4.7	J	9.2	J	4.4	J	16	J	16	J	13	J	13	J
POTASSIUM	1700	J	730	J	1200	J	760	J	2000	J	1500	J	1400	J	2900	J
SELENIUM		U		U		U		U		U		U		U		U
SILVER		U		U		U		U		U		U		U		U
SODIUM	13000	=	5300	=	7900	=	7400	=	13000	=	10000	=	8500	=	20000	J
VANADIUM	18	J	9.6	J	17	J	9.8	J	23	J	20	J	23	J	25	J
ZINC	240	=	140	J	250	J	71	J	350	J	330	J	340	J	300	=
MERCURY	0.17	J	0.071	J	0.17	J	0.12	J	0.28	J	0.26	J	0.22	J	0.22	J
CYANIDE		U		U		U		U		U		U		U		U
Pesticides (ug/KG)																
ALPHA CHLORDANE		U		UJ		UJ		UJ		UJ		UJ		UJ		UJ
GAMMA-CHLORDANE		U		UJ		UJ		UJ		UJ		UJ		UJ		UJ
p,p'-DDD		U		UJ		UJ		UJ		UJ		UJ		UJ		UJ
p,p'-DDE		U		UJ		UJ		UJ		UJ		UJ		UJ		UJ
p,p'-DDT		U	7.3	J		UJ		UJ		UJ		UJ		UJ		UJ
PCBs (ug/KG)																
PCB-1260 (AROCHLOR 1260)		U		UJ		UJ		UJ		UJ		UJ		UJ		UJ
Volatile Organic Compounds (ug/KG)																
ACETONE			120	=			190	=							660	=
CARBON DISULFIDE			4.8	J			23	J								U
METHYL ETHYL KETONE (2-BUTANONE)			26	=			40	J							120	J
Semivolatile Organic Compounds (ug/KG)																
ANTHRACENE		U		U		U		U		U		U		U		U
BENZO(a)ANTHRACENE		U	110	J		U		U		U		U		U		U
BENZO(a)PYRENE	150	J	120	J		U		U		U		U		U		U
BENZO(b)FLUORANTHENE		U	120	J		U		U		U		U	380	J		U
BENZO(g,h,i)PERYLENE	190	J	97	J		U		U		U		U		U		U
BENZO(k)FLUORANTHENE		U	110	J		U		U		U		U		U		U
BENZYL BUTYL PHTHALATE		U		U		U		U		U		U		U		U
bis(2-ETHYLHEXYL) PHTHALATE		U	180	J		U	190	J	210	J	210	J	830	J	460	J
CARBAZOLE		U		U		U		U		U		U		U		U
CHRYSENE		U	170	J	100	J		U		U		U	300	J	150	J
DIBENZ(a,h)ANTHRACENE		U		U		U		U		U		U		U		U
DIETHYL PHTHALATE		U		U		U		U		U		U		U		U
DI-n-BUTYL PHTHALATE		U		U		U	110	J		U	250	J	150	J	210	J
FLUORANTHENE		U	220	J		U		U		U		U	340	J		U
INDENO(1,2,3-c,d)PYRENE		U		J		UJ		U		U		U		U		U
PHENANTHRENE		U	69	J		U		U		U		U	94	J		U
PYRENE		U	190	J		U		U		U		U	410	J		U

ROD Table 3

Notes
(a) soil value used
=, Unqualified
U Undetected
J Estimated value
R Data was rejected
Samples shown in yellow exceed screening value
Samples shown in orange exceed refinement value
Screened COPEC are blacked out

8/7/2003

Table 2-5
Sediment Sample Results and Selection of PCOPEC and COPEC
Jacksonville Ash Superfund Site
Lonnie C. Miller, Jr. Park
Page 2 of 2

ParameterName	AOC Samples					Screening for PCOPEC Selection				Refinement for Direct Exposure COPEC Selection				
	Total Samples	Total Detections	Minimum Detected	Average Detected	Maximum Detected	Approved Screening Value	Total Detections > Screening	AOC Screening HQ Based on Maximum	Selected as PCOPC?	Approved Refinement Value	Total Detections > Refinement Value	AOC Refinement HQ Based on Maximum	Selected as COPC?	Rationale for selection as COPEC
Dioxins (ng/KG)														
ADJUSTED TEQ OF 2,3,7,8-TCDD	5	5	60 04	229 12	644 84	2 5	5	257 94	Yes	25	5	**25.79**	Yes	HQ was above 1
TEQ OF 2,3,7,8 TCDD	1	1	2 077221	2 08	2 077221	2 5	0	0 83	No	[redacted]				
Inorganics (mg/KG)														
ALUMINUM	26	26	620	5088 38	15000	-	-	-	Yes	600 (a)	26	**25.00**	Yes	HQ was above 1
ANTIMONY	26	6	1 2	4 95	18	2	3	9 00	Yes	25	0	0 72	No	HQ was below 1
ARSENIC	26	21	1 8	5 88	17	7 24	5	2 35	Yes	17	1	**1.00**	No	Low magnitude and frequency of exceedance
BARIUM	26	26	4	116 10	630	-	-	-	Yes	200	4	**3.15**	No	Low magnitude of exceedance
BERYLLIUM	26	20	0 077	0 39	0 88	-	-	-	Yes	1 1 (a)	0	0 80	No	HQ was below 1
CADMIUM	26	23	0 32	1 30	3 2	0 676	15	4 73	Yes	3 5	0	0 91	No	HQ was below 1
CALCIUM	26	26	950	10359 62	54000	-		-	Yes	-	-	-	No	Essential nutrient
CHROMIUM, TOTAL	26	26	2 3	23 87	61	52 3	2	1 17	Yes	90	0	0 68	No	HQ was below 1
COBALT	26	23	0 43	2 58	15	50	0	0 30	No	[redacted]				
COPPER	26	25	2 5	90 66	500	18 7	22	26 74	Yes	108	8	**4.63**	Yes	HQ was above 1
IRON	26	25	1500	27869 23	140000	-	-	-	Yes	20000	9	**7.00**	Yes	HQ was above 1
LEAD	26	26	8 4	128 86	600	30 2	23	19 87	Yes	91 3	11	**6.57**	Yes	HQ was above 1
MAGNESIUM	26	25	180	2503 60	8200	-		-	Yes	-	-	-	No	Essential nutrient
MANGANESE	26	26	8 3	110 05	290	-	-	-	Yes	460	0	0 63	No	HQ was below 1
NICKEL	26	26	0 99	12 35	52	15 9	7	3 27	Yes	42 8	2	**1.21**	No	Low magnitude and frequency of exceedance
POTASSIUM	26	26	45	721 12	2900	-	-	-	Yes	-	-	-	No	Essential nutrient
SELENIUM	26	1	1 6	1 60	1 6	-	-	-	Yes	0 81 (a)	1	**1.98**	No	Low magnitude and frequency of exceedance
SILVER	26	9	0 52	1 62	3 4	0 733	8	4 64	Yes	1 77	3	**1.92**	No	Low magnitude and frequency of exceedance
SODIUM	26	17	300	7870 59	20000		-	-	Yes		-	-	No	Essential nutrient
VANADIUM	26	26	1 9	13 05	54		-	-	Yes	130 (a)	0	0 42	No	HQ was below 1
ZINC	26	26	32	272 12	750	124	20	6 05	Yes	270	11	**2.78**	Yes	HQ was above 1
MERCURY	26	24	0 011	0 17	0 45	0 13	13	3 46	Yes	0 486	0	0 93	No	HQ was below 1
CYANIDE	26	1	2	2 00	2	0 0001	1	20000 00	Yes	1	1	**2.00**	No	Low magnitude and frequency of exceedance
Pesticides (ug/KG)														
ALPHA-CHLORDANE	26	1	13	13	13	0 5	1	26 00	Yes	4 79	1	**2.71**	No	Low magnitude and frequency of exceedance
GAMMA-CHLORDANE	26	1	19	19	19	0 5	1	38 00	Yes	4 79	1	**3.97**	No	Low magnitude and frequency of exceedance
p,p'-DDD	26	1	5 5	5 5	5 5	1 22	1	4 51	Yes	7 81	0	0 70	No	HQ was below 1
p,p'-DDE	26	1	1 6	1 6	1 6	2 07	0	0 77	No	[redacted]				
p,p'-DDT	26	2	5 3	6 3	7 3	1 19	2	6 13	Yes	4 77	2	**1.53**	No	Low magnitude and frequency of exceedance
PCBs (ug/KG)														
PCB-1260 (AROCHLOR 1260)	26	1	250	250	250	34 1	1	7 33	Yes	189	1	**1.32**	No	Low magnitude and frequency of exceedance
Volatile Organic Compounds (ug/KG)														
ACETONE	8	8	67	423 4	1600	453 37	2	3 53	Yes	453 37	2	**3.53**	No	Low magnitude and frequency of exceedance
CARBON DISULFIDE	8	5	4 2	17 2	43	133 97	0	0 32	No	[redacted]				
METHYL ETHYL KETONE (2-BUTANONE)	8	8	22	131 4	630	136 96	1	4 60	Yes	136 96	1	**4.60**	No	Low magnitude and frequency of exceedance
Semivolatile Organic Compounds (ug/KG)														
ANTHRACENE	26	1	65	65	65	46 9	1	1 39	Yes	245	0	0 27	No	HQ was below 1
BENZO(a)ANTHRACENE	26	9	35	201	750	74 8	8	10 03	Yes	385	1	**1.95**	No	Low magnitude and frequency of exceedance
BENZO(a)PYRENE	26	8	120	259	780	88 8	8	8 78	Yes	763	1	**1.02**	No	Low magnitude and frequency of exceedance
BENZO(b)FLUORANTHENE	26	9	110	312	880	10400	0	0 08	No	[redacted]				
BENZO(g,h,i)PERYLENE	26	7	92	235	550	170	5	3 24	Yes	170	5	**3.24**	Yes	HQ was above 1
BENZO(k)FLUORANTHENE	26	7	62	259	890	240	3	3 71	Yes	240	3	**3.71**	Yes	HQ was above 1
BENZYL BUTYL PHTHALATE	26	1	94	94	94	4190	0	0 02	No	[redacted]				
bis(2-ETHYLHEXYL) PHTHALATE	26	18	73	736	2800	182	14	15 38	Yes	2647	1	**1.06**	No	Low magnitude and frequency of exceedance
CARBAZOLE	26	1	86	86	86	-	-	-	Yes	-	-	-	No	Low frequency of occurance
CHRYSENE	26	13	38	272	1000	108	10	9 26	Yes	846	1	**1.18**	No	Low magnitude and frequency of exceedance
DIBENZ(a,h)ANTHRACENE	26	1	120	120	120	6 22	1	19 29	Yes	135	0	0 89	No	HQ was below 1
DIETHYL PHTHALATE	26	1	60	60	60	8 04	1	7 46	Yes	8 04	1	**7.46**	No	Low frequency of occurance
DI-n-BUTYL PHTHALATE	26	9	56	136	250	110 5	5	2 26	Yes	110 5	5	**2.26**	No	Low magnitude and frequency of exceedance
FLUORANTHENE	26	8	150	455	1300	113	8	11 50	Yes	1494	0	0 87	No	HQ was below 1
INDENO(1,2,3-c,d)PYRENE	26	3	200	290	440	200	3	2 20	Yes	200	3	**2.20**	No	Low magnitude and frequency of exceedance
PHENANTHRENE	26	7	79	157	480	86 7	5	5 54	Yes	515	0	0 93	No	HQ was below 1
PYRENE	26	6	150	630	1500	153	6	9 80	Yes	875	1	**1.71**	No	Low magnitude and frequency of exceedance

ROD Table 3

e used
d
ed
value
rejected
ren in yellow exceed screening value
wn in orange exceed refinement value
PEC are blacked out

3.6 Surface Water Contamination

3.6.1 Forest Street Incinerator

Surface drainage at the Forest Street Incinerator site generally flows northward overland in drainageways along streets, in storm water collection systems, and swales into McCoy Creek, located approximately 100 to 150 feet north of the site. McCoy Creek is a tributary of the St. Johns River, located approximately one mile east of the site.

During RI sampling events in 2000, a total of 8 downstream surface water samples and 7 upstream background samples were obtained from McCoy's Creek. The 15 surface water samples were analyzed for TAL and TCL parameters. One of the upstream background samples was found to be downstream of an ash deposit located adjacent to the creek. This sample was eliminated from the background calculation of background surface water and sediment concentrations.

Ten metals were detected in surface water: barium, cadmium, copper, cyanide, iron, lead, manganese, mercury, vanadium, and zinc. Of these, only cadmium and cyanide exceeded screening criteria from the Region 4 Ecological Risk Assessment Bulletins. Cadmium exceeded the screening criteria in the most downstream surface water sample. Cadmium is not believed to be related to discharge of groundwater from the site to McCoy Creek because it was not detected in any of the 22 groundwater monitoring wells.

Cyanide concentrations in McCoy's Creek exceeded the screening threshold criteria of 0.0052 mg/L at 4 locations (FSSW002, FSSW003, FSSW006 and FSSW008). At all 4 locations, cyanide only marginally exceeds the detection limit of 0.005 mg/L. At each of these locations, potassium and sodium are much higher than other surface water samples, possibly indicative of more saline water from tidal waters. Cyanide is not believed to be related to the site because it was detected in only 1 of the 20 downgradient monitoring wells. At that well (FSMW005), cyanide was detected at an estimated concentration of 0.0073 mg/L, which is far below the groundwater screening criteria of 0.2 mg/L.

The only organic compound were detected in surface water at concentrations exceeding screening criteria was bis(2-ehtylhexyl) phthalate, which was detected in FSSW008 at 2 µg/1. A variety of SVOCs were detected at concentrations below quantitation limits, primarily in one sample (FSSW004).

Table 4 lists the constituents detected by surface water analysis.

3.6.2 5th and Cleveland Incinerator

Surface drainage generally flows northeast to a channelized subsurface unnamed creek. The unnamed creek flows to the east of the site and discharges into Hogan Creek about 0.5 mile downstream, which subsequently discharges into the St. Johns River.

During RI sampling events in 2000, a total of 10 surface water samples were obtained from the drainage ditch, underground culvert and Hogan's Creek. All 10 samples were analyzed for TAL

Table 2-6
Surface Water Sample Results and Selection of PCOPEC and COPEC
Forest Street Site
Jacksonville Ash Superfund Site
Page 1 of 1

Samples from Areas of Expected Contamination

ParameterName	FSSW001 Result	Q	FSSW002 Result	Q	FSSW003 Result	Q	FSSW004 Result	Q	FSSW005 Result	Q	FSSW006 Result	Q	FSSW007 Result	Q	FSSW008 Result	Q
Inorganics (mg/L)																
BARIUM	0.065	J	0.08	J	0.052	J	0.058	J	0.06	J	0.046	J	0.063	J	0.044	J
CADMIUM		U		U		U		U		U		U		U	0.0048	J
Cadmium, Dissolved		U		U		U		U		U		U		U		U
CALCIUM	77	=	130	=	150	=	73	=	120	=	180	=	96	=	150	=
Calcium, Dissolved	78	=	130	=	150	=	76	=	140	=	160	=	91	=	150	=
COPPER		U		U		U		U		U		U		U	0.003	J
Copper, Dissolved		U		U		U		U		U		U		U		U
IRON	0.42	=	0.39	=	0.42	=	0.35	=	0.35	=	0.32	=	0.4	=	0.33	=
MAGNESIUM	28	=	290	=	400	=	29	=	250	=	450	=	130	=	400	=
Magnesium, Dissolved	46	=	300	=	400	=	34	=	330	=	470	=	120	=	420	=
MANGANESE	0.081	=	0.079	=	0.069	=	0.057	=	0.071	=	0.053	=	0.08	=	0.046	=
POTASSIUM	8.4	=	110	=	140	J	8.7	J	90	J	180	J	45	J	150	J
Potassium, Dissolved	16	=	110	=	140	J	10	J	120	J	170	J	40	J	150	J
SODIUM	130	=	2200	=	2900	=	140	=	1800	=	3400	=	1800	=	3000	=
Sodium, Dissolved	290	J	2300	J	3000	=	170	=	2400	=	3500	=	800	=	3200	=
VANADIUM		U		U	0.0055	J		U		U		U		U		U
ZINC	0.008	J	0.0099	J	0.0098	J		U	0.0095	J	0.0097	J	0.018	J	0.0089	J
CYANIDE		U	0.0065	=	0.0059	J		UJ		UJ	0.0099	J		UJ	0.0076	J
Volatile Organic Compounds (ug/L)																
1,2,4-TRICHLOROBENZENE		U								U			3.6	J		
Semivolatile Organic Compounds (ug/L)																
BENZO(a)ANTHRACENE		U		U		UJ	2	J		U	0.83	J		U		U
BENZO(a)PYRENE		U		U		UJ	2.2	J		U		U		U		U
BENZO(b)FLUORANTHENE		UJ		UJ		UJ	2.2	J		U		U		U		U
BENZO(g,h,i)PERYLENE	0.7	J		U		UJ	2.1	J		U		U		U		U
BENZO(k)FLUORANTHENE		U		U		UJ	1.7	J		U		U		U		U
BENZYL BUTYL PHTHALATE		U		U		UJ	2	J		U		U		U		U
bis(2-ETHYLHEXYL) PHTHALATE		U		U	10	J		U		U		U		U		U
CARBAZOLE		U		U		U	2	J		U		U		U		U
CHRYSENE		U		J		UJ	2.2	J		U	0.53	J		U		U
DIBENZ(a,h)ANTHRACENE		U		J		UJ	1.1	J		U		U		U		U
DI-n-BUTYL PHTHALATE		U		U		UJ	1	J		U		U		U		U
DI-n-OCTYLPHTHALATE		U		U		UJ	1.5	J		U		U		U		U
FLUORANTHENE		U		U		UJ	2	J		U		U		U		U
INDENO(1,2,3-c,d)PYRENE	0.65	J		J		UJ	2.1	J		U		U		U		U
PYRENE		U		J		UJ	2.1	J		U		U		U		U
Physical Characteristics (mg/L)																
TOTAL ORGANIC CARBON	6.3	=	8.6	=	9.3	=	6.4	=	8.1	=	9.9	=	8.2	=	10	=
HARDNESS (as CACO3)	310	=	1500	.	2000	=	300	=	1300	=	2300	=	780	=	2000	=
SUSPENDED SOLIDS (RESIDUE, NON-FILTERABLE)		U		J		U		U	10	=	24	=		U	26	=
ALKALINITY, TOTAL (AS CaCO3)	190	=	130	=	110	=	180	=	150	=	100	=	170	=	95	=

ParameterName	Total Samples	Total Detections	AOC Samples: Minimum Detected	AOC Samples: Average Detected	AOC Samples: Maximum Detected	Screening for PCOPC Selection: Approved Screening Value	Total Detections > Screening Value	AOC Screening HQ Based on Maximum	Selected as PCOPC?	Refinement for Direct Exposure COPC Selection: Approved Refinement Value (1)	Total Detections > Refinement Value	AOC Refinement HQ Based on Maximum	Selected as COPC?	Rationale for selection as COPEC
Inorganics (mg/L)														
BARIUM	8	8	0.0440	0.0560	0.0850	5	0	0.01	No	[redacted]				
CADMIUM	8	1	0.0048	0.0048	0.0048	0.00066	1	7.27	Yes	0.00015	1	32.00	No	Not detected in dissolved samples, eliminated due to low bioavailability
Cadmium, Dissolved	8	0	0.0000	0.0000	0.0000	-	-	-	Yes	-	-	-		
CALCIUM	8	8	73.0000	119.5000	160.0000	-	-	-	Yes	116	5	1.38	No	Essential nutrient
Calcium, Dissolved	8	8	70.0000	172.1250	180.0000	-	-	-	Yes	-	-	-	No	Essential nutrient
COPPER	8	1	0.0030	0.0030	0.0030	0.000664	1	4.59	Yes	0.00023	1	13.04	No	Not detected in dissolved samples, eliminated due to low bioavailability
Copper, Dissolved	8	0	0.0000	0.0000	0.0000	-		-	Yes	-	-	-		
IRON	8	8	0.3200	0.3725	0.4200	1	0	0.42	No	[redacted]				
MAGNESIUM	8	8	28.0000	247.1250	450.0000	-	-	-	Yes	82	6	5.49	No	Essential nutrient
Magnesium, Dissolved	8	8	34.0000	265.0000	470.0000	-	-	-	Yes	-	-	-	No	Essential nutrient
MANGANESE	8	8	0.0460	0.0645	0.0800	-	-	-	Yes	1.1	0	0.07	No	HQ was below 1
POTASSIUM	8	8	8.4000	89.0125	160.0000	-		-	Yes	53	5	3.02	No	Essential nutrient
Potassium, Dissolved	8	8	10.0000	94.5000	170.0000	-	-	-	Yes	-	-	-	No	Essential nutrient
SODIUM	8	8	130.0000	1821.2500	3400.0000	-	-	-	Yes	680	6	5.00	No	Essential nutrient
Sodium, Dissolved	8	8	170.0000	1970.0000	3500.0000	-	-	-	Yes	-	-	-	No	Essential nutrient
VANADIUM	8	1	0.0055	0.0055	0.0055	0.019	0	0.29	No	[redacted]				
ZINC	8	7	0.0080	0.0105	0.0180	0.05891	0	0.31	No					
CYANIDE	8	4	0.0059	0.0075	0.0099	0.0052	4	1.90	Yes	0.0078	1	1.27	No	Low magnitude of exceedance
Volatile Organic Compounds (ug/L)														
1,2,4-TRICHLOROBENZENE	3	1	3.60	3.60	3.60	44.9	0	0.08	No	[redacted]				
Semivolatile Organic Compounds (ug/L)														
BENZO(a)ANTHRACENE	8	2	0.63	1.32	2.00	0.839	1	2.38	Yes	0.65	1	3.08	No	Only detected at FSSW004, localized exposure
BENZO(a)PYRENE	8	1	2.20	2.20	2.20	0.014	1	157.14	Yes	0.3	1	7.33	No	Only detected at FSSW004, localized exposure
BENZO(b)FLUORANTHENE	8	1	2.20	2.20	2.20	9.07	0	0.24	No	[redacted]				
BENZO(g,h,i)PERYLENE	8	2	0.70	1.40	2.10	7.64	0	0.27	No					
BENZO(k)FLUORANTHENE	8	1	1.70	1.70	1.70	0.0056	1	303.57	Yes	-	-	-	No	Only detected at FSSW004, localized exposure
BENZYL BUTYL PHTHALATE	8	1	2.00	2.00	2.00	22	0	0.09	No	[redacted]				
bis(2-ETHYLHEXYL) PHTHALATE	8	1	10.00	10.00	10.00	0.3	1	33.33	Yes	912	0	0.01	No	HQ was below 1
CARBAZOLE	8	1	2.00	2.00	2.00	-	-	-	Yes	-	-	-	No	Only detected at FSSW004, localized exposure
CHRYSENE	8	2	0.53	1.37	2.20	0.033	2	66.67	Yes	-	-	-	No	Only detected at FSSW004, localized exposure
DIBENZ(a,h)ANTHRACENE	8	1	1.10	1.10	1.10	0.0016	1	687.50	Yes	-	-	-	No	Only detected at FSSW004, localized exposure
DI-n-BUTYL PHTHALATE	8	1	1.00	1.00	1.00	9.4	0	0.11	No	[redacted]				
DI-n-OCTYLPHTHALATE	8	1	1.50	1.50	1.50	30	0	0.05	No					
FLUORANTHENE	8	1	2.00	2.00	2.00	39.8	0	0.05	No					
INDENO(1,2,3-c,d)PYRENE	8	2	0.65	1.38	2.10	4.31	0	0.49	No					
PYRENE	8	1	2.10	2.10	2.10	0.3	1	7.00	Yes	11000	0	0.00019	No	HQ was below 1
Physical Characteristics (mg/L)														
TOTAL ORGANIC CARBON	8	8	6.30	8.35	10.00	-	-	-	No	[redacted]				
HARDNESS (as CACO3)	8	8	300.00	1311.25	2300.00	-	-	-	No					
SUSPENDED SOLIDS (RESIDUE, NON-FILTERABLE)	8	3	10.00	20.00	26.00	-	-	-	No					
ALKALINITY, TOTAL (AS CaCO3)	8	8	95.00	140.63	190.00	-	-	-	No					

ROD Table 4

Notes

(1) Value used for dissolved metals are from NAWQC Fresh CCC (a1)
=, Unqualified
U Undetected
J Estimated value
R Data was rejected
Samples in yellow exceed screening value
Samples in orange exceed screening value

and TCL parameters. The intended background sampling location is located within the ash/lead delineation area and was therefore converted to a downstream sample location. No additional surface water/sediment locations could be found upstream of the site, therefore, there is no background location available for this site.

Twelve metals were detected in surface water: aluminum, arsenic, barium, chromium, copper, cyanide, iron, lead, manganese, mercury, vanadium and zinc. Of these, aluminum, copper, cyanide, lead, iron, mercury and zinc exceeded their respective screening criteria from the Region 4 Ecological Risk Assessment Bulletins. Dissolved metals were also determined and, in most cases, were below criteria indicating the metals are associated with turbidity and suspended solids in the samples. The three samples having the greatest number of exceedances for the total metals results are located in the ditch along the west side of the site. This ditch does not usually contain water and is not a viable aquatic habitat.

Total iron exceeded its screening criterion in all but one of the surface water samples. It exceeds the iron criterion in only one of the dissolved metals samples. Iron is naturally elevated in the shallow groundwater in the area. As it discharges to surface water it would be expected to precipitate as it mixes with the oxygenated surface water, forming iron oxide. This would explain the presence of iron in the total metals sample.

Cyanide exceeds threshold criteria in four surface water samples ranging from 0.0066 mg/L to 0.0082 mg/L, slightly above the screening criterion of 0.0052 mg/L. Cyanide is not believed to be related to the site because it was not detected in any of the 7 monitoring wells.

Thirteen of the fourteen sampling stations were drainage ditches that had little or no flowing water, and were not typical of an aquatic habitat. One sample station is located at the point where the main drainage ditch for the site discharges to Hogan's Creek, which is located approximately one-half mile from the site. Hogan's Creek has flowing water and is more typical of an aquatic habitat, although not a very important habitat. Only one TAL parameter was found above screening criteria. Cyanide was detected at an estimated concentration of 0.0066 mg/L, slightly above the screening criterion of 0.0052 mg/L. The low cyanide concentration found in Hogan's Creek is believed to be natural and not site related.

Table 5 lists the constituents detected by surface water analysis.

3.6.3 Lonnie C. Miller, Sr. Park

Surface drainage generally flows to a drainage ditch that is located on the eastern portion of the site. This ditch is the topographic divide between the western and eastern portions of the site. The ditch conveys water to the northeast to a small tributary of the Ribault River. The tributary flows south and discharges into the Ribault River approximately 0.25 mile downstream of the site.

During RI sampling events in 2000, a total of 21 surface water samples and eight background surface water samples were obtained. The background samples were analyzed for TAL and downstream site samples were analyzed for TAL and TCL.

All of the TAL metals except cyanide were detected in seven of the onsite ditch total surface water samples. The most frequent exceedances of the srceening criteria from the Region 4 Ecological Risk Assessment Bulletins were aluminum (6 of 7) and iron and lead (5 of 7 each). These 3 metals and zinc were the only exceedances of background concentrations in total TAL tests on surface water. Samples with the highest total suspended solids also had the highest metal concentrations. This is particularly true of iron. Total iron ranged up to 160 mg/L. Dissolved iron in the ditch water exceeded criteria but was considerably lower in concentration compared to total iron, ranging up to 8.3 mg/L. Aluminum, lead, and zinc did not exceed screening criteria in dissolved metal samples.

The northern section of the drainage ditch flowing to the unnamed tributary of the Ribault River only marginally exceeded screening criteria for aluminum and iron. The unnamed tributary of the Ribault River is represented by three surface water sample locations. Proceeding from upstream to downstream in the unnamed tributary of the Ribault River, exceedances above background included aluminum and iron in one sample, cyanide only in the second location, and none in the third. The cyanide was not elevated in the ditch and may be associated with backwater from the Ribault River because it is higher in concentration in more saline water. Sodium increases from about 10 mg/L in the ditch to 2,900 mg/L in the unnamed tributary.

The Ribault River surface water sample results showed aluminum (7 of 10), cyanide (1 of 10), iron (2 of 10), and lead (5 of 10) exceeding screening criteria, and aluminum (4 of 10), cyanide (1 of 10), and lead (4 of 10) exceeding both screening criteria and background values. However, lead and cyanide were also detected above screening criteria in at least one background surface water sample.

Table 6 lists the constituents detected by surface water analysis.

3.7 Groundwater Contamination

3.7.1 Forest Street Incinerator

The Forest Street Incinerator site is located south of McCoy Creek, with groundwater beneath the site flowing toward the creek in a northeasterly direction. The groundwater table in the area is typically encountered between approximately 4 to 12 feet below ground surface (bgs). McCoy Creek acts as the discharge zone for groundwater from the Forest Street Incinerator Site. The average horizontal hydraulic gradient, which is defined as the slope of the water table across the site, was calculated at 0.01.

During the RI, two groundwater sampling events were performed. One event occurred in 2000 and the second event occurred in 2002. Twenty-two wells were sampled in 2000. No residential wells or community wells near the site were sampled. Table 7 lists all of the constituents detected above respective health based screening levels during the 2000 Phase I RI groundwater sampling.

Table 2-6
Surface Water Sample Results and Selection of PCOPEC and COPEC
Jacksonville Ash Superfund Site
5th and Cleveland
Page 1 of 1

Samples from Areas of Expected Contamination

ParameterName	FCSW001 Result	Q	FCSW002 Result	Q	FCSW003 Result	Q	FCSW004 Result	Q	FCSW005 Result	Q	FCSW006 Result	Q	FCSW010 Result	Q	FCSW011 Result	Q	FCSW012 Result	Q	FCSW013 Result	Q
Inorganics (mg/L)																				
ALUMINUM	1.3	=	2.6	=	0.23	=		U		U		U		U		UJ		UJ		U
ARSENIC	0.0045	J		U		U		U		U		U		U		U		U		U
Arsenic, Dissolved	0.0041	J		U		U		U		U		U		U		U		U		U
BARIUM	0.15	J	0.18	J	0.17	J	0.091	J	0.1	J	0.1	J	0.1	J	0.095	J	0.091	J	0.055	J
Barium, Dissolved	0.13	J	0.15	J	0.15	J	0.086	J	0.099	J	0.099	J	0.1	J	0.091	J	0.088	J	0.064	J
CALCIUM	120	=	150	=	140	=	71	=	73	=	74	=	20	=	72	=	68	=	57	=
Calcium, Dissolved	110	=	130	=	130	=	68	=	74	=	75	=	20	=	72	=	69	=	64	=
CHROMIUM, TOTAL	0.005	J	0.0069	J	0.0018	J		U		U		U	0.0018	J		U		U		U
COPPER	0.011	J	0.014	J		U	0.0021	J		U		U		U		U		U		U
Copper, Dissolved	0.0072	J		U		U	0.00093	J		U		U		U		U		U	0.01	J
IRON	2.1	=	6.4	=	13	=	2.2	=	2.4	=	1.7	=	6.1	=	1.6	=	1.7	=		U
Iron, Dissolved		U		U	1	=	0.27	=	0.084	J	0.046	J	6.6	=	0.25	=	0.11	=	0.52	=
LEAD	0.027	=	0.053	=		U		U		U		U	0.014	=		U		U		U
Lead, Dissolved		U		U		U		U		U	0.0018	J	0.0061	=		U		U		U
MAGNESIUM	15	=	19	=	19	=	14	=	15	=	15	=	7	=	14	=	13	=	10	=
Magnesium, Dissolved	15	=	18	=	19	=	14	=	15	=	15	=	7	=	14	=	13	=	12	=
MANGANESE	0.14	=	0.22	=	0.25	=	0.058	=	0.051	=	0.051	=	0.031	=	0.056	=	0.069	=	0.04	=
Manganese, Dissolved	0.052	=		U	0.22	=	0.056	=	0.047	=	0.05	=	0.024	=	0.064	=	0.063	=	0.046	=
POTASSIUM	8.7	=	13	=	15	=	4.5	J	4.3	J	4.8	J	1.6	J	5	J	4.6	J	3.6	J
Potassium, Dissolved	8.2	=	11	=	14	=	4.5	J	4.3	J	4.7	J	1.6	J	5	=	4.7	J	3.8	J
SODIUM	47	=	70	=	75	=	32	=	40	=	43	=	53	=	44	=	44	=	37	=
Sodium, Dissolved	29	=	64	=	75	=	28	=	40	=	44	=	55	=	44	=	42	=	39	=
VANADIUM	0.0055	J	0.01	J	0.0027	J		U		U		U		U		U		U		U
ZINC	0.087	=	0.096	=	0.025	=		U		U		U	0.039	=		U	0.007	J	0.0097	J
Zinc, Dissolved	0.012	J		U		U		U		U		U	0.019	J		U		U	0.014	J
MERCURY		U		U		U		U	0.0001	J	0.00011	J	0.000079	J		U		U		U
Mercury, Dissolved		U		U		U		U		U	0.00012	J		U		U		U		U
CYANIDE		U		U		U	0.0082	J		U		U		U	0.008	J	0.0076	J	0.0066	J
Pesticides (ug/L)																				
GAMMA BHC (LINDANE)		UJ		R		U		UJ		UJ		UJ		R		U		U	0.0069	J
Volatile Organic Compounds (ug/L)																				
CHLOROFORM				U					1.6	J								U		
TRICHLOROETHYLENE (TCE)				U					0.71	J								U		
Semivolatile Organic Compounds (ug/L)																				
BENZO(a)ANTHRACENE		U		U		U		U		U	0.53	J	0.46	J		U		U		U
BENZO(g,h,i)PERYLENE		U		U		U		U		UJ	0.75	J		UJ		U		U		U
BENZYL BUTYL PHTHALATE		U		U		U		U	0.47	J	0.61	J	0.51	J		U		U		U
CARBAZOLE		U		U		U		U		U	0.67	J		U		U		U		U
CHRYSENE		U		U		U		U		U	0.52	J		U		U		U		U
DIETHYL PHTHALATE		U		U		U		U		U		U		U	1.1	J		U		U
DI-n-BUTYL PHTHALATE		U		U		U		U	2.6	J	0.56	J		U		U		U		U
DI-n-OCTYLPHTHALATE		U		U		U		U		U	0.54	J		U		U		U		U
FLUORANTHENE		U		U		U		U		U	0.71	J	0.35	J		U		U		U
INDENO(1,2,3-c,d)PYRENE		U		U		U		U		U	0.64	J		U		U		U		U
PYRENE		U		U		U		U		U	0.67	J		U		U		U		U
Physical Characteristics (mg/L)																				
TOTAL ORGANIC CARBON	19	=	18	=	18	=	7.9	=	4.1	=	4.9	=	43	=	6.2	=	7.4	=	5.6	=
HARDNESS (as CACO3)	350	=	450	=	420	=	240	=	240	=	250	=	78	=	240	=	220	=	180	=
SUSPENDED SOLIDS (RESIDUE, NON-FILTERABLE)	26	=	33	=	56	=	5	=		U	5.5	=		U	16	=	16	=		U
ALKALINITY, TOTAL (AS CaCO3)	210	=	250	=	250	=	130	=	130	=	140	=	92	=	150	=	160	=	150	=

ParameterName	AOC Samples: Total Samples	Total Detections	Minimum Detected	Average Detected	Maximum Detected	Screening for PCOPC Selection: Approved Screening Value	Total Detections > Screening Value	AOC Screening HQ Based on Maximum	Selected as PCOPC?	Refinement for Direct Exposure COPC Selection: Approved Refinement Value	Total Detections > Refinement Value	AOC Refinement HQ Based on Maximum	Selected as COPC?	Rationale for selection as COPEC
Inorganics (mg/L)														
ALUMINUM	10	3	0.2300	1.3767	2.6000	0.087	3	29.89	Yes	0.46	2	5.65	No	Not in dissolved sample, low bioavailability
ARSENIC	10	1	0.0045	0.0045	0.0045	0.19	0	0.02	No	[redacted]				
Arsenic, Dissolved	10	1	0.0041	0.0041	0.0041	0.19	0	0.02	No					
BARIUM	10	10	0.0550	0.1132	0.1800	5	0	0.04	No					
Barium, Dissolved	10	10	0.0640	0.1057	0.1500	5	0	0.03	No					
CALCIUM	10	10	20.0000	84.5000	150.0000	-	-	-	Yes	116	3	1.29	No	Essential nutrient
Calcium, Dissolved	10	10	20.0000	81.2000	130.0000	-	-	-	Yes	116	2	1.12	No	Essential nutrient
CHROMIUM, TOTAL	10	4	0.0018	0.0039	0.0069	0.011	0	0.63	No	[redacted]				
COPPER	10	3	0.0021	0.0090	0.0140	0.000654	3	21.41	Yes	0.00023	3	60.87	No	Low bioavailability & toxicity
Copper, Dissolved	10	3	0.0009	0.0044	0.0100	0.000654	3	15.29	Yes	1.13	0	0.0088	No	HQ was below 1
IRON	10	9	1.6000	4.1333	13.0000	1	9	13.00	Yes	0.158	9	82.28	Yes	HQ greater than 1
Iron, Dissolved	10	8	0.0460	0.9725	5.5000	1	1	5.50	Yes	0.158	5	34.81	Yes	HQ greater than 1
LEAD	10	3	0.0140	0.0313	0.0530	0.00132	3	40.15	Yes	0.01226	3	4.32	No	Low bioavailability & toxicity
Lead, Dissolved	10	2	0.0018	0.0040	0.0061	0.00132	2	4.62	Yes	0.165	0	0.04	No	HQ was below 1
MAGNESIUM	10	10	7.0000	14.1000	19.0000	-	-	-	Yes	82	0	0.23	No	Essential nutrient
Magnesium, Dissolved	10	10	7.0000	14.7000	19.0000	-	-	-	Yes	82	0	0.23	No	Essential nutrient
MANGANESE	10	10	0.0310	0.0966	0.2500	-	-	-	Yes	1.1	0	0.23	No	HQ was below 1
Manganese, Dissolved	10	9	0.0240	0.0680	0.2200	-	-	-	Yes	1.1	0	0.20	No	HQ was below 1
POTASSIUM	10	10	1.6000	6.5100	15.0000	-	-	-	Yes	53	0	0.28	No	Essential nutrient
Potassium, Dissolved	10	10	1.6000	6.1800	14.0000	-	-	-	Yes	53	0	0.26	No	Essential nutrient
SODIUM	10	10	32.0000	48.5000	75.0000	-	-	-	Yes	680	0	0.11	No	Essential nutrient
Sodium, Dissolved	10	10	28.0000	46.0000	75.0000	-	-	-	Yes	680	0	0.11	No	Essential nutrient
VANADIUM	10	3	0.0027	0.0061	0.0100	0.019	0	0.53	No	[redacted]				
ZINC	10	6	0.0070	0.0406	0.0960	0.05891	2	1.63	Yes	0.033641	3	2.85	No	Low bioavailability & toxicity
Zinc, Dissolved	10	3	0.0120	0.0150	0.0190	0.05891	0	0.32	No	[redacted]				
MERCURY	10	3	0.0001	0.0001	0.0001	0.000012	3	9.17	Yes	0.00004	3	2.75	Yes	HQ greater than 1
Mercury, Dissolved	10	1	0.0001	0.0001	0.0001	0.000012	1	10.00	Yes	0.00004	1	3.00	Yes	HQ greater than 1
CYANIDE	10	4	0.0066	0.0076	0.0082	0.0052	4	1.58	Yes	0.0078	2	1.06	No	Low magnitude of exceedance
Pesticides (ug/L)														
GAMMA BHC (LINDANE)	10	1	0.0069	0.0069	0.0069	0.08	0	0.09	No	[redacted]				
Volatile Organic Compounds (ug/L)														
CHLOROFORM	3	1	1.6000	1.6000	1.6000	289	0	0.01	No	[redacted]				
TRICHLOROETHYLENE (TCE)	3	1	0.7100	0.7100	0.7100	75	0	0.01	No					
Semivolatile Organic Compounds (ug/L)														
BENZO(a)ANTHRACENE	10	2	0.4600	0.4950	0.5300	0.839	0	0.63	No	[redacted]				
BENZO(g,h,i)PERYLENE	10	1	0.7500	0.7500	0.7500	7.64	0	0.10	No					
BENZYL BUTYL PHTHALATE	10	3	0.4700	0.5300	0.6100	22	0	0.03	No					
CARBAZOLE	10	1	0.6700	0.6700	0.6700	-	-	-	Yes	-	-	-	Yes	No refinement value
CHRYSENE	10	1	0.5200	0.5200	0.5200	0.033	1	15.76	Yes	-	-	-	Yes	No refinement value
DIETHYL PHTHALATE	10	1	1.1000	1.1000	1.1000	521	0	0.00	No	[redacted]				
DI-n-BUTYL PHTHALATE	10	2	0.5500	1.5750	2.6000	9.4	0	0.28	No					
DI-n-OCTYLPHTHALATE	10	1	0.5400	0.5400	0.5400	30	0	0.02	No					
FLUORANTHENE	10	2	0.3500	0.5300	0.7100	39.8	0	0.02	No					
INDENO(1,2,3-c,d)PYRENE	10	1	0.6400	0.6400	0.6400	4.31	0	0.15	No					
PYRENE	10	1	0.6700	0.6700	0.6700	0.3	1	2.23	Yes	11000	0	0.00006	No	HQ was below 1
Physical Characteristics (mg/L)														
TOTAL ORGANIC CARBON	10	10	4.1000	13.4100	43.0000	-	-	-						
HARDNESS (as CACO3)	10	10	78.0000	266.8000	450.0000	-	-	-						
SUSPENDED SOLIDS (RESIDUE, NON-FILTERABLE)	10	7	5.0000	22.5000	56.0000	-	-	-						
ALKALINITY, TOTAL (AS CaCO3)	10	10	92.0000	166.2000	250.0000	-	-	-						

ROD Table 5

Notes

(1) Value used for dissolved metals are from NAWQC Fresh CCC (#1)
=, Unqualified
U Undetected
J Estimated value
R Data was rejected
Samples in yellow exceed screening value
Samples in orange exceed screening value

Table 2-6
Surface Water Sample Results and Selection of PCOPEC and COPEC
Jacksonville Ash Superfund Site
Lonnie C. Miller, Jr. Park
Page 1 of 2

ParameterName	Samples from Areas of Expected Contamination (April 2000 Sampling)																																										Total Samples
	LMSW002		LMSW003		LMSW007		LMSW009		LMSW010		LMSW011		LMSW012		LMSW013		LMSW014		LMSW015		LMSW016		LMSW017		LMSW018		LMSW019		LMSW020		LMSW021		LMSW022		LMSW023		LMSW024		LMSW025		LMSW026		
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
Inorganics (mg/L)																																											
ALUMINUM	0.74	=	1.4	J	0.28	=	0.62	J	5.1	=		U	4.7	=	0.35	=	0 8	=		U		U	0.62	=	0.41	=	1	=	0.62	=	0.83	=		U		U	1.3	=		U	1.1	=	21
Aluminum, Dissolved		U		U		U		U		U		U	0 049	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
ARSENIC		U		U		U		U	0 03	=		U	0 0088	J		U		U		U		U		U		U		U		U		U		U		U		U		U	0 0046	J	21
Arsenic, Dissolved		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	0 0052	J	21
BARIUM	0 024	J	0 061	J	0 32	=	0 48	=	1 1	=	0 35	=	0 55	=	0 14	J	0 29	=	0 075	J	0 063	J	0 069	J	0 067	J	0 075	J	0 055	J	0 062	J	0 045	J	0 051	J	0 055	J	0 049	J	0 051	J	21
Barium, Dissolved	0 02	J	0 055	J	0 28	=	0 35	=	0 23	=	0 32	=	0 41	=	0 13	J	0 28	=	0 07	J	0 063	J	0 069	J	0 065	J	0 068	J	0 051	J	0.055	J	0 045	J	0 05	J	0 049	J	0 044	J	0 051	J	21
CADMIUM		U		U		U		U	0.0048	J		U	0.0032	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
Cadmium, Dissolved		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	0.0027	J		U		U		U		U	21
CALCIUM	68	=	71	=	93	=	61	=	56	=	60	=	150	=	160	=	170	=	94	=	100	=	110	=	99	=	120	=	96	=	100	=	66	=	76	=	79	=	70	=	120	=	21
Calcium, Dissolved	65	=	67	=	91	=	49	=	40	=	60	=	140	=	160	=	170	=	95	=	100	=	120	=	100	=	110	=	91	=	91	=	70	=	79	=	76	=	68	=	130	=	21
CHROMIUM, TOTAL		U		U		U		U	0.045	=		U	0.014	=		U		U		U		U		U		U	0 0018	J		U		U		U		U		U		U	0 002	J	21
Chromium, Dissolved		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
COBALT		U		U		U		U	0 0019	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
COPPER		U		U		U	0.033	=	0.29	=		U	0.081	=	0 0026	J		U		U		U		U		U		U		U		U		U	0 0037	J		U		U		U	21
Copper, Dissolved		U		U		U		U		U		U	0 002	J	0 002	J		U		U		U		U		U		U		U		U		U	0 0025	J		U		U		U	21
IRON	0.58	=	0.85	=	6	=	27	=	160	=	5.6	=	55	=	1.1	=	2.7	=	0.52	=	0.35	=	0.77	=	0.64	=	1.1	=	0.75	=	0.94	=	0.41	=	0.57	=	1.5	=	0.56	=	0.94	=	21
Iron, Dissolved		U		U		U	8	=	3	=	2.9	=	4.3	=	0 091	J	0 085	J		U		U		U	0 056	J	0.18	=		U		U		U	0.029	J		U		U	0 031	J	21
LEAD		U		U	0.0074	=	0.036	=	0.3	=	0.0018	J	0.083	=		U		U		U		U	0.0015	J		U		U		U	0.003	J		U		U	0.0031	=	0.0027	J	0.0034	=	21
Lead, Dissolved		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
MAGNESIUM	25	=	24	=	18	=	13	=	9	=	11	=	250	=	340	=	300	=	180	=	220	=	240	=	200	=	260	=	190	=	210	=	91	=	120	=	130	=	94	=	290	=	21
Magnesium, Dissolved	25	=	23	=	18	=	12	=	7 5	=	13	=	200	=	350	=	300	=	190	=	210	=	250	=	210	=	240	=	180	=	170	=	100	=	140	=	130	=	90	=	320	=	21
MANGANESE		U		U	0 16	=	0 23	=	0 43	=	0 31	=	0 67	=	0 3	=	0 47	=	0 13	=	0 11	=	0 15	=	0 14	=	0 16	=	0 1	=	0 13	=	0 078	=	0 099	=	0 11	=	0 084	=	0 09	=	21
Manganese, Dissolved		U		U	0 11	=	0 18	=	0 15	=	0 32	=	0 57	=	0 26	=	0 46	=	0 12	=	0 098	=	0 13	=	0 12	=	0 13	=	0 071	=	0 098	=	0 07	=	0 086	=	0 073	=	0 061	=	0 059	=	21
NICKEL		U		U		U		U	0 022	J		U	0 01	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
Nickel, Dissolved		U		U		U		U		U	0 0051	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
POTASSIUM	1 6	J	2 4	J	7 9	=	2 5	J	2 9	J	5 5	=	88	=	130	=	110	=	58	=	74	J	78	=	63	=	87	=	65	J	67	=	28	J	41	J	45	J	39	J	110	J	21
Potassium, Dissolved	1 5	J	2 2	J	7 7	=	2 3	J	2 6	J	6 6	=	76	=	130	=	120	=	62	=	74	J	86	=	72	=	78	=	62	J	55	=	34	J	47	J	44	J	37	J	120	J	21
SILVER		U		U		U		U	0.0032	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
SODIUM	11	=	13	=	28	=	13	=	11	=	67	=	1900	=	2700	=	2100	=	1400	=	1600	=	1800	=	1200	=	1600	=	1300	=	1500	=	650	=	780	=	910	=	660	=	2100	=	21
Sodium, Dissolved	12	=	13	=	27	=	12	=	10	=	98	=	1500	=	2900	=	2200	=	1400	=	1400	=	1800	=	1500	=	1600	=	1300	=	1200	=	680	=	1000	=	940	=	640	=	2300	=	21
VANADIUM		U	0 0054	J		U	0 0033	J	0.024	J		U	0 015	J	0 0039	J		U		U		U		U		U		U		U		U		U		U		U	0 0042	J		U	21
Vanadium, Dissolved		U	0 0044	J		U		U		U		U		U	0 0034	J		U		U		U		U		U		U		U		U		U		U		U	0 0031	J	0 007	J	21
ZINC	0 017	J		U		U	0.12	=	0.78	=	0 0065	J	0.26	=	0 0085	J		U	0 025	=		U	0 014	J		U	0 025	=	0 011	J	0 018	J	0 0098	J	0 0096	J	0 021	=	0 016	J	0 012	J	21
Zinc, Dissolved		U		U		U		U		U		U	0 012	J		U		U		U		U	0 0085	J		U		U		U	0 0072	J	0 024	=		U		U	0 0061	J		U	21
MERCURY		U		U		U		U	0.00044	=		U	0.00023	=		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
Mercury, Dissolved		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	21
CYANIDE		U		U		U		U		U		U		U		U	0.0157	J	0.015	=		U		U	0.01	=		U		U		U		U		U		U		U		U	21
Volatile Organic Compounds (ug/L)																																											
METHYLENE CHLORIDE				U			2 5	J								U				U										U				U								U	7
Semivolatile Organic Compounds (ug/L)																																											
BENZO(a)ANTHRACENE		U		U	0.97	J	0.78	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	6.4	J		U	21
BENZO(a)PYRENE		U		U	0.95	J	0.56	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	3.6	J	0 51	J	21
BENZO(b)FLUORANTHENE		U		U	1 3	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	4 7	J	0 66	J	21
BENZO(g,h,i)PERYLENE		U		U		U		U		U		U		U		UJ		U		U		U		U		U		U		U		U		U		U	0 79	J	1 9	J		UJ	21
BENZO(k)FLUORANTHENE		U		U	1.3	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	5.1	J		U	21
BENZYL BUTYL PHTHALATE		U		U	0 69	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	5	J		U	21
bis(2-ETHYLHEXYL) PHTHALATE		U		U		U		U		U		U		U		U		U	1.6	J		U	0.83	J		U		U		U	1.4	J		U		U		U		U		U	21
CHRYSENE		U		U	1.1	J	0.74	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	8.1	J		U	21
DIBENZ(a,h)ANTHRACENE		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	1.3	J		U	21
DI-n-BUTYL PHTHALATE		U		U		U	0 36	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	0 93	J		U	21
DI-n-OCTYLPHTHALATE		U		U	1 8	J	1 6	J		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	1 7	J	0 46	J	21
FLUORANTHENE		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	0 76	J	0 73	J		U	21
INDENO(1,2,3-c,d)PYRENE		U		U		U		U		U		U		U		UJ		U		UJ		U		UJ		U		U		U		U		U		U		U	1 7	J		U	21
PYRENE		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U		U	1.4	J	1.6	J		U	21

ROD Table 6

Notes.
- Unqualified
U, Undetected
J, Estimated value
R, Data was rejected
Samples shown in yellow exceed screening value
Samples shown in orange exceed refinement value
Screened COPEC are blacked out

3/21/2003

Table 2-6
Surface Water Sample Results and Selection of PCOPEC and COPEC
Jacksonville Ash Superfund Site
Lonnie C. Miller, Jr. Park
Page 2 of 2

ParameterName	AOC Samples				Screening for PCOPEC Selection				Refinement for Direct Exposure COPEC Selection				
	Total Detections	Minimum Detected	Average Detected	Maximum Detected	Approved Screening Value	Total Detections > Screening	AOC Screening HQ Based on Maximum	Selected as PCOPC?	Approved Refinement Value	Total Detections > Refinement Value	AOC Refinement HQ Based on Maximum	Selected as COPC?	Rationale for selection as COPEC
Inorganics (mg/L)													
ALUMINUM	15	0.28	1.325	5.1	0.087	15	58.62	Yes	0.46	12	11.09	No	Bioavailable portion (dissolved) not a COPEC
Aluminum, Dissolved	1	0.049	0.049	0.049	0.087	0	0.56	No					
ARSENIC	3	0.0046	0.014	0.03	0.19	0	0.16	No					
Arsenic, Dissolved	1	0.0052	0.005	0.0052	0.19	0	0.03	No					
BARIUM	21	0.024	0.192	1.1	5	0	0.22	No					
Barium, Dissolved	21	0.02	0.131	0.41	5	0	0.08	No					
CADMIUM	2	0.0032	0.004	0.0048	0.00066	2	7.27	Yes	0.00788	2	0.61	No	Bioavailable portion (dissolved) not a COPEC
Cadmium, Dissolved	1	0.0027	0.003	0.0027	0.00066	1	4.09	Yes	0.00788	0	0.34		
CALCIUM	21	58	96.143	170	-	-	-	Yes	-	-	-	No	Essential nutrient
Calcium, Dissolved	21	40	93.905	170	-	-	-	Yes	-	-	-		
CHROMIUM, TOTAL	4	0.0018	0.016	0.045	0.011	2	4.09	Yes	0.044	1	1.02	No	Bioavailable portion (dissolved) not a COPEC
Chromium, Dissolved	0	0	#DIV/0!	0	0.011	0	0.00	Yes	0.044	0	0.00		
COBALT	1	0.0019	0.002	0.0019	0.005	0	0.38	No					
COPPER	5	0.0026	0.082	0.29	0.00654	3	44.34	Yes	2.027	0	0.14	No	HQ was below 1
Copper, Dissolved	3	0.002	0.002	0.0025	0.00654	0	0.38	No					
IRON	21	0.35	12.756	160	1	9	160.00	Yes	0.158	21	1012.66	Yes	HQ above 1 for total and dissolved portion
Iron, Dissolved	10	0.029	1.867	8	1	4	8.00	Yes	0.158	5	50.63		
LEAD	10	0.0015	0.044	0.3	0.00132	10	227.27	Yes	0.255	1	1.18	No	Bioavailable portion (dissolved) not a COPEC
Lead, Dissolved	0	0	#DIV/0!	0	0.00132	0	0.00	Yes	0.255	0	0.00		
MAGNESIUM	21	9	153.095	340	-	-	-	Yes	-	-	-	No	Essential nutrient
Magnesium, Dissolved	21	7.5	151.357	350	-		-	Yes	-	-	-		
MANGANESE	19	0.078	0.208	0.67	-	-	-	Yes	1.1	0	0.61	No	HQ was below 1
Manganese, Dissolved	19	0.059	0.167	0.57	-	-		Yes	1.1	0	0.52		
NICKEL	2	0.01	0.016	0.022	0.08771	0	0.25	No					
Nickel, Dissolved	1	0.0051	0.005	0.0051	0.08771	0	0.06	No					
POTASSIUM	21	1.6	52.657	130	-	-	-	Yes	-	-	-	No	Essential nutrient
Potassium, Dissolved	21	1.5	53.329	130	-	-	-	Yes	-	-	-		
SILVER	1	0.0032	0.003	0.0032	0.000012	1	266.67	Yes	0.00012	1	26.67	No	Low frequency of detection
SODIUM	21	11	1063.952	2700	-	-	-	Yes	-	-	-	No	Essential nutrient
Sodium, Dissolved	21	10	1073.429	2900	-	-	-	Yes	-	-	-		
VANADIUM	6	0.0033	0.009	0.024	0.019	1	1.26	Yes	0.08	0	0.30	No	HQ was below 1
Vanadium, Dissolved	4	0.0031	0.004	0.007	0.019	0	0.37	No					
ZINC	16	0.0065	0.085	0.78	0.05891	3	13.24	Yes	312.6	0	0.002	No	HQ was below 1
Zinc, Dissolved	5	0.0061	0.012	0.024	0.05891	0	0.41	No					
MERCURY	2	0.00023	0.000	0.00044	0.000012	2	36.67	Yes	0.00004	2	11.00	No	Bioavailable portion (dissolved) not a COPEC
Mercury, Dissolved	0	0	#DIV/0!	0	0.000012	0	0.00	Yes	0.00004	0	0.00		
CYANIDE	3	0.0057	0.010	0.015	0.0052	3	2.88	Yes	0.0078	2	1.92	No	Low magnitude of exceedance
Volatile Organic Compounds (ug/L)													
METHYLENE CHLORIDE	1	2.5	2.5	2.5	1930	0	0.001	No					
Semivolatile Organic Compounds (ug/L)													
BENZO(a)ANTHRACENE	3	0.76	2.71	6.4	0.839	2	7.63	Yes	0.65	3	9.85	Yes	HQ above 1
BENZO(a)PYRENE	4	0.51	1.41	3.6	0.014	4	257.14	Yes	0.3	4	12.00	Yes	HQ above 1
BENZO(b)FLUORANTHENE	3	0.66	2.22	4.7	9.07	0	0.52	No					
BENZO(g,h,i)PERYLENE	2	0.79	1.35	1.9	7.64	0	0.25	No					
BENZO(k)FLUORANTHENE	2	1.3	3.20	5.1	0.0056	2	910.71	Yes	0.0056	2	910.71	Yes	HQ above 1
BENZYL BUTYL PHTHALATE	2	0.69	2.85	5	22	0	0.23	No					
bis(2-ETHYLHEXYL) PHTHALATE	3	0.83	1.28	1.6	0.3	3	5.33	Yes	912	0	0.00	No	HQ was below 1
CHRYSENE	3	0.74	3.31	8.1	0.033	3	245.45	Yes	0.033	3	245.45	Yes	HQ above 1
DIBENZ(a,h)ANTHRACENE	1	1.3	1.30	1.3	0.0016	1	812.50	Yes	0.0016	1	812.50	No	Low frequency of occurrence
DI-n-BUTYL PHTHALATE	2	0.36	0.65	0.93	9.4	0	0.10	No					
DI-n-OCTYLPHTHALATE	4	0.46	1.39	1.8	30	0	0.06	No					
FLUORANTHENE	2	0.73	0.75	0.76	39.8	0	0.02	No					
INDENO(1,2,3-c,d)PYRENE	1	1.7	1.70	1.7	4.31	0	0.39	No					
PYRENE	2	1.4	1.50	1.6	0.3	2	5.33	Yes	11000	0	0.00	No	HQ was below 1

ROD Table 6

Notes
. Unqualified
J. Undetected
J. Estimated value
R. Data was rejected
Samples shown in yellow exceed screening value
Samples shown in orange exceed refinement value
Screened COPEC are blacked out

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Table 7: Constituents Detected in Groundwater Above Screening Level During Phase I RI			
Constituents	2000 (mg/L)	Screening Level (mg/L)	Basis for Screening Level
Iron	11.0 (F) 12.0 (F) 24.0 (F)	11	EPA Region 9 PRG
Lead	0.0298 (F)	0.015	Primary MCL
Aroclor 1242	0.0014 (C)	0.0005	Primary MCL
l,2-dibromo-3-chloropropane	0.00086J (C)	0.0002	Primary MCL
Forest Street (F) 5th & Cleveland (C) Lonnie Miller (L) J (organic) - constituent was detected above method detection limit but below the reporting limit. Screening Criteria is the Drinking Water Standard, if available. If Drinking Water Standard is not available, then Screening Criteria is the lowest of the EPA Region 9 Preliminary Remediation Goals (10/01/02) or the Florida Groundwater Concentration Level (May 1999)			

During Phase I, lead was detected in only 2 of the monitoring well samples. It was detected in the initial sample for FSMW016 at a concentration of 0.0298 mg/L. The well is located in an 8.5-foot-thick ash deposit. It was re-sampled because of the potential for the presence of suspended ash to be affecting the results. The 2 subsequent samples had undetectable lead. The other sample where lead was detected was from the intermediate well FSIW001. It was detected at 0.0016 mg/L, below the screening criterion (Primary MCL) of 0.015 mg/L.

Of the remaining TAL parameters, only aluminum exceeded screening levels, which was detected at 0.47 mg/L in FSMW013. That is above the Florida secondary MCL of 0.2 mg/1 for aluminum. This concentration is below the background aluminum concentration in both background monitoring wells. The aluminum does not exceed the health based EPA Region 9 Preliminary Remedial Goal (PRG) for drinking water of 36 mg/1.

Several wells exceeded secondary drinking water standards for iron and manganese. However, secondary standards are not health based. All the manganese concentrations are within the risk range for manganese (i.e., 0.03 to 0.9 ppm) as calculated in the BHHRA and the EPA Region 9 PRG of 0.88 ppm.

During Phase I, eight monitoring wells were sampled and analyzed for TCLs, and 3 additional wells were analyzed for TCLs except VOCs. Only 3 organic parameters were detected in the wells. These were benzo(g, h, l) perylene, carbon disulfide, and cis-1,2 dichloroethene. None of the organic parameters exceeded screening levels which are the primary MCL for cis-1,2 dichloroethene and the Florida Groundwater Cleanup Targets for benzo(g, h, l) perylene and carbon disulfide.

Table 8 shows all the wells that were resampled in January 2003 and the parameters for which they analyzed. The results of the 2002 groundwater resampling are in the Groundwater Resampling Report (July 2003) and summarized in Tables 9, 10, 11 and 12. This most recent groundwater resampling event confirms the conclusions of the 2000 sampling event that groundwater at the Forest Street Incinerator site is not significantly impacted by ash contamination. However, groundwater monitoring will be instituted to verify the "No Action" decision for groundwater.

3.7.2 5th and Cleveland Incinerator

The 5th & Cleveland Incinerator site is located approximately 300 feet west of Interstate 95. Groundwater beneath the site flows in a northeasterly direction. The groundwater table in the area under investigation is typically encountered between approximately 4 to 8 feet bgs. The average horizontal hydraulic gradient was calculated to be 0.01.

During the RI, two groundwater sampling events were performed. One event occurred in 2000 and the second event occurred in 2002. Seven monitoring wells were sampled in 2000. No residential wells or community wells near the site were sampled. Table 7 lists all of the constituents detected above respective health based screening levels during the 2000 Phase I RI groundwater sampling event.

During Phase I, seven new monitoring wells, including five site wells and two background wells, were installed as part of the RI. These wells were sampled and analyzed for TCL and TAL parameters. The two background monitoring wells were installed in an area believed to be upgradient of the area of visible ash at the time of installation. However, subsequent soil borings delineated an area of visible ash upgradient of the two background monitoring wells.

The wells were sampled twice, once for lead and once for TAL Lead is below the screening criterion (primary MCL of 0.015 mg/1) in all monitoring well samples. None of the TAL parameters exceeded human health-based screening levels. Iron and/or manganese did exceed the aesthetic criteria for taste in 5 of the monitoring wells sampled. However, secondary standards are not health based. All the manganese concentrations are within the risk range for manganese (i.e., 0.03 to 0.9 ppm) as calculated in the BHHRA and the EPA Region 9 PRG of 0.88 ppm.

Other heavy metals detected below screening criteria in at least 1 monitoring well include arsenic, barium, beryllium, cobalt and vanadium. All were estimated concentrations below practical quantitation limits. A limited number of organic parameters were detected below screening criteria in the monitoring wells. The screening criteria is the primary MCL if available or the EPA Region 9 PRGs or Florida Groundwater Cleanup Target Levels whichever is lower.

TABLE 1
GROUNDWATER RESAMPLING SUMMARY
JACKSONVILLE ASH SITE

Monitoring Well	TAL	TCL	VOC	DIOXIN
BKFSMW001	X	X		X
BKFSMW002	X	X		X
FSMW001	X	X	X	X
FSMW002	X			
FSMW003	X			
FSMW004	X			
FSMW005	X	X	X	X
FSMW006	X			
FSMW007	X			
FSMW008	X	X	X	X
FSMW009	X	X	X	
FSMW010	X			
FSMW011	X			
FSMW012	X	X	X	X
FSMW013	X			
FSMW014	X	X	X	
FSMW015	X			
FSMW016	X			
FSMW017	X	X	X	X
FSMW018	X			
FSMW019	X	X	X	X
Monitoring Well	**TAL**	**TCL**	**VOC**	**DIOXIN**
BKFCMW001	X	X		X
BKFCMW002	X	X		X
FCMW001	X	X	X	X
FCMW002	X	X	X	X
FCMW003	X	X	X	X
FCMW004	X	X	X	X
FCMW005	X	X	X	X
FCMW009	X			
Monitoring Well	**TAL**	**TCL**	**VOC**	**DIOXIN**
BKLMMW001	X	X		X
BKLMMW002	X	X		X
LMMW001	X	X	X	X
LMMW002	X	X	X	X
LMMW003	X	X	X	X
LMMW004	X	X	X	X
LMMW005	X	X	X	X
LMMW007	X	X	X	X

ROD Table 8

TABLE 2
JACKSONVILLE ASH SITE
GROUNDWATER RESAMPLING TAL SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDEDING GWCTL	NUMBER OF SAMPLES
Aluminum (total)	mg/l	36	0.040B	0.79	14	0	37
Aluminum (dissolved)	mg/l	36	0.042B	0.42	7	0	37
Antimony (total)	mg/l	0.006	0.011B	0.011B	2	1	37
Antimony (dissolved)	mg/l	0.006	0.0065B	0.009B	2	2	37
Arsenic (total)	mg/l	0.05	0.018	0.043	2	0	37
Arsenic (dissolved)	mg/l	0.05	0.013	0.013	1	0	37
Barium (total)	mg/l	2	0.0078B	0.51	37	0	37
Barium (dissolved)	mg/l	2	0.0078B	0.5	37	0	37
Beryllium (total)	mg/l	0.004	0.00078B	0.0021	2	0	37
Beryllium (dissolved)	mg/l	0.004	0.00082B	0.002	2	0	37
Cadmium (total)	mg/l	0.005	0.00078B	0.0011B	3	0	37
Cadmium (dissolved)	mg/l	0.005	0.00089B	0.0012B	2	0	37
Calcium (total)	mg/l	NA	0.35B	200	37	NA	37
Calcium (dissolved)	mg/l	NA	0.38B	200	37	NA	37
Chromium (total)	mg/l	0.1	0.0019B	0.003B	2	0	37
Chromium (dissolved)	mg/l	0.1	0.0026B	0.083	2	0	37
Cobalt (total)	mg/l	0.73	0.0028B	0.004B	3	0	37
Cobalt (dissolved)	mg/l	0.73	0.0015B	0.004B	6	0	37
Copper (total)	mg/l	1.5	0.00099B	0.021B	28	0	37
Copper (dissolved)	mg/l	1.5	0.00095B	0.03	26	0	37
Iron (total)	mg/l	11	0.032B	13	37	2	37
Iron (dissolved)	mg/l	11	0.042B	11	37	0	37
Lead (total)	mg/l	0.015	0.0015B	0.012	8	0	37
Lead (dissolved)	mg/l	0.015	0.0016B	0.0016B	2	0	37
Magnesium (total)	mg/l	NA	0.54B	33	37	NA	37
Magnesium (dissolved)	mg/l	NA	0.57B	33	37	NA	37
Manganese (total)	mg/l	0.88	0.0025B	0.99	35	1	37
Manganese (dissolved)	mg/l	0.88	0.0025B	0.58	35	1	37
Nickel (total)	mg/l	0.1	0.0047U	0.0047U	0	0	37
Nickel (dissolved)	mg/l	0.1	0.012B	0.012B	1	0	37
Potassium (total)	mg/l	NA	0.22B	66	37	NA	37
Potassium (dissolved)	mg/l	NA	0.22B	69	37	NA	37
Selenium (total)	mg/l	0.05	0.0042U	0.0042U	0	0	37
Selenium (dissolved)	mg/l	0.05	0.0042U	0.0042U	0	0	37
Silver (total)	mg/l	0.18	0.0019U	0.0019U	0	0	37
Silver (dissolved)	mg/l	0.18	0.0019U	0.0019U	0	0	37
Sodium (total)	mg/l	NA	2.1B	100	37	NA	37
Sodium (dissolved)	mg/l	NA	2.2B	120	37	NA	37
Thallium (total)	mg/l	0.002	0.010U	0.010U	0	0	37
Thallium (dissolved)	mg/l	0.002	0.010U	0.010U	0	0	37
Vanadium (total)	mg/l	0.26	0.0022B	0.0065B	8	0	37
Vanadium (dissolved)	mg/l	0.26	0.0028B	0.0067B	7	0	37
Zinc (total)	mg/l	11	0.0072B	0.63	26	0	37
Zinc (dissolved)	mg/l	11	0.0059B	0.66	20	0	37
Mercury (total)	mg/l	0.002	0.000079B	0.000079B	1	0	37
Mercury (dissolved)	mg/l	0.002	0.000092B	0.000092B	1	0	37
Cyanide (total)	mg/l	0.2	0.0062B	0.014	4	0	37

PRGs are the primary drinking water standards. If a p mary drinking water standard is not available for a particular constituent, then EPA Region 9 PRGs for tap water are used.
U means that the compound was analyzed for but not detected.
B(inorganic) means that the analyte was detected above the method detection limit but below the reporting limit.

ROD Table 9

TABLE 4
JACKSONVILLE ASH SITE
GROUNDWATER RESAMPLING SVOC SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDING GWCTL	NUMBER OF SAMPLES
Phenol	ug/l	22,000	10U	10U	0	0	25
bis(2-Chloroethyl)ether	ug/l	0.001	10U	10U	0	0	25
2-Chlorophenol	ug/l	30	10U	10U	0	0	25
2-Methylphenol	ug/l	1,800	10U	10U	0	0	25
2,2'-Oxybis(1-Chloropropane)	ug/l	NA	10U	10U	0	0	25
3-Methylphenol	ug/l	1,800	10U	10U	0	0	25
N-Nitroso-di-n-propylamine	ug/l	0.001	10U	10U	0	0	25
Hexachloroethane	ug/l	4.8	10U	10U	0	0	25
Nitrobenzene	ug/l	3.4	10U	10U	0	0	25
Isophorone	ug/l	71	10U	10U	0	0	25
2-Nitrophenol	ug/l	NA	10U	10U	0	0	25
2,4-Dimethylphenol	ug/l	730	10U	10U	0	0	25
bis(2-Chloroethoxy)methane	ug/l	NA	10U	10U	0	0	25
2,4-Dinitrophenol	ug/l	73	10U	10U	0	0	25
Naphthalene	ug/l	6.2	10U	10U	0	0	25
4-Chloroaniline	ug/l	150	10U	10U	0	0	25
Hexachlorobutadiene	ug/l	0.86	10U	10U	0	0	25
4-Chloro-3-methylphenol	ug/l	NA	10U	10U	0	0	25
2-Methylnaphthalene	ug/l	NA	10U	10U	0	0	25
Hexachlorocyclopentadiene	ug/l	50	10U	10U	0	0	25
2,4,6-Trichlorophenol	ug/l	3.6	10U	10U	0	0	25
2,4,5-Trichlorophenol	ug/l	3,600	25U	25U	0	0	25
2-Chloronaphthalene	ug/l	490	10U	10U	0	0	25
2-Nitroanaline	ug/l	1	25U	25U	0	0	25
Dimethylphthalate	ug/l	360,000	10U	10U	0	0	25
Acenaphthalene	ug/l	NA	10U	10U	0	0	25
3-Nitroanaline	ug/l	NA	25U	25U	0	0	25
Acenaphthene	ug/l	370	10U	10U	0	0	25
2,4-Dinitrophenol	ug/l	73	25U	25U	0	0	25
4-Nitrophenol	ug/l	NA	25U	25U	0	0	25
Dibenzofuran	ug/l	24	10U	10U	0	0	25
2,4-Dinitrotoluene	ug/l	73	10U	10U	0	0	25
2,6-Dinitrotoluene	ug/l	36	10U	10U	0	0	25
Diethylphthalate	ug/l	29,000	10U	10U	0	0	25
4-Chlorophenylphenyl ether	ug/l	NA	10U	10U	0	0	25
Fluorene	ug/l	240	10U	10U	0	0	25
4-Nitroanaline	ug/l	NA	25U	25U	0	0	25
4,6-Dinitro-2-methylphenol	ug/l	NA	25U	25U	0	0	25
N-Nitrosodiphenyl ether	ug/l	NA	10U	10U	0	0	25
4-Bromophenylphenyl ether	ug/l	NA	10U	10U	0	0	25
Hexachlorobenzene	ug/l	1	10U	10U	0	0	25
Pentachlorophenol	ug/l	1	25U	25U	0	0	25
Phenanthrene	ug/l	NA	10U	10U	0	0	25
Anthracene	ug/l	1,800	10U	10U	0	0	25
Di-n-butylphthalate	ug/l	3,600	0.38J	1.3J	8	0	25
Fluoranthene	ug/l	1,500	10U	10U	0	0	25
Pyrene	ug/l	180	10U	10U	0	0	25
Butylbenzylphthalate	ug/l	7,300	10U	10U	0	0	25
3,3'-Dichlorobenzidine	ug/l	0.15	10U	10U	0	0	25
Benzo(a)anthracene	ug/l	0.09	10U	10U	0	0	25
bis(2-Ethylhexyl)phthalate	ug/l	6	0.51J	0.51J	1	0	25
Chrysene	ug/l	9.2	10U	10U	0	0	25
Di-n-octylphthalate	ug/l	1,500	10U	10U	0	0	25
Benzo(b)fluoranthene	ug/l	0.09	10U	10U	0	0	25
Benzo(k)fluoranthene	ug/l	0.9	10U	10U	0	0	25
Benzo(a)pyrene	ug/l	0.2	10U	10U	0	0	25
Indeno(1,2,3-cd)pyrene	ug/l	0.09	1J	1J	1	1	25
Dibenzo(a,h)anthracene	ug/l	0.009	0.88J	0.88J	1	1	25
Benzo(g,h,i)perylene	ug/l	NA	0.75J	4.1J	6	0	25
Carbazole	ug/l	3.4	10U	10U	0	0	25
1-Methylnaphthalene	ug/l	NA	10U	10U	0	0	25

PRGs are the primary drinking water standards. If a primary drinking water standard is not available for a particular constituent, then EPA Region 9 PRGs for tap water are used.
NA means not available at the time of this report
PRG is the Primary Drinking Water Standard MCL, if available, or the EPA Relon 9 tap water PRG.
U means that the compound was analyzed for but not detected.
J means that the analyte was detected above the bmethod detection limit but below the reporting limit.

ROD Table 10

TABLE 6
JACKSONVILLE ASH SITE
GROUNDWATER RESAMPLING PESTICIDES/PCBS SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDING GCTL	NUMBER OF SAMPLES
Alpha-BHC	ug/l	0.011	0.050U	0.053U	0	0	25
Beta-BHC	ug/l	0.037	0.014JP	0.014JP	1	0	25
Delta-BHC	ug/l	0.052	0.050U	0.050U	0	0	25
Heptachlor	ug/l	0.4	0.050U	0.050U	0	0	25
Aldrin	ug/l	0.004	0.050U	0.050U	0	0	25
Heptachlor Epoxide	ug/l	0.2	0.050U	0.050U	0	0	25
Endosulfan	ug/l	220	0.050U	0.050U	0	0	25
Dieldrin	ug/l	0.004	0.10U	0.11U	0	0	25
4,4'-DDE	ug/l	0.2	0.10U	0.10U	0	0	25
Endrin	ug/l	11	0.10U	0.10U	0	0	25
Endrin Aldehyde	ug/l	2	0.10U	0.10U	0	0	25
Endosulfan II	ug/l	220	0.10U	0.10U	0	0	25
4,4'-DDD	ug/l	0.28	0.10U	0.10U	0	0	25
Endosulfan Sulfate	ug/l	NA	0.10U	0.10U	0	0	25
4,4'-DDT	ug/l	0.2	0.10U	0.10U	0	0	25
Endrin Ketone	ug/l	NA	0.10U	0.10U	0	0	25
Methoxychlor	ug/l	40	0.50U	0.50U	0	0	25
Alpha-Chlordane	ug/l	2	0.050U	0.050U	0	0	25
Gamma-Chlordane	ug/l	2	0.050U	0.050U	0	0	25
Toxaphene	ug/l	3	5.0U	5.0U	0	0	25
Arochlor-1016	ug/l	0.5	1.0U	1.0U	0	0	25
Arochlor-1221	ug/l	0.5	2.0U	2.0U	0	0	25
Arochlor-1232	ug/l	0.5	1.0U	1.0U	0	0	25
Arochlor-1242	ug/l	0.5	1.0U	1.0U	0	0	25
Arochlor-1248	ug/l	0.5	1.0U	1.0U	0	0	25
Arochlor-1254	ug/l	0.5	1.0U	1.0U	0	0	25
Arochlor-1260	ug/l	0.5	1.0U	1.0U	0	0	25

PRGs are the primary drinking water standards. If a primary drinking water standard is not available for a particular constituent, then EPA Region 9 PRGs for tap water are used.
U means that the compound was analyzed for but not detected.
J (organic) means that the reported value is less than the Project Reporting Limit but greater than the Method detection Limit.
P is the flag used for a pesticide analyte when there is greater than 25% difference for detected concentrations between the two columns.

ROD Table 11

TABLE 8
JACKSONVILLE ASH SITE
GROUNDWATER RESAMPLING VOC SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDING GWCTL	NUMBER OF SAMPLES
Chloromethane	ug/l	1.5	10U	10U	0	0	19
Bromomethane	ug/l	8.7	10U	10U	0	0	19
Vinyl Chloride	ug/l	1	10U	10U	0	0	19
Chloroethane	ug/l	NA	10U	10U	0	0	19
Methylene Chloride	ug/l	5	10U	10U	0	0	19
Acetone	ug/l	610	12	13J	2	0	19
Carbon Disulfide	ug/l	1,000	10U	10U	0	0	19
1,1-Dichloroethene	ug/l	7	10U	10U	0	0	19
cis-1,2-Dichloroethene	ug/l	70	6.1J	27	2	0	19
trans-1,2-Dichloroethene	ug/l	100	10U	10U	0	0	19
Chloroform	ug/l	80	10U	10U	0	0	19
1,2-Dichloroethane	ug/l	3	10U	10U	0	0	19
2-Butanone	ug/l	NA	10U	10U	0	0	19
1,1,1-Trichloroethane	ug/l	200	10U	10U	0	0	19
Carbon Tetrachloride	ug/l	3	10U	10U	0	0	19
Bromodichloromethane	ug/l	0.18	10U	10U	0	0	19
1,1,2,2-Tetrachloroethane	ug/l	0.0055	10U	10U	0	0	19
1,2-Dichloropropane	ug/l	5	10U	10U	0	0	19
trans-1,3-Dichloropropene	ug/l	0.4	10U	10U	0	0	19
Trichloroethene	ug/l	3	10U	10U	0	0	19
Dibromochloromethane	ug/l	80	10U	10U	0	0	19
1,1,2-Trichloroethane	ug/l	5	10U	10U	0	0	19
Benzene	ug/l	1	10U	10U	0	0	19
cis-1,3-Dichloropropene	ug/l	0.4	10U	10U	0	0	19
Bromoform	ug/l	80	10U	10U	0	0	19
2-Hexanone	ug/l	1,200	10U	10U	0	0	19
4-Methyl-2-Pentanone	ug/l	NA	10U	10U	0	0	19
Tetrachloroethene	ug/l	3	10U	10U	0	0	19
Toluene	ug/l	1,000	10U	10U	0	0	19
Chlorobenzene	ug/l	100	10U	10U	0	0	19
Ethylbenzene	ug/l	700	10U	10U	0	0	19
Styrene	ug/l	100	10U	10U	0	0	19
Xylenes	ug/l	10,000	10U	10U	0	0	19
Dichlorodifluoromethane	ug/l	390	10U	10U	0	0	19
Trichlorofluoromrethane	ug/l	1,300	10U	10U	0	0	19
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	NA	10U	10U	0	0	19
Methyl t-butyl ether	ug/l	13	10U	10U	0	0	19
Isopropylbenzene	ug/l	NA	10U	10U	0	0	19
1,3-Dichlorobenzene	ug/l	600	10U	10U	0	0	19
1,4-Dichlorobenzene	ug/l	75	10U	10U	0	0	19
1,2-Dichlorobenzene	ug/l	600	10U	10U	0	0	19
1,2-Dibromo-3-chloropropane	ug/l	0.2	10U	10U	0	0	19
1,2,4-Trichlorobenzene	ug/l	70	10U	10U	0	0	19
1,2-Dibromoethane	ug/l	0.00076	10U	10U	0	0	19

The PRGs are the Primary Drinking Water Standards, if available, or the EPA Region 9 tap water PRGs.
NA means not available at the time of this report
U means that the compound was analyzed for but not detected.
J means that the analyte was detected above the method detection limit but below the reporting limit.

ROD Table 12

Table 8 shows all the wells that were resampled in January 2003 and analyzed for TAL metals, TCL organics, volatile organics and dioxins/furans. The results of the 2002 resampling are in the Groundwater Resampling Report (July 2003) and summarized in Tables 9, 10, 11 and 12. This most recent groundwater resampling event confirms the conclusions of the 2000 sampling event that groundwater at the 5th & Cleveland Incinerator Site is not significantly impacted by ash contamination. However, groundwater monitoring will be instituted to verify the "No Action" decision for groundwater.

3.7.3 Lonnie C. Miller, Sr. Park

The Lonnie C. Miller, Sr. Park site is located west of the Ribault River. Groundwater beneath the site flows toward the river in an east to northeasternly direction. The groundwater table in the area is typically encountered between approximately 2.5 feet to 9.5 feet bgs. The average horizontal hydraulic gradient was calculated to be 0.005.

Eight new monitor wells (2 background and 6 site) were installed as part of the Phase I RI. These wells were sampled and analyzed initially for lead only. In the second round all wells were sampled and analyzed for TCL and TAL parameters. The two new background monitor wells were installed upgradient of the area of visible ash. The background wells were sampled twice, once for total lead and once for TAL and TCL (except VOCs).

In background monitor wells, lead was not detected in any of the four samples. Only one other inorganic parameter was found in the background samples (barium); estimated concentrations below quantitation limits were found for barium in both background wells. No organics were found in the background wells.

Lead is below the screening criteria (primary MCL of 0.015 mg/1) in all monitor well samples. It was detected in two monitor wells (LMMW001 and the initial sampling only of LMMW002) at estimated concentrations of 0.0019 and 0.001 mg/L, respectively. These 2 wells are located in the area of thickest ash deposits, in the northern portion of the site.

Aluminum was the only TAL parameter that exceeded screening levels. Aluminum exceeded the secondary MCL of 0.2 mg/1 in one well, LMMW001. Iron and/or manganese did exceed the aesthetic criteria for taste in 11 of the monitor wells samples, including 1 of the background monitor wells for iron. However, secondary standards are not health based. All the manganese concentrations are within the risk range for manganese (i.e., 0.03 to 0.9 ppm) as calculated in the BHHRA and the EPA Region 9 PRG of 0.88 ppm.

A limited number of organic parameters were detected in the monitor wells. Two organic parameters were detected at low concentrations in LMMW005 (cis-l, 2-dichloroethylene and vinyl chloride. This well is close to Moncrief Road and within the area of ash disposal. The pesticide endosulfan as well as cresol and phenol were detected in LMMW007; this is a deep well below the thickest portion of ash disposal. None of the organic parameters exceeded screening levels. The screening criteria is the primary MCL if available or the EPA Region 9 PRGs or Florida Groundwater Cleanup Target Levels whichever is lower.

Table 8 shows all the wells that were resampled in January 2003 and analyzed for TAL metals, TCL organics, volatile organics and dioxins/furans. The results of the 2002 resampling are in the Groundwater Resampling Report (July 2003) and summarized in Tables 9, 10, 11 and 12. This most recent groundwater resampling event confirms the conclusions of the 2000 sampling event that groundwater at the Lonnie C. Miller Park site is not significantly impacted by ash contamination. However, groundwater monitoring will be instituted to verify the "No Action" decision for groundwater.

3.8 Likelihood for Soil Migration

The likelihood for migration of COCs in soil is low. Heavy rains could cause existing surface soil contamination to migrate from the sites into creeks or rivers in storm water runoff but is likely to be minimum due to the presence of grass and other types of cover (e.g., clean soil, gravel) over contaminated soil. The presence of grass and other types of cover (e.g., clean soil, gravel) over contaminated soil also minimizes the migration of soil via wind. Contaminants of concern located in soil do not appear to be migrating to groundwater based on the result of groundwater monitoring.

3.9 Likelihood for Surface Water Migration

The likelihood for surface water migration is low. Sampling to date has indicated that surface water does not contain significant levels of Site COCs.

3.10 Likelihood for Sediment Migration

Concern over the likelihood for sediment migration is not significant. Exceedences of ecological sediment RGs in McCoy's Creek and the Ribault River sediments next to the sites have been found to be similar to sediment background concentrations upstream of the sites. This evaluation indicates that the sites have not significantly contaminated the sediment above levels already present in the surface water bodies. With the stabilization of the streams banks during the remedial action, the concentrations of site-related COCs in the streams is expected to decrease.

3.11 Likelihood for Groundwater Migration

Concern over the likelihood for groundwater migration of COCs from the sites is not significant. Groundwater sampling has not indicated Site contamination in need of remediation.

PART 4: CURRENT AND POTENTIAL FUTURE LAND AND WATER USE

4.1 Current And Potential Future Land Use

4.1.1 Forest Street Current Land Use

The Forest Street Incinerator site is located northwest of the intersection of Margaret Street and Forest Street, and south of McCoy's Creek. The site consists of approximately 27 acres of land in a predominately residential area. The site is currently occupied by the Forest Park Head Start School, a Parks and Recreation Center, an open lot where the incinerator was located and surrounding residential and commercial areas. The site is the location of a former municipal solid waste incinerator, which was operated by the City from the 1910's to the 1969, and the surrounding area was used for ash disposal. Ash deposits have been documented in areas to the east, south, and west of the site. The former incinerator area at the northeastern corner of the site is currently grassed and enclosed by a chain-link fence to minimize human access. The area is maintained by mowing. The land uses are institutional, recreational, open land and primarily residential in the surrounding area with some commercial usage.

The nearest house is located approximately 200 feet from the site boundary. The Forest Park Head Start School, with a staff of approximately 122 workers and 740 students, is situated along the west side of the site and includes a school building and several playground areas that are used by the students. The school property is enclosed by a chain-link fence. The Parks and Recreation Center contains two large ball fields that are routinely maintained by mowing. This open recreational area is located along the southern portion of the site.

In 1990, the population in Jacksonville was 906,727. It is estimated that the Jacksonville population increased to 1,044,684 by 1998 (U.S. Census Bureau, 1999). According to the 1990 U.S. Census, the total population in the four census tracts within one mile of the site is approximately 11,952. African-Americans comprise 59 percent of the population, Caucasians approximately 39 percent, and Hispanics about 2 percent. The median age is approximately 40, and the median family income is approximately $15,500.

4.1.1.1 Forest Street Potential Future Land Use

The City of Jacksonville enacted Ordinance 2003-892E on August 12, 2003. This Ordinance requires all development in the area of Forest Street Incinerator (and areas outside the site) to follow the North Riverside Action Plan (NR Action Plan) developed with the help of the North Riverside Community Development Corporation (TAP Community Group) and area business owners. The Ordinance and the NR Action Plan are included in Appendix E of this ROD along with zoning maps of the three properties. Some areas of the Forest Street site will change to light industrial/commercial to create a buffer between residential housing (which in some areas is dispersed among light industrial buildings) and commercial properties. The residential houses in the converted areas will be removed from the commercially zoned areas. This is discussed in Section 7 of the NR Action Plan in Appendix E of this ROD.

4.1.2 5th & Cleveland Current Land Use

The 5th & Cleveland Incinerator site is located northeast of the intersection of 5th & Cleveland Street, in a predominately residential area approximately 1 mile north of downtown Jacksonville, Florida. The site is currently used as Emmett Reed Park, a public park, and Emmett Reed Community Center and residential areas. Emmett Reed Park contains two basketball courts, a baseball diamond, a picnic area, and two buildings. The Emmett Reed Community Center comprises one building and a playground is located adjacent to this building. The site is the location of a former municipal solid waste incinerator, which was operated by the City from the 1910s to the 1969. Ash deposits have been documented in residential areas to the east, south, and west of the main former incinerator site.

Doll's and Jill's Day Care Center is located east of the site, and public housing units are located northwest of the site. The Mt. Herman Elementary School is located northeast of the site behind the community center, and the H. R. Lewis Petroleum Company and residential properties are located south and east of the site. The Ford Elementary School is approximately 0.25 mile south of the site on 3rd Street.

According to the 1990 U.S. Census, approximately 3,939 people (6 percent Caucasian, 90 percent African-American, and 1.5 percent Hispanic) live within ½ mile of the site. Approximately 16 percent of the population is under the age of 9, and 18 percent of the population is over the age of 65. Approximately 48 percent of the population over age 25 graduated from high school. Approximately 37 percent have less than a ninth grade education. The median family income is about $17,814. Approximately 85 percent of the housing units are occupied.

4.1.2.1 5th & Cleveland Future Land Use

A tennis facility and courts are planned for the Emmett Reed Park which presently contains the baseball field and basketball courts (see Figure 6). The remediation of Emmett Reed Park is occurring under a non-time critical removal described in Section 2.6.1 of this ROD. After remediation, the tennis courts, tennis facility, basketball court and parking lot will be constructed.

4.1.3 Lonnie C. Miller Sr. Park Current Land Use

The Lonnie C. Miller, Sr., Park site is located on Price Road near the intersection of Moncrief Road and Soutel Road. The site occupies approximately 100 acres and is currently used as a municipal park that includes a playground, picnic shelters, a small fishpond, and public restrooms. The site was used by the City of Jacksonville for ash disposal of municipal ash from the 5th & Cleveland Incinerator site, which operated from I910's to 1969. Ash deposits have been documented on, east, and south of the site. The park is bounded to the south and northeast by private residences, to the west and northwest by a light commercial development, and to the east by the Ribault River.

According to the 1990 U.S. Census, approximately 16,752 people (7.7 percent Caucasian, 91.9 percent African-American, and 0.5 percent Hispanic) live in the general area of the site.

Approximately 15 percent of the population is under the age of 9, and 14 percent of the population is over the age of 60. The median age is 33.8. The median family income is about $26,189. Approximately 95 percent of the housing units are occupied.

4.2 Current And Potential Future Water Use

4.2.1 Hydrogeology of the Jacksonville Area

The geology in the Jacksonville area can be divided into three hydrostratigraphic units: the surficial aquifer system, the intermediate aquifer/confining unit, and the Floridan aquifer system. The surficial aquifer system sediments are 50 to 100 feet thick in Duval County. The water table is found between 1 and 10 feet below land surface (bls). Recharge to the water-table zone is primarily from local rainfall. The water-table zone of the surficial aquifer system is used for limited irrigation, stock, and domestic uses. The "Rock" limestone aquifer is the major water-yielding zone in the surficial aquifer system and is tapped by numerous private and small community supply wells in Duval County. Well yields from the limestone unit average 30 to 100 gallons per minute (gpm) with peaks as high as 200 gpm. Water level elevations of the water table zone and the limestone unit are similar; however, when water levels in the water table aquifer are higher than those of the limestone unit, a downward potential, albeit small, may exist.

The surficial aquifer system is underlain by the intermediate aquifer system/confining unit, which is between 250 to 500 feet thick. Wells in this zone will yield at least 20 gallons per minute. The Floridan aquifer system is the principal source of fresh water in the area and is found under artesian conditions between 500 to 550 feet bls in the Jacksonville area. Regional flow direction within the Floridan aquifer system is to the east-northeast. The City of Jacksonville municipal water supply system is derived from wells that tap the Floridan aquifer system 1,000 to 1,500 feet deep. The majority of residents located within a 4-mile radius of the site obtain drinking water from the City of Jacksonville municipal water supply system, which is derived from wells that are completed in the Floridan aquifer system. Due to its considerable thickness, low permeability, and high potentiometric surface elevation, generally no recharge of the Floridan aquifer system takes place in the Jacksonville area.

4.2.2 Forest Street Current Water Uses

The majority of residents located within a 4-mile radius of the site obtain drinking water from the City of Jacksonville municipal water supply system, which is derived from wells that are completed in the Floridan aquifer. A number of community and small public well systems are located within 4 miles of the site. Two of the larger systems include the Jacksonville Suburban Utilities Magnolia Gardens and Lake Forest wells. These wells obtain potable water from the Floridan aquifer system and are located between 3 and 4 miles northwest of the site. The Jacksonville Suburban Utilities Magnolia Gardens and Lake Forest well systems collectively provide potable drinking water to approximately 5,200 people. Approximately 421,465 people obtain potable drinking water from municipal wells located within 4 miles of the site and completed in the Floridan aquifer system. Due to its considerable thickness, low permeability, and high potentiometric surface elevation, generally no recharge of the Floridan aquifer system takes place in the Jacksonville area. The Floridan Aquifer is not affected by site contamination.

Several private wells located within 4 miles of the site are completed in the surficial aquifer. Private wells generally are approximately 40 to 100 feet deep. Approximately 12 persons obtain potable water from private wells within 1 mile of the site.

The Forest Street Incinerator site is located south of McCoy's Creek, with groundwater beneath the site flowing toward the creek in a northeasterly direction. The general overland flow pattern of the area is interrupted by two intervening paved roads, Margaret Street and McCoy's Creek Boulevard. The groundwater table in the area is typically encountered between approximately 4 to 12 feet below ground surface. McCoy's Creek flows east approximately 1 mile and converges with the St. Johns River, of which McCoy's Creek is a small tributary, and where the 15-mile target distance limit is completed. This portion of the St. Johns River is tidally-influenced and estuarine conditions predominate throughout most of the surface water migration pathway. The northern portion of the site lies within the 100-year flood zone of the St. Johns River drainage system, and deposits of incinerator ash have been observed on the southern banks of McCoy's Creek within this flood zone. The surface water is not used for drinking water or recreation.

4.2.3 5th & Cleveland Current Water Uses

The majority of residents located within a 4-mile radius of the site obtain drinking water from the City of Jacksonville municipal water supply system, which is derived from wells that are completed in the Floridan aquifer system. The municipal water system supplies approximately 385,480 people within the targeted area. A number of small community water systems is also located within 4 miles of the site, including the Jacksonville Suburban Utilities, Magnolia Gardens, and Lake Forest wells. These wells obtain water potable water from the Floridan aquifer system, and are located between 3 and 4 miles northwest and north of the site. These water systems collectively provide potable water to approximately 5,200 people. The Floridan Aquifer system is not affected by the site.

Several private wells located within 4 miles of the site are completed in the surficial aquifer. There are approximately 39 residents obtaining potable water from private wells located within a 1-mile radius of the site.

Surface drainage in the study area generally flows northeast to a channelized subsurface unnamed creek. The unnamed creek flows to the east of the site and discharges into Hogan Creek about 0.5 mile downstream, which subsequently discharges into the St. Johns River. The surface water is not used for drinking water or recreation.

4.2.4 Lonnie C. Miller Park Current Water Uses

Most residents within a 4-mile radius of the site obtain drinking water from the City of Jacksonville municipal water supply system, which is derived from wells that are completed in the Floridan aquifer system. The municipal water system supplies approximately 102,755 people within the targeted area. A number of small community water systems is also located within 4 miles of the site, including the Jacksonville Suburban Utilities, Magnolia Gardens, and Lake Forest wells. These wells obtain water potable water from the Floridan aquifer system, and are located between 1.25 and 2.75 miles southeast of the site. These water systems collectively provide potable water to approximately 5,200 people. The Floridan Aquifer system is not affected by the site.

Several private wells located within 4 miles of the site are completed in the surficial aquifer. There are approximately 206 residents obtaining potable water from private hand-dug wells located within a 1-mile radius of the site..

Surface drainage in the study area generally flows a drainage ditch that is located on the eastern portion of the site. This ditch is the topographic divide between the western and eastern portions of the site. The ditch conveys water to the northeast to a small tributary of the Ribault River. The tributary flows south and discharges into the Ribault River approximately 0.25 mile downstream of the site. The Ribault River is used for fishing and recreation but not for drinking water.

PART 5 : SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

5.1 Summary of Site Risks - Human Health Risk Assessment

The Baseline Human Health Risk Assessments (BHHRA) estimate what risks the Site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. The BHHRAs consist of the following activities:

- Data Collection and Evaluation
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization
- Remedial Goal Options

The following sub-parts of the ROD will summarize each of the above activities which together formed the 2002 and 2003 BHHRAs for the Site.

5.2 Data Collection and Evaluation

This step in the risk assessment process involves gathering and analyzing the site data relevant to human health and identifying the contaminants present at the site that will be included in the risk assessment process. The BHHRA was based on data from the 1996 Site Investigation (SI) and the analytical data collected during the Phase I Remedial Investigation conducted in 2000.

5.2.1 Conceptual Site Model for Risk Assessment Purposes

5.2.1.1 Forest Street Incinerator

For purposes of the risk assessment, the Forest Street Incinerator site was divided into three primary areas. Area 1 consists of the Forest Street site proper and contains the Parks and Recreation Center, the former incinerator area, and a section of Forest Park Head Start School. Area 2 consists of the industrial areas to the north and east of Area 1. Area 2 was divided into three sections: the area north of McCoy's Creek, the Florida Department of Transportation (FDOT) I-10/I-95 Interchange area west of I-95, and FDOT I-10/I-95 Interchange area east of I-95. Area 3 contains all of the surrounding residential parcels of land. To simplify the risk assessment report, only Area 1 and Area 2 were evaluated in the body of the risk assessment report. All risk assessment tables associated with Areas 1 and 2 are presented in Appendix A of the BHHRA.

It was not feasible for the risk assessment to quantitatively evaluate exposure to surface soil from individual residential properties (Area 3). Therefore, an attempt was made to identify the most highly contaminated samples so that risks and hazards could be estimated for these locations. It was assumed that risks and hazards resulting from exposure to surface soil at these locations would represent the "worst case scenario" for the yards that were sampled during the RI investigation. To this end, the surface soil analytical data were reviewed to determine which locations had the highest numbers, concentrations, and toxicities (potencies) of chemicals. Based on this review, ten sample locations were selected for quantitative evaluation. Area 3 is discussed and evaluated in Appendix B of the BHHRA.

The risk from lead in soil was not included in the cancer risks or hazard calculation in the BHHRA but was determined by the Lead Uptake/Biokinetics Model (IEUBK. model).

The conceptual model used in the BHHRA is on Figure 19.

5.2.1.2 5th and Cleveland Incinerator

For purposes of the risk assessment, the 5th & Cleveland Incinerator site was divided into two primary areas. Area 1 consists of the Emmett Reed Community Center area, Emmett Reed Park and the apartment complex located on the west side of Payne Street across from the community center. Area 2 contains all of the surrounding parcels of land (i.e., mainly residential properties). To simplify the risk assessment report, only Area 1 was evaluated in the body of the risk assessment report. All risk assessment tables associated with Area 1 are presented in Appendix A of the BHHRA.

It was not feasible for the risk assessment to quantitatively evaluate exposure to surface soil from individual residential properties (Area 2). Therefore, an attempt was made to identify the most highly contaminated samples so that risks and hazards could be estimated for these locations. It was assumed that risks and hazards resulting from exposure to surface soil at these locations would represent the "worst case scenario" for the yards that were sampled during the RI investigation. To this end, the surface soil analytical data were reviewed to determine which locations had the highest numbers, concentrations, and toxicities (potencies) of chemicals. Based on this review, ten sample locations were selected for quantitative evaluation. Area 2 is discussed and evaluated in Appendix B of the BHHRA.

The risk from lead in soil was not included in the cancer risks or hazard calculation in the BHHRA but was determined by the Lead Uptake/Biokinetics Model (IEUBK model).

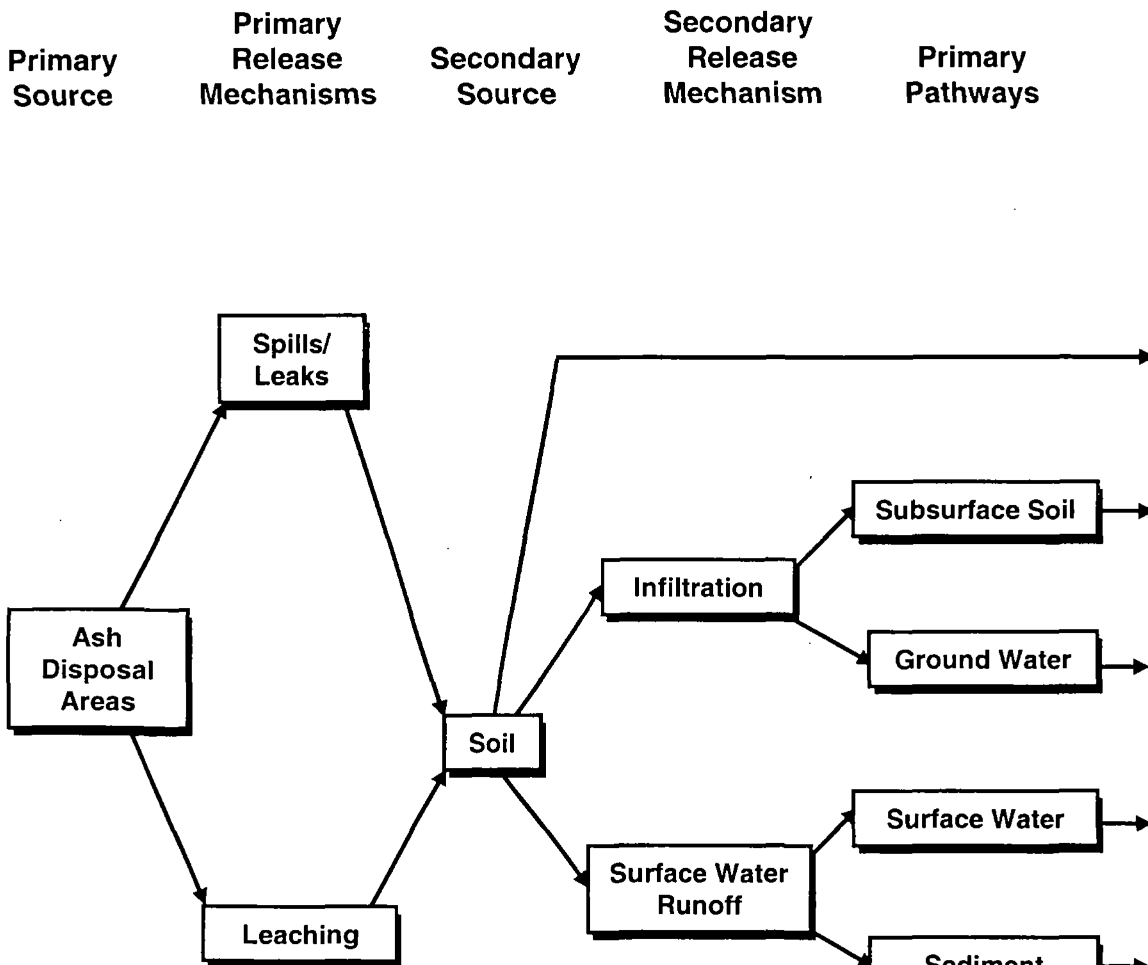
The conceptual model used in the BHHRA is on Figure 20.

5.2.1.3 Lonnie C. Miller, Sr. Park

For purposes of the risk assessment, the site was divided into two areas. The first area is Lonnie C. Miller, Sr. Park. The second area contains all of the surrounding residential parcels of land. To simplify the risk assessment report, the park area is evaluated in the body of the risk assessment report. All risk assessment tables associated with the park are presented in Appendix A of the BHHRA.

It was not feasible for the risk assessment to quantitatively evaluate exposure to surface soil from individual residential properties (Area 2). Therefore, an attempt was made to identify the most highly contaminated samples so that risks and hazards could be estimated for these locations. It was assumed that risks and hazards resulting from exposure to surface soil at these locations would

Figure 3-1
Human Health Conceptual Site Model
Jacksonville Ash Site
Forest Street Incinerator



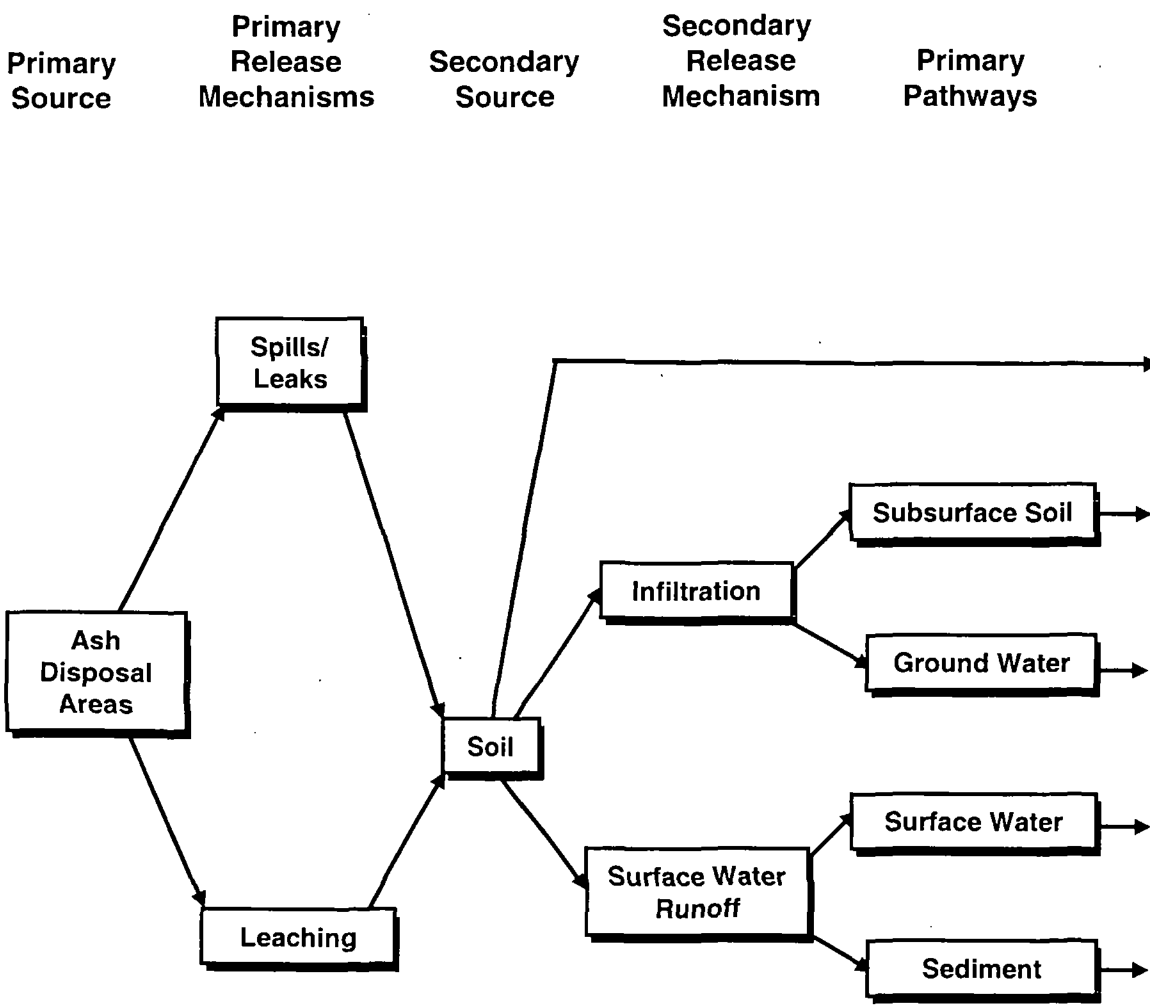
POTENTIAL HUMAN RECEPTORS

EXPOSURE ROUTE	CURRENT Onsite Resident	FUTURE Onsite Resident	CURRENT Worker	FUTURE Worker
Ingestion	X	X	X	X
Inhalation	•	•	•	•
Dermal Contact	X	X	X	X
Ingestion		X		X
Inhalation		•		•
Dermal Contact		X		X
Ingestion		X		
Inhalation		•		
Dermal Contact		•		
Ingestion	X	X		
Inhalation				
Dermal Contact	X	X		
Ingestion				
Inhalation				
Dermal Contact				

X Pathway was quantitatively evaluated.
• Pathway was qualitatively evaluated

ROD Figure 19

Figure 3-1
Human Health Conceptual Site Model
5th and Cleveland Incinerator (Jacksonville Ash) Site
Jacksonville, Florida



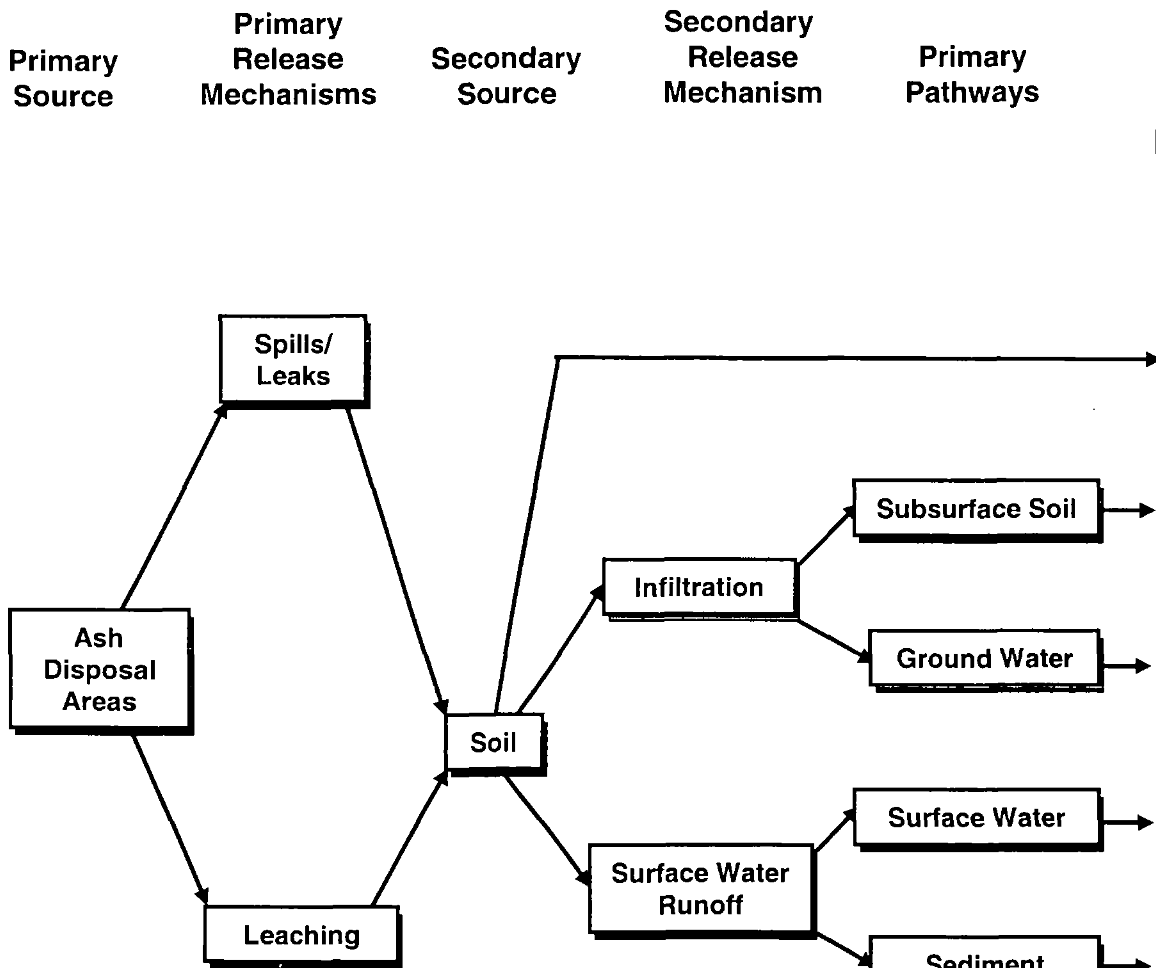
POTENTIAL HUMAN RECEPTORS

EXPOSURE ROUTE	CURRENT: Onsite Resident	FUTURE: Onsite Resident
Ingestion	X	X
Inhalation	•	•
Dermal Contact	X	X
Ingestion	X	X
Inhalation	•	•
Dermal Contact	X	X
Ingestion	X	X
Inhalation	X	X
Dermal Contact	X	X
Ingestion	X	X
Inhalation		
Dermal Contact	X	X
Ingestion	X	X
Inhalation		
Dermal Contact	X	X

X Pathway was quantitatively evaluated
• Pathway was qualitatively evaluated

ROD Figure 20

Figure 3-1
Human Health Conceptual Site Model
Lonnie C. Miller, Sr., Park (Jacksonville Ash) Site
Jacksonville, Florida



POTENTIAL HUMAN RECEPTORS

EXPOSURE ROUTE	CURRENT Onsite Resident	FUTURE Onsite Resident
Ingestion	X	X
Inhalation	•	•
Dermal Contact	X	X
Ingestion	X	X
Inhalation	•	•
Dermal Contact	X	X
Ingestion	X	X
Inhalation	X	X
Dermal Contact	X	X
Ingestion	X	X
Inhalation		
Dermal Contact	X	X
Ingestion	X	X
Inhalation		
Dermal Contact	X	X

X Pathway was quantitatively evaluated
• Pathway was qualitatively evaluated

represent the " worst case scenario" for the yards that were sampled during the RI investigation. To this end, the surface soil analytical data were reviewed to determine which locations had the highest numbers, concentrations, and toxicities (potencies) of chemicals. Based on this review, ten sample locations were selected for quantitative evaluation. The residential areas are discussed and evaluated in Appendix B of the BHHRA.

The risk from lead in soil was not included in the cancer risks or hazard calculation in the BHHRA but was determined by the Lead Uptake/Biokinetics Model (IEUBIC model).

The conceptual model used in the BHHRA is on Figure 21.

5.3 Exposure Assessment

In order to characterize potential risk, two pieces of information are needed: results from the exposure assessment and chemical-specific toxicity information on the constituents of potential concern (COPCs). Part 5.3 of the ROD summarizes the exposure assessment for the Jacksonville Ash Site including exposure pathways and scenarios quantitatively evaluated in the BHHRA. Part 5.4 of the ROD will address the toxicity assessment. The objective of the exposure assessment is to estimate the types and magnitudes of exposures to COPCs that are present at or migrating from the Site. In short, the purpose of the exposure assessment is to estimate the magnitude of potential human exposure to the COPCs. The BHHRA provides a more detailed analysis on the potential exposures associated with the COPCs at the Site, and why exposure routes were eliminated or retained as routes of potential concern.

The exposure pathways and scenarios evaluated in the BHHRAs for the Forest Street Incinerator and Lonnie C. Miller, Sr. Park sites are in Tablesl3 and 14.

5.3.1 Soil Exposure Assessment

5.3.1.1 Forest Street Incinerator

The risk assessment evaluated 18 surface soil and 13 subsurface soil samples from the Forest Street site (Area 1). Thirteen surface soil samples and one subsurface soil sample were analyzed from the FDOT I-10/I-95 Interchange east of I-95 and five surface soil samples and five subsurface soil samples were analyzed from the FDOT I-10/I-95 Interchange west of I-95. Finally, seven surface soil samples and two subsurface soil samples were analyzed from the industrial area north of McCoy's Creek.

5.3.1.1.1 <u>Current/Future Resident</u>

The risk assessment conservatively assumed that current and future use of the Forest Street site is residential. Therefore, it was assumed that current and future residents may be exposed to COPCs in surface soil. Current and future residents may also be exposed to site-related chemicals in surface water. Also, the future resident was assumed to be exposed to subsurface soil brought to the surface during construction or renovation activities. Potential routes of exposure for residents (child and adult) included incidental ingestion of, and dermal contact with, COPCs in soil.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Onsite/ Offsite	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soil	Surface soil	Forest Street Site Proper	Resident	Adult	Ingestion Dermal	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in surface soil.
					Child	Ingestion Dermal	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in surface soil.
			Industrial Area North of McCoy's Creek	Worker	Adult	Ingestion Dermal	Onsite	Quant Quant	Industrial workers may be exposed to contaminants in surface soil.
			FDOT I-10/I-95 Interchange	Worker	Adult	Ingestion Dermal	Onsite	Quant Quant	Industrial workers may be exposed to contaminants in surface soil.
		Air	Forest Street Site Proper	Resident	Adult	Inhalation	Onsite	Qual	Hypothetical adult residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
					Child	Inhalation	Onsite	Qual	Hypothetical child residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
			Industrial Area North of McCoy's Creek	Worker	Adult	Inhalation	Onsite	Qual	Industrial workers may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
			FDOT I-10/I-95 Interchange	Worker	Adult	Inhalation	Onsite	Qual	Industrial workers may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
	Surface water	Surface water	McCoy's Creek	Resident	Adult	Dermal Ingestion	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in McCoy's Creek while using it for recreational purposes.
					Child	Dermal Ingestion	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in McCoy's Creek while using it for recreational purposes.
Future	Soil	Surface soil	Forest Street Site Proper	Resident	Adult	Dermal Ingestion	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in surface soil.
					Child	Dermal Ingestion	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in surface soil.
			Industrial Area North of McCoy's Creek	Worker	Adult	Dermal Ingestion	Onsite	Quant Quant	Industrial workers may be exposed to contaminants in surface soil.
			FDOT I-10/I-95 Interchange	Worker	Adult	Ingestion Dermal	Onsite	Quant Quant	Industrial workers may be exposed to contaminants in surface soil.
		Subsurface soil	Forest Street Site Proper	Resident	Adult	Dermal Ingestion	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in subsurface soil brought to the surface during construction activities.
					Child	Dermal Ingestion	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in subsurface soil brought to the surface during construction activities.
			Industrial Area North of McCoy's Creek	Worker	Adult	Dermal Ingestion	Onsite	Quant Quant	Industrial workers may be exposed to contaminants in subsurface soil brought to the surface during construction activities.
			FDOT I-10/I-95 Interchange	Worker	Adult	Dermal Ingestion	Onsite	Quant Quant	Industrial workers may be exposed to contaminants in subsurface soil brought to the surface during construction activities.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Onsite/ Offsite	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
		Air	Forest Street Site Proper	Resident	Adult	Inhalation	Onsite	Qual	Hypothetical adult residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
					Child	Inhalation	Onsite	Qual	Hypothetical child residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
			Industrial Area North of McCoy's Creek	Worker	Adult	Inhalation	Onsite	Qual	Industrial workers may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
			FDOT I-10/I-95 Interchange	Worker	Adult	Inhalation	Onsite	Qual	Industrial workers may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
	Groundwater	Groundwater	Tap Water	Resident	Adult	Ingestion Dermal	Onsite	Quant Qual	Hypothetical residents may install a private well onsite.
					Child	Ingestion Dermal	Onsite	Quant Qual	Hypothetical residents may install a private well onsite.
		Air	Water Vapors at Showerhead	Resident	Adult	Inhalation	Onsite	Qual	Hypothetical residents may install a private well onsite.
					Child	Inhalation	Onsite	Qual	Hypothetical residents may install a private well onsite.
	Surface Water	Surface Water	McCoy's Creek	Resident	Adult	Ingestion Dermal	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in McCoy's Creek while using it for recreational purposes.
					Child	Ingestion Dermal	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in McCoy's Creek while using it for recreational purposes.

ROD Table 13

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
JACKSONVILLE ASH SITE
LONNIE C. MILLER, SR., PARK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Onsite/ Offsite	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soil	Surface soil/ Sediment	Lonnie C. Miller, Sr., Park	Resident	Adult	Ingestion Dermal	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in surface soil.
					Child	Ingestion Dermal	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in surface soil.
		Air	Lonnie C. Miller, Sr., Park	Resident	Adult	Inhalation	Onsite	Qual	Hypothetical adult residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
					Child	Inhalation	Onsite	Qual	Hypothetical child residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
	Surface water	Surface water	Unnamed Tributary	Resident	Adult	Dermal Ingestion	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in the unnamed tributary during recreational activities.
					Child	Dermal Ingestion	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in the unnamed tributary during recreational activities.
Future	Soil	Surface soil/ Sediment	Lonnie C. Miller, Sr., Park	Resident	Adult	Dermal Ingestion	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in surface soil.
					Child	Dermal Ingestion	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in surface soil.
		Subsurface soil	Lonnie C. Miller, Sr., Park	Resident	Adult	Dermal Ingestion	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in subsurface soil brought to the surface during construction activities.
					Child	Dermal Ingestion	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in subsurface soil brought to the surface during construction activities.
		Air	Lonnie C. Miller, Sr., Park	Resident	Adult	Inhalation	Onsite	Qual	Hypothetical adult residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
					Child	Inhalation	Onsite	Qual	Hypothetical child residents may be exposed to airborne contaminants via inhalation of VOCs or fugitive dust emissions.
	Groundwater	Groundwater	Tap Water	Resident	Adult	Ingestion Dermal	Onsite	Quant Quant	Hypothetical residents may install a private well onsite.
					Child	Ingestion Dermal	Onsite	Quant Quant	Hypothetical residents may install a private well onsite.
		Air	Water Vapors at Showerhead	Resident	Adult	Inhalation	Onsite	Quant	Hypothetical residents may install a private well onsite.
					Child	Inhalation	Onsite	Quant	Hypothetical residents may install a private well onsite.
	Surface Water	Surface Water	Unnamed Tributary	Resident	Adult	Ingestion Dermal	Onsite	Quant Quant	Hypothetical adult residents may be exposed to contaminants in the unnamed tributary during recreational activities.
					Child	Ingestion Dermal	Onsite	Quant Quant	Hypothetical child residents may be exposed to contaminants in the unnamed tributary during recreational activities.

Individual risk assessments could not be performed on all residential properties in the investigation area, so the ten most contaminated lots were evaluated.

5.3.1.1.2 Current/Future Worker

The risk assessment assumed that residential exposure was limited to Area 1 and the area north of McCoy's Creek in Area 2. It was assumed that the remaining portions of Area 2 (I-10/I-95 Interchange east and west) would not be used for residential use. While working onsite, workers may be exposed to COPCs in soil. Potential routes of exposure for the onsite worker included incidental ingestion of, and dermal contact with, COPCs in surface and subsurface soil.

5.3.1.2 5th & Cleveland Incinerator

The human health risk assessment quantitatively evaluates potential risks from exposure to COPCs in surface and subsurface soil, sediment, surface water, and groundwater. The conceptual site model for the 5th & Cleveland Incinerator site incorporates information on the potential chemical sources, affected media, release mechanisms, routes of migration, and known or potential human receptors. The purpose of the conceptual site model is to provide a framework with which to identify potential exposure pathways occurring at the site. Information presented in the SI Report and data collected during a site visit conducted on December 20, 1999, were used to identify potential receptors and exposure pathways at the site.

The risk assessment evaluated 24 surface soil and two subsurface soil samples from Emmett Reed Community Center. Nineteen surface soil samples and 12 subsurface soil samples were analyzed from the Emmett Reed Park. Fifteen surface soil samples and 14 subsurface soil samples were analyzed from the apartment complex.

5.3.1.2.1 Current/Future Resident

A current/future resident may be exposed to COPCs in surface soil as well as subsurface soil that is brought to the surface during construction or renovation activities. Therefore, a current/future resident was quantitatively evaluated for exposure to surface and subsurface soil.

Individual risk assessments could not be performed on all residential properties in the investigation area, so the ten most contaminated lots were evaluated.

5.3.1.3 Lonnie C. Miller, Sr. Park

The human health risk assessment quantitatively evaluates potential risks from exposure to COPCs in surface and subsurface soil, sediment, surface water, and groundwater. The conceptual site model for the Lonnie C. Miller, Sr., Park site incorporates information on the potential chemical sources, affected media, release mechanisms, routes of migration, and known or potential human receptors. The purpose of the conceptual site model is to provide a framework with which to identify potential exposure pathways occurring at the site. Information presented in the SI Report and data collected during a site visit conducted on December 20, 1999, were used to identify potential receptors and exposure pathways at the site.

The risk assessment evaluated 53 surface soil and 43 subsurface soil samples from the park. In addition, four sediment samples (LMSW001, LMSW004, LMSW005, and LMSW008) that were collected from the drainage ditch were combined with the surface soil samples. These sediment samples were evaluated as surface soil since the ditch is sometimes dry.

5.3.1.3.1 Current/Future Resident

A current/future resident may be exposed to COPCs in surface soil as well as subsurface soil that is brought to the surface during construction or renovation activities. Therefore, a current/future resident was quantitatively evaluated for exposure to surface (including the four sediment samples) and subsurface soil. The risk assessment conservatively assumed that current and future use of the park is residential. Therefore, it was assumed that current and future residents may be exposed to COPCs in surface soil/sediment. Also, the future resident was assumed to be exposed to subsurface soil brought to the surface during construction or renovation activities. Potential routes of exposure for residents (child and adult) included incidental ingestion of, and dermal contact with, COPCs in soil.

Individual risk assessments could not be performed on all residential properties in the investigation, area so the ten most contaminated lots were evaluated.

5.3.2 Groundwater

5.3.2.1 Forest Street Incinerator

The majority of residents located within a 4-mile radius of the site obtain drinking water from the City of Jacksonville municipal water supply system, which is derived from wells that are completed in the Floridan aquifer system. Due to its considerable thickness, low permeability, and high potentiometric surface elevation, generally no recharge of the Floridan aquifer system takes place in the Jacksonville area. The Floridan Aquifer is not affected by site contamination.

A total of 19 groundwater samples were evaluated in the risk assessment. Most residents in the area currently obtain potable water from the municipal water supply; however a future residents may be exposed to groundwater if a private well is installed. Therefore, exposure to groundwater was evaluated for the future resident.

When evaluating exposure to groundwater, EPA Region 4 considers ingestion, and inhalation of and dermal contact with VOCs while showering to be the most significant exposure routes. However, no VOCs were detected in groundwater at the site; therefore, the risk assessment assumed that ingestion of groundwater represented the most significant exposure route for this medium.

5.3.2.2 5th & Cleveland Incinerator

The majority of residents located within a 4-mile radius of the site obtain drinking water from the City of Jacksonville municipal water supply system, which is derived from wells that are completed in the Floridan aquifer system. The municipal water system supplies approximately 385,480 people within the targeted area. A number of small community water systems is also located within 4 miles of the site, including the Jacksonville Suburban Utilities, Magnolia Gardens, and Lake Forest wells. These wells obtain water potable water from the Floridan aquifer system, and are located between 3 and 4 miles northwest and north of the site. These water systems collectively provide potable water to approximately 5,200 people. The Floridan Aquifer system is not affected by the site.

A total of five groundwater samples were evaluated in the risk assessment. Most residents in the area currently obtain potable water from the municipal water supply; however, a resident may install a private well in one of the exposure units in the future. Therefore, exposure to groundwater was evaluated for the future resident.

When evaluating exposure to groundwater, EPA Region 4 considers ingestion, and inhalation of and dermal contact with VOCs while showering to be the most significant exposure routes. However, no VOCs were detected in groundwater at the site; therefore, the risk assessment assumed that ingestion of groundwater represented the most significant exposure route for this medium.

5.3.2.3 Lonnie C. Miller, Sr. Park

Most residents within a 4-mile radius of the site obtain drinking water from the City of Jacksonville municipal water supply system, which is derived from wells that are completed in the Floridan aquifer system. The municipal water system supplies approximately 102,755 people within the targeted area. A number of small community water systems is also located within 4 miles of the site, including the Jacksonville Suburban Utilities, Magnolia Gardens, and Lake Forest wells. These wells obtain water potable water from the Floridan aquifer system, and are located between 1.25 and 2.75 miles southeast of the site. These water systems collectively provide potable water to approximately 5,200 people. The Floridan Aquifer system is not affected by the site.

A total of six groundwater samples were evaluated in the risk assessment. Most residents in the area currently obtain potable water from the municipal water supply; however, the risk assessment assumed that a resident may install a private well at the park in the future. Therefore, exposure to groundwater was evaluated for the Current/future resident.

When evaluating exposure to groundwater, EPA Region 4 considers ingestion, and inhalation of and dermal contact with VOCs while showering to be the most significant exposure routes. However, no VOCs were detected in groundwater at the site; therefore, the risk assessment assumed that ingestion of groundwater represented the most significant exposure route for this medium.

5.3.3 Surface Water

5.3.3.1 Forest Street Incinerator

Surface drainage at the site generally flows northward overland in drainage ways along streets, in storm water collection systems, and swales to McCoy's Creek located approximately 100 to 150 feet north of the site. McCoy's Creek is a tributary of the St. Johns River, located approximately 1 mile east of the site. Eight surface water samples collected from McCoy's Creek were evaluated in the risk assessment. Current/future residents may be exposed to COPCs in surface water while recreating in the creek.

5.3.3.2 5th & Cleveland Incinerator

Surface drainage in at the site generally flows northeast to a channelized subsurface unnamed creek. The unnamed creek flows to the east of the site and discharges into Hogan Creek about 0.5 mile downstream, which subsequently discharges into the St. Johns River. Ten surface water samples collected from the unnamed creek were evaluated in the risk assessment. Current/future residents may be exposed to COPCs in surface water while recreating in the creek.

5.3.3.3 Lonnie C. Miller, Sr. Park

Surface drainage at the park generally flows toward a drainage ditch that is located on the eastern portion of the site. This ditch is the topographic divide between the western and eastern portions of the site. The ditch conveys water to the northeast to a small tributary of the Ribault River. The tributary flows south and discharges into the Ribault River approximately 0.25 mile downstream of the site. Eleven surface water samples collected from the unnamed tributary were evaluated in the human health risk assessment. Current/future residents may be exposed to COPCs in surface water during recreational activities.

5.3.4 Vegetables

The BHHRA also considered that some residents may be exposed to site-related COPCs via ingestion of homegrown vegetables. According to residents, the primary vegetables grown in this area are collard greens, tomatoes, and onions.

5.4 Toxicity Assessment

In order to characterize potential risk, two pieces of information are needed: results from the exposure assessment and chemical-specific toxicity information on the COPCs. Part 5.3 summarized the exposure assessment for Jacksonville Ash Site. This part addresses the toxicity assessment.

The purpose of the toxicity assessment is to assign toxicity values (criteria) to each chemical evaluated in the risk assessment. The BHHRA utilized information from the Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST) and National Center for Environmental Assessment (NCEA). In evaluating potential health risks, both carcinogenic and noncarcinogenic health effects were considered.

5.4.1 Carcinogenic Health Effects

The potential for producing carcinogenic effects is limited to substances that have been shown to be carcinogenic in animals and/or humans. Excessive exposure to all substances, carcinogens and noncarcinogens, can produce adverse noncarcinogenic effects. Therefore, it was necessary to identify reference doses for every chemical selected regardless of its classification, and to identify carcinogenic slope factors (CSFs) for those that are classified as carcinogenic. Tables 15, 16, 17, 18, 19 and 20 provide carcinogenic risk information which is relevant to the COPCs in both soil and ground water.

5.4.2 Non-Carcinogenic Health Effects

Table 21, 22, 23, 24, 25 and 26 provide non-carcinogenic risk information which is relevant to the COPCs in both soil and ground water.

5.5 Risk Characterization

The objective of the risk characterization is to integrate the exposure and toxicity assessments into quantitative and qualitative expressions of risk. The risk characterization is an evaluation of the nature and degree of potential carcinogenic and noncarcinogenic health risks posed to current and future receptors at the Jacksonville Ash Site.

5.5.1 Evaluation of the Risk for Lead

Although there is a great deal of information on its health effects, there is not an EPA SF or RfD dose for lead. It appears that some health effects, particularly changes in the levels of certain blood enzymes and in aspects of children's neurobehavioral development, may occur at blood lead levels so low as to be essentially without a threshold. Therefore, EPA considers it inappropriate to develop an RfD for inorganic lead (EPA, 2001). Quantifying lead's cancer risk involves many uncertainties, some of which may be unique to lead. Age, health, nutritional state, body burden, and exposure duration influence the absorption, release, and excretion of lead. In addition, current knowledge of lead pharmacokinetics indicates that an estimate derived by standard procedures would not truly describe the potential risk. Thus, EPA's Carcinogen Assessment Group recommends that a numerical estimate not be used (EPA, 2001).

In the absence of lead health criteria, two approaches were used to assess risks associated with exposure to lead at the Site. The first was to predict mean lead blood levels in children using the Lead Uptake/Biokinetics Model (Version 0.99d). The second approach was to compare the maximum detected concentrations of lead in the environmental media at the site to available ARARs or OSWER directives (e.g., federal action levels for drinking water, residential cleanup levels in soil).

Blood levels of lead in the age group ranging from 0 to 7 years of age can be predicted with the Lead Uptake/Biokinetics Model. EPA Region 4 recommended its use to provide an estimation of chronic blood lead concentrations in children based, as much as possible, on site-specific data. Such data can assist in the risk management decision regarding cleanup of lead at hazardous waste sites. The lead

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source Target Organ	Date (2) (MM/DD/YY)
Alpha-Chlordane	3.5E-001	50%	7.0E-001	(mg/kg-day)-1	B2	IRIS	03/21/2001
Benzo(a)Anthracene	7.3E-001	58%	1.2E+000	(mg/kg-day)-1	B2	NCEA	03/21/2001
Benzo(a)pyrene	7.3E+00	58%	1.26E+001	(mg/kg-day)-1	B2	IRIS	03/21/2001
Benzo(b)Fluoranthene	7.3E-001	58%	1.2E+000	(mg/kg-day)-1	B2	NCEA	03/21/2001
Benzo(g,h,i)Perylene	N/A	N/A	N/A	N/A	D	IRIS	03/21/2001
Benzo(k)Fluoranthene	7.3E-002	58%	1.2E+001	(mg/kg-day)-1	B2	NCEA	03/21/2001
Beryllium	N/A	N/A	N/A	N/A	B1	IRIS	03/21/2001
Cadmium	N/A	N/A	N/A	N/A	B1	IRIS	03/21/2001
Chromium VI	N/A	N/A	N/A	N/A	A	IRIS	03/21/2001
Chrysene	7.3E+003	58%	1.2E-002	(mg/kg-day)-1	B2	NCEA	03/21/2001
Dieldrin	1.6E+01	50%	3.2E+01	(mg/kg-day)-1	B2	IRIS	03/21/2001
Lindane	1.3E+000	50%	2.6E+001	(mg/kg-day)-1	A	HEAST	07/1997
Arsenic	1.5E+00	95%	1.6E+00	(mg/kg-day)-1	A	IRIS	03/21/2001
Beta BHC	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
bis (2-Ethylhexyl)Phthalate	1.4E-02	55%	2.55E-02	(mg/kg-day)-1	N/A	N/A	03/21/2001
Carbazole	2E-02	50%	4E-02	(mg/kg-day)-1	B2	HEAST	03/21/2001
Indeno(1,2,3-c,d)Pyrene	7.3E-001	58%	1.2E+000	(mg/kg-day)-1	B2	NCEA	03/21/2001
Dibenz(a,h)Anthracene	7.3E+000	58%	1.26E+001	(mg/kg-day)-1	B2	NCEA	03/21/2001
Lead	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
p,p' - DDD	2.4E-001	50%	4.8E-001	(mg/kg-day)-1	B2	IRIS	03/21/2001
p,p' - DDE	3.4E-001	50%	6.8E-001	(mg/kg-day)-1	B2	IRIS	03/21/2001
p,p' - DDT	3.4E-001	50%	6.8E-001	(mg/kg-day)-1	B2	IRIS	03/21/2001
TEQ of 2,3,7,8 - TCDD	1.5E+005	50%	3.0E+005	(mg/kg-day)-1	B2	HEAST	03/21/2001
PCB-1260 (Aroclor 1260)	2.0E+00	50%	4E+00	(mg/kg-day)-1	B2	IRIS	03/21/2001

ROD Table 15

N/A = Not Available

IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA= National Center for Environmental Assessment

EPA Group:
- A - Human carcinogen
- B1 - Probable human carcinogen - indicates that limited human data are available
- B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
- C - Possible human carcinogen
- D - Not classifiable as a human carcinogen
- E - Evidence of noncarcinogenicity

Weight of Evidence:
- Known/Likely
- Cannot be Determined
- Not Likely

(1) Explanation of derivation provided in Section 4.2.2.3.
(2) For IRIS values, provide the date IRIS was searched.
For HEAST values, provide the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Alpha-Chlordane	N/A	N/A	N/A	3.5E-001	(mg/kg-day)-1	B2	IRIS	03/21/2001
Benzo(a)Anthracene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
Benzo(a)pyrene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
Benzo(b)Fluoranthene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
Benzo(g,h,i)Perylene	N/A	N/A	N/A	N/A	N/A	D	IRIS	03/21/2001
Benzo(k)Fluoranthene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
Beryllium	2.4E-03	(ug/m3)-1	3,500	8.4E+00	(mg/kg-day)-1	B1	IRIS	03/21/2001
Cadmium	1.8E-03	(ug/m3)-1	3,500	6.3E+00	(mg/kg-day)-1	B1	IRIS	03/21/2001
Chromium VI	1.2E-02	(ug/m3)-1	3,500	4.2E+01	(mg/kg-day)-1	A	IRIS	03/21/2001
Cobalt	4.2E-003	(ug/m3)-1	3,500	9.8E+000	(mg/kg-day)-1	A	NCEA	03/21/2001
Dieldrin	4.6E-03	(ug/m3)-1	3,500	1.6E+01	(mg/kg-day)-1	B2	IRIS	03/21/2001
Arsenic	4.3E-03	(ug/m3)-1	3,500	1.5E+01	(mg/kg-day)-1	A	IRIS	03/21/2001
Carbazole	5.7E-07	(ug/m3)-1	3,500	2.0E-03	(mg/kg-day)-1	B2	HEAST	03/21/2001
Beta BHC	5.3E-004	(ug/m3)-1	3,500	1.9E+00	(mg/kg-day)-1	C	IRIS	03/21/2001
bis (2-Ethylhexyl)Phthalate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Indeno(1,2,3-c,d)Pyrene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
Dibenz(a,h)Anthracene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
Lead	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
p,p'-DDD	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
p,p'-DDE	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
p,p'-DDT	N/A	N/A	N/A	N/A	N/A	B2	IRIS	03/21/2001
TEQ of 2,3,7,8 - TCDD	3.3E-011	(ug/m3)-1	3,500	1.2E-07	(mg/kg-day)-1	B2	HEAST	03/21/2001
PCB-1260 (Aroclor 1260)	1.0E-004	(ug/m3)-1	3,500	3.5E-001	(mg/kg-day)-1	B2	IRIS	03/21/2001

IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA= National Center for Environmental Assessment

ROD Table 16

(1) Explanation of derivation provided in section 4.2.2.2.
(2) For IRIS values, provide the date IRIS was searched.
For HEAST values, provide the date of HEAST.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity
Weight of Evidence:
Known/Likely
Cannot be Determined
Not Likely

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source Target Organ	Date (2) (MM/DD/YY)
Chloroform	6.1E-03	80%	7.6E-03	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Benzo(a)pyrene	7.3E+00	58%	1.26E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Aldrin	1.7E+01	50%	3.4E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Dieldrin	1.6E+01	50%	3.2E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Arsenic	1.5E+00	95%	1.6E+00	(mg/kg-day)-1	A	IRIS	26-Nov-00
Beryllium	N/A	N/A	N/A	N/A	B1	IRIS	26-Nov-00
Cadmium	N/A	N/A	N/A	N/A	B1	IRIS	26-Nov-00
Chromium VI	N/A	N/A	N/A	N/A	A	IRIS	26-Nov-00
1,1-Dichloroethene	6.0E-01	80%	7.5E+01	(mg/kg-day)-1	C	IRIS	26-Nov-00
1,2-Dibromo-3-chloropropanol	1.4E+00	80%	1.75E+00	(mg/kg-day)-1	B2	HEAST	1-Jul-01
1,4-Dichlorobenzene	2.4E-02	80%	3.0E-02	(mg/kg-day)-1	C	IRIS	26-Nov-00
Alpha BHC	6.3E+00	50%	1.2E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Benzene	1.5E-02 to 5.5E-02	97%	1.5E-02 to 5.5E-02	(mg/kg-day)-1	A	IRIS	26-Nov-00
Beta BHC	1.8E+00	91%	2.0E+00	(mg/kg-day)-1	C	IRIS	26-Nov-00
bis (2-Ethylhexyl)Phthalate	1.4E-02	55%	2.5E-02	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Carbazole	2E-02	50%	4E-02	(mg/kg-day)-1	B2	HEAST	1-Jul-97
Chloroform	6.1E-03	80%	7.6E-03	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Chloromethane	1.3E-02	100%	1.3E-02	(mg/kg-day)-1	C	HEAST	1-Jul-97
Gamma BHC (Lindane)	1.3E+00	50%	2.6E+00	(mg/kg-day)-1	B2/C	HEAST	1-Jul-97
Chlordane	3.5E-01	50%	7.0E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Heptachlor	4.5E+00	50%	9.0E+00	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Heptachlor Epoxide	9.1E+00	50%	1.82E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene Chloride	7.5E-03	80%	9.4E-03	(mg/kg-day)-1	B2	IRIS	26-Nov-00
p,p' - DDD	2.4E-01	50%	4.8E-01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
p,p' - DDE	3.4E-01	50%	6.8E-01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
p,p' - DDT	3.4E-01	50%	6.8E-01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
PCB - 1016 (Aroclor 1016)	7E-02	50%	1.4E-01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
PCB - 1242 (Aroclor 1242)	2.0E+00	50%	4.0E+00	(mg/kg-day)-1	B2	IRIS	21-Feb-01
Pentachlorophenol	1.2E-01	50%	2.4E-01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
TEQ of 2,3,7,8 - TCDD	1.5E+05	50%	3.0E+05	(mg/kg-day)-1	B2	HEAST	1-Jul-97
Trichloroethylene (TCE)	1.1E-02	100%	1.1E-02	(mg/kg-day)-1	B2	NCEA	13-Apr-00
PCB-1260 (Aroclor 1260)	2.0E+00	50%	4E+00	(mg/kg-day)-1	B2	IRIS	26-Nov-00

N/A = Not Available

IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA= National Center for Environmental Assessment

(1) Explanation of derivation provided in text.
(2) For IRIS values, provide the date IRIS was searched
For HEAST values, provide the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity
Weight of Evidence:
Known/Likely
Cannot be Determined
Not Likely

ROD Table 17

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Aldrin	4.9E-03	(ug/m3)-1	3,500	1.7E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Chloroform	2.3E-05	(ug/m3)-1	3,500	8.1E-02	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Benzo(a)pyrene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	26-Nov-00
Dieldrin	4.6E-03	(ug/m3)-1	3,500	1.6E+01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Arsenic	4.3E-03	(ug/m3)-1	3,500	1.5E+01	(mg/kg-day)-1	A	IRIS	26-Nov-00
Beryllium	2.4E-03	(ug/m3)-1	3,500	8.4E+00	(mg/kg-day)-1	B1	IRIS	26-Nov-00
Cadmium	1.8E-03	(ug/m3)-1	3,500	6.3E+00	(mg/kg-day)-1	B1	IRIS	26-Nov-00
Chromium VI	1.2E-02	(ug/m3)-1	3,500	4.2E+01	(mg/kg-day)-1	A	IRIS/HEAST	26-Nov-00
1,1-Dichloroethene	5.0E-05	(ug/m3)-1	3,500	1.8E-001	(mg/kg-day)-1	C	IRIS	26-Nov-00
1,4-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	C	HEAST	1-Jul-97
Alpha BHC	1.8E-03	(ug/m3)-1	3,500	6.3E+00	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Benzene	2.2E-06 to 7.8E-06	(ug/m3)-1	3,500	7.7E-03 to 2.7E-02	(mg/kg-day)-1	A	IRIS	26-Nov-00
Carbazole	5.7E-07	(ug/m3)-1	3,500	2.0E-03	(mg/kg-day)-1	B2	HEAST	1-Jul-97
Benzo(a)anthracene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	26-Nov-00
Beta BHC	5.3E-04	(ug/m3)-1	3,500	1.9E+00	(mg/kg-day)-1	C	IRIS	26-Nov-00
Chloromethane	1.8E-06	(ug/m3)-1	3,500	6.3E-03	(mg/kg-day)-1	C	HEAST	1-Jul-97
Chloroform	2.3E-05	(ug/m3)-1	3,500	8.1E-02	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Chlordane	1.0E-04	(ug/m3)-1	3,500	3.5E-01	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Heptachlor	1.3E-03	(ug/m3)-1	3,500	4.6E+00	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Heptachlor Epoxide	2.6E-03	(ug/m3)-1	3,500	9.1E+00	(mg/kg-day)-1	B2	IRIS	26-Nov-00
Lead	N/A	N/A	N/A	N/A	N/A	B2	IRIS	26-Nov-00
p,p'-DDD	N/A	N/A	N/A	N/A	N/A	B2	IRIS	26-Nov-00
p,p'-DDE	N/A	N/A	N/A	N/A	N/A	B2	IRIS	26-Nov-00
p,p'-DDT	N/A	N/A	N/A	N/A	N/A	B2	IRIS	26-Nov-00
Pentachlorophenol	N/A	N/A	N/A	N/A	N/A	B2	IRIS	26-Nov-00
TEQ of 2,3,7,8 - TCDD	3.3E-11	(ug/m3)-1	3,500	1.2E-07	(mg/kg-day)-1	B2	HEAST	1-Jul-97

IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA= National Center for Environmental Assessment

(1) Explanation of derivation provided in Section 4.2.2.2 of the text.
(2) For IRIS values, provide the date IRIS was searched.
For HEAST values, provide the date of HEAST.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Weight of Evidence:
Known/Likely
Cannot be Determined
Not Likely

ROD Table 18

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source Target Organ	Date (2) (MM/DD/YY)
Alpha-Chlordane	3.5E-01	50%	7.0E-001	(mg/kg-day)-1	B2	IRIS	05/01
Benzo(a)Anthracene	7.3E-01	58%	1.2E+000	(mg/kg-day)-1	B2	NCEA	05/01
Benzo(a)pyrene	7.3E+00	58%	1.26E+001	(mg/kg-day)-1	B2	IRIS	05/01
Benzo(b)Fluoranthene	7.3E-01	58%	1.2E+000	(mg/kg-day)-1	B2	NCEA	05/01
Benzo(g,h,i)Perylene	N/A	N/A	N/A	N/A	D	IRIS	05/01
Benzo(k)Fluoranthene	7.3E-02	58%	1.2E-001	(mg/kg-day)-1	B2	NCEA	05/01
Beryllium	N/A	N/A	N/A	N/A	B1	IRIS	05/01
Cadmium	N/A	N/A	N/A	N/A	B1	IRIS	05/01
Chromium VI	N/A	N/A	N/A	N/A	A	IRIS	05/01
Chrysene	7.3E+03	58%	1.2E-002	(mg/kg-day)-1	B2	NCEA	05/01
Lindane	1.3E+00	50%	2.6E+001	(mg/kg-day)-1	A	HEAST	07/97
Cobalt	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	1.6E+01	50%	3.2E+01	(mg/kg-day)-1	B2	IRIS	05/01
Arsenic	1.5E+00	95%	1.6E+00	(mg/kg-day)-1	A	IRIS	05/01
Beta BHC	N/A	N/A	N/A	N/A	N/A	N/A	05/01
bis (2-Ethylhexyl)Phthalate	1.4E-02	55%	2.55E-02	(mg/kg-day)-1	N/A	N/A	05/01
Carbazole	2E-02	50%	4E-02	(mg/kg-day)-1	B2	HEAST	07/97
Indeno(1,2,3-c,d)Pyrene	7.3E-01	58%	1.2E+000	(mg/kg-day)-1	B2	NCEA	05/01
Dibenz(a,h)Anthracene	7.3E+00	58%	1.26E+001	(mg/kg-day)-1	B2	NCEA	05/01
Lead	N/A	N/A	N/A	N/A	B2	IRIS	05/01
3-Methylphenol (m-cresol)	NA	NA	NA	NA	C	IRIS	05/01
4-Methylphenol (p-cresol)	NA	NA	NA	NA	C	HEAST	07/97
p,p' - DDD	2.4E-001	50%	4.8E-001	(mg/kg-day)-1	B2	IRIS	05/01
p,p' - DDE	3.4E-001	50%	6.8E-001	(mg/kg-day)-1	B2	IRIS	05/01
p,p' - DDT	3.4E-001	50%	6.8E-001	(mg/kg-day)-1	B2	IRIS	05/01
TEQ of 2,3,7,8 - TCDD	1.5E+005	50%	3.0E+005	(mg/kg-day)-1	B2	HEAST	07/97
PCB-1248 (Aroclor 1248)	2.0E+00	50%	4E+00	(mg/kg-day)-1	B2	IRIS	05/01
PCB-1254 (Aroclor 1254)	2.0E+00	50%	4E+00	(mg/kg-day)-1	B2	IRIS	05/01
PCB-1260 (Aroclor 1260)	2.0E+00	50%	4E+00	(mg/kg-day)-1	B2	IRIS	05/01
Vinyl Chloride	1.4E+00	100%	1.4E+00	(mg/kg-day)-2	A	IRIS	05/01

N/A = Not Available
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA= National Center for Environmental Assessment

ROD Table 19

(1) Explanation of derivation provided in Section 4.2.2.3.
(2) For IRIS values, provide the date IRIS was searched.
For HEAST values, provide the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Weight of Evidence:
Known/Likely
Cannot be Determined
Not Likely

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Alpha-Chlordane	N/A	N/A	N/A	3.5E-001	(mg/kg-day)-1	B2	IRIS	05/01
Benzo(a)Anthracene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
Benzo(a)pyrene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
Benzo(b)Fluoranthene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
Benzo(g,h,i)Perylene	N/A	N/A	N/A	N/A	N/A	D	IRIS	05/01
Benzo(k)Fluoranthene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
Beryllium	2.4E-03	(ug/m3)-1	3,500	8.4E+00	(mg/kg-day)-1	B1	IRIS	05/01
Cadmium	1.8E-03	(ug/m3)-1	3,500	6.3E+00	(mg/kg-day)-1	B1	IRIS	05/01
Chromium VI	1.2E-02	(ug/m3)-1	3,500	4.2E+01	(mg/kg-day)-1	A	IRIS	05/01
Cobalt	4.2E-003	(ug/m3)-1	3,500	9.8E+000	(mg/kg-day)-1	A	NCEA	05/01
Dieldrin	4.6E-03	(ug/m3)-1	3,500	1.6E+01	(mg/kg-day)-1	B2	IRIS	05/01
Arsenic	4.3E-03	(ug/m3)-1	3,500	1.5E+01	(mg/kg-day)-1	A	IRIS	05/01
Carbazole	5.7E-07	(ug/m3)-1	3,500	2.0E-03	(mg/kg-day)-1	B2	HEAST	07/97
Beta BHC	5.3E-004	(ug/m3)-1	3,500	1.9E+00	(mg/kg-day)-1	C	IRIS	05/01
bis (2-Ethylhexyl)Phthalate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Indeno(1,2,3-c,d)Pyrene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
Dibenz(a,h)Anthracene	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
Lead	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
3-Methylphenol (m-cresol)	NA	NA	NA	NA	NA	C	IRIS	05/01
4-Methylphenol (p-cresol)	NA	NA	NA	NA	NA	C	HEAST	07/97
p,p'-DDD	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
p,p'-DDE	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
p,p'-DDT	N/A	N/A	N/A	N/A	N/A	B2	IRIS	05/01
TEQ of 2,3,7,8 - TCDD	3.3E-011	(ug/m3)-1	3,500	1.2E-07	(mg/kg-day)-1	B2	HEAST	07/97
PCB-1248 (Aroclor 1248)	1.0E-004	(ug/m3)-1	3,500	3.5E-001	(mg/kg-day)-1	B2	IRIS	05/01
PCB-1254 (Aroclor 1254)	1.0E-004	(ug/m3)-1	3,500	3.5E-001	(mg/kg-day)-1	B2	IRIS	05/01
PCB-1260 (Aroclor 1260)	1.0E-004	(ug/m3)-1	3,500	3.5E-001	(mg/kg-day)-1	B2	IRIS	05/01
Vinyl Chloride	4.4E-06	(ug/m3)-1	3,500	1.5E-02	(mg/kg-day)-1	A	IRIS	05/01

IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA= National Center for Environmental Assessment

ROD Table 20

(1) Explanation of derivation provided in Section 4.2.2.2.
(2) For IRIS values, provide the date IRIS was searched.
For HEAST values, provide the date of HEAST.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity
Weight of Evidence:
Known/Likely
Cannot be Determined
Not Likely

TABLE 5.1
NON-CANCER TOXICITY DATA – ORAL/DERMAL
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Acenaphthene	Chronic	6E-02	mg/kg-day	50%	3.0E-02	mg/kg-day	Liver	3000	IRIS	03/21/2001
Acenaphthylene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Alpha Chlordane	Chronic	5E-004	mg/kg-day	50%	2.5E-004	mg/kg-day	Liver	300		03/21/2001
Aluminum	Chronic	1E+00	mg/kg-day	10%	1.0E-01	mg/kg-day			NCEA	03/21/2001
Anthracene	Chronic	3E-01	mg/kg-day	50%	1.5E-002	mg/kg-day	N/A	3000	IRIS	03/21/2001
Antimony	Chronic	4E-04	mg/kg-day	1%	4.0E-06	mg/kg-day	Blood	1000	IRIS	03/21/2001
Arsenic	Chronic	3E-04	mg/kg-day	95%	2.9E-004	mg/kg-day	Skin	3	IRIS	03/21/2001
Barium	Chronic	7E-02	mg/kg-day	7%	4.9E-03	mg/kg-day	Kidney	3	IRIS	03/21/2001
Benzo(a)Anthracene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Benzo(a)Pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Benzo(b)Fluoranthene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Benzo(g,h,i)Perylene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Benzo(k)Fluoranthene	Chronic	1E-002	mg/kg-day	80%	8.0E-03	mg/kg-day	Liver	1000	IRIS	03/21/2001
Beryllium	Chronic	2E-03	mg/kg-day	20%	4.0E-004	mg/kg-day	Small Intestine	300	IRIS	03/21/2001
Beta BHC (Beta Hexachlorocyclohexane)	Chronic	2E-004	mg/kg-day	50%	1E-004	mg/kg-day	Liver Tumors		NCEA	03/21/2001
bis(2-Ethylhexyl)Phthalate	Chronic	2E-02	mg/kg-day	55%	1.1E-02	mg/kg-day	Liver	1000	IRIS	03/21/2001
Cadmium	Chronic	5E-04	mg/kg-day	5%	2.5E-05	mg/kg-day	Kidney	10	IRIS	03/21/2001
Calcium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Carbazole	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Chromium Total	Chronic	3E-03	mg/kg-day	2%	6.0E-05	mg/kg-day	Skin	900	IRIS	03/21/2001
Chrysene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Cobalt	Chronic	2E-002	mg/kg-day	20%	4.0E-004	mg/kg-day			NCEA	03/21/2001
Copper	Chronic	4E-002	mg/kg-day	20%	8.0E-003	mg/kg-day	GI Tract	20	HEAST	03/21/2001
Cyanide	Chronic	2E-02	mg/kg-day	20%	4.0E-003	mg/kg-day	Whole Body	500	IRIS	03/21/2001
p,p'-DDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
p,p'-DDE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
p,p'-DDT	Chronic	5E-04	mg/kg-day	50%	2.5E-004	mg/kg-day	Liver	100	IRIS	03/21/2001

ROD Table 21

TABLE 5.1
NON-CANCER TOXICITY DATA – ORAL/DERMAL
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Dibenz(a,h)Anthracene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Dibenzofuran	Chronic	4E-003	mg/kg-day	50%	2E-003	mg/kg-day	N/A	N/A	NCEA	03/21/2001
Diethyl Phthalate	Chronic	8E-001	mg/kg-day	50%	4.0E-001	mg/kg-day	N/A	1000	IRIS	03/21/2001
Dieldrin	Chronic	5E-05	mg/kg-day	50%	2.5E-05	mg/kg-day	Liver	100	IRIS	03/21/2001
Di-n-butylphthalate	Chronic	1E-001	mg/kg-day	50%	5.0E-002	mg/kg-day	N/A	1000	IRIS	03/21/2001
Endrin	Chronic	3E-04	mg/kg-day	50%	1.5E-04	mg/kg-day	Liver	100	IRIS	03/21/2001
Fluoranthene	Chronic	4E-02	mg/kg-day	50%	2.0E-02	mg/kg-day	Liver	3000	IRIS	03/21/2001
Fluorene	Chronic	4E-02	mg/kg-day	58%	2.3E-02	mg/kg-day	Deceased Cell Count	3000	IRIS	03/21/2001
gamma BHC (Lindane)	Chronic	3E-04	mg/kg-day	50%	1.5E-04	mg/kg-day	Liver/Kidney	1000	IRIS	03/21/2001
Indeno(1,2,3-c,d)Pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Iron	Chronic	3E-01	mg/kg-day	15%	4.5E-02	mg/kg-day			NCEA	03/21/2001
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Magnesium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Manganese (soil)	Chronic	2E-002	mg/kg-day	5%	4E-003	mg/kg-day	CNS	1	N/A	03/21/2001
Mercury (elemental)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Naphthalene	Chronic	2E-02	mg/kg-day	50%	1.0E-02	mg/kg-day	Body Weight	3000	IRIS	03/21/2001
Nickel	Chronic	2E-02	mg/kg-day	27%	5.4E-03	mg/kg-day	Body Weight	300	IRIS	03/21/2001
PCB-1260 (Aroclor 1260)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Phenanthrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Potassium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Pyrene	Chronic	3E-02	mg/kg-day	87%	2.6E-002	mg/kg-day	Kidney	3000	IRIS	03/21/2001
Selenium	Chronic	5E-03	mg/kg-day	20%	1.0E-003	mg/kg-day	Whole Body	3	IRIS	03/21/2001
Silver	Chronic	5E-03	mg/kg-day	20%	1.0E-03	mg/kg-day	Skin	3	IRIS	03/21/2001
Sodium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
TEQ of 2,3,7,8-TCDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03/21/2001
Thallium	Chronic	8E-05	mg/kg-day	15%	1.2E-05	mg/kg-day	NOAEL	3000	IRIS	03/21/2001
Vanadium	Chronic	7E-03	mg/kg-day	20%	1.4E-03	mg/kg-day	N/A	100	HEAST	03/21/2001
Zinc	Chronic	3E-01	mg/kg-day	20%	6.0E-02	mg/kg-day	Blood	3	IRIS	03/21/2001

N/A = Not Applicable
CNS = Central nervous system
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
Other = Region III Risk-Based Concentration Table
(1) Refer to RAGS, Part A and text for an explanation.
(2) Provide equation used for derivation.
(3) For IRIS values, provided the date IRIS was searched.
For HEAST values, provided the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

ROD Table 21

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates (2) (MM/DD/YY)
Acenaphthene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	03/21/2001
Acenaphthylene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	03/21/2001
Alpha Chlordane	Chronic	7E-004	mg/m3	2E-004	mg/kg-day	Hepatic Necrosis	1000	IRIS	03/21/2001
Aluminum	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Anthracene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Antimony	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Arsenic	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Barium	N/A	N/A	N/A	1.4E-004	N/A	N/A	N/A	N/A	03/21/2001
Benzo(a)Anthracene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Benzo(a)Pyrene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Benzo(b)Fluoranthene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Benzo(g,h,i)Perylene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Benzo(k)Fluoranthene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Beryllium	Chronic	2E-02	mg/m3	5.7E-006	mg/kg-day	Small intestine	300	IRIS	03/21/2001
Beta BHC (Beta Hexachlorocycl	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
bis(2-Ethylhexyl)Phthalate	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Cadmium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Calcium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Carbazole	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Chromium Total	Chronic	1E-004	mg/m3	2E-006	mg/kg-day		1		03/21/2001
Chrysene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Cobalt	N/A		mg/m3	6E-006	mg/kg-day			NCEA	03/21/2001
Copper	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Cyanide	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
p,p'-DDD	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
p,p'-DDE	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
p,p'-DDT	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Dibenz(a,h)Anthracene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Dibenzofuran	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Diethyl Phthalate	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Dieldrin	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Di-n-butylphthalate	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Endrin	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Fluoranthene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Fluorene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
gamma BHC (Lindane)	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Indeno(1,2,3-c,d)Pyrene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Iron	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Lead	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Magnesium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Manganese (soil)	Chronic	5E-005	mg/m3	1.4E-005	mg/kg-day	CNS	1000	IRIS	03/21/2001
Mercury (elemental)	Chronic	3E-004	mg/m3	8.6E-005	mg/kg-day	N/A	30	IRIS	03/21/2001
Naphthalene	Chronic	3E-003	mg/m3	9.0E-004	mg/kg-day	Body Weight	3000	IRIS	03/21/2001
Nickel	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001

ROD Table 22

TABLE 5.2
NON-CANCER TOXICITY DATA – INHALATION
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates (2) (MM/DD/YY)
PCB-1260 (Aroclor 1260)	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Phenanthrene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Potassium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Pyrene	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Selenium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Silver	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Sodium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
TEQ of 2,3,7,8-TCDD	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Thallium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Vanadium	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001
Zinc	N/A	N/A	N/A		N/A	N/A	N/A	N/A	03/21/2001

N/A = Not Applicable
CNS = Central nervous system
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
Other = Region III Risk-Based Concentration Table
(1) Refer to RAGS, Part A and text for an explanation.
(2) Provide equation used for derivation.
(3) For IRIS values, provided the date IRIS was searched.
For HEAST values, provided the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

ROD Table 22

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Acenaphthene	Chronic	6E-02	mg/kg-day	50%	3.0E-02	mg/kg-day	Liver	3000	IRIS	20-Nov-00
Acenaphthylene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	Chronic	1E-01	mg/kg-day	83%	8.3E-02	mg/kg-day	Liver, Kidney	1000	IRIS	20-Nov-00
Aldrin	Chronic	3E-05	mg/kg-day	50%	1.5E-05	mg/kg-day	Liver	1000	IRIS	20-Nov-00
Alpha BHC (Alpha Hexachlorocyclohexane)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alpha Endosulfan (Endosulfan I)	Chronic	6E-03	mg/kg-day	50%	3.0E-03	mg/kg-day	Kidney	100	IRIS	20-Nov-00
Aluminum	Chronic	1E+00	mg/kg-day	10%	1.0E-01	mg/kg-day			NCEA	13-Apr-00
Anthracene	Chronic	3E-01	mg/kg-day	50%	1.5E-02	mg/kg-day	N/A	3000	IRIS	20-Nov-00
Antimony	Chronic	4E-04	mg/kg-day	1%	4.0E-06	mg/kg-day	Blood	1000	IRIS	20-Nov-00
Arsenic	Chronic	3E-04	mg/kg-day	95%	2.9E-04	mg/kg-day	Skin	3	IRIS	20-Nov-00
Barium	Chronic	7E-02	mg/kg-day	7%	4.9E-03	mg/kg-day	Kidney	3	IRIS	20-Nov-00
Benzene	Chronic	3E-03	mg/kg-day	97%	3E-03	mg/kg-day			NCEA	13-Apr-00
Benzo(a)Anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)Pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(b)Fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(g,h,i)Perylene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(k)Fluoranthene	Chronic	1E-02	mg/kg-day	80%	8.0E-03	mg/kg-day	Liver	1000	IRIS	20-Nov-00
Benzyl Butyl Phthalate	Chronic	2E-01	mg/kg-day	50%	1E-01	mg/kg-day	Liver	1000	IRIS	20-Nov-00
Beryllium	Chronic	2E-03	mg/kg-day	20%	4.0E-04	mg/kg-day	Small Intestine	300	IRIS	20-Nov-00
Beta BHC (Beta Hexachlorocyclohexane)	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
bis(2-Ethylhexyl)Phthalate	Chronic	2E-02	mg/kg-day	55%	1.1E-02	mg/kg-day	Liver	1000	IRIS	20-Nov-00
Cadmium	Chronic	5E-04	mg/kg-day	5%	2.5E-05	mg/kg-day	Kidney	10	IRIS	20-Nov-00
Carbazole	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Disulfide	Chronic	1E-01	mg/kg-day	80%	8.0E-02	mg/kg-day	Fetus	100	IRIS	20-Nov-00
Chlorobenzene	Chronic	2E-02	mg/kg-day	31%	6.2E-03	mg/kg-day	Liver	1000	IRIS	20-Nov-00
Chlordane	Chronic	5.0E-04	mg/kg-day	50%	2.5E-04	mg/kg-day	N/A	300	IRIS	20-Nov-00
Chloroethane	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloroform	Chronic	1E-02	mg/kg-day	80%	8.0E-03	mg/kg-day	Liver	1000	IRIS	20-Nov-00
Chloromethane	Chronic	1.6E+00	ug/l	100%			Lungs	1000	IRIS	20-Nov-00
Chromium VI	Chronic	3E-03	mg/kg-day	2%	6.0E-05	mg/kg-day	Skin	900	IRIS	20-Nov-00
Chrysene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt	Chronic	6E-02	mg/kg-day	20%	1.2E-02	mg/kg-day			NCEA	13-Apr-00
Copper	Chronic	4E-02	mg/kg-day	20%	8.0E-03	mg/kg-day	GI Tract	20	HEAST	1-Jul-97
Cyanide	Chronic	2E-02	mg/kg-day	20%	4.0E-03	mg/kg-day	Whole Body	500	IRIS	20-Nov-00
p,p'-DDD	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
p,p'-DDE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
p,p'-DDT	Chronic	5E-04	mg/kg-day	50%	2.5E-04	mg/kg-day	Liver	100	IRIS	20-Nov-00

ROD Table 23

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Dibenz(a,h)Anthracene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dibenzofuran	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dibromo-3-chloropropanol	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1-Dichloroethene	Chronic	1E-01	mg/kg-day	80%	8.0E-02	mg/kg-day	None Observed	1000	HEAST	1-Jul-97
Dieldrin	Chronic	5E-05	mg/kg-day	50%	2.5E-05	mg/kg-day	Liver	100	IRIS	20-Nov-00
Di-n-Octylphthalate	Chronic	2E-02	mg/kg-day	50%	1E-02	mg/kg-day	Kidney/Liver	1000	HEAST	1-Jul-97
Endrin	Chronic	3E-04	mg/kg-day	50%	1.5E-04	mg/kg-day	Liver	100	IRIS	20-Nov-00
Endrin Aldehyde	Chronic	3E-04	mg/kg-day	50%	1.5E-05	mg/kg-day	Liver	100	IRIS	20-Nov-00
Ethylbenzene	Chronic	1E-01	mg/kg-day	80%	8.0E-02	mg/kg-day	Liver/Kidney	1000	IRIS	20-Nov-00
Fluoranthene	Chronic	4E-02	mg/kg-day	50%	2.0E-02	mg/kg-day	Liver	3000	IRIS	20-Nov-00
Fluorene	Chronic	4E-02	mg/kg-day	58%	2.3E-02	mg/kg-day	Deceased Cell Count	3000	IRIS	20-Nov-00
gamma BHC (Lindane)	Chronic	3E-04	mg/kg-day	50%	1.5E-04	mg/kg-day	Liver/Kidney	1000	IRIS	20-Nov-00
Heptachlor	Chronic	5E-04	mg/kg-day	50%	2.5E-04	mg/kg-day	Liver	300	IRIS	20-Nov-00
Heptachlor Epoxide	Chronic	1.3E-05	mg/kg-day	50%	6.5E-06	mg/kg-day	Liver	1000	IRIS	20-Nov-00
Indeno(1,2,3-c,d)Pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron	Chronic	3E-01	mg/kg-day	15%	4.5E-02	mg/kg-day			NCEA	13-Apr-00
Isopropylbenzene (Cumene)	Subchronic	4E-01	mg/kg-day	80%	3.2E-01	mg/kg-day	Kidney	300	HEAST	1-Jul-97
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M, P-Xylene	Chronic	2E+00	mg/kg-day	80%	1.6E+00	mg/kg-day	Body Weight	100	IRIS	20-Nov-00
Manganese (water)	Chronic	2E-02	mg/kg-day	5%	1.0E-03	mg/kg-day	CNS	3	IRIS	20-Nov-00
Manganese (soil)	Chronic	7E-02	mg/kg-day	5%	3.5E-03	mg/kg-day	CNS	1	N/A	N/A
Mercury (elemental)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Mercury	Chronic	1E-04	mg/kg-day	20%	2E-05	mg/kg-day	Nervous System	10	IRIS	20-Nov-00
Methyl Ethyl Ketone (2-Butanone)	Chronic	6E-01	mg/kg-day	80%	4.8E-01	mg/kg-day	Fetus	3000	IRIS	20-Nov-00
Methylene Chloride	Chronic	6E-02	mg/kg-day	80%	4.8E-02	mg/kg-day	Liver	100	IRIS	20-Nov-00
Naphthalene	Chronic	2E-02	mg/kg-day	50%	1.0E-02	mg/kg-day	Body Weight	3000	IRIS	20-Nov-00
Nickel	Chronic	2E-02	mg/kg-day	27%	5.4E-03	mg/kg-day	Body Weight	300	IRIS	20-Nov-00
O-Xylene	Chronic	2E+00	mg/kg-day	80%	1.6E+00	mg/kg-day	Whole Body	100	IRIS	20-Nov-00
PCB-1016 (Aroclor 1016)	Chronic	7E-05	mg/kg-day	50%	2.5E-07	mg/kg-day	Fetus	100	IRIS	20-Nov-00
PCB-1242 (Aroclor 1242	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCB-1260 (Aroclor 1260)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	Chronic	3E-02	mg/kg-day	50%	1.5E-02	mg/kg-day	Liver/Kidney	100	IRIS	20-Nov-00
Phenanthrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pyrene	Chronic	3E-02	mg/kg-day	87%	2.6E-02	mg/kg-day	Kidney	3000	IRIS	20-Nov-00
Selenium	Chronic	5E-03	mg/kg-day	20%	1.0E-03	mg/kg-day	Whole Body	3	IRIS	20-Nov-00
Silver	Chronic	5E-03	mg/kg-day	20%	1.0E-03	mg/kg-day	Skin	3	IRIS	20-Nov-00
TEQ of 2,3,7,8-TCDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thallium	Chronic	8E-05	mg/kg-day	15%	1.2E-05	mg/kg-day	NOAEL	3000	IRIS	20-Nov-00
Toluene	Chronic	2E-01	mg/kg-day	80%	1.6E-01	mg/kg-day	Liver/Kidney	1000	IRIS	20-Nov-00
Trichloroethylene (TCE)	Chronic	6E-03	mg/kg-day	100%	6E-03	mg/kg-day			NCEA	13-Apr-00

ROD Table 23

TABLE 5.1
NON-CANCER TOXICITY DATA – ORAL/DERMAL
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Trichlorofluoromethane	Chronic	3E-01	mg/kg-day	80%	2.4E-01	mg/kg-day	Whole Body	1000	IRIS	20-Nov-00
Vanadium	Chronic	7E-03	mg/kg-day	20%	1.4E-03	mg/kg-day	N/A	100	HEAST	20-Nov-00
Xylenes, Total	Chronic	2E+00	mg/kg-day	80%	1.6E+00	mg/kg-day	Body Weight	100	IRIS	20-Nov-00
Zinc	Chronic	3E-01	mg/kg-day	20%	6.0E-02	mg/kg-day	Blood	3	IRIS	20-Nov-00

N/A = Not Applicable
CNS = Central nervous system
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
Other = Region III Risk-Based Concentration Table
(1) Refer to RAGS, Part A and text for an explanation.
(2) Provide equation used for derivation.
(3) For IRIS values, provided the date IRIS was searched.
For HEAST values, provided the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

ROD Table 23

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
Chloroform	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dibromo-3-chloropropanol	Chronic	2E-04	mg/m3	5.7E-05	mg/kg-day	Testicles	1000	IRIS	20-Feb-01
Ethylbenzene	Chronic	1E+00	mg/m3	2.9E-01	mg/kg-day	Developmental	300	IRIS	20-Nov-00
(3- and/or 4-)Methylphenol	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Xylene (Total)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Napthalene	Chronic	3E-03	mg/m3	9.0E-04	mg/kg-day	Respiratory Tract	3000	IRIS	20-Nov-00
Aldrin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Antimony	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium	Chronic	N/A	N/A	1.4E-04	mg/kg-day	N/A	N/A	N/A	N/A
Beryllium	Chronic	2E-02	ug/m3	5.7E-06	mg/kg-day	Respiratory Tract	10	IRIS	20-Nov-00
Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloroethane	Chronic	1E+01	mg/m3	2.9E+00	mg/kg-day	Fetus	300	IRIS	20-Nov-00
Chromium VI	Chronic	1E-04	mg/m3	2.9E-05	mg/kg-day	Respiratory Tract	300	IRIS	20-Nov-00
Cobalt	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	Chronic	8E-01	mg/m3	2.3E-01	mg/kg-day	Liver	100	IRIS	20-Nov-00
Iron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese (soil)	Chronic	5E-05	mg/m3	1.4E-05	mg/kg-day	CNS	1,000	IRIS	20-Nov-00
Manganese (water)	Chronic	5E-05	mg/m3	1.4E-05	mg/kg-day	CNS	1,000	IRIS	20-Nov-00
Mercury Chloride	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury (elemental)	Chronic	3E-04	mg/m3	8.6E-05	mg/kg-day	Nervous System	30	IRIS	20-Nov-00
Methyl Mercury	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thallium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A = Not Applicable
CNS = Central nervous system
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
(1) Explanation of derivation provided in text.
(2) For IRIS values, provided the date IRIS was searched.
For HEAST values, provided the date of HEAST.

ROD Table 24

TABLE 5.1
NON-CANCER TOXICITY DATA – ORAL/DERMAL
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Acenaphthene	Chronic	6E-02	mg/kg-day	50%	3.0E-02	mg/kg-day	Liver	3000	IRIS	05/01
Acenaphthylene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Alpha Chlordane	Chronic	5E-004	mg/kg-day	50%	2.5E-004	mg/kg-day	Liver	300		05/01
Aluminum	Chronic	1E+00	mg/kg-day	10%	1.0E-01	mg/kg-day			NCEA	05/01
Anthracene	Chronic	3E-01	mg/kg-day	50%	1.5E-002	mg/kg-day	N/A	3000	IRIS	05/01
Antimony	Chronic	4E-04	mg/kg-day	1%	4.0E-06	mg/kg-day	Blood	1000	IRIS	05/01
Arsenic	Chronic	3E-04	mg/kg-day	95%	2.9E-004	mg/kg-day	Skin	3	IRIS	05/01
Barium	Chronic	7E-02	mg/kg-day	7%	4.9E-03	mg/kg-day	Kidney	3	IRIS	05/01
Benzo(a)Anthracene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Benzo(a)Pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Benzo(b)Fluoranthene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Benzo(g,h,i)Perylene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Benzo(k)Fluoranthene	Chronic	1E-002	mg/kg-day	80%	8.0E-03	mg/kg-day	Liver	1000	IRIS	05/01
Beryllium	Chronic	2E-03	mg/kg-day	20%	4.0E-004	mg/kg-day	Small Intestine	300	IRIS	05/01
Beta BHC (Beta Hexachlorocyclohexane)	Chronic	2E-04	mg/kg-day	50%	1.0E-004	mg/kg-day	Liver Tumors		NCEA	05/01
bis(2-Ethylhexyl)Phthalate	Chronic	2E-02	mg/kg-day	55%	1.1E-02	mg/kg-day	Liver	1000	IRIS	05/01
Cadmium	Chronic	5E-04	mg/kg-day	5%	2.5E-05	mg/kg-day	Kidney	10	IRIS	05/01
Calcium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Carbazole	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Chromium Total	Chronic	3E-03	mg/kg-day	2%	6.0E-05	mg/kg-day	Skin	900	IRIS	05/01
Chrysene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Cobalt	Chronic	2E-02	mg/kg-day	20%	4E-004	mg/kg-day			NCEA	05/01
Copper	Chronic	4E-002	mg/kg-day	20%	8.0E-003	mg/kg-day	GI Tract	20	HEAST	07/97
Cyanide	Chronic	2E-02	mg/kg-day	20%	4.0E-003	mg/kg-day	Whole Body	500	IRIS	05/01
p,p'-DDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
p,p'-DDE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
p,p'-DDT	Chronic	5E-04	mg/kg-day	50%	2.5E-004	mg/kg-day	Liver	100	IRIS	05/01
Dibenz(a,h)Anthracene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Dibenzofuran	Chronic	4E-03	mg/kg-day	50%	2E-003	mg/kg-day			NCEA	05/01
cis-1,2-Dichloroethylene	Chronic	1E-02	mg/kg-day	100%	1E-02	mg/kg-day	Blood	3000	HEAST	07/97
Diethyl Phthalate	Chronic	8E-001	mg/kg-day	50%	4.0E-001	mg/kg-day	N/A	1000	IRIS	05/01
Dieldrin	Chronic	5E-05	mg/kg-day	50%	2.5E-05	mg/kg-day	Liver	100	IRIS	05/01
Di-n-butylphthalate	Chronic	1E-001	mg/kg-day	50%	5.0E-002	mg/kg-day	N/A	1000	IRIS	05/01
Endrin	Chronic	3E-04	mg/kg-day	50%	1.5E-04	mg/kg-day	Liver	100	IRIS	05/01
Fluoranthene	Chronic	4E-02	mg/kg-day	50%	2.0E-02	mg/kg-day	Liver	3000	IRIS	05/01
Fluorene	Chronic	4E-02	mg/kg-day	58%	2.3E-02	mg/kg-day	Deceased Cell Count	3000	IRIS	05/01
gamma BHC (Lindane)	Chronic	3E-04	mg/kg-day	50%	1.5E-04	mg/kg-day	Liver/Kidney	1000	IRIS	05/01
Indeno(1,2,3-c,d)Pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Iron	Chronic	3E-01	mg/kg-day	15%	4.5E-02	mg/kg-day			NCEA	05/01

ROD Table 25

TABLE 5.1
NON-CANCER TOXICITY DATA – ORAL/DERMAL
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Magnesium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Manganese (soil)	Chronic	2E-02	mg/kg-day	5%	4E-003	mg/kg-day	CNS	1	IRIS	05/01
3-Methylphenol (m-cresol)	Chronic	5E-02	mg/kg-day	84%	4.2E-02	mg/kg-day	CNS	1000	IRIS	05/01
4-Methylphenol (p-cresol)	Chronic	5E-03	mg/kg-day	84%	4.2E-03	mg/kg-day	CNS	1000	HEAST	07/97
Mercury (elemental)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Naphthalene	Chronic	2E-02	mg/kg-day	50%	1.0E-02	mg/kg-day	Body Weight	3000	IRIS	05/01
Nickel	Chronic	2E-02	mg/kg-day	27%	5.4E-03	mg/kg-day	Body Weight	300	IRIS	05/01
PCB-1248 (Aroclor 1248)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
PCB-1254 (Aroclor 1254)	Chronic	2E-05	mg/kg-day	50%	1E-005	mg/kg-day			IRIS	05/01
PCB-1260 (Aroclor 1260)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Phenanthrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Potassium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Pyrene	Chronic	3E-02	mg/kg-day	87%	2.6E-002	mg/kg-day	Kidney	3000	IRIS	05/01
Selenium	Chronic	5E-03	mg/kg-day	20%	1.0E-003	mg/kg-day	Whole Body	3	IRIS	05/01
Silver	Chronic	5E-03	mg/kg-day	20%	1.0E-03	mg/kg-day	Skin	3	IRIS	05/01
Sodium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
TEQ of 2,3,7,8-TCDD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	05/01
Thallium	Chronic	8E-05	mg/kg-day	15%	1.2E-05	mg/kg-day	NOAEL	3000	IRIS	05/01
Vanadium	Chronic	7E-03	mg/kg-day	20%	1.4E-03	mg/kg-day	N/A	100	HEAST	07/97
Vinyl Chloride	Chronic	3E-03	mg/kg-day	100%	3E-03	mg/kg-day	Liver	30	IRIS	05/01
Zinc	Chronic	3E-01	mg/kg-day	20%	6.0E-02	mg/kg-day	Blood	3	IRIS	05/01

N/A = Not Applicable
CNS = Central nervous system
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
Other = Region III Risk-Based Concentration Table
(1) Refer to RAGS, Part A and text for an explanation.
(2) Provide equation used for derivation.
(3) For IRIS values, provided the date IRIS was searched.
For HEAST values, provided the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

ROD Table 25

TABLE 5.2
NON-CANCER TOXICITY DATA – INHALATION
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates (2) (MM/DD/YY)
Acenaphthene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Acenaphthylene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Alpha Chlordane	Chronic	7E-004	mg/m3	2E-004	mg/kg-day	Hepatic Necrosis	1000	IRIS	05/01
Aluminum	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Anthracene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Antimony	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Arsenic	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Barium	N/A	N/A	N/A	1.4E-004	mg/kg-day	N/A	N/A	IRIS	05/01
Benzo(a)Anthracene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Benzo(a)Pyrene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Benzo(b)Fluoranthene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Benzo(g,h,i)Perylene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Benzo(k)Fluoranthene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Beryllium	Chronic	2E-02	mg/m3	5.7E-006	mg/kg-day	Small Intestine	300	IRIS	05/01
Beta BHC (Beta Hexachlorocycl	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
bis(2-Ethylhexyl)Phthalate	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Cadmium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Calcium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Carbazole	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Chromium Total	Chronic	1E-004	mg/m3	2.0E-006	mg/kg-day	N/A	1	IRIS	05/01
Chrysene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Cobalt	N/A	N/A	N/A	6E-006	mg/kg-day	N/A	N/A	NCEA	05/01
Copper	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Cyanide	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
p,p'-DDD	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
p,p'-DDE	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
p,p'-DDT	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Dibenz(a,h)Anthracene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Dibenzofuran	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
cis-1,2-Dichloroethylene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Diethyl Phthalate	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Dieldrin	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Di-n-butylphthalate	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Endrin	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Fluoranthene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Fluorene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
gamma BHC (Lindane)	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Indeno(1,2,3-c,d)Pyrene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Iron	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Lead	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Magnesium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Manganese (soil)	Chronic	5E-005	mg/m3	1.4E-005	mg/kg-day	CNS	1000	IRIS	05/01

ROD Table 26

TABLE 5.2
NON-CANCER TOXICITY DATA – INHALATION
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates (2) (MM/DD/YY)
3-Methylphenol (m-cresol)	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
4-Methylphenol (p-cresol)	N/A	N/A	N/A		N/A	N/A	N/A	HEAST	07/97
Mercury (elemental)	Chronic	3E-004	mg/m3	8.6E-005	mg/kg-day	N/A	30	IRIS	05/01
Naphthalene	Chronic	3E-003	mg/m3	9.0E-004	mg/kg-day	Body Weight	3000	IRIS	05/01
Nickel	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
PCB-1260 (Aroclor 1260)	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Phenanthrene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Potassium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Pyrene	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Selenium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Silver	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Sodium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
TEQ of 2,3,7,8-TCDD	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Thallium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Vanadium	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01
Vinyl Chloride	Chronic	1E-01	mg/m3	2.9E-02	mg.kg-day	Liver	30	IRIS	05/01
Zinc	N/A	N/A	N/A		N/A	N/A	N/A	IRIS	05/01

N/A = Not Applicable
CNS = Central nervous system
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
Other = Region III Risk-Based Concentration Table
(1) Refer to RAGS, Part A and text for an explanation.
(2) Provide equation used for derivation.
(3) For IRIS values, provided the date IRIS was searched.
For HEAST values, provided the date of HEAST.
NCEA values obtained from Region III RBC Table, dated 04/13/00.

ROD Table 26

model was used to evaluate lead risks in the exposure units evaluated in the baseline risk assessment. However, lead risks in all residential areas were evaluated by screening detected concentrations against EPA's residential screening level of 400 mg/kg. This screening level is also based on the lead model. As lead is not included in the cancer risks or hazard calculation, the presence of lead > 400 mg/kg is sufficient to trigger remediation in residential areas.

5.5.2 Evaluation of Carcinogenic Risk

The incremental risk of developing cancer from exposure to a chemical at the site was defined as the additional probability that an individual exposed will develop cancer during his or her lifetime (assumed to be 70 years). This value was calculated from the average daily intake over a lifetime (GDI) and the slope factor (SF) for the chemical as follows (EPA, 1989):

$$\text{Risk} = \text{GDI X SF}$$

When the product of GDI x SF is greater than 0.01, this expression may be estimated as:

$$\text{Risk} = \text{l: exp}^{(\text{-CDI X SF})}$$

An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure estimate has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes such as smoking or exposure to too much sun. The chance of an individual's developing cancer from all other causes has been estimated to be as high as one in three. EPA's generally acceptable risk range for site-related exposures is $1x10^{-4}$ to $1x10^{-6}$.

The surface and subsurface soil in the incinerator area of the Forest Street was determined to have a risk greater than the EPA acceptable risk range for carcinogens at $4x10^{-4}$ (surface soil) and $1x10^{-3}$ (subsurface soil). All ten evaluated residential properties have carcinogenic risks greater than $1x10^{-6}$ and two of the ten have greater than the $1x10^{-4}$ risk. This indicates a potential risk for surface and subsurface soils at the site.

The surface and subsurface soil in the Emmett Reed Park (former incinerator area) of the 5th & Cleveland site was determined to have a risk greater than or equal to the EPA risk range for carcinogens at $1x10^{-4}$ and $3x10^{-4}$. Three of the ten evaluated residential properties have greater than a $1x10^{-4}$ risk. This indicates a potential risk for surface and subsurface soils at the site. Groundwater at the 5th & Cleveland site has a carcinogenic risk of $1.3x10^{-4}$. Slightly higher that EPA acceptable risk range of $1x10^{-4}$ to $1x10^{-6}$.

The surface and subsurface soil in the Lonnie C. Miller, Sr. Park was determined to have a risk greater than the EPA acceptable risk range for carcinogens at $5x10^{-4}$ and $6x10^{-4}$. One of the ten evaluated residential properties have greater than a $1x10^{-4}$ risk. This indicates a potential risk for surface and subsurface soils at the site. Groundwater at the Lonnie C. Miller, Sr. Park site has a carcinogenic risk of $1.1x10^{-5}$.

A summary of carcinogenic risks for all exposure pathways and media is presented in Tables 27, 28 and 29. A detailed summary of risks that exceed a carcinogenic risk of $1x10^{-6}$ is presented in the tables in Appendix A of this ROD.

5.5.3 Evaluation of Non-Carcinogenic Effects

The potential for noncarcinogenic effects was evaluated by comparing an exposure level over a specified time period (e.g., life-time) with a reference dose (RfD) derived for a similar exposure period. A RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a hazard quotient (HQ). A HQ less than 1 indicates that a receptor's dose of a single contaminant is less than the RfD, and that toxic noncarcinogenic effects from that chemical are unlikely. The Hazard Index (HI) is generated by adding the HQs for all chemical(s) of concern that affect the same target organ (e.g., liver) or that act through the same mechanism of action within a medium or across all media to which a given individual may reasonably be exposed. A HI less than 1 indicates that, based on the sum of all HQ's from different contaminants and exposure routes, toxic noncarcinogenic effects from all contaminants are unlikely. A HI greater than 1 indicates that site-related exposures may present a risk to human health. The HQ is calculated as follows (EPA, 1989):

$$HQ = DI/RfD$$

Where:

HQ = Hazard Quotient (unitless)
DI = Daily Intake (mg/kg/day)
RfD = Reference Dose (mg/kg/day)

All the HQ values for chemicals within each exposure pathway are summed to yield the HI. Each pathway HI within a land use scenario (e.g., future child resident) is summed to yield the total HI for the receptor. If the value of the total HI is less than 1.0, it is interpreted to mean that the risk of noncarcinogenic injury is low. If the total HI is greater than 1.0, it is indicative of some degree of noncarcinogenic risk, or effect, and contaminants of concern are selected (EPA, 1995a). Contaminants of concern are those COPCs that contribute a HQ of 0.1 or greater to any pathway evaluated for the use scenario. Using the HQ equation, the chronic DI values, and the RfD values, a hazard index for current and future child residents was estimated by calculating a HQ for each chemical of potential concern associated with a complete pathway and exposure point. Only chronic His are derived, as the subchronic risks will always be equal to or less than the chronic risks.

The surface (HI = 4) and subsurface (HI = 543) soil in the incinerator area of the Forest Street was determined to have a HI > 1. Three of the ten evaluated residential properties have a HI greater than or equal to 1. This indicates a potential risk for surface and subsurface soils at the site. Groundwater at the Forest Street site has a HI = 5.4.

The surface (HI = 92) and subsurface (HI = 12) soil in the Emmett Reed Park (former incinerator area) of the 5th & Cleveland site was determined to have a HI > 1. Four of the ten evaluated residential properties have HQ greater than or equal to 1. This indicates a potential risk for surface

TABLE 11.2
SUMMARY OF CARCINOGENIC RISKS
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Risk Index
Current	Resident (Child and Adult)	Forest Stsreet Site Proper	Surface Soil	Incidental Ingestion Dermal Contact	2.6E-005 6.0E-006
		McCoy's Creek	Surface Water	Incidental Ingestion Dermal Contact	3.4E-07 3.9E-04
				Total Incremental Lifetime Cancer Risk	**4E-04**
Future	Resident (Child and Adult)	Forest Street Site Proper	Surface Soil	Incidental Ingestion Dermal Contact	2.6E-05 6.0E-006
		McCoy's Creek	Surface Water	Incidental Ingestion Dermal Contact	3.4E-07 3.9E-04
		Tap	Groundwater	Ingestion	--
				Total Incremental Lifetime Cancer Risk	**4E-04**
Future	Resident (Child and Adult)	Forest Street Site Proper	Subsurface Soil	Incidental Ingestion Dermal Contact	5.3E-04 3.4E-05
		McCoy's Creek	Surface Water	Incidental Ingestion Dermal Contact	3.4E-07 3.9E-04
		Tap	Groundwater	Ingestion	--
				Total Incremental Lifetime Cancer Risk	**1E-03**
Current	Adult Worker	FDOT I-10/95 Interchange East	Surface Soil	Incidental Ingestion Dermal Contact	1.6E-06 1.4E-06
				Total Incremental Lifetime Cancer Risk	**3E-06**
Future	Adult Worker	FDOT I-10/95 Interchange East	Srbsurface Soil	Incidental Ingestion Dermal Contact	1.7E-06 1.7E-06
				Total Incremental Lifetime Cancer Risk	**3E-06**
Current	Adult Worker	FDOT I-10/95 Interchange West	Surface Soil	Incidental Ingestion Dermal Contact	2.4E-06 1.2E-07
				Total Incremental Lifetime Cancer Risk	**3E-06**
Future	Adult Worker	FDOT I-10/95 Interchange West	Subsurface Soil	Incidental Ingestion Dermal Contact	3.3E-006 1.7E-07
				Total Incremental Lifetime Cancer Risk	**3E-06**
Current	Adult Worker	Area North of McCoy's Creek	Surface Soil	Incidental Ingestion Dermal Contact	8.2E-07 4.1E-08
				Total Incremental Lifetime Cancer Risk	**9E-06**
Future	Adult Worker	Area North of McCoy's Creek	Subsurface Soil	Incidental Ingestion Dermal Contact	7.9E-07 4.0E-08
				Total Incremental Lifetime Cancer Risk	**8E-07**

TABLE 11.2
SUMMARY OF CARCINOGENIC RISKS
JACKSONVILLE ASH SITE
5th AND CLEVELAND

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Hazard Index
Current	Child Resident (Child and Adult)	Emmett Reed Community Center	Surface Soil	Incidental Ingestion Dermal Contact	1.5E-005 7.8E-006
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
				Total Hazard Index	**4E-005**
Future	Resident (Child and Adult)	Emmett Reed Community Center	Surface Soil	Incidental Ingestion Dermal Contact	1.5E-005 7.8E-006
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3E-004 5.8E-008 4.2E-005
				Total Hazard Index	**2E-004**
Future	Resident (Child and Adult)	Emmett Reed Community Center	Subsurface Soil	Incidental Ingestion Dermal Contact	4.2E-005 8.1E-006
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3E-004 5.8E-008 4.2E-005
				Total Hazard Index	**2E-004**
Current	Resident (Child and Adult)	Emmett Reed Park Community Center	Surface Soil	Incidental Ingestion Dermal Contact	7.7E-005 3.2E-005
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
				Total Hazard Index	**1E-004**
Future	Resident (Child and Adult)	Emmett Reed Park	Surface Soil	Incidental Ingestion Dermal Contact	7.7E-005 3.2E-005
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3E-004 5.8E-008 4.2E-005
				Total Hazard Index	**3E-004**

ROD Table 28

TABLE 11.2
SUMMARY OF CARCINOGENIC RISKS
JACKSONVILLE ASH SITE
5th AND CLEVELAND

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Hazard Index
Future	Resident (Child and Adult)	Emmett Reed Park	Subsurface Soil	Incidental Ingestion Dermal Contact	1.1E-004 2.3E-005
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3E-004 5.8E-008 4.2E-005
				Total Hazard Index	**3E-004**
Current	Resident (Child and Adult)	Apartment Complex	Surface Soil	Incidental Ingestion Dermal Contact	7.0E-006 3.2E-006
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
				Total Hazard Index	**2E-005**
Future	Resident (Child and Adult)	Apartment Complex	Surface Soil	Incidental Ingestion Dermal Contact	7.0E-006 3.2E-006
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3E-004 5.8E-008 4.2E-005
				Total Hazard Index	**2E-004**
Future	Resident (Child and Adult)	Apartment Complex	Subsurface Soil	Incidental Ingestion Dermal Contact	1.9E-005 2.4E-006
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	1.0E-008 1.2E-005
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3E-004 5.8E-008 4.2E-005
				Total Hazard Index	**2E-004**

ROD Table 28

TABLE 11.2
SUMMARY OF CARCINOGENIC RISKS
JACKSONVILLE ASH SITE
LONNIE C. MILLER, SR., PARK

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Hazard Index
Current	Resident (Child and Adult)	Lonnie C. Miller, Sr., Park	Surface Soil	Incidental Ingestion Dermal Contact	1.6E-005 1.2E-05
		Unnamed Tributary	Surface Water	Incidental Ingestion Dermal Contact	4.8E-07 4.7E-04
				Total Incremental Lifetime Cancer Risk	**5E-04**
Future	Resident (Child and Adult)	Lonnie C. Miller, Sr., Park	Surface Soil	Incidental Ingestion Dermal Contact	1.6E-05 1.2E-05
		Unnamed Tributary	Surface Water	Incidental Ingestion Dermal Contact	4.8E-07 4.7E-04
		Tap	Groundwater	Ingestion Dermal Contact Inhalation	1.1E-05 5.9E-06 6.3E-08
				Total Incremental Lifetime Cancer Risk	**5E-04**
Future	Resident (Child and Adult)	Lonnie C. Miller, Sr., Park	Subsurface Soil	Incidental Ingestion Dermal Contact	1.2E-04 2.1E-05
		Unnamed Tributary	Surface Water	Incidental Ingestion Dermal Contact	4.8E-07 4.7E-04
		Tap	Groundwater	Ingestion Dermal Contact Inhalation	1.1E-05 5.9E-06 6.3E-08
				Total Incremental Lifetime Cancer Risk	**6E-04**

ROD Table 29

and subsurface soils at the site. Groundwater at the 5th & Cleveland site has a HI = 3.

The surface (HI = 18) and subsurface (HI = 32) soil in the Lonnie C. Miller, Sr. Park was determined to have a HI > 1. Six of the ten evaluated residential properties have HI greater than or equal to 1. This indicates a potential risk for surface and subsurface soils at the site. Groundwater at the Lonnie C. Miller, Sr. Park site has a HI = 1.96.

A summary of a non-carcinogenic risk for all exposure pathways and media is presented in Tables 30, 31 and 32. A detailed summary of risks that exceed a Hazard Index of 1 evaluated by target organs is presented in the tables in Appendix B of this ROD.

5.5.4 Evaluation of Risk in Residential Area

5.5.4.1 Quantitative Evaluation of Surface Soil

EPA acting through their contractor evaluated risks and hazards that may result from exposure to surface soil at residences surrounding the sites. 220 soil samples at Forest Street, 226 soil samples at 5th & Cleveland and 106 soil samples at Lonnie Miller were collected in the residential areas to use for this evaluation. The maximum detected concentration of the detected chemicals in surface soil was compared to the corresponding EPA Region 9 PRG Based on this comparison, chemicals were retained as COPCs in surface soil in the residential areas. COPCs included carcinogenic PAHs, dioxins, and metals.

It was not feasible for the risk assessment to quantitatively evaluate exposure to surface soil from 552 locations (exposure units). Therefore, an attempt was made to identify the most highly contaminated samples so that risks and hazards could be estimated for these locations. It was assumed that risks and hazards resulting from exposure to surface soil at these locations would represent the "worst case scenario" for the yards that were sampled during the RI investigation. To this end, the surface soil analytical data were reviewed to determine which locations had the highest numbers and detected concentrations of chemicals. Based on this review, ten sample locations were selected for quantitative evaluation at each of the three sites.

According to EPA policy, the target total individual risk resulting from exposures at a Superfund site may range anywhere between 1 X 10^{-6} and 1 X 10^{-4} (EPA, 1991). Thus, remedial alternatives should be capable of reducing total potential carcinogenic risks to levels within this range for individual receptors. According to EPA guidance, if the hazard index is greater than 1 or the cumulative cancer risk is greater than a range between 1 X 10^{-6} to 1 X 10^{-4} for a land use scenario (i.e., resident), then remedial action is generally warranted. A summary of carcinogenic risks and noncarcinogenic hazards resulting from exposure to each of the thirty sample locations is discussed below.

The risk assessment assumed that one yard represented an exposure unit for a given receptor. Generally one sample was collected from each yard that was evaluated; therefore, the single soil concentration for each COPC was assumed to represent the average concentration across the yard.

EPA standard default exposure assumptions were used to calculate the risks and hazards outlined above. These exposure assumptions are conservative and are likely to overestimate risks. Also, an

TABLE 11.1
SUMMARY OF NONCARCINOGENIC RISKS
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Hazard Index
Current	Child Resident	Forest Street Site Proper	Surface Soil	Incidental Ingestion Dermal Contact	2.8 1.7
		McCoy'sCreek	Surface Water	Incidental Ingestion Dermal Contact	0.0005 0.004
				Total Hazard Index	**4**
Future	Child Resident	Forest Street Site Proper	Surface Soil	Incidental Ingestion Dermal Contact	2.8 1.7
		McCoy's Creek	Surface Water	Incidental Ingestion Dermal Contact	0.0005 0.004
		Tap	Groundwater	Ingestion	5.4
				Total Hazard Index	**10**
Future	Child Resident	Forest Street Site Proper	·Subsurface Soil	Incidental Ingestion Dermal Contact	391 147
		McCoy's Creek	Surface Water	Incidental Ingestion Dermal Contact	0.0005 0.004
		Tap	Groundwater	Ingestion	5.4
				Total Hazard Index	**543**
Current	Adult Worker	FDOT I-10/95 Interchange East	Surface Soil	Incidental Ingestion Dermal Contact	0.003 0.0001
				Total Hazard Index	**0.003**
Future	Adult Worker	FDOT I-10/95 Interchange East	Subsurface Soil	Incidental Ingestion Dermal Contact	0.01 0.0005
				Total Hazard Index	**0.01**
Current	Adult Worker	FDOT I-10/95 Interchange West	Surface Soil	Incidental Ingestion Dermal Contact	0.02 0.0007
				Total Hazard Index	**0.02**
Future	Adult Worker	FDOT I-10/95 Interchange Wast	Subsurface Soil	Incidental Ingestion Dermal Contact	0.3 0.09
				Total Hazard Index	**0.4**
Current	Adult Worker	Area North of McCoy's Creek	Surface Soil	Incidental Ingestion Dermal Contact	0.005 0.0003
				Total Hazard Index	**0.006**
Future	Adult Worker	Area North of McCoy's Creek	Subsurface Soil	Incidental Ingestion Dermal Contact	0.005 0.00025
				Total Hazard Index	**0.005**

ROD Table 30

TABLE 11.1
SUMMARY OF NONCARCINOGENIC RISKS
JACKSONVILLE ASH SITE
5th AND CLEVELAND

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Hazard Index
Current	Child Resident	Emmett Reed Community Center	Surface Soil	Incidental Ingestion Dermal Contact	0.5 0.2
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
				Total Hazard Index	**0.7**
Future	Child Resident	Emmett Reed Community Center	Surface Soil	Incidental Ingestion Dermal Contact	0.5 0.2
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3 1.7 --
				Total Hazard Index	**4**
Future	Child Resident	Emmett Reed Community Center	Subsurface Soil	Incidental Ingestion Dermal Contact	4.9 1.8
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3 1.7 --
				Total Hazard Index	**10**
Current	Child Resident	Emmett Reed Park	Surface Soil	Incidental Ingestion Dermal Contact	33 59
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
				Total Hazard Index	**92**
Future	Child Resident	Emmett Reed Park	Surface Soil	Incidental Ingestion Dermal Contact	33 59
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3 1.7 --
				Total Hazard Index	**95**

ROD Table 31

TABLE 11.1
SUMMARY OF NONCARCINOGENIC RISKS
JACKSONVILLE ASH SITE
5th AND CLEVELAND

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Hazard Index
Future	Child Resident	Emmett Reed Park	Subsurface Soil	Incidental Ingestion Dermal Contact	7 1.7
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3 1.7 --
				Total Hazard Index	**12**
Current	Child Resident	Apartment Complex	Surface Soil	Incidental Ingestion Dermal Contact	0.3 0.03
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
				Total Hazard Index	**0.3**
Future	Child Resident	Apartment Complex	Surface Soil	Incidental Ingestion Dermal Contact	0.3 0.03
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3 1.7 --
				Total Hazard Index	**3**
Future	Child Resident	Apartment Complex	Subsurface Soil	Incidental Ingestion Dermal Contact	1.6 0.7
		Unnamed Creek	Surface Water	Incidental Ingestion Dermal Contact	0.001 0.01
		Tap	Groundwater	Ingestion Inhalation Dermal	1.3 1.7 --
				Total Hazard Index	**5**

ROD Table 31

TABLE 11.1
SUMMARY OF NONCARCINOGENIC RISKS
JACKSONVILLE ASH SITE
LONNIE C. MILLER, SR., PARK

Scenario Timeframe	Receptor Population	Exposure Point	Exposure Medium	Exposure Pathway	Pathway Hazard Index
Current	Child Resident	Lonnie C. Miller, Sr., Park	Surface Soil	Incidental Ingestion Dermal Contact	13.7 4.5
		Unnamed Tributary	Surface Water	Incidental Ingestion Dermal Contact	0.013 0.051
				Total Hazard Index	**18**
Future	Child Resident	Lonnie C. Miller, Sr., Park	Surface Soil	Incidental Ingestion Dermal Contact	13.7 4.5
		Unnamed Tributary	Surface Water	Incidental Ingestion Dermal Contact	0.013 0.051
		Tap	Groundwater	Ingestion Dermal Contact Inhalation	1.9 0.0006 0.06
				Total Hazard Index	**20**
Future	Child Resident	Lonnie C. Miller, Sr., Park	Subsurface Soil	Incidental Ingestion Dermal Contact	24.7 7.3
		Unnamed Tributary	Surface Water	Incidental Ingestion Dermal Contact	0.01 0.03
		Tap	Groundwater	Ingestion Dermal Contact Inhalation	1.9 0.0006 0.06
				Total Hazard Index	**32**

ROD Table 32

exposure unit should be based on the areal extent of a receptor's movements during a single day. Two types of samples were collected during the RI - Tier 1 and Tier 2. Tier 1 samples were discreet samples collected from a single location. Tier 2 samples were composite samples collected from five locations in the yard. If any of the ten samples quantitatively evaluated in the risk assessment were tier 1 samples, then the resulting risks and hazards are based on exposure to a single location in a given yard. Thus the estimated risks/hazards resulting from exposure to these yards may be over- or underestimated.

5.5.4.1.1 Forest Street Incinerator

The maximum detected concentration of the 54 chemicals, that were detected in 220 surface soil samples collected from the residential areas of the Forest Street Incinerator site, was compared to the corresponding EPA Region 9 PRG. Based on this comparison, 16 chemicals were retained as COPCs in surface soil in the residential areas. COPCs included carcinogenic PAHs, dioxins, and metals.

It was not feasible for the risk assessment to quantitatively evaluate exposure to surface soil from 220 locations (exposure units). Therefore, an attempt was made to identify the most highly contaminated samples so that risks and hazards could be estimated for these locations. The surface soil analytical data were reviewed to determine which locations had the highest numbers and detected concentrations of chemicals. Based on this review, ten sample locations were selected for quantitative evaluation. A summary of carcinogenic risks and noncarcinogenic hazards resulting from exposure to each of the ten sample locations is discussed below.

Lead, one of the primary contaminants of concern at the Forest Street Incinerator site, was not included in the quantitative evaluation of risks. There are no toxicity criteria for lead; therefore, lead was evaluated qualitatively by comparing detected concentrations of this metal to EPA's residential soil screening level of 400 mg/kg. Four of the ten surface soil samples that were quantitatively evaluated had detected lead concentrations that exceeded 400 mg/kg. The lead concentrations in these four samples ranged from 660 mg/kg to 2,600 mg/kg. The remaining six samples had detected lead concentrations that ranged from 177 mg/kg to 290 mg/kg.

All ten surface soil samples evaluated as part of this assessment resulted in excess lifetime cancer risks that were within EPA's target risk range of 1 X 10^{-6} to 1 X 10^{-4}. Exposure to two samples, each resulted in an excess lifetime cancer risk of 1 X 10^{-4}, which is at the upper end of the target risk range. Estimated cancer risks for the remaining eight samples ranged from 3 X 10^{-6} to 7 X 10^{-5}.

Two of the ten samples generated hazard indices greater than 1. The hazard indices for these two samples were 6 and 3. The hazard indices for the remaining eight samples ranged from 0.1 to 1.

Table 33 presents the calculated risks and hazards at the ten surface soil samples that were quantitatively evaluated.

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - FOREST STREET INCINERATOR

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs -TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake - Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FSSB035	ARSENIC	0.96	MG/KG	0.96	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-004	1.5E+00	1.6E+00	4 2E-02	8.6E-04	1 6E-06	6.6E-08	4.2E-02	1 7E-06	
FSSB035	BARIUM	48	MG/KG	48	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	8 9E-03	2 5E-03	--	--	1.1E-02	--	
FSSB035	CHROMIUM, TOTAL	4.8	MG/KG	4.8	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6 0E-05	--	--	2 1E-02	2 1E-02	--	--	4 2E-02	--	
FSSB035	COPPER	29	MG/KG	29	MG/KG		1.3E-05	2.6E-07	1.1E-06	4 3E-08	4.0E-02	8.0E-03	--	--	9.4E-03	9 4E-04	--	--	1.0E-02	--	
FSSB035	LEAD	177	MG/KG	177	MG/KG		1.3E-05	2.6E-07	1.1E-06	4 3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB035	MANGANESE	83	MG/KG	83	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7 0E-02	3 5E-03	--	--	1 5E-02	6.2E-03	--	--	2.2E-02	--	
FSSB035	MERCURY																				
FSSB035	ZINC	0.15	MG/KG	0.15	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3 0E-01	6.0E-02	--	--	6 5E-06	6.5E-07	--	--	7 2E-06	--	
FSSB035	BENZO(a)ANTHRACENE	5600	UG/KG	5.6	MG/KG	0.56	1.3E-05	2.6E-06	1.1E-06	4 3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB035	BENZO(a)PYRENE	5100	UG/KG	5.1	MG/KG	5.1	1.3E-05	2.6E-06	1.1E-06	4 3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB035	BENZO(b)FLUORANTHENE	5400	UG/KG	5 4	MG/KG	0.54	1.3E-05	2 6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB035	BENZO(k)FLUORANTHENE	2700	UG/KG	2.7	MG/KG	0.027	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB035	DIBENZ(a,h)ANTHRACENE	1300	UG/KG	1.3	MG/KG	1.3	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB035	INDENO(1,2,3-c,d)PYRENE	2500	UG/KG	2.5	MG/KG	0.25	1.3E-05	2.6E-06	1.1E-06	4 3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB035	TEF CPAHs	--	--	--	MG/KG	7.78	1.3E-05	2.6E-06	1.1E-06	4 3E-07	--	--	7.3E+00	1.26E+01	--	--	6.2E-05	4.2E-05	--	1.0E-04	
																			1.3E-01	1.1E-04	1.1E-04
FSSB081	ANTIMONY	0 82	MG/KG	0 82	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4 0E-04	4.0E-06	--	--	2.7E-02	5.3E-02	--	--	8.0E-02	--	
FSSB081	ARSENIC	7.4	MG/KG	7.4	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	3 0E-04	2.9E-004	1.5E+00	1.6E+00	3.2E-01	6.6E-03	1.2E-05	5 1E-07	3 3E-01	1.3E-05	
FSSB081	BARIUM	210	MG/KG	210	MG/KG		1 3E-05	2.6E-07	1.1E-06	4 3E-08	7.0E-02	4.9E-03	--	--	3.9E-02	1.1E-02	--	--	5.0E-02	--	
FSSB081	CHROMIUM, TOTAL	14	MG/KG	14	MG/KG		1 3E-05	2.6E-07	1.1E-06	4 3E-08	3.0E-03	6 0E-05	--	--	6.1E-02	6.1E-02	--	--	1.2E-01	..	
FSSB081	COPPER	220	MG/KG	220	MG/KG		1.3E-05	2.6E-07	1 1E-06	4.3E-08	4 0E-02	8 0E-03	--	--	7.2E-02	7 2E-03	--	--	7.9E-02	--	
FSSB081	LEAD	220	MG/KG	220	MG/KG		1.3E-05	2.6E-07	1 1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB081	MANGANESE	180	MG/KG	180	MG/KG		1 3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	3.3E-02	1.3E-02	--	--	4.7E-02	--	
FSSB081	MERCURY																				
FSSB081	ZINC	600	MG/KG	600	MG/KG		1 3E-05	2.6E-07	1.1E-06	4.3E-08	3 0E-01	6 0E-02	--	--	2.6E-02	2.6E-03	--	--	2.9E-02	--	
FSSB081	BENZO(a)ANTHRACENE	180	UG/KG	0 18	MG/KG	0.018	1.3E-05	2 6E-06	1 1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB081	BENZO(a)PYRENE	250	UG/KG	0.25	MG/KG	0.25	1.3E-05	2 6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB081	BENZO(b)FLUORANTHENE	220	UG/KG	0.22	MG/KG	0.022	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB081	BENZO(k)FLUORANTHENE	210	UG/KG	0.21	MG/KG	0.0021	1.3E-05	2.6E-06	1.1E-06	4 3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB081	INDENO(1,2,3-c,d)PYRENE	150	UG/KG	0.15	MG/KG	0.015	1.3E-05	2.6E-06	1.1E-06	4 3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB081	TEF CPAHs	--	--	--	MG/KG	0.31	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	2 5E-06	1.7E-06	--	4 2E-06	
																			7.3E-01	1.7E-05	1.7E-05
FSSB116	ANTIMONY	1.5	MG/KG	1.5	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	4 9E-02	9.8E-02	--	--	1.5E-01	--	
FSSB116	ARSENIC	1.9	MG/KG	1.9	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-004	1.5E+00	1.6E+00	8 2E-02	1.7E-03	3.1E-06	1.3E-07	8.4E-02	3.3E-06	
FSSB116	BARIUM	130	MG/KG	130	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.4E-02	6 9E-03	--	--	3 1E-02	--	
FSSB116	CHROMIUM, TOTAL	8.4	MG/KG	8.4	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	3.6E-02	3 6E-02	--	--	7 3E-02	--	
FSSB116	COPPER	250	MG/KG	250	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	8.1E-02	8.1E-03	--	--	8.9E-02	--	
FSSB116	LEAD	290	MG/KG	290	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB116	MANGANESE	140	MG/KG	140	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7 0E-02	3.5E-03	--	--	2.6E-02	1.0E-02	--	--	3.6E-02	--	
FSSB116	MERCURY																				
FSSB116	ZINC	650	MG/KG	650	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	2.8E-02	2 8E-03	--	--	3 1E-02	--	
FSSB116	BENZO(a)ANTHRACENE	600	UG/KG	0 6	MG/KG	0.06	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB116	BENZO(a)PYRENE	540	UG/KG	0.54	MG/KG	0.54	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB116	BENZO(b)FLUORANTHENE	510	UG/KG	0.51	MG/KG	0.051	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB116	BENZO(k)FLUORANTHENE	480	UG/KG	0.48	MG/KG	0.0048	1.3E-05	2.6E-06	1 1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB116	DIBENZ(a,h)ANTHRACENE	110	UG/KG	0.11	MG/KG	0.11	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB116	INDENO(1,2,3-c,d)PYRENE	300	UG/KG	0.3	MG/KG	0.03	1 3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB116	TEF CPAHs	--	--	--	MG/KG	0.80	1.3E-05	2 6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	6.4E-06	4.3E-06	--	1.1E-05	
																			4.9E-01	3.3E-06	3.3E-06

ROD Table 33

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - FOREST STREET INCINERATOR

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs -TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake - Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FSSB125	ANTIMONY	1.9	MG/KG	1.9	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	6.2E-02	1.2E-01	--	--	1.9E-01	--	
FSSB125	ARSENIC	8.1	MG/KG	8.1	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-004	1.5E+00	1.6E+00	3.5E-01	7.3E-03	1.3E-05	5.6E-07	3.6E-01	1.4E-05	
FSSB125	BARIUM	680	MG/KG	680	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.3E-01	3.6E-02	--	--	1.6E-01	--	
FSSB125	CHROMIUM, TOTAL	13	MG/KG	13	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	5.6E-02	5.6E-02	--	--	1.1E-01	--	
FSSB125	COPPER	89	MG/KG	89	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	2.9E-02	2.9E-03	--	--	3.2E-02	--	
FSSB125	LEAD	660	MG/KG	660	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB125	MANGANESE	120	MG/KG	120	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	2.2E-02	8.9E-03	--	--	3.1E-02	--	
FSSB125	MERCURY																				
FSSB125	ZINC	2000	MG/KG	2000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	8.7E-02	8.7E-03	--	--	9.5E-02	--	
FSSB125	BENZO(a)ANTHRACENE	370	UG/KG	0.37	MG/KG	0.037	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB125	BENZO(a)PYRENE	410	UG/KG	0.41	MG/KG	0.41	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB125	BENZO(b)FLUORANTHENE	440	UG/KG	0.44	MG/KG	0.044	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB125	BENZO(k)FLUORANTHENE	380	UG/KG	0.38	MG/KG	0.0038	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB125	TEF CPAHs	--	--	--	MG/KG	0.49	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	4.0E-06	2.7E-06	--	6.7E-06	
FSSB125	TEQ OF 2,3,7,8-TCDD	2.8	NG/KG	0.000028	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	1.5E+05	3.0E+05	--	--	4.6E-06	3.6E-06	--	8.2E-06	
																			9.8E-01	2.9E-05	2.9E-05
FSSB127	ARSENIC	1.3	MG/KG	1.3	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	5.6E-02	1.2E-03	2.1E-06	8.9E-08	5.7E-02	2.2E-06	
FSSB127	BARIUM	150	MG/KG	150	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.8E-02	8.0E-03	--	--	3.6E-02	--	
FSSB127	CHROMIUM, TOTAL	8.9	MG/KG	8.9	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	3.9E-02	3.9E-02	--	--	7.7E-02	--	
FSSB127	COPPER	28	MG/KG	28	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	9.1E-03	9.1E-04	--	--	1.0E-02	--	
FSSB127	LEAD	270	MG/KG	270	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB127	MANGANESE	59	MG/KG	59	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.1E-02	4.4E-03	--	--	1.5E-02	--	
FSSB127																					
FSSB127	ZINC	410	MG/KG	410	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.8E-02	1.8E-03	--	--	2.0E-02	--	
FSSB127	TEQ OF 2,3,7,8-TCDD	3.3	NG/KG	0.000033	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	1.5E+05	3.0E+05	--	--	5.4E-06	4.3E-06	--	9.7E-06	
																			2.2E-01	1.2E-05	1.2E-05
FSSB128	ARSENIC	1.4	MG/KG	1.4	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	6.1E-02	1.3E-03	2.3E-06	9.6E-08	6.2E-02	2.4E-06	
FSSB128	BARIUM	79	MG/KG	79	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.5E-02	4.2E-03	--	--	1.9E-02	--	
FSSB128	CHROMIUM, TOTAL	8.4	MG/KG	8.4	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	3.6E-02	3.6E-02	--	--	7.3E-02	--	
FSSB128	COPPER	14	MG/KG	14	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	4.6E-03	4.6E-04	--	--	5.0E-03	--	
FSSB128	LEAD	240	MG/KG	240	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--							
FSSB128	MANGANESE	31	MG/KG	31	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	5.8E-03	2.3E-03	--	--	8.1E-03	--	
FSSB128																					
FSSB128	ZINC	210	MG/KG	210	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	9.1E-03	9.1E-04	--	--	1.0E-02	--	
FSSB128	BENZO(a)ANTHRACENE	2700	UG/KG	2.7	MG/KG	0.27	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB128	BENZO(a)PYRENE	2700	UG/KG	2.7	MG/KG	2.7	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB128	BENZO(b)FLUORANTHENE	3600	UG/KG	3.6	MG/KG	0.36	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB128	BENZO(k)FLUORANTHENE	2900	UG/KG	2.9	MG/KG	0.029	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB128	DIBENZ(a,h)ANTHRACENE	720	UG/KG	0.72	MG/KG	0.72	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB128	INDENO(1,2,3-c,d)PYRENE	2200	UG/KG	2.2	MG/KG	0.22	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB128	TEF CPAHs	--	--	--	MG/KG	4.30	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	3.5E-05	2.3E-05	--	5.8E-05	
																			1.8E-01	6.0E-05	6.0E-05

ROD Table 33

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - FOREST STREET INCINERATOR

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs -TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake - Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FSSB129	ARSENIC	2.6	MG/KG	2.6	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	1.1E-01	2.3E-03	4.3E-06	1.8E-07	1.1E-01	4.5E-06	
FSSB129	BARIUM	100	MG/KG	100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.9E-02	5.3E-03	--	--	2.4E-02	--	
FSSB129	CHROMIUM, TOTAL	4.5	MG/KG	4.5	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	2.0E-02	2.0E-02	--	--	3.9E-02	--	
FSSB129	COPPER	18	MG/KG	18	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	5.9E-03	5.9E-04	--	--	6.4E-03	--	
FSSB129	LEAD	230	MG/KG	230	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB129	MANGANESE	47	MG/KG	47	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	8.7E-03	3.5E-03	--	--	1.2E-02	--	
FSSB129																					
FSSB129	ZINC	320	MG/KG	320	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.4E-02	1.4E-03	--	--	1.5E-02	--	
FSSB129	BENZO(a)ANTHRACENE	1300	UG/KG	1.3	MG/KG	0.13	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB129	BENZO(a)PYRENE	1400	UG/KG	1.4	MG/KG	1.4	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB129	BENZO(b)FLUORANTHENE	1600	UG/KG	1.6	MG/KG	0.16	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB129	BENZO(k)FLUORANTHENE	1200	UG/KG	1.2	MG/KG	0.012	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB129	DIBENZ(a,h)ANTHRACENE	330	UG/KG	0.33	MG/KG	0.33	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB129	INDENO(1,2,3-c,d)PYRENE	1000	UG/KG	1	MG/KG	0.1	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FSSB129	TEF CPAHs	--	--	--	MG/KG	2.13	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	1.7E-05	1.2E-05	--	2.9E-05	
																			2.1E-01	3.3E-05	3.3E-05
FSSB327	ANTIMONY	5.3	MG/KG	5.3	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	1.7E-01	3.4E-01	--	--	5.2E-01	--	
FSSB327	ARSENIC	65	MG/KG	65	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	2.8E+00	5.8E-02	1.1E-04	4.5E-06	2.9E+00	1.1E-04	
FSSB327	BARIUM	900	MG/KG	900	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.7E-01	4.8E-02	--	--	2.1E-01	--	
FSSB327	CHROMIUM, TOTAL	180	MG/KG	180	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	7.8E-01	7.8E-01	--	--	1.6E+00	--	
FSSB327	COPPER	520	MG/KG	520	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.7E-01	1.7E-02	--	--	1.9E-01	--	
FSSB327	LEAD	1300	MG/KG	1300	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB327	MANGANESE	660	MG/KG	660	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.2E-01	4.9E-02	--	--	1.7E-01	--	
FSSB327																					
FSSB327	ZINC	2300	MG/KG	2300	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.0E-01	1.0E-02	--	--	1.1E-01	--	
																			5.6E+00	1.1E-04	1.1E-04
FSSB360	ANTIMONY	2.4	MG/KG	2.4	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	7.8E-02	1.6E-01	--	--	2.3E-01	--	
FSSB360	ARSENIC	39	MG/KG	39	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	1.7E+00	3.5E-02	6.4E-05	2.7E-06	1.7E+00	6.7E-05	
FSSB360	BARIUM	770	MG/KG	770	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.4E-01	4.1E-02	--	--	1.8E-01	--	
FSSB360	CHROMIUM, TOTAL	40	MG/KG	40	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	1.7E-01	1.7E-01	--	--	3.5E-01	--	
FSSB360	COPPER	310	MG/KG	310	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.0E-01	1.0E-02	--	--	1.1E-01	--	
FSSB360	LEAD	1600	MG/KG	1600	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FSSB360	MANGANESE	240	MG/KG	240	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	4.5E-02	1.8E-02	--	--	6.2E-02	--	
FSSB360																					
FSSB360	ZINC	2500	MG/KG	2500	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.1E-01	1.1E-02	--	--	1.2E-01	--	
																			2.8E+00	6.7E-05	6.7E-05
FSSB378	ANTIMONY	2.2	MG/KG	2.2	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	7.2E-02	1.4E-01	--	--	2.1E-01	--	
FSSB378	ARSENIC	8.5	MG/KG	8.5	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	3.7E-01	7.6E-03	1.4E-05	5.8E-07	3.8E-01	1.5E-05	
FSSB378	BARIUM	360	MG/KG	360	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	6.7E-02	1.9E-02	--	--	8.6E-02	--	
FSSB378	CHROMIUM, TOTAL	23	MG/KG	23	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	1.0E-01	1.0E-01	--	--	2.0E-01	--	
FSSB378	COPPER	54	MG/KG	54	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.8E-02	1.8E-03	--	--	1.9E-02	--	
FSSB378	LEAD	2600	MG/KG	2600	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--							
FSSB378	MANGANESE	250	MG/KG	250	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	4.6E-02	1.9E-02	--	--	6.5E-02	--	
FSSB378																					
FSSB378	ZINC	1100	MG/KG	1100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	4.8E-02	4.8E-03	--	--	5.2E-02	--	
																			1.0E+00	1.5E-05	1.5E-05

5.5.4.1.2 5th & Cleveland Incinerator

The maximum detected concentration of the 71 chemicals, that were detected in the 226 surface soil samples collected from the residential areas of the 5th & Cleveland Incinerator site in surface soil, was compared to the corresponding EPA Region 9 PRG. Based on this comparison, 25 chemicals were retained as COPCs in surface soil in the residential areas. COPCs included carcinogenic PAHs, dioxins, pesticides, and metals.

It was not feasible for the risk assessment to quantitatively evaluate exposure to surface soil from 226 locations (exposure units). Therefore, an attempt was made to identify the most highly contaminated samples so that risks and hazards could be estimated for these locations. The surface soil analytical data were reviewed to determine which locations had the highest numbers, concentrations, and toxicities (potencies) of chemicals. Based on this review, ten sample locations were selected for quantitative evaluation. A summary of carcinogenic risks and noncarcinogenic hazards resulting from exposure to each of the ten sample locations is discussed below.

Lead, one of the primary contaminants of concern at the 5th & Cleveland Incinerator site, was not included in the quantitative evaluation of risks. There are no toxicity criteria for lead; therefore, lead was evaluated qualitatively by comparing detected concentrations of this metal to EPA's residential soil screening level of 400 mg/kg. Six of the ten surface soil samples that were quantitatively evaluated had detected lead concentrations that exceeded 400 mg/kg. The lead concentrations in these six samples ranged from 470 mg/kg to 11,000 mg/kg. The remaining four samples had detected lead concentrations that were below 400 mg/kg. These concentrations ranged from 160 mg/kg to 369 mg/kg.

Nine of the ten surface soil samples evaluated as part of this assessment resulted in excess lifetime cancer risks that were within EPA's target risk range of 1 X 10^{-6} to 1 X 10^{-4}. Exposure to one sample, resulted in an excess lifetime cancer risk (3 X 10^{-4}) that was above the acceptable range. Exposure to two samples, each resulted in an excess lifetime cancer risk of 1 X 10^{-4}, which is at the upper end of the target risk range. Estimated cancer risks for the remaining seven samples ranged from 1 X 10^{-5} to 7 X 10^{-5}.

Six of the ten samples generated hazard indices greater than 1. The hazard indices for these five samples ranged from 3 to 12. The hazard indices for the remaining four samples ranged from 0.3 to 0.8.

Table 34 presents the calculated risks and hazards at the ten surface soil samples that were quantitatively evaluated.

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH - 5TH AND CLEVELAND

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake -Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FCSB136	ALUMINUM	3100	MG/KG	3100	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	4.0E-02	8.1E-03	--	--	4.8E-02	--	
FCSB136	ANTIMONY	9.2	MG/KG	9.2	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4 0E-04	4.0E-06	--	--	3.0E-01	6.0E-01	--	--	9.0E-01	--	
FCSB136	ARSENIC	20	MG/KG	20	MG/KG		1 3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-004	1.5E+00	1.6E+00	8.7E-01	1.8E-02	3.3E-05	1.4E-06	8.8E-01	3 4E-05	
FCSB136	BARIUM	650	MG/KG	650	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.2E-01	3.4E-02	--	--	1.6E-01	--	
FCSB136	CHROMIUM, TOTAL	38	MG/KG	38	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	1.6E-01	1.6E-01	--	--	3.3E-01	--	
FCSB136	COPPER	370	MG/KG	370	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	8.0E-03	--	--	4.8E-03	1.2E-02	--	--	1.7E-02	--	
FCSB136	IRON	64000	MG/KG	64000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	2.8E+00	3.7E-01	--	--	3.1E+00	--	
FCSB136	LEAD	5820	MG/KG	5820	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB136	MANGANESE	860	MG/KG	860	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.6E-01	6.4E-02	--	--	2.2E-01	--	
FCSB136	ZINC	2500	MG/KG	2500	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3 0E-01	6 0E-02	--	--	1.1E-01	1.1E-02	--	--	1.2E-01	--	
FCSB136	Heptachlor Epoxide	1.7	UG/KG	0 0017	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	--	--	--	--	--	--	--	--	
FCSB136	BENZO(a)ANTHRACENE	5300	UG/KG	5.3	MG/KG	0.53	1.3E-05	2.6E-06	1 1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB136	BENZO(a)PYRENE	4300	UG/KG	4.3	MG/KG	4.3	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB136	BENZO(b)FLUORANTHENE	4000	UG/KG	4	MG/KG	0.4	1.3E-05	2.6E-06	1.1E-06	4 3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB136	BENZO(k)FLUORANTHENE	4100	UG/KG	4.1	MG/KG	0.041	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB136	DIBENZ(a,h)ANTHRACENE	930	UG/KG	0.93	MG/KG	0.93	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB136	INDENO(1,2,3-c,d)PYRENE	2700	UG/KG	2.7	MG/KG	0.27	1.3E-05	2.6E-06	1 1E-06	4 3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB136	TEF CPAHs	--	--	--	MG/KG	6.47	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	5.2E-05	3.5E-05	--	8.7E-05	
																			5.8E+00	1.2E-04	1.2E-04
FCSB073	ALUMINUM	740	MG/KG	740	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	9.6E-03	1.9E-03	--	--	1.2E-02	--	
FCSB073	ANTIMONY	1.7	MG/KG	1.7	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4 0E-04	4 0E-06	--	--	5.5E-02	1.1E-01	--	--	1.7E-01	--	
FCSB073	ARSENIC	1.6	MG/KG	1.6	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3 0E-04	2.9E-004	1.5E+00	1.6E+00	6 9E-02	1.4E-03	2.6E-06	1.1E-07	7.1E-02	2.8E-06	
FCSB073	BARIUM	86	MG/KG	86	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.6E-02	4.6E-03	--	--	2.1E-02	--	
FCSB073	CHROMIUM, TOTAl	4.8	MG/KG	4.8	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	2.1E-02	2.1E-02	--	--	4.2E-02	--	
FCSB073	COPPER	32	MG/KG	32	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.0E-02	1.0E-03	--	--	1.1E-02	--	
FCSB073	IRON	3900	MG/KG	3900	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	1.7E-01	2.3E-02	--	--	1.9E-01	--	
FCSB073	LEAD	369	MG/KG	369	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB073	MANGANESE	33	MG/KG	33	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	6.1E-03	2.5E-03	--	--	8.6E-03	--	
FCSB073	ZINC	280	MG/KG	280	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.2E-02	1.2E-03	--	--	1.3E-02	--	
FCSB073	ALPHA-CHLORDANE	2300	UG/KG	2.3	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	3.50E-01	7.00E+01	6 0E-02	2.4E-02	8.9E-07	6.9E-05	8.4E-02	7.0E-05	
FCSB073	GAMMA-CHLORDANE	5300	UG/KG	5.3	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	3.50E-01	7.00E+01	1.4E-01	5.5E-02	2.0E-06	1.6E-04	1.9E-01	1 6E-04	
FCSB073	HEPTACHLOR	1800	UG/KG	1.8	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	4.5E+00	9.0E+00	4.7E-02	1.9E-02	8.9E-06	7.0E-06	6.6E-02	1.6E-05	
FCSB073	HEPTACHLOR EPOXIDE	1400	UG/KG	1.4	MG/KG		1.3E-05	2.6E-06	1.1E-06	4 3E-07	1.3E-05	6.5E-06	9.10E+00	1.82E+01	1.4E+00	5.6E-01	1.4E-05	1.1E-05	2.0E+00	2.5E-05	
FCSB073	BENZO(a)ANTHRACENE	46	UG/KG	0.046	MG/KG	0.0046	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB073	BENZO(a)PYRENE	82	UG/KG	0.082	MG/KG	0.082	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB073	BENZO(b)FLUORANTHENE	51	UG/KG	0.051	MG/KG	0.0051	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB073	BENZO(k)FLUORANTHENE	81	UG/KG	0.081	MG/KG	0.00081	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB073	TEF CPAHs	--	--	--	MG/KG	0.09	1.3E-05	2.6E-06	1.1E-06	4 3E-07	--	--	7.3E+00	1.26E+01	--	--	7.4E-07	5.0E-07	--	1 2E-06	
																			2.8E+00	2.8E-04	2.8E-04

ROD Table 34

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH - 5TH AND CLEVELAND

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake -Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FCSB064	ALUMINUM	11000	MG/KG	11000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	1.4E-01	2.9E-02	--	--	1.7E-01	--	
FCSB064	ANTIMONY	15	MG/KG	15	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	4.9E-01	9.8E-01	--	--	1.5E+00	--	
FCSB064	ARSENIC	15	MG/KG	15	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	6.5E-01	1.3E-02	2.5E-05	1.0E-06	6.6E-01	2.6E-05	
FCSB064	BARIUM	865	MG/KG	865	MG/KG		1.3E-05	2.6E-07	1 1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.6E-01	4.6E-02	--	--	2.1E-01	--	
FCSB064	CHROMIUM, TOT[illegible]	56	MG/KG	56	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	2.4E-01	2 4E-01	--	--	4.9E-01	--	
FCSB064	COPPER	735	MG/KG	735	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	2.4E-01	2.4E-02	--	--	2.6E-01	--	
FCSB064	IRON	37500	MG/KG	37500	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4 5E-02	--	--	1.6E+00	2.2E-01	--	--	1.8E+00	--	
FCSB064	LEAD	6190	MG/KG	6190	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB064	MANGANESE	330	MG/KG	330	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	6.1E-02	2.5E-02	--	--	8.6E-02	--	
FCSB064	ZINC	3600	MG/KG	3600	MG/KG		1.3E-05	2.6E-07	1.1E-06	4 3E-08	3.0E-01	6.0E-02	--	--	1.6E-01	1.6E-02	--	--	1.7E-01	--	
																			5.4E+00	2.6E-05	2.6E-05
FCSB184	ALUMINUM	1400	MG/KG	1400	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	1 8E-02	3.6E-03	--	--	2.2E-02	--	
FCSB184	ARSENIC	0.75	MG/KG	0.75	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	3.3E-02	6.7E-04	1.2E-06	5.2E-08	3.3E-02	1.3E-06	
FCSB184	BARIUM	180	MG/KG	180	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	3 3E-02	9.6E-03	--	--	4.3E-02	--	
FCSB184	CHROMIUM, TOTAL	7.8	MG/KG	7.8	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	3.4E-02	3.4E-02	--	--	6.8E-02	--	
FCSB184	COPPER	16	MG/KG	16	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	5.2E-03	5.2E-04	--	--	5.7E-03	--	
FCSB184	IRON	2900	MG/KG	2900	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	1.3E-01	1.7E-02	--	--	1.4E-01	--	
FCSB184	LEAD	266	MG/KG	266	MG/KG		1 3E-05	2.6E-07	1.1E-06	4 3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB184	MANGANESE	31	MG/KG	31	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	5 8E-03	2.3E-03	--	--	8.1E-03	--	
FCSB184	ZINC	280	MG/KG	280	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.2E-02	1.2E-03	--	--	1.3E-02	--	
FCSB184	TEQ OF 2,3,7,8-TCDD	29.6	NG/KG	0.0000296	MG/KG		1.3E-05	2 6E-06	1.1E-06	4.3E-07	--	--	1.5E+05	3 0E+05	--	--	4.9E-06	3.8E-06	--	8.7E-06	
																			3.4E-01	1.0E-05	1.0E-05

ROD Table 34

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH - 5TH AND CLEVELAND

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake -Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FCSB185	ALUMINUM	1500	MG/KG	1500	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	2.0E-02	3.9E-03	--	--	2.3E-02	--	
FCSB185	ANTIMONY	0.55	MG/KG	0.55	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	1.8E-02	3.6E-02	--	--	5.4E-02	--	
FCSB185	ARSENIC	1.5	MG/KG	1.5	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	6.5E-02	1.3E-03	2.5E-06	1.0E-07	6.6E-02	2.6E-06	
FCSB185	BARIUM	100	MG/KG	100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	1.9E-02	5.3E-03	--	--	2.4E-02	--	
FCSB185	CHROMIUM, TOTAL	6.2	MG/KG	6 2	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	2.7E-02	2.7E-02	--	--	5.4E-02	--	
FCSB185	COPPER	23	MG/KG	23	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	7.5E-03	7.5E-04	--	--	8 2E-03	--	
FCSB185	IRON	3100	MG/KG	3100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	1.3E-01	1.8E-02	--	--	1.5E-01	--	
FCSB185	LEAD	160	MG/KG	160	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB185	MANGANESE	47	MG/KG	47	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3 5E-03	--	--	8.7E-03	3.5E-03	--	--	1.2E-02	--	
FCSB185	ZINC	47	MG/KG	47	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6 0E-02	--	--	2.0E-03	2.0E-04	--	--	2.2E-03	--	
FCSB185	BENZO(a)ANTHRACENE	490	UG/KG	0.49	MG/KG	0.049	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB185	BENZO(a)PYRENE	600	UG/KG	0.6	MG/KG	0.6	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB185	BENZO(b)FLUORANTHENE	690	UG/KG	0.69	MG/KG	0.069	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB185	BENZO(k)FLUORANTHENE	540	UG/KG	0.54	MG/KG	0.0054	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB185	DIBENZ(a,h)ANTHRACENE	100	UG/KG	0.1	MG/KG	0.1	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB185	INDENO(1,2,3-c,d)PYRENE	410	UG/KG	0.41	MG/KG	0.041	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB185	TEF CPAHs	--	--	--	MG/KG	0.86	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	6.9E-06	4.7E-06	--	1.2E-05	
FCSB185	TEQ OF 2,3,7,8-TCDD	9.0	NG/KG	0.000009	MG/KG		1 3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	1.5E+05	3.0E+05	--	--	1.5E-06	1 2E-06	--	2.6E-06	
																			4.0E-01	1.7E-05	1.7E-05
FCSB308	ALUMINUM	1600	MG/KG	1600	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1 0E+00	1.0E-01	--	--	2.1E-02	4.2E-03	--	--	2.5E-02	--	
FCSB308	ANTIMONY	0.87	MG/KG	0.87	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	2.8E-02	5.7E-02	--	--	8.5E-02	--	
FCSB308	ARSENIC	2.3	MG/KG	2.3	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	1.0E-01	2.1E-03	3.8E-06	1.6E-07	1.0E-01	4.0E-06	
FCSB308	BARIUM	140	MG/KG	140	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.6E-02	7.4E-03	--	--	3.3E-02	--	
FCSB308	CHROMIUM, TOTAL	9.7	MG/KG	9.7	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3 0E-03	6.0E-05	--	--	4.2E-02	4.2E-02	--	--	8.4E-02	--	
FCSB308	COPPER	28	MG/KG	28	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8 0E-03	--	--	9.1E-03	9.1E-04	--	--	1.0E-02	--	
FCSB308	IRON	8200	MG/KG	8200	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	3.6E-01	4.7E-02	--	--	4.0E-01	--	
FCSB308	LEAD	290	MG/KG	290	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--							
FCSB308	MANGANESE	140	MG/KG	140	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	2.6E-02	1.0E-02	--	--	3.6E-02	--	
FCSB308	ZINC	680	MG/KG	680	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	2.9E-02	2 9E-03	--	--	3.2E-02	--	
FCSB308	CRESOLS, M&P	73	UG/KG	0.073	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	--	--	--	--	--	--	--	--	
FCSB308	BENZO(a)ANTHRACENE	7000	UG/KG	7	MG/KG	0.7	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB308	BENZO(a)PYRENE	6000	UG/KG	6	MG/KG	6	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB308	BENZO(b)FLUORANTHENE	6000	UG/KG	6	MG/KG	0.6	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB308	BENZO(k)FLUORANTHENE	4500	UG/KG	4.5	MG/KG	0.045	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB308	DIBENZ(a,h)ANTHRACENE	1200	UG/KG	1.2	MG/KG	1.2	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB308	INDENO(1,2,3-c,d)PYRENE	3800	UG/KG	3.8	MG/KG	0.38	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB308	TEF CPAHs	--	--	--	MG/KG	8.93	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	7.2E-05	4.8E-05	--	1.2E-04	
																			8.1E-01	1.2E-04	1.2E-04

ROD Table 34

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH - 5TH AND CLEVELAND

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake -Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FCSB313	ALUMINUM	2000	MG/KG	2000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	2 6E-02	5.2E-03	--	--	3.1E-02	--	
FCSB313	ANTIMONY	0.84	MG/KG	0.84	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	2.7E-02	5.5E-02	--	--	8.2E-02	--	
FCSB313	ARSENIC	2	MG/KG	2	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	8.7E-02	1.8E-03	3.3E-06	1.4E-07	8.8E-02	3.4E-06	
FCSB313	BARIUM	140	MG/KG	140	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.6E-02	7.4E-03	--	--	3.3E-02	--	
FCSB313	CHROMIUM, TOTAL	18	MG/KG	18	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	7.8E-02	7.8E-02	--	--	1.6E-01	--	
FCSB313	COPPER	68	MG/KG	68	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8 0E-03	--	--	2.2E-02	2.2E-03	--	--	2.4E-02	--	
FCSB313	IRON	6100	MG/KG	6100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	2.6E-01	3.5E-02	--	--	3.0E-01	--	
FCSB313	LEAD	470	MG/KG	470	MG/KG		1.3E-05	2.6E-07	1.1E-06	4 3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB313	MANGANESE	82	MG/KG	82	MG/KG		1.3E-05	2 6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.5E-02	6.1E-03	--	--	2.1E-02	--	
FCSB313	ZINC	520	MG/KG	520	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3 0E-01	6.0E-02	--	--	2.3E-02	2.3E-03	--	--	2.5E-02	--	
FCSB313	ALPHA-CHLORDANE	5.9	UG/KG	0.0059	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	3.5E-01	7.0E+01	1.5E-04	6.1E-05	2.3E-09	1.8E-07	2.1E-04	1.8E-07	
FCSB313	DIELDRIN	4	UG/KG	0.004	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-05	2.5E-05	1.6E+01	3.2E+01	1.0E-03	4.2E-04	7.0E-08	5.5E-08	1.5E-03	1.3E-07	
FCSB313	GAMMA-CHLORDANE	5.8	UG/KG	0.0058	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	3.5E-01	7.0E+01	1.5E-04	6.0E-05	2.2E-09	1.7E-07	2.1E-04	1.8E-07	
FCSB313	HEPTACHLOR	0.24	UG/KG	0.00024	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	4.5E+00	9.0E+00	6.2E-06	2.5E-06	1.2E-09	9.3E-10	8.7E-06	2.1E-09	
FCSB313	HEPTACHLOR EPOXIDE	0.75	UG/KG	0.00075	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	1.3E-05	6.5E-06	9.1E+00	1.82E+01	7.5E-04	3.0E-04	7.5E-09	5.9E-09	1.1E-03	1.3E-08	
FCSB313	BENZO(a)ANTHRACENE	1700	UG/KG	1.7	MG/KG	0.17	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB313	BENZO(a)PYRENE	2100	UG/KG	2.1	MG/KG	2.1	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB313	BENZO(b)FLUORANTHENE	1300	UG/KG	1.3	MG/KG	0.13	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB313	BENZO(k)FLUORANTHENE	1600	UG/KG	1.6	MG/KG	0.016	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB313	INDENO(1,2,3-c,d)PYRENE	2200	UG/KG	2.2	MG/KG	0.22	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB313	TEF CPAHs	--	--	--	MG/KG	2.64	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	2.1E-05	1.4E-05	--	3.5E-05	
																			7.6E-01	3.9E-05	3.9E-05
FCSB370	ALUMINUM	4800	MG/KG	4800	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	6.2E-02	1.2E-02	--	--	7.5E-02	--	
FCSB370	ANTIMONY	46	MG/KG	46	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	1.5E+00	3 0E+00	--	--	4.5E+00	--	
FCSB370	ARSENIC	31	MG/KG	31	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	1.3E+00	2.8E-02	5.1E-05	2.1E-06	1.4E+00	5.3E-05	
FCSB370	BARIUM	1100	MG/KG	1100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.0E-01	5.8E-02	--	--	2.6E-01	--	
FCSB370	CHROMIUM, TOTAL	42	MG/KG	42	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	1.8E-01	1.8E-01	--	--	3.6E-01	--	
FCSB370	COPPER	580	MG/KG	580	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.9E-01	1.9E-02	--	--	2.1E-01	--	
FCSB370	IRON	76000	MG/KG	76000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	3.3E+00	4.4E-01	--	--	3.7E+00	--	
FCSB370	LEAD	4000	MG/KG	4000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB370	MANGANESE	830	MG/KG	830	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.5E-01	6.2E-02	--	--	2.2E-01	--	
FCSB370	ZINC	3300	MG/KG	3300	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.4E-01	1.4E-02	--	--	1.6E-01	--	
																			1.1E+01	5.3E-05	5.3E-05

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH - 5TH AND CLEVELAND

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion - Cancer	Adult + Child- Intake -Dermal - Cancer	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
FCSB371	ALUMINUM	1900	MG/KG	1900	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	2.5E-02	4.9E-03	--	--	3.0E-02	--	
FCSB371	ANTIMONY	100	MG/KG	100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	3.3E+00	6.5E+00	--	--	9.8E+00	--	
FCSB371	ARSENIC	32	MG/KG	32	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	1.4E+00	2.9E-02	5.3E-05	2.2E-06	1.4E+00	5.5E-05	
FCSB371	BARIUM	200	MG/KG	200	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	3.7E-02	1.1E-02	--	--	4.8E-02	--	
FCSB371	CHROMIUM, TOTAL	12	MG/KG	12	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	5.2E-02	5.2E-02	--	--	1.0E-01	--	
FCSB371	COPPER	68	MG/KG	68	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	2.2E-02	2.2E-03	--	--	2.4E-02	--	
FCSB371	IRON	15000	MG/KG	15000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	6.5E-01	8.7E-02	--	--	7.4E-01	--	
FCSB371	LEAD	11000	MG/KG	11000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
FCSB371	MANGANESE	110	MG/KG	110	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	2.0E-02	8.2E-03	--	--	2.9E-02	--	
FCSB371	ZINC	660	MG/KG	660	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	2.9E-02	2.9E-03	--	--	3.1E-02	--	
FCSB371	BENZO(a)ANTHRACENE	800	UG/KG	0.8	MG/KG	0.08	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB371	BENZO(a)PYRENE	720	UG/KG	0.72	MG/KG	0.72	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB371	BENZO(b)FLUORANTHENE	830	UG/KG	0.83	MG/KG	0.083	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB371	BENZO(k)FLUORANTHENE	690	UG/KG	0.69	MG/KG	0.0069	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB371	DIBENZ(a,h)ANTHRACENE	130	UG/KG	0.13	MG/KG	0.13	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB371	INDENO(1,2,3-c,d)PYRENE	450	UG/KG	0.45	MG/KG	0.045	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB371	TEF CPAHs	--	--	--	MG/KG	1.06	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	8.6E-06	5.8E-06	--	1.4E-05	
																			1.2E+01	6.9E-05	6.9E-05
FCSB375	ALUMINUM	1700	MG/KG	1700	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.0E+00	1.0E-01	--	--	2.2E-02	4.4E-03	--	--	2.7E-02	--	
FCSB375	ANTIMONY	12	MG/KG	12	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	3.9E-01	7.8E-01	--	--	1.2E+00	--	
FCSB375	ARSENIC	17	MG/KG	17	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	7.4E-01	1.5E-02	2.8E-05	1.2E-06	7.5E-01	2.9E-05	
FCSB375	BARIUM	1500	MG/KG	1500	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.8E-01	8.0E-02	--	--	3.6E-01	--	
FCSB375	CHROMIUM, TOTAL	61	MG/KG	61	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	2.6E-01	2.6E-01	--	--	5.3E-01	--	
FCSB375	COPPER	170	MG/KG	170	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	5.5E-02	5.5E-03	--	--	6.1E-02	--	
FCSB375	IRON	31000	MG/KG	31000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	1.3E+00	1.8E-01	--	--	1.5E+00	--	
FCSB375	LEAD	3800	MG/KG	3800	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--							
FCSB375	MANGANESE	310	MG/KG	310	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	5.8E-02	2.3E-02	--	--	8.1E-02	--	
FCSB375	ZINC	3800	MG/KG	3800	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	1.6E-01	1.6E-02	--	--	1.8E-01	--	
FCSB375	ALPHA-CHLORDANE	27	UG/KG	0.027	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	3.5E-01	7.0E+01	7.0E-04	2.8E-04	1.0E-08	8.1E-07	9.8E-04	8.2E-07	
FCSB375	DIELDRIN	6.8	UG/KG	0.0068	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-05	2.5E-05	1.6E+01	3.2E+01	1.8E-03	7.1E-04	1.2E-07	9.4E-08	2.5E-03	2.1E-07	
FCSB375	GAMMA-CHLORDANE	22	UG/KG	0.022	MG/KG		1.3E-05	2.6E-06	1.1E-06	4.3E-07	5.0E-04	2.5E-04	3.5E-01	7.0E+01	5.7E-04	2.3E-04	8.5E-09	6.6E-07	8.0E-04	6.7E-07	
FCSB375	BENZO(a)ANTHRACENE	1200	UG/KG	1.2	MG/KG	0.12	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB375	BENZO(a)PYRENE	1000	UG/KG	1	MG/KG	1	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB375	BENZO(b)FLUORANTHENE	1300	UG/KG	1.3	MG/KG	0.13	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB375	BENZO(k)FLUORANTHENE	1100	UG/KG	1.1	MG/KG	0.011	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB375	DIBENZ(a,h)ANTHRACENE	360	UG/KG	0.36	MG/KG	0.36	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB375	INDENO(1,2,3-c,d)PYRENE	1100	UG/KG	1.1	MG/KG	0.11	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
FCSB375	TEF CPAHs	--	--	--	MG/KG	1.73	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	1.4E-05	9.4E-06	--	2.3E-05	
																			4.7E+00	5.4E-05	5.4E-05

ROD Table 34

5.5.4.1.3 Lonnie C. Miller, Sr. Park

The maximum detected concentration of the 57 chemicals that were detected, in the 106 surface soil samples collected from the residential areas of the Lonnie C. Miller, Sr., Park site in surface soil, was compared to the corresponding EPA Region 9 PRO. Based on this comparison, 20 chemicals were retained as COPCs in surface soil in the residential areas. COPCs included carcinogenic PAHs, dioxins, and metals.

It was not feasible for the risk assessment to quantitatively evaluate exposure to surface soil from 106 locations (exposure units). Therefore, an attempt was made to identify the most highly contaminated samples so that risks and hazards could be estimated for these locations. The surface soil analytical data were reviewed to determine which locations had the highest numbers and detected concentrations of chemicals. Based on this review, ten sample locations were selected for quantitative evaluation The samples were collected from various yards and blocks of land around the site. A summary of carcinogenic risks and noncarcinogenic hazards resulting from exposure to each of the ten sample locations is discussed below.

Lead, one of the primary contaminants of concern at the Lonnie C. Miller, Sr., Park site, was not included in the quantitative evaluation of risks. There are no toxicity criteria for lead; therefore, lead was evaluated qualitatively by comparing detected concentrations of this metal to EPA's residential soil screening level of 400 mg/kg. Six of the ten surface soil samples that were quantitatively evaluated had detected lead concentrations that exceeded 400 mg/kg. The lead concentrations in these six samples ranged from 480 mg/kg to 990 mg/kg. The remaining four samples had detected lead concentrations that were below 400 mg/kg. These concentrations ranged from 35.9 mg/kg to 320 mg/kg.

With the exception of two samples, all surface soil samples evaluated as part of this quantitative assessment resulted in excess lifetime cancer risks that were within EPA's target risk range of 1 X 10^{-6} to 1 X 10^{-4}. Exposure to one sample resulted in an excess lifetime cancer risk of only 8 X 10^{-7}. Exposure to one sample resulted in an excess lifetime cancer risk of 3 X 10^{-4}, which is slightly above the upper end of the target risk range. Estimated cancer risks for the remaining eight samples ranged from 2 X 10^{-6} to 9 X 10^{-5}.

Six of the ten samples generated hazard indices greater than 1. The hazard indices for these samples ranged from 3 to 13. The hazard indices for the remaining four samples ranged from 0.03 to 1.

Table 35 presents the calculated risks and hazards at the ten surface soil samples that were quantitatively evaluated.

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - LONNIE C. MILLER

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion -	Adult + Child- Intake - Dermal -	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
LMSB094	ARSENIC	0.74	MG/KG	0.74	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-004	1.5E+00	1.6E+00	3.2E-02	6.6E-04	1.2E-06	5.1E-08	3.3E-02	1.3E-06	
LMSB094	**BENZO(a)ANTHRACENE**	42	UG/KG	0.042	MG/KG	**0.004**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB094	**BENZO(a)PYRENE**	36	UG/KG	0.036	MG/KG	**0.036**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB094	**BENZO(b)FLUORANTHENE**	47	UG/KG	0.047	MG/KG	**0.005**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB094	**BENZO(k)FLUORANTHENE**	34	UG/KG	0.034	MG/KG	**3E-04**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB094	**CHRYSENE**	45	UG/KG	0.045	MG/KG	**5E-04**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB094	TEF CPAHs	--	--	--	MG/KG	**0.05**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	4.0E-07	2.7E-07	--	6.7E-07	
																			3.3E-02	2.0E-06	2.0E-06
LMSB321	**BENZO(a)ANTHRACENE**	45	UG/KG	0.045	MG/KG	**0.005**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB321	**BENZO(a)PYRENE**	50	UG/KG	0.05	MG/KG	**0.05**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB321	**BENZO(b)FLUORANTHENE**	49	UG/KG	0.049	MG/KG	**0.005**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB321	**BENZO(k)FLUORANTHENE**	49	UG/KG	0.049	MG/KG	**5E-04**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB321	**CHRYSENE**	52	UG/KG	0.052	MG/KG	**5E-04**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB321	TEF CPAHs	--	--	--	MG/KG	**0.06**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	4.9E-07	3.3E-07	--	8.1E-07	
																			0.0E+00	8.1E-07	8.1E-07

ROD Table 35

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - LONNIE C. MILLER

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion -	Adult + Child- Intake - Dermal -	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
LMSB324	ARSENIC	0.64	MG/KG	0.64	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-004	1.5E+00	1.6E+00	2.8E-02	5.7E-04	1.1E-06	4.4E-08	2.8E-02	1.1E-06	
LMSB324	IRON	2500	MG/KG	2500	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	1.1E-01	1.4E-02	--	--	1.2E-01	--	
LMSB324	**BENZO(a)ANTHRACENE**	85.5	UG/KG	0.0855	MG/KG	**0.009**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB324	**BENZO(a)PYRENE**	140	UG/KG	0.14	MG/KG	**0.14**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB324	**BENZO(b)FLUORANTHENE**	140	UG/KG	0.14	MG/KG	**0.014**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB324	**BENZO(k)FLUORANTHENE**	120	UG/KG	0.12	MG/KG	**0.001**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB324	***INDENO(1,2,3-c,d)PYRENE***	*77*	*UG/KG*	*0.077*	*MG/KG*	***0.008***	*1.3E-05*	*2.6E-06*	*1.1E-06*	*4.3E-07*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	
LMSB324	**CHRYSENE**	105	UG/KG	0.105	MG/KG	**1E-04**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB324	TEF CPAHs	--	--	--	MG/KG	**0.17**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	1.4E-06	9.3E-07	--	2.3E-06	
																			1.5E-01	3.4E-06	3.4E-06
LMSB339	ALUMINUM	9100	MG/KG	9100	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.00E+00	1.00E-01	--	--	1.2E-01	2.4E-02	--	--	1.4E-01	--	
LMSB339	ANTIMONY	6.3	MG/KG	6.3	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	2.0E-01	4.1E-01	--	--	6.1E-01	--	
LMSB339	ARSENIC	22	MG/KG	22	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-004	1.5E+00	1.6E+00	9.5E-01	2.0E-02	3.6E-05	1.5E-06	9.7E-01	3.8E-05	
LMSB339	BARIUM	490	MG/KG	490	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	9.1E-02	2.6E-02	--	--	1.2E-01	--	
LMSB339	CADMIUM	23	MG/KG	23	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	5.0E-04	2.5E-05	--	--	6.0E-01	2.4E-01	--	--	8.4E-01	--	
LMSB339	CHROMIUM, TOTAL	110	MG/KG	110	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	4.8E-01	4.8E-01	--	--	9.5E-01	--	
LMSB339	COPPER	430	MG/KG	430	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.4E-01	1.4E-02	--	--	1.5E-01	--	
LMSB339	IRON	69000	MG/KG	69000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	3.0E+00	4.0E-01	--	--	3.4E+00	--	
LMSB339	LEAD	900	MG/KG	900	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
LMSB339	MANGANESE	590	MG/KG	590	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.1E-01	4.4E-02	--	--	1.5E-01	--	
LMSB339	ZINC	16000	MG/KG	16000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	6.0E-02	--	--	6.9E-01	6.9E-02	--	--	7.6E-01	--	
																			8.0E+00	3.8E-05	3.8E-05

ROD Table 35

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - LONNIE C. MILLER

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion -	Adult + Child- Intake - Dermal -	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
LMSB340	ANTIMONY	15	MG/KG	15	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	4.9E-01	9.8E-01	--	--	1.5E+00	--	
LMSB340	ARSENIC	52	MG/KG	52	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	2.3E+00	4.7E-02	8.6E-05	3.6E-06	2.3E+00	8.9E-05	
LMSB340	BARIUM	230	MG/KG	230	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	4.3E-02	1.2E-02	--	--	5.5E-02	--	
LMSB340	CHROMIUM, TOTAL	61	MG/KG	61	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	2.6E-01	2.6E-01	--	--	5.3E-01	--	
LMSB340	COPPER	1500	MG/KG	1500	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	4.9E-01	4.9E-02	--	--	5.4E-01	--	
LMSB340	IRON	2E+05	MG/KG	160000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	6.9E+00	9.2E-01	--	--	7.9E+00	--	
LMSB340	LEAD	935	MG/KG	935	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
LMSB340	MANGANESE	750	MG/KG	750	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.4E-01	5.6E-02	--	--	2.0E-01	--	
																			1.3E+01	8.9E-05	8.9E-05

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion -	Adult + Child- Intake - Dermal -	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
LMSB343	ANTIMONY	3.1	MG/KG	3.1	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	1.0E-01	2.0E-01	--	--	3.0E-01	--	
LMSB343	ARSENIC	7.8	MG/KG	7.8	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	3.4E-01	7.0E-03	1.3E-05	5.4E-07	3.4E-01	1.3E-05	
LMSB343	BARIUM	140	MG/KG	140	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.6E-02	7.4E-03	--	--	3.3E-02	--	
LMSB343	CADMIUM	1.9	MG/KG	1.9	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	5.0E-04	2.5E-05	--	--	4.9E-02	2.0E-02	--	--	6.9E-02	--	
LMSB343	CHROMIUM, TOTAL	25	MG/KG	25	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	1.1E-01	1.1E-01	--	--	2.2E-01	--	
LMSB343	COPPER	320	MG/KG	320	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.0E-01	1.0E-02	--	--	1.1E-01	--	
LMSB343	IRON	40000	MG/KG	40000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	1.7E+00	2.3E-01	--	--	2.0E+00	--	
LMSB343	LEAD	702	MG/KG	702	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--							
LMSB343	MANGANESE	300	MG/KG	300	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	5.6E-02	2.2E-02	--	--	7.8E-02	--	
																			3.2E+00	1.3E-05	1.3E-05

ROD Table 35

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - LONNIE C. MILLER

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion -	Adult + Child- Intake - Dermal -	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
LMSB344	ANTIMONY	13	MG/KG	13	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	4.2E-01	8.5E-01	--	--	1.3E+00	--	
LMSB344	ARSENIC	57	MG/KG	57	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	2.5E+00	5.1E-02	9.4E-05	3.9E-06	2.5E+00	9.8E-05	
LMSB344	BARIUM	130	MG/KG	130	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.4E-02	6.9E-03	--	--	3.1E-02	--	
LMSB344	CADMIUM	6	MG/KG	6	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	5.0E-04	2.5E-05	--	--	1.6E-01	6.2E-02	--	--	2.2E-01	--	
LMSB344	CHROMIUM, TOTAL	38	MG/KG	38	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	1.6E-01	1.6E-01	--	--	3.3E-01	--	
LMSB344	COPPER	220	MG/KG	220	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	7.2E-02	7.2E-03	--	--	7.9E-02	--	
LMSB344	IRON	47000	MG/KG	47000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	2.0E+00	2.7E-01	--	--	2.3E+00	--	
LMSB344	LEAD	700	MG/KG	700	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
LMSB344	MANGANESE	460	MG/KG	460	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	8.5E-02	3.4E-02	--	--	1.2E-01	--	
LMSB344	VANADIUM	43	MG/KG	43	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-03	1.4E-03	--	--	8.0E-02	8.0E-03	--	--	8.8E-02	--	
LMSB344	**BENZO(a)ANTHRACENE**	10000	UG/KG	10	MG/KG	**1**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB344	**BENZO(a)PYRENE**	7800	UG/KG	7.8	MG/KG	**7.8**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB344	**BENZO(b)FLUORANTHENE**	9600	UG/KG	9.6	MG/KG	**0.96**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB344	**BENZO(k)FLUORANTHENE**	4900	UG/KG	4.9	MG/KG	**0.049**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB344	**CHRYSENE**	9300	UG/KG	9.3	MG/KG	**0.093**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB344	**DIBENZ(a,h)ANTHRACENE**	2300	UG/KG	2.3	MG/KG	**2.3**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB344	**INDENO(1,2,3-c,d)PYRENE**	5700	UG/KG	5.7	MG/KG	**0.57**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
LMSB344	TEF CPAHs	--	--	--	MG/KG	**12.77**	1.3E-05	2.6E-06	1.1E-06	4.3E-07	--	--	7.3E+00	1.26E+01	--	--	1.0E-04	6.9E-05	--	1.7E-04	
																			7.0E+00	2.7E-04	2.7E-04
LMSB346	ARSENIC	2.8	MG/KG	2.8	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	1.2E-01	2.5E-03	4.6E-06	1.9E-07	1.2E-01	4.8E-06	
LMSB346	BARIUM	140	MG/KG	140	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	2.6E-02	7.4E-03	--	--	3.3E-02	--	
LMSB346	COPPER	720	MG/KG	720	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	2.3E-01	2.3E-02	--	--	2.6E-01	--	
LMSB346	IRON	8800	MG/KG	8800	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	3.8E-01	5.1E-02	--	--	4.3E-01	--	
LMSB346	MANGANESE	270	MG/KG	270	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	5.0E-02	2.0E-02	--	--	7.0E-02	--	
LMSB346	VANADIUM	24	MG/KG	24	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-03	1.4E-03	--	--	4.5E-02	4.5E-03	--	--	4.9E-02	--	
																			9.6E-01	4.8E-06	4.8E-06

ROD Table 35

TABLE B.13.1
SURFACE SOIL SAMPLES COLLECTED IN YARDS
CANCER RISK AND HAZARD CALCULATIONS
CHILD AND ADULT
JACKSONVILLE ASH SITE - LONNIE C. MILLER

Station ID	Compound	Final Result Used	Units	EPC	Units	CPAHs - TEF	Child - Intake - Ingestion - Noncancer	Child - Intake - Dermal - Noncancer	Adult + Child - Intake - Ingestion -	Adult + Child- Intake - Dermal -	Reference Dose - Oral	Reference Dose - Dermal	Slope Factor - Oral	Slope Factor - Dermal	Child Hazard - Ingestion	Child Hazard Dermal	Adult + Child Risk - Ingestion	Adult + Child Risk Dermal	Total Child Hazard	Total Adult + Child Risk	Total Lifetime Risk
LMSB347	ALUMINUM	8700	MG/KG	8700	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	1.00E+00	1.00E-01	--	--	1.1E-01	2.3E-02	--	--	1.4E-01	--	
LMSB347	ANTIMONY	3.4	MG/KG	3.4	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	1.1E-01	2.2E-01	--	--	3.3E-01	--	
LMSB347	ARSENIC	44	MG/KG	44	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	1.9E+00	3.9E-02	7.3E-05	3.0E-06	1.9E+00	7.6E-05	
LMSB347	CADMIUM	6.8	MG/KG	6.8	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	5.0E-04	2.5E-05	--	--	1.8E-01	7.1E-02	--	--	2.5E-01	--	
LMSB347	CHROMIUM, TOTAL	44	MG/KG	44	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	1.9E-01	1.9E-01	--	--	3.8E-01	--	
LMSB347	COPPER	420	MG/KG	420	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	1.4E-01	1.4E-02	--	--	1.5E-01	--	
LMSB347	IRON	61000	MG/KG	61000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	2.6E+00	3.5E-01	--	--	3.0E+00	--	
LMSB347	LEAD	990	MG/KG	990	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--	--	--	--	--	--	--	
LMSB347	MANGANESE	790	MG/KG	790	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	1.5E-01	5.9E-02	--	--	2.1E-01	--	
LMSB347	VANADIUM	16	MG/KG	16	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-03	1.4E-03	--	--	3.0E-02	3.0E-03	--	--	3.3E-02	--	
																			6.4E+00	7.6E-05	7.6E-05
LMSB348	ANTIMONY	3.8	MG/KG	3.8	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-04	4.0E-06	--	--	1.2E-01	2.5E-01	--	--	3.7E-01	--	
LMSB348	ARSENIC	12	MG/KG	12	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-04	2.9E-04	1.5E+00	1.6E+00	5.2E-01	1.1E-02	2.0E-05	8.3E-07	5.3E-01	2.1E-05	
LMSB348	BARIUM	220	MG/KG	220	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	4.9E-03	--	--	4.1E-02	1.2E-02	--	--	5.3E-02	--	
LMSB348	CADMIUM	3.9	MG/KG	3.9	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	5.0E-04	2.5E-05	--	--	1.0E-01	4.1E-02	--	--	1.4E-01	--	
LMSB348	CHROMIUM, TOTAL	96	MG/KG	96	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-03	6.0E-05	--	--	4.2E-01	4.2E-01	--	--	8.3E-01	--	
LMSB348	COPPER	220	MG/KG	220	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	4.0E-02	8.0E-03	--	--	7.2E-02	7.2E-03	--	--	7.9E-02	--	
LMSB348	IRON	48000	MG/KG	48000	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	3.0E-01	4.5E-02	--	--	2.1E+00	2.8E-01	--	--	2.4E+00	--	
LMSB348	LEAD	480	MG/KG	480	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	--	--	--	--							
LMSB348	MANGANESE	520	MG/KG	520	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-02	3.5E-03	--	--	9.7E-02	3.9E-02	--	--	1.4E-01	--	
LMSB348	VANADIUM	27	MG/KG	27	MG/KG		1.3E-05	2.6E-07	1.1E-06	4.3E-08	7.0E-03	1.4E-03	--	--	5.0E-02	5.0E-03	--	--	5.5E-02	--	
																			4.6E+00	2.1E-05	2.1E-05

5.5.4.2 Qualitative Evaluation of Surface Soil Risk in Residential Areas

5.5.4.2.1 Forest Street Incinerator

As discussed in Part 5.5.4.1.1, it was not feasible to calculate risks for 220 exposure units; therefore, 210 surface soil sample locations were not included in the quantitative evaluation. Based on the reduced numbers of COPCs at these locations, it was anticipated that the total risk and hazard at each location would be less than the criteria of concern (i.e., cancer risk of 1 X 10^{-4} or HI of 1). However, the analytical data from each of these 210 locations were evaluated qualitatively by comparing the detected concentration of each COPC to its chemical-specific RGO. If the detected concentration of a chemical was greater than the RGO corresponding to an HQ of 1 or a cancer risk of 1 X 10^{-6}, further action may be required at that sample location (e.g., additional sampling, soil removal).

Detected concentrations of COPCs in 181of the 210 samples were all below RGOs. However, a total of 39 surface soil samples contained COPC concentrations that exceeded at least one RGO. Lead was the only contaminant of concern in 19 samples (i.e., lead was the only COPC detected at a concentration that exceeded an RGO). Lead plus at least one other COC were detected in 13 surface soil samples. Seven surface soil samples contained detected concentrations of COPCs other than lead that exceeded at least one RGO (i.e., lead was detected at concentrations less than 400 mg/kg in these seven samples).

Detected concentrations of COPCs in the ten samples that were quantitatively evaluated were compared to their corresponding RGOs. Nine of the ten samples had detected concentrations of COPCs that exceeded at least one RGO. PAHs, lead and arsenic were the only COPCs that exceeded the RGOs. PAHs were the only COPCs detected above an RGO in five of the ten samples. PAHs were detected at concentrations ranging from 0.31 mg/kg to 7.8 mg/kg. Lead was detected at concentrations exceeding 400 mg/kg in each of the remaining four samples with detected concentrations above RGOs. Arsenic or PAHs were also detected at concentrations exceeding their corresponding RGOs in three of these samples. Arsenic was detected at concentrations of 39 mg/kg and 65 mg/kg in two samples. PAHs were detected at a concentration of 0.5 mg/kg in sample.

Lead, one of the primary contaminants of concern at the Forest Street Incinerator site, was analyzed at each of the surface sample locations. Lead was detected at concentrations between 200 and 400 mg/kg in 37 surface soil samples. Lead was detected at concentrations above the RGO of 400 mg/kg in 26 surface soil samples.

5.5.4.2.2 5th & Cleveland Incinerator

As discussed in Part 5.5.4.1.2, it was not feasible to calculate risks for 226 exposure units; therefore, 216 surface soil sample locations were not included in the quantitative evaluation. Based on the reduced numbers of COPCs at these locations, it was anticipated that the total risk and hazard at each location would be less than the criteria of concern (i.e., cancer risk of 1 X 10^{-4} or HI of 1). However, the analytical data from each of these 216 locations were evaluated qualitatively by comparing the detected concentration of each COPC to its chemical-specific RGO. If the detected concentration of a chemical was greater than the RGO corresponding to an HQ of 1 or a cancer risk of 1 X 10^{-6}, further action may be required at that sample location (e.g., additional sampling, soil removal).

Detected concentrations of COPCs in 114 of the 216 samples were all below RGOs. However, a total of 102 surface soil samples contained COPC concentrations that exceeded at least one RGO. Lead was the only contaminant of concern in 65 samples (i.e., lead was the only COPC detected at a concentration that exceeded an RGO). Lead plus at least one other COC were detected in 28 surface soil samples (e.g., lead and PAHs were detected in one sample at concentrations that exceeded their respective RGOs). Nine surface soil samples contained detected concentrations of COPCs other than lead that exceeded at least one RGO (i.e., lead was detected at concentrations less than 400 mg/kg in these nine samples).

Detected concentrations of COPCs in the ten samples that were quantitatively evaluated were compared to their corresponding RGOs. Nine of the ten samples had detected concentrations of COPCs that exceeded at least one RGO (one sample did not contain any detected concentrations above RGOs). Lead, PAHs, and pesticides were the only COPCs that exceeded the RGOs. With the exception of three samples, lead was detected at concentrations exceeding 400 mg/kg in all samples containing PAHs or pesticides at concentrations above RGOs. PAHs were detected at concentrations of 0.86 mg/kg and 8.9 mg/kg in two samples. Lead was detected at concentrations below its RGO at both of these locations. Pesticides (including alpha-chlordane, gamma-chlordane, heptachlor, and heptachlor epoxide) were detected at concentrations ranging from 1.4 mg/kg to 5.3 mg/kg in one sample. Lead was detected at a concentration of 369 mg/kg in one sample. This sample concentration, which was screened using XRF, was just below the RGO of 400 mg/kg.

Lead, one of the primary contaminants of concern at the 5th & Cleveland Incinerator site, was analyzed at each of the surface sample locations. Lead was detected at concentrations between 200 and 400 mg/kg in over 40 surface soil samples. Lead was detected at concentrations above the RGO of 400 mg/kg in well over 60 surface soil samples.

5.5.4.2.3 Lonnie Miller, Sr. Park

As discussed in Part 5.5.4.1.3, it was not feasible to calculate risks for 106 exposure units; therefore, 96 surface soil sample locations were not included in the quantitative evaluation. Based on the reduced numbers of COPCs at these locations, it was anticipated that the total risk and hazard at each location would be less than the criteria of concern (i.e., cancer risk of 1 X 10^{-4} or HI of 1). However, the analytical data from each of these 96 locations were evaluated qualitatively by comparing the detected concentration of each COPC to its chemical-specific RGO. If the detected concentration of a chemical was greater than the RGO corresponding to an HQ of 1 or a cancer risk of 1 X 10^{-6}, further action may be required at that sample location (e.g., additional sampling, soil removal).

Detected concentrations of COPCs in 90 of the 96 samples were all below RGOs. However, six surface soil samples contained COPC concentrations that exceeded an RGO. Lead was the only contaminant of concern in five of the six samples (i.e., lead was the only COPC detected at a concentration that exceeded an RGO). One surface soil sample contained antimony at a detected concentration that exceeded its RGO.

Detected concentrations of COPCs in the ten samples that were quantitatively evaluated were compared to their corresponding RGOs. Seven of the ten samples had detected concentrations of COPCs that exceeded at least one RGO. PAHs, lead, and arsenic were the only COPCs that exceeded the RGOs. Lead was detected at concentrations exceeding 400 mg/kg in six of the seven samples with detected concentrations above RGOs. Arsenic was also detected at concentrations exceeding its corresponding RGO in three of these samples. Arsenic was detected at concentrations of 52 mg/kg, 57 mg/kg and 44 mg/kg in three samples. PAHs, detected at a concentration of 0.2 mg/kg, were the only COPCs detected above an RGO in one sample.

Lead, one of the primary contaminants of concern at the Lonnie C. Miller, Sr., Park site, was analyzed at each of the surface soil sample locations. Lead was detected at concentrations above the RGO of 400 mg/kg in eight surface soil samples.

5.5.4.3 Qualitative Evaluation of Subsurface Soil Risk in Residential Areas

5.5.4.3.1 Forest Street Incinerator

Subsurface soil in the residential areas was evaluated qualitatively since it is not currently available for direct contact. A total of 18 chemicals were retained as COPCs in subsurface soils in the residential area of the Forest Street site. COPCs included dioxins, carcinogenic PAHs, aroclor 1260, and metals.

The analytical data from each subsurface soil sample were compared to the chemical-specific RGOs for dioxins, carcinogenic PAHs, aroclor 1260, and metals. Dioxins were sampled and detected in one subsurface soil sample; however, the detected concentration of dioxins in this sample was below the EPA Region 4 RGO of 1 µg/kg. Carcinogenic PAHs were detected in all 12 samples that were analyzed. With the exception of one sample, all detected concentrations of carcinogenic PAHs were greater than 0.07 mg/kg, the RGO corresponding to a risk of 1×10^{-6}. The maximum detected concentration of benzo(a) pyrene was 5.3 mg/kg. Aroclor 1260 was detected in nine subsurface soil samples. One of the detected concentrations of aroclor 1260 (1 mg/kg) was greater than 0.26 mg/kg, the RGO corresponding to a risk of 1×10^{-6}.

Detected concentrations of seven of the metals that were retained as COPCs (arsenic, barium, cadmium, copper, manganese, vanadium, and zinc) were below the RGO corresponding to an HQ of 1. However, the lead, antimony and chromium were detected in subsurface soil at concentrations that exceeded the RGO corresponding to an HQ of 1.

With the exception of three sample locations, lead was detected at concentrations exceeding 400 mg/kg at each subsurface soil location where a chemical-specific RGO was exceeded. In other words, lead was detected at concentrations greater than 400 mg/kg in the sample where the detected concentration of aroclor 1260 exceeded its RGO, and in eight of 11 subsurface soil samples where CPAHs exceeded the RGO of 0.07 mg/kg. Lead was detected at concentrations greater than 400 mg/kg in both subsurface soil samples where antimony exceeded the RGO of 29 mg/kg and in the sample where the detected concentration of chromium exceeded the RGO of 211 mg/kg.

5.5.4.3.2 5th & Cleveland Incinerator

Subsurface soil in the residential areas was evaluated qualitatively since it is not currently available for direct contact. A total of 21 chemicals were retained as COPCs in subsurface soils in the residential area. COPCs included dioxins, carcinogenic PAHs, dieldrin, and metals.

The analytical data from each subsurface soil sample were compared to the chemical-specific RGOs for dioxins, carcinogenic PAHs, dieldrin, and metals. Dioxins were sampled and detected in two subsurface soil samples. Detected concentrations of dioxins in both samples were below the EPA Region 4 RGO of 1 µg/kg. Carcinogenic PAHs were detected in the eleven samples. All detected concentrations of carcinogenic PAHs were greater than 0.07 mg/kg, the RGO corresponding to a risk of 1 X 10^{-6}. The maximum detected concentration of benzo(a) pyrene was 3.5 mg/kg. Dieldrin was detected in five subsurface soil samples. One of the detected concentrations of dieldrin (0.056 mg/kg) was greater than 0.04 mg/kg, the RGO corresponding to a risk of 1 X 10^{-6}.

Detected concentrations of eight of the metals that were retained as COPCs (aluminum, barium, cadmium, chromium, copper, manganese, vanadium, and zinc) were below the RGO corresponding to an HQ of 1. However, lead, antimony and arsenic were detected in subsurface soil at concentrations that exceeded the RGO corresponding to an HQ of 1.

With the exception of one sample, lead was detected at concentrations exceeding 400 mg/kg at each subsurface soil location where a chemical-specific RGO was exceeded. In other words, lead was detected at concentrations greater than 400 mg/kg in the sample where the detected concentration of dieldrin exceeded its RGO, and in 10 of 11 subsurface soil samples where CPAHs exceeded the RGO of 0.07 mg/kg. Lead was detected at concentrations greater than 400 mg/kg in all three subsurface soil samples where arsenic exceeded the RGO of 23 mg/kg and both samples where detected concentrations of antimony exceeded the RGO of 29 mg/kg.

5.5.4.3.3 Lonnie Miller Park, Sr. Park

Subsurface soil in the residential areas was evaluated qualitatively since it is not currently available for direct contact. A total of 17 chemicals were retained as COPCs in subsurface soils in the residential area. COPCs included carcinogenic PAHs and metals.

The analytical data from each subsurface soil sample were compared to the chemical-specific RGOs for carcinogenic PAHs and various metals. Carcinogenic PAHs were detected in all four samples that were analyzed. With the exception of one sample, all detected concentrations of carcinogenic PAHs were greater than 0.07 mg/kg, the RGO corresponding to a risk of 1 X 10^{-6}. The maximum detected concentration of benzo(a) pyrene was 0.8 mg/kg.

Detected concentrations of nine of the metals that were retained as COPCs (aluminum, antimony, arsenic, barium, cadmium, copper, lead, manganese, nickel, vanadium, and zinc) were below the RGO corresponding to an HQ of 1. However, lead and arsenic were detected in subsurface soil at concentrations that exceeded the RGO corresponding to an HQ of 1. With the exception of arsenic in one sample, lead was the only metal detected in subsurface soil samples at a concentration that exceeded a chemical-specific RGO.

5.5.5 Evaluation of Vegetables

To address questions regarding exposure to site-related COPCs via ingestion of homegrown vegetables, samples were collected on January 15, 2002, from three gardens located near the 5th and Cleveland portion of the Jacksonville Ash Superfund Alternative Site. Two surface soil samples and two vegetable samples were collected from each of the three gardens. The soil samples and vegetable samples were analyzed for lead, arsenic, antimony, and PAHs. Only lead was detected in the vegetables and each of the gardens represented a different level of soil lead contamination. Listed below are the maximum concentrations of lead in the garden soils and the maximum detected concentration of lead in the corresponding vegetable sample:

1. Garden 1: maximum soil lead concentration of 500 mg/kg with a maximum vegetable lead concentration of 0.16 mg/kg,
2. Garden 2: maximum soil lead concentration of 4,400 mg/kg with a maximum vegetable lead concentration of 0.28 mg/kg
3. Garden 3: maximum soil lead concentration of 73 mg/kg with a maximum vegetable lead concentration of 0.089 mg/kg,

The vegetables sampled were collard and/or mustard greens. These vegetables were chosen because of their availability and the fact that they were thought to represent the vegetables most likely to bioaccumulate lead, therefore providing the most conservative data available.

To determine if the lead levels detected would result in an unacceptable risk via ingestion of the vegetables, the IEUBK model was run using the maximum detected lead concentrations in the vegetables from each of the three gardens. The results of the IEUBK model conclude that under these circumstances the average blood lead level would only slightly increase even at the highest detected concentrations of lead in the greens. Based on the IEUBK. results, it can be concluded that there is no unacceptable risks associated from ingestion of vegetables from gardens with soil lead concentrations less than 500 mg/kg. The two samples collected from the highest soil lead contamination location (maximum concentration of 4,400 mg/kg lead) showed a slight increase above acceptable levels via ingestion of vegetables, but it has already been determined by EPA that residential exposure to soils with lead concentrations of 4,400 mg/kg is unacceptable via direct contact to those soils.

In conclusion, based on the above data and references, the use of vegetable gardens with soil lead concentrations below or only slightly above EPA's recommended remedial goal of 400 mg/kg should not result in any significant increase in blood lead levels. Garden soil levels of lead significantly above 400 mg/kg may pose unacceptable risk with the risk potential increasing with increasing levels of soil lead. Regardless of the soil lead level, following good gardening and food preparation practices will lower risks.

5.6 Uncertainties in the Human Health Risk Assessment

Uncertainties in the BHHRA included several factors which are discussed in the following paragraphs.

5.6.1 Data Evaluation

The purpose of data evaluation is to determine which constituents, if any, are present at the site at concentrations requiring further investigation. The screening process used to select COPCs to evaluate in the BHHRA was intended to include all chemicals with concentrations high enough to be of concern for the protection of public health.

Uncertainty with respect to data evaluation can arise from many sources, such as the quality and quantity of the data used to characterize the site, the process used to select data to use in the risk assessment, and the statistical treatment of data.

Most of the lead soil samples at the Forest Street site were analyzed in the field by XRF. A percentage of the lead samples were also submitted to a laboratory for confirmatory analysis. Of the 156 Phase I RI soil samples at the Forest Street site that had both XRF and laboratory results, 18 percent (28 samples) had readings that were basically the same (e.g., the higher reading was no more than 10 percent higher than the lower reading). When a given sample had two results for lead, the laboratory results were higher than the XRF readings 59 percent of the time and the XRF readings were higher than the laboratory results 6 percent of the time. However, when the two results were different (i.e., the higher value was more than 10 percent higher than the lower value), the higher result was generally between 1.2 and 1.9 times greater than the lower number. In fact, 80 percent of the 128 samples with different results fell into this category. On average, laboratory results were approximately 1.33 times higher than XRF results. Therefore, XRF soil samples at the Forest Street site containing less than 300 mg/kg of lead would likely be less than 400 mg/kg if the results were confirmed by laboratory analysis.

Most of the lead soil samples at the 5th & Cleveland site were analyzed in the field by XRF. A percentage of the lead samples were also submitted to a laboratory for confirmatory analysis. Of the 145 Phase I RI soil samples at the 5th & Cleveland site that had both XRF and laboratory results, 19 percent (28 samples) had readings that were basically the same. When a given sample had two results for lead, the laboratory results were higher than the XRP readings 59 percent of the time and the XRF readings were higher than the laboratory results 22 percent of the time. When the two results were different, the higher result was generally between 1.1 and 1.9 times greater than the lower number. In fact, 74 percent of the 117 samples with different results fell into this category. On average, laboratory results were approximately 1.5 times higher than XRF results. Therefore, XRF soil samples at the 5th & Cleveland site containing less than 270 mg/kg of lead would likely be less than 400 mg/kg if the results were confirmed by laboratory analysis.

Most of the lead soil samples at the Lonnie C. Miller, Sr. Park site were analyzed in the field by XRF. A percentage of the lead samples were also submitted to a laboratory for confirmatory analysis. Of the 105 Phase I RI soil samples at the Lonnie C. Miller, Sr. Park site that had both XRF and laboratory results, 11 percent (12 samples) had readings that were basically the same (e.g., the higher reading was no more than 10 percent higher than the lower reading). When a given sample had two results for lead, the laboratory results were higher than the XRF readings 64 percent of the time and the XRF readings were higher than the laboratory results 25 percent of the time. However, when the two results were different (i.e., the higher value was more than 10 percent higher than the lower value), the higher result was generally between 1.2 and 1.9 times greater than the lower number. In fact, 60 percent of the 94 samples with different results fell into this category. On average, laboratory results were approximately 1.3 times higher than XRF results. Therefore, XRF soil samples at the Lonnie C. Miller, Sr. Park site containing less than 300 mg/kg of lead would likely be less than 400 mg/kg if the results were confirmed by laboratory analysis.

EPA further evaluated the Phase 1 RI XRF and laboratory data for soil lead. The evaluation indicated an error of 1.7 percent when XRF lead measurements under 200 mg/kg were compared with the corresponding lead laboratory measurement exceeding 400 mg/kg. Therefore, EPA anticipates a 98 percent confirmation rate that no soil sample with a concentration above 400 mg/kg is missed.

5.6.2 Exposure Pathways and Parameter

The exposure assumptions directly influence the calculated doses (daily intakes), and ultimately the risk calculations. For the most part, site-specific data were not available for this BHHRA; therefore, conservative default exposure assumptions were used in calculating exposure doses such as the selection of exposure routes and exposure factors (e.g., contact rate). In most cases, this uncertainty may overestimate the most probable realistic exposures and, therefore, may overestimate risk. This is appropriate when performing risk assessments of this type so that the risk managers can be reasonably assured that the public risks may not be underestimated, and so that risk assessments for different locations and scenarios can be compared.

In order to estimate a receptor's potential exposure at a site, it is necessary to determine the geographical location where the receptor is assumed to be exposed. Once the area of interest has been defined, the appropriate data can be selected and the exposure point concentration can be calculated. The primary source of uncertainty associated with estimating exposure point concentrations involves the statistical methods used to estimate these concentrations and the assumptions inherent in these statistical methods. Generally, an upper bound estimate of the mean concentration is used to represent the exposure point concentration instead of the measured mean concentration. This is done to account for the possibility that the true mean is higher than the measured mean because unsampled areas of the site may have higher constituent concentrations. Listed below are a few site-specific uncertainties which relate to the exposure point concentration (EPC) calculation.

- When data sets for a exposure unit contained less than 10 samples, the maximum detected concentration in that data set was used to represent the EPC for the exposure unit. This may result in an overestimation of risk.

- COPC concentrations in soil for future use were assumed to be the same as current concentrations, with no adjustment due to migration or degradation. This may overestimate dose.

- Surface soil and sediment data were evaluated separately and exposure to these media was assumed to be equal (i.e., the same exposure assumptions were used to evaluate both media). This will result in an overestimation of risk.

- Sediment data from the intermittent ditch were evaluated as surface soil and were assumed to be dry year round. This may result in an overestimation of risk.

Ideally, areas of exposure should be defined based on actual exposures or known behaviors of receptors at the site. Often, however, this information is unavailable. Lacking absolute knowledge about the behaviors of receptors at or near the site, it is necessary to make some assumptions. This risk assessment conservatively assumed that current and future use of the site is residential. Such assumptions add to the uncertainty in the BHHRA.

The reasonable maximum exposure concept was used to develop exposure doses in the current and future scenarios and is defined as the "maximum exposure that is reasonably expected to occur at the site" (EPA, 1989). Several variables that were used to determine the exposure dose for the reasonable maximum exposure were generally based on upper-bound (typically 90th percentile or greater) estimates. These are:

- Maximum detected concentration used to calculate the exposure dose.
- Exposure duration (ED) (upper-bound value).
- Intake/contact rate (IR).
- Exposure frequency (EF).

Therefore, the calculated exposure dose for any given chemical, which results from integration of these variables, typically represents an upper-bound probable exposure dose estimate. The use of these upperbound exposure parameters, coupled with conservative estimates of toxicity, will yield risk results that represent an upper-bound estimate of the occurrence of carcinogenic and noncarcinogenic health effects.

Generally, in order to present a range of possible exposure estimates, a central tendency risk describer is calculated in addition to the reasonable maximum exposure risk. In accordance with Region 4 policy, central tendency risk describers are included in the uncertainty sub-part of the risk characterization. The reasonable maximum exposure approach characterizes risk at the upper end of the risk distribution, while the central tendency approach characterizes either the arithmetic mean risk or the median risk. The inclusion of both reasonable maximum exposure and central tendency risk describers provides perspective for the risk manager. However, the National Contingency Plan (NCP) Section 300.430(d) states, "The reasonable maximum exposure estimates for future uses of the site will provide the basis for the development of protective exposure levels."

5.6.3 Toxicity Assessment

For a risk to exist, both significant exposure to the chemicals of potential concern and toxicity at these predicted exposure levels must exist. The toxicological uncertainties primarily relate to the methodology by which carcinogenic and noncarcinogenic criteria (i.e., CSFs and reference doses) are developed. In general, the methodology currently used to develop CSFs and reference doses is very conservative, and likely results in overestimation of human toxicity (EPA, 1989).

Recent toxicological studies performed by the National Toxicology Program (NTP, 2004a, b, c, d) suggest that dioxin and dioxin-like chemicals may be considerably less carcinogenic than EPA previously thought. California EPA used this recent data to develop an oral cancer slope factor for dioxin that is 40 fold lower than the value in EPA's draft dioxin reassessment (Cal-EPA, 2005; USEPA, 2003). In 2005, California EPA released a draft Public Health Goal for TCDD in water (Cal-EPA, 2005). In this document, an oral cancer slope factor of 2.6E-02 per ngTEQ/kg-day or 26,000 per mgTEQ/kg-day was derived by Monte Carlo analysis to combine cancer potency estimates across the various tumor sites.

In EPA's recent draft assessment (USEPA, 2003) for dioxin and dioxin-like chemicals, the agency estimates an upper bound on the lifetime risk of all cancers combined of 1.0E-03 per pgTEQ/kg-day, or 1,000,000 per mgTEQ/kg-day. This proposed upper-bound slope factor spans a range from 0.5 to 19 times greater than the previous upper bound estimate on cancer slope of 1.6E-04 per pgTEQ/kg-day (USEPA, 1985).

In light of the significant uncertainties surrounding the upper-bound cancer risk estimates, the USEPA Region 4 remedial program currently defaults to using the previous EPA upper-bound cancer slope factor in calculating lifetime excess cancer risk for dioxin and dioxin-like compounds. The agency's final choice of the appropriate upper-bound cancer risk estimate may change.

5.6.4 Risk Characterization

Ideally, areas of exposure should be defined based on actual exposures or known behaviors of receptors at the site. Often, however, as in the case of this risk assessment, this information is unavailable. Lacking absolute knowledge about the behaviors of receptors at or near the site, it was necessary to make some assumptions. This risk assessment made assumptions about exposure units (or areas) based on contaminant distribution and likely areas of exposure based on site features. Such assumptions will add to the uncertainty in the BHHRA.

Each complete exposure pathway concerns more than one contaminant. There are uncertainties associated with summing risks or hazard quotients for multiple substances in the risk characterization step. The assumption ignores the possibility of synergistic or antagonistic activities in the metabolism of the contaminants. This could result in over- or under-estimation of risk.

The potential risks developed for the Jacksonville Ash Site were directly related to COPCs detected in the environmental media at this site. No attempt was made to differentiate between the risk contributions from other sites and those being contributed from the Jacksonville Ash Site.

Because inorganic chemicals are naturally-occurring, metals are generally compared to site-specific background concentrations when selecting COPCs for a site. As described further in the HHBRA, in general, EPA excludes chemicals as COPCs if the maximum detected concentration of an inorganic chemical is less than two times the mean background concentration, the chemical is excluded as a COPC in that medium. Samples were collected during the RI field investigation to serve as background samples for the Jacksonville Ash Site. However, since the boundaries of the ash had not been delineated, inorganic compounds detected in soil were not screened against the background samples due to the uncertainty associated with obtaining "true" background samples from this area. Therefore, no metal was excluded as a COPC in soil based on a comparison with background. This may result in an overestimation of risk.

Soil lead concentrations greater than 400 mg/kg in residential areas are considered a potential health threat. However, the degree of threat depends on the bioavailability of the lead. The lead model applies default assumptions in estimating the bioavailability of lead; however, the bioavailability of lead at the Jacksonville Ash Site was not measured. Available blood lead data for children in the surrounding neighborhoods indicates that the Site bioavailability of lead at the may be low.

Aluminum and iron were identified as chemicals of concern at the site. The RfDs for both of these metals are provisional (interim) values, meaning that they have not gone through the verification necessary to be placed by EPA on IRIS or HEAST. Additional toxicological data would be needed in order to complete this verification process. For example, the oral RfD for iron was derived from the mean dietary iron intakes, dietary plus supplemental, taken from the National Health and Nutrition Examination Survey (NHANES) II data base. Chromium was also identified as a chemical of concern in soil. The risk assessment assumed that only hexavalent chromium, the more toxic form of chromium, was present at the site. While this likely results in some overestimation of risk, this uncertainty could be reduced by analyzing samples from areas of concern for hexavalent chromium.

2,3,7,8-TCDD (dioxin) was identified as a COC in surface soil in all exposure units, and in subsurface soil at the community center. IRIS does not currently list an RFD or SF for 2,3,7,8-TCDD. EPA is currently reassessing the toxicity of dioxin. The toxicity data used in this risk assessment were obtained from the 1997 HEAST. Some dioxin samples that were analyzed by Draft Screening Method 4425 were not used in the baseline risk assessment because of uncertainty associated with the analytical method. Using the 1997 HEAST toxicity data and excluding the dioxin screening data may lead to an under- or overestimation of risk.

All of the uncertainties ultimately effect the risk estimate. Most of the uncertainties identified will likely result in the potential for overestimation of risk (e.g., the combination of several upper-bound assumptions for some exposure scenarios).

5.7 Identification of Contaminants of Concern

The BHHRA evaluated soil, surface water and groundwater. The occurrence, distribution and selection of the chemicals of potential concern (COPC) are in the tables in Appendix C of this ROD. The medium-specific exposure point concentration for the COPCs are in the tables in Appendix D in this ROD. Based on the evaluation of health effects, the soil, groundwater and surface water media were found to have COCs. The initial COCs identified for the Jacksonville Ash Site including the area of the former incinerators at Forest Street and 5th & Cleveland, the Park at Lonnie C. Miller and the separate evaluation of the residential areas are presented in Table 36.

Table 36: Initial Human Health Constituents of Concern		
Soil	Groundwater	Surface Water
Aluminum	Iron	Carcinogenic PAHs
Antimony	Barium (F)	
Arsenic	Manganese (F) (L)	
Barium	Arsenic (C)	
Cadmium	Cadmium (L)	
Chromium	l, 2-Dibromo-3-Chloropropane (C)	
Copper	Aroclor 1242 (C)	
Iron	Cresol (M & P) (L)	
Lead	cis-l, 2-Dichloroethylene (L)	
Manganese	Vinyl Chloride (L)	
Zinc		
Carcinogenic PAHs		
Dioxin (2,3,7,8-TCDD)		
Cobalt (F)		
Nickel (F) (L)		
Silver (F)		
Thallium (F) (L)		
Vanadium (F)		
Aroclor 1260(C)		
Aroclor 1254 (L)		
alpha-Chlordane (C)		
gamma-Chlordane (C)		
Dieldrin (C)		
Heptachlor (C)		
Heptachlor Epoxide (C)		

Notes on COC table:
COCs without notation are common to all three sites. COCs with notations as follow are specific to that site:
Forest Street (F)
5th & Cleveland (C)
Lonnie C. Miller, Sr. Park (L)

The COCs in soil were developed without the evaluation of background soil concentrations.

5.8 Refinement of Contaminants of Concern

As indicated in Part 5.6, uncertainties are inherent in the risk assessment process. Most these uncertainties result in the potential for overestimation of risk (e.g., the combination of several upper-bound assumptions for some exposure scenarios). Therefore, the BHHRA included refinement in the number of COCs identified in the risk characterization by examining any chemical-specific uncertainties that may exist.

5.8.1 Soil

5.8.1.1 Forest Street Incinerator Soil

A total of 18 chemicals were identified as COCs in on-site soil: antimony, arsenic, barium, cadmium, CPAHs, chromium, cobalt, copper, dioxin (2,3,7,8-TCDD), iron, lead, manganese, nickel, silver, thallium, vanadium, and zinc. Most of the COCs identified appear to be site-related COCs; however, additional discussion is warranted for seven of the COCs: chromium, cobalt, iron, nickel, silver, thallium, and zinc.

Iron, identified as a COC in soil, is the most common of all metals in the environment. Iron is one of the most important elements in nutrition, although iron toxemia occurs when high levels of iron are consumed. The oral RfD for iron is a provisional value. Most of the quantitative chronic oral toxicity data for iron have been obtained from studies of the Bantu population of South Africa. These studies were based on consumption of iron after drinking beer that was brewed in iron vessels. However, data from the Bantu studies were considered inadequate to determine a LOAEL because of confounding factors. The iron RfD is based on the mean dietary iron intakes, dietary plus supplemental, taken from the NHANES II data base. The highest dose level from the NHANES II study was used as a NOAEL, and the RfD was established on this basis. Additional toxicological data are needed to complete the verification process for the RfD. As stated above, hazards associated with chemicals with provisional toxicity values are likely to be overly conservative. Iron was removed as a COC for the Forest Street soils.

Chromium was identified as a COC in surface and subsurface soil. The risk assessment assumed that only hexavalent chromium, the more toxic form of chromium, was present at the site. This likely results in some overestimation of risk. Hexavalent chromium is more mobile than trivalent chromium; if hexavalent chromium is detected in soil, it will generally be present in groundwater also. However, as indicated chromium was not detected in groundwater. Therefore, it is unlikely that hexavalent chromium is the only form of chromium in the soil. In fact, it is customary to assume that when total chromium is analyzed the ratio of hexavalent chromium to trivalent chromium (the less toxic form of chromium) is 1 to 6. The maximum detected concentrations of chromium in surface soil and subsurface soil were 74 mg/kg and 70 mg/kg, respectively. Both of these concentrations are well below the PRO of 10,000 mg/kg for trivalent chromium. The uncertainty of not knowing the speciation of chromium could be reduced by analyzing samples for hexavalent chromium. Chromium was removed as a COC for the Forest Street soils.

Five metals were identified as COCs in subsurface soil, but were not identified as COCs in surface soil or groundwater: cobalt, nickel, silver, thallium, and zinc. In fact, none of these metals was retained as a COPC in surface soil or groundwater. Cobalt, nickel, silver, and thallium were detected in only one subsurface soil sample (FSSB007) at a concentration exceeding their respective PRGs. Out of a total of 31 surface and subsurface soil samples that were analyzed for TAL metals, thallium was detected in only one sample (FSSB007). Therefore, since cobalt, nickel, silver, and thallium were detected only once at a concentration exceeding their respective PRG, these metals were below risk-based screening values in surface soil and groundwater, and subsurface soil is not currently available for direct contact, these metals are not likely to pose a significant threat to receptors at the site and were removed as COCs for the Forest Street soils.

Zinc was detected in two subsurface soil samples at concentrations exceeding the PRG of 2,300 mg/kg. Zinc was detected at concentrations of 3,500 mg/kg and 3,800 mg/kg in samples FSSB088 and FSSB110, respectively. These concentrations are not significantly higher than the PRG (less than two times greater). Therefore, since detected concentrations of zinc were below risk-based screening levels in surface soil and groundwater, it was detected only two times at concentrations slightly exceeding its PRG, and subsurface soil is not currently available for direct contact, zinc is not likely to pose a significant threat to receptors at the site and was removed as a COC for the Forest Street soils.

5.8.1.2 5th & Cleveland Incinerator Soil

A total of 14 chemicals were identified as COCs in on-site soils: aluminum, antimony, aroclor 1260, arsenic, barium, cadmium, carcinogenic PAHs, chromium, copper, iron, lead, manganese, 2,3,7,8-TCDD, and zinc. Most of the COCs identified appear to be site-related COCs; however, additional discussion is warranted for nine of the COCs: aluminum, iron, chromium, zinc, dieldrin, gamma-chlordane, alpha-chlordane, heptachlor and heptachlor epoxide.

The maximum detected concentration of aluminum in surface soil was 5,300 mg/kg. The EPA PRG for aluminum is 7,600 mg/kg; therefore, aluminum was eliminated as a COPC in surface soil in all three exposure units. Aluminum was detected in only one subsurface soil sample at a concentration exceeding the PRG (it was detected at a concentration of 8,000 mg/kg in subsurface soil sample FCSB042). Only a provisional RfD was available for aluminum (provisional toxicity values have not gone through the verification necessary to be placed by EPA on IRIS or HEAST). Hazards associated with chemicals with provisional toxicity values are likely to be overly conservative. Therefore, since aluminum was detected only once at a concentration exceeding its PRG, the hazard quotients for aluminum are based on a provisional RfD, and subsurface soil is not currently available for direct contact, aluminum is not likely to pose a significant threat to receptors at the site and was removed as a COC for the 5th & Cleveland soils.

Iron, another COC identified in soil, is the most common of all metals in the environment. Iron is an essential element in nutrition, although iron toxemia occurs when high levels of iron are consumed. The oral RfD for iron is a provisional value. Most of the quantitative chronic oral toxicity data for iron have been obtained from studies of the Bantu population of South Africa. These studies were based on consumption of iron after drinking beer that was brewed in iron vessels. However, data from the Bantu studies were considered inadequate to determine a LOAEL because of confounding factors. The iron RfD is based on the mean dietary iron intakes, dietary plus supplemental, taken from the NHANES II data base. The highest dose level from the NHANES II study was used as a NOAEL, and the RfD was established on this basis. Additional toxicological data are needed to complete the verification process for the RfD. As stated above, hazards associated with chemicals with provisional toxicity values are likely to be overly conservative and was removed as a COC for the 5Ih & Cleveland soils.

The maximum detected concentration of zinc in surface soil was 1,300 mg/kg. The EPA PRG for zinc is 2,300 mg/kg; therefore, zinc was eliminated as a COPC in surface soil in all three exposure units. Zinc was detected in only one subsurface soil sample (sample FCSB054) at a concentration (2,800 mg/kg) that exceeded the PRG. This concentration is not significantly higher than the PRG of 2,300 mg/kg. Therefore, since zinc was detected only once at a concentration exceeding its PRG and subsurface soil is not currently available for direct contact, zinc is not likely to pose a significant threat to receptors at the site and was removed as a COC for the 5th & Cleveland soils.

Chromium was identified as a COC in subsurface soil at the community center and in surface and subsurface soil at the park. The risk assessment assumed that only hexavalent chromium, the more toxic form of chromium, was present at the site. This likely results in some overestimation of risk. Hexavalent chromium is more mobile than trivalent chromium; if hexavalent chromium is detected in soil, it will generally be present in groundwater also. However, chromium was not detected in groundwater. Therefore, it is unlikely that hexavalent chromium is the only form of chromium in the soil. In fact, it is customary to assume that when total chromium is analyzed the ratio of hexavalent chromium to trivalent chromium (the less toxic form of chromium) is 1 to 6. The maximum detected concentrations of chromium in surface soil and subsurface soil were 28 mg/kg and 41 mg/kg, respectively. Both of these concentrations are well below the PRG of 10,000 mg/kg for trivalent chromium. The uncertainty of not knowing the speciation of chromium could be reduced by analyzing samples from areas of concern for hexavalent chromium. Chromium was removed as a COC for the 5th & Cleveland soils.

Pesticides use is widespread in the residential markets, and the pesticides detected are not thought to be site related because there were few detections and low concentrations of pesticides in the area with the highest concentrations of ash related contamination in the former incinerator area (Emmett Reed Park). Pesticides were only listed as COCs in the residential area of the 5th & Cleveland site and were not found to be COCs at the former incinerator area. The presence of pesticides at the site is likely related to general pest control in the area, therefore the following pesticides were removed from the COC list: dieldrin, gamma-chlordane, alpha-chlordane, heptachlor and heptachlor epoxide.

5.8.1.3 Lonnie C. Miller, Sr., Park Soil

A total of 14 chemicals were identified as COCs in on-site soil: antimony, aroclor 1254 (subsurface soil only), arsenic, cadmium, chromium, CPAHs, copper, iron, lead, manganese, nickel (subsurface soil only), thallium, dioxin (2,3,7,8-TCDD), and zinc. Most of the COCs identified appear to be site-related COCs; however, additional discussion is warranted for two of the COCs: chromium and iron.

Iron, identified as a COC in soil (surface and subsurface), is the most common of all metals in the environment. Iron is one of the most important elements in nutrition, although iron toxemia occurs when high levels of iron are consumed. The oral RfD for iron is a provisional value. Most of the quantitative chronic oral toxicity data for iron have been obtained from studies of the Bantu population of South Africa. These studies were based on consumption of iron after drinking beer that was brewed in iron vessels. However, data from the Bantu studies were considered inadequate to determine a LOAEL because of confounding factors. The iron RfD is based on the mean dietary iron intakes, dietary plus supplemental, taken from the NHANES II data base. The highest dose level from the NHANES II study was used as a NOAEL, and the RfD was established on this basis. Additional toxicological data are needed to complete the verification process for the RfD. As stated above, hazards associated with chemicals with provisional toxicity values are likely to be overly conservative. Iron was removed as a COC for the Lonnie C. Miller soils.

Chromium was identified as a COC in surface and subsurface soil. The risk assessment assumed that only hexavalent chromium, the more toxic form of chromium, was present at the site. This likely results in some overestimation of risk. Hexavalent chromium is more mobile than trivalent chromium; if hexavalent chromium is detected in soil, it will generally be present in groundwater also. However, chromium was not detected in groundwater. Therefore, it is unlikely that hexavalent chromium is the only form of chromium in the soil. In fact, it is customary to assume that when total chromium is analyzed the ratio of hexavalent chromium to trivalent chromium (the less toxic form of chromium) is 1 to 6. The maximum detected concentrations of chromium in surface soil and subsurface soil were 160 mg/kg and 370 mg/kg, respectively. Both of these concentrations are well below the PRO of 10,000 mg/kg for trivalent chromium. The uncertainty of not knowing the speciation of chromium could be reduced by analyzing samples for hexavalent chromium. Chromium was removed as a COC for the Lonnie C. Miller soils.

5.8.2 Groundwater

5.8.2.1 Forest Street Incinerator Groundwater

Three chemicals were identified as COCs in groundwater: barium, iron, and manganese. However, the presence of two of these COCs warrant additional discussion.

Although barium was detected in each well, its maximum detected concentration of 0.35 mg/L was well below the maximum contaminant level (primary MCL) of 2 mg/L. Iron was identified as a COC in groundwater. Iron is an essential element in nutrition. The provisional oral RfD for iron was derived based on the mean dietary iron intakes taken from the NHANES II data base (a NOAEL).

Therefore, additional toxicological data are needed to complete the verification process for the RfD. Also, iron was detected in only three of 19 groundwater samples. As stated above, hazards associated with chemicals with provisional toxicity values are likely to be overly conservative. Barium and iron were removed as COCs for the Forest Street groundwater.

5.8.2.2 5th & Cleveland Incinerator Groundwater

Four chemicals were identified as COCs in groundwater: arsenic, aroclor 1242, and 1,2-dibromo-3-chloropropane, and iron. However, the presence of three of these COCs warrant additional discussion.

Two of the four COCs in groundwater (aroclor 1242 and arsenic) were detected in only one of five groundwater samples collected and analyzed during the RI. Arsenic was detected at a concentration of 0.0035 mg/L, which is well below the maximum contaminant level (MCL) of 0.01 mg/L. Arsenic was removed as a COC for the 5th & Cleveland groundwater. Aroclor 1242 was detected at a concentration of 0.0014 mg/L. This concentration is above the MCL of 0.0005 mg/L. Based on the low frequency of detection, the BHHRA recommended that additional samples be collected to confirm the presence of aroclor 1242 in groundwater.

Iron was identified as another COC in groundwater. Iron is an essential element in nutrition. The provisional oral RfD for iron was derived based on the mean dietary iron intakes taken from the NHANES II data base (a NOAEL). Therefore, additional toxicological data are needed to complete the verification process for the RfD. As stated above, hazards associated with chemicals with provisional toxicity values are likely to be overly conservative. Iron was removed as a COC for the 5th & Cleveland groundwater.

5.8.2.3 Lonnie C. Miller, Sr., Park Groundwater

Six chemicals were identified as COCs in groundwater: cadmium, cresol (M&P), cis-1,2-dichloroethylene, iron, manganese, and vinyl chloride. However, the presence of five of these COCs warrants additional discussion.

Four of the COCs in groundwater (cadmium, cis-l, 2-dichloroethylene, cresol (M&P), and vinyl chloride) were detected in only one of six groundwater samples collected and analyzed during the RI. Cadmium was detected at a concentration of 0.0034 mg/L, which is well below the maximum contaminant level (MCL) of 2 mg/L. Cis-l, 2-dichloroethylene was detected at a concentration of 0.016 mg/L, which is below the MCL of 0.07 mg/L. Vinyl chloride (detected at a concentration of 0.00054 mg/L) was also below its federal and state MCLs of 0.002 mg/L and 0.001 mg/L, respectively. Cresol (M&P) was detected at a concentration of 0.075 mg/L. Cresol (M&P) does not have an MCL. However, based on its low frequency of detection, the BHHRA recommended that additional samples be collected to confirm the presence of cresol in groundwater. Cesol (M&P) was not detected during the 2003 round of groundwater sampling and was removed as a COC for the Lonnie C. Miller groundwater as were the other three chemicals.

Iron was identified as another COC in groundwater. Iron is an essential element in nutrition. The provisional oral RfD for iron was derived based on the mean dietary iron intakes taken from the NHANES El data base (a NOAEL). Therefore, additional toxicological data are needed to complete the verification process for the RfD. As stated above, hazards associated with chemicals with provisional toxicity values are likely to be overly conservative. Iron was removed as a COC for the Lonnie C. Miller groundwater.

5.8.3 Surface Water

5.8.3.1 Forest Street Incinerator Surface Water

Carcinogenic PAHs were identified as COCs in surface water. Six individual carcinogenic PAH compounds were detected in surface water: benzo(a) anthracene, benzo(a) pyrene, benzo(b) fluoranthene, benzo(k) fluoranthene, chrysene, and indeno(l, 2,3-c, d) pyrene. Benzo(a) pyrene, benzo(b) fluoranthene, and benzo(k) fluoranthene were detected in one out of eight samples. Benzo (a) anthracene, chrysene, and indeno(l, 2,3-c, d) pyrene were each detected in two out of eight samples. Risk from dermal exposure to CPAHs in surface water was 4×10^{-4}, which is above EPA's acceptable risk range. There are a number of factors that impact this risk estimate. The critical issue that should first be noted is a change in the EPA dermal risk guidance (RAGS Volume I, Part E) that was finalized since the completion of the risk assessment report for this site. In the final version of the dermal risk guidance, EPA discusses chemicals having constants such as molecular weight and K_{OC} that fall outside specified ranges; these chemicals, which include the CPAHs and other extractable organics are said to be outside the Effective Predictive Domain. In essence, the equations used to model dermal dose/risk are not really valid for chemical with excessively high (or low) K_{OC}, MW. The guidance goes on to discuss the high uncertainty of calculating the dose for these chemicals and that the dose/risk for these chemicals should probably not be quantified, but rather should be discussed in the uncertainty section of the risk assessment.

Another factor contributing to the uncertainty of this pathway risk is that surface water is not static so it may be difficult to obtain representative concentrations of CPAHs, or any constituent, in surface water. Additionally, the risk assessment assumed that residents waded in McCoy's Creek for a given number of days. Site-specific information was not available about the number of days residents wade in the creek. Also, if the water level varies, body surface areas contacting the water may be greater than or less than those used in the risk assessment. Finally, an oral absorption efficiency was used to convert the oral slope factor for benzo(a) pyrene to a dermal slope factor for carcinogenic PAHs. Since benzo(a) pyrene causes skin cancer through direct action at the point of application, it may be inappropriate to quantitatively evaluate dermal exposure to CPAHs using a slope factor that was converted from the oral value. Therefore, before making any remedial decisions about this exposure medium, risk managers should consider that there is considerable uncertainty associated with the cancer risk that was calculated for surface water.

Due to the low frequency of detection of CPAH compounds and the fact that risks from exposure to surface water was likely overestimated, the BHHRA concluded that exposure to CPAHs in surface water is not likely to pose a significant threat to human receptors at the site.

5.8.3.2 5th & Cleveland Incinerator Surface Water

Carcinogenic PAHs were identified as COCs in surface water. Three individual carcinogenic PAH compounds were detected in surface water: benzo(a) anthracene, chrysene and indeno(1,2,3-c, d) pyrene. Benzo(a) fluoranthene was detected in two out often samples and chrysene, and indeno (l, 2,3-c, d) pyrene were each detected in one out often samples. Carcinogenic risk from dermal exposure to CPAHs in surface water was 1 X 10^{-5}, which falls within EPA's acceptable risk range. There are a number of factors that impact this risk estimate. The critical issue that should first be noted is a change in the EPA dermal risk guidance (RAGS Volume I, Part E) that was finalized since the completion of the risk assessment report for this site. In the final version of the dermal risk guidance, EPA discusses chemicals having constants such as molecular weight and K_{OC} that fall outside specified ranges; these chemicals, which include the CPAHs and other extractable organics are said to be outside the Effective Predictive Domain. In essence, the equations used to model dermal dose/risk are not really valid for chemical with excessively high (or low) K_{OC}, MW. The guidance goes on to discuss the high uncertainty of calculating the dose for these chemicals and that the dose/risk for these chemicals should probably not be quantified, but rather should be discussed in the uncertainty section of the risk assessment.

Another factor contributing to the uncertainty of this pathway risk is that surface water is not static so it may be difficult to obtain representative concentrations of CPAHs, or any constituent, in surface water. Although the risk assessment assumed that residents waded in the surface bodies, the surface water samples were actually collected from drainage ditches that had little or no flowing water. Also, if the water level varies, body surface areas contacting the water may be greater than or less than those used in the risk assessment. Finally, an oral absorption efficiency was used to convert the oral slope factor for benzo(a) pyrene to a dermal slope factor for carcinogenic PAHs. Since benzo(a) pyrene causes skin cancer through direct action at the point of application, it may be inappropriate to quantitatively evaluate dermal exposure to CPAHs using a slope factor that was converted from the oral value. Therefore, before making any remedial decisions about this exposure medium, risk managers should consider that there is considerable uncertainty associated with the cancer risk that was calculated for surface water.

Due to the low frequency of detection of CPAH compounds and the fact that risks from exposure to surface water was likely overestimated, the BHHRA concluded that exposure to CPAHs in surface water is not likely to pose a significant threat to human receptors at the site.

5.8.3.3 Lonnie C. Miller, Sr. Park Surface Water

Carcinogenic PAHs were identified as COCs in surface water. Five individual carcinogenic PAH compounds were detected in surface water: benzo(a) anthracene, benzo(a) pyrene, benzo(b) fluoranthene, benzo(k) fluoranthene, and chrysene. Benzo(b) fluoranthene and benzo(k) fluoranthene were detected in one out of 11 samples. Benzo(a) anthracene, benzo(a) pyrene, and chrysene were each detected in two out of 11 samples. Risk from dermal exposure to CPAHs in surface water was 5 X 10^{-5}, which is above EPA's acceptable risk range. There are a number of factors that impact this risk estimate. The critical issue that should first be noted is a change in the EPA dermal risk guidance (RAGS Volume 1, Part E) that was finalized since the completion of the risk assessment report for this site. In the final version of the dermal risk guidance, EPA discusses chemicals having constants such as molecular weight and Koc that fall outside specified ranges; these chemicals, which include the CPAHs and other extractable organics are said to be outside the Effective Predictive Domain. In essence, the equations used to model dermal dose/risk are not really valid for chemical with excessively high (or low) K_{oc}, MW. The guidance goes on to discuss the high uncertainty of calculating the dose for these chemicals and that the dose/risk for these chemicals should probably not be quantified, but rather should be discussed in the uncertainty section of the risk assessment.

Another factor contributing to the uncertainty of this pathway risk is that surface water is not static so it may be difficult to obtain representative concentrations of CPAHs, or any constituent, in surface water. Additionally, the risk assessment assumed that residents waded in the unnamed tributary for a given number of days. Site-specific information was not available about the number of days residents wade in the tributary. Also, if the water level varies, body surface areas contacting the water may be greater than or less than those used in the risk assessment. Finally, an oral absorption efficiency was used to convert the oral slope factor for benzo(a) pyrene to a dermal slope factor for carcinogenic PAHs. Since benzo(a) pyrene causes skin cancer through direct action at the point of application, it may be inappropriate to quantitatively evaluate dermal exposure to CPAHs using a slope factor that was converted from the oral value. Therefore, before making any remedial decisions about this exposure medium, risk managers should consider that there is considerable uncertainty associated with the cancer risk that was calculated for surface water.

Due to the low frequency of detection of CPAH compounds and the fact that risks from exposure to surface water was likely overestimated, the BHHRA concluded that exposure to CPAHs in surface water is not likely to pose a significant threat to human receptors at the site.

5.8.4 Refined List of COCs

The refined list of Site COCs is presented in Table 37.

Table 37: Refined Human Health Constituents of Concern	
Soil	Groundwater
Antimony	manganese (F, L)
Arsenic	aroclor 1242 (C)
Cadmium	l, 2-dibromo-3-chloropropane (C)
Copper	
Lead	
Manganese	
TEQ of 2,4,7,8, TCDD	
Carcinogenic Polycyclic aromatic hydrocarbons	
Aroclor-1260(C)	
Aroclor-1254(L)	
Barium (F) (C)	
Nickel (L)	
Thallium (L)	
Vanadium (F)	
Zinc (L)	
Notes on COC table: COCs without notation are common to all three properties. COCs with notations as follow are specific to that site: Forest Street (F) 5th & Cleveland (C) Lonnie C. Miller, Sr. Park (L)	

The refined list of COCs and the Remedial Goal Options (RGOs) for soil and groundwater developed during the HHBRAs are in Tables 38, 39, 40, 41, 42 and 43.

TABLE 12.1
RISK-BASED REMEDIAL GOAL OPTIONS
CURRENT/FUTURE CHILD AND ADULT RESIDENT - SURFACE/SUBSURFACE SOIL (mg/kg)
JACKSONVILLE ASH SITE - FOREST STREET INCINERATOR
JACKSONVILLE, DUVAL COUNTY, FLORIDA

CHEMICAL	HAZARD INDEX *			CARCINOGENIC RISK			EPA ARARs (mg/kg)
	0.1	1	3	10-6	10-5	10-4	--
Antimony	1.0	10	31	--	--	--	--
Arsenic	2.3	23	69	0.6	6	60	--
Barium	416	4,166	12,500	--	--	--	--
Cadmium	2.7	27	82	--	--	--	--
Copper	281	2,810	8,430	--	--	--	--
Lead	--	--	--	--	--	--	400 **
Manganese	386	3,858	11,574	--	--	--	--
Vanadium	49.1	491	1,473	--	--	--	--
CPAHs [benzo(a)pyrene]	--	--	--	0.07	0.7	7	--
2,3,7,8-TCDD (Dioxin)	--	--	--	0.000003	0.00003	0.0003	0.001 **

Notes:
* Based on child exposure only.
** These values are based on EPA OSWER Directives.
-- - Not Applicable

ROD Table 38

TABLE 12.2
RISK-BASED REMEDIAL GOAL OPTIONS
FUTURE CHILD RESIDENT - GROUNDWATER (mg/L)
JACKSONVILLE ASH SITE - FOREST STREET INCINERATOR
JACKSONVILLE, DUVAL COUNTY, FLORIDA

CHEMICAL	HAZARD INDEX			CARCINOGENIC RISK			Maximum Contaminant Levels (MCLs) (mg/L)	Florida MCLs (mg/L)
	0.1	1	3	10-6	10-5	10-4	--	--
Manganese	0.03	0.3	0.9	--	--	--	NE	--

Notes:

-- - Not Applicable
NE - Not Established

ROD Table 39

TABLE 12.1
RISK-BASED REMEDIAL GOAL OPTIONS
FUTURE CHILD AND ADULT RESIDENT - SURFACE/SUBSURFACE SOIL (mg/kg)
JACKSONVILLE ASH SITE - 5TH AND CLEVELAND
JACKSONVILLE, DUVAL COUNTY, FLORIDA

CHEMICAL	HAZARD INDEX* (mg/kg)			CARCINOGENIC RISK (mg/kg)			EPA ARARs (mg/kg)
	0.1	1	3	10-6	10-5	10-4	--
Antimony	2.9	29	87	--	--	--	--
Arsenic	2.3	23	69	0.59	5.9	59	--
Barium	496	4,960	14,880	--	--	--	--
Cadmium	3.5	35	105	--	--	--	--
Chromium	21.1	211	633	--	--	--	--
Copper	281	2,810	8,430	--	--	--	--
Manganese	479	4,790	14,370	--	--	--	--
Lead	--	--	--	--	--	--	400**
CPAHs [Benzo(a)pyrene]	--	--	--	0.07	0.7	7	--
2,3,7,8-TCDD (Dioxin)	--	--	--	0.000003	0.00003	0.0003	0.001**
PCB 1260 (Aroclor 1260)	--	--	--	0.26	2.6	26	--

Notes: *Based on Child Exposure Only
**These values are based based on EPA OSWER Directives
-- - Not Applicable

ROD Table 40

TABLE 12.2
RISK-BASED REMEDIAL GOAL OPTIONS
FUTURE CHILD AND ADULT RESIDENT - GROUNDWATER (mg/L)
JACKSONVILLE ASH SITE - 5TH AND CLEVELAND
JACKSONVILLE, DUVAL COUNTY, FLORIDA

CHEMICAL	HAZARD INDEX* (mg/L)			CARCINOGENIC RISK (mg/L)			EPA Maximum Contaminant Levels (MCLs) (mg/L)	Florida MCLs (mg/L)
	0.1	1	3	10-6	10-5	10-4	--	--
1,2-Dibromo-3-Chloropropanol	0.00018	0.0018	0.0054	0.00003	0.0003	0.003	--	--
PCB 1242 (Aroclor 1242)	--	--	--	0.00003	0.0003	0.003	0.0005	--

Notes: *Based on Child Exposure Only
-- - Not Applicable

ROD Table 41

TABLE 12.1
RISK-BASED REMEDIAL GOAL OPTIONS
CURRENT/FUTURE CHILD AND ADULT RESIDENT - SURFACE/SUBSURFACE SOIL/SEDIMENT (mg/kg)
JACKSONVILLE ASH SITE - LONNIE C. MILLER
JACKSONVILLE, DUVAL COUNTY, FLORIDA

CHEMICAL	HAZARD INDEX *			CARCINOGENIC RISK			EPA ARARs (mg/kg)
	0.1	1	3	10-6	10-5	10-4	--
PCB-1254 (Aroclor 1254)	0.1	1	3	0.5	5	50	--
Antimony	1	10	31	1.15	11.5	115	--
Arsenic	2.3	23	69	--	--	--	--
Cadmium	2.7	27	82	--	--	--	--
Copper	281	2,810	8,430	--	--	--	--
CPAHs (Benzo(a)pyrene)	--	--	--	0.07	0.7	7	--
2,3,7,8-TCDD (Dioxin)	--	--	--	0.000006	0.00006	0.0006	0.001**
Lead	--	--	--	--	--	--	400 **
Manganese	386	3,858	11,574	--	--	--	--
Nickel	143	1,433	4,299	--	--	--	--
Thallium	0.5	5	15	--	--	--	--
Zinc	210	2,105	6,315	--	--	--	--

Notes:

* Based on Child Exposure only

** These values are based on EPA OSWER Directives.

-- Not Applicable

ROD Table 42

TABLE 12.2
RISK-BASED REMEDIAL GOAL OPTIONS
FUTURE CHILD AND ADULT RESIDENT - GROUNDWATER (mg/L)
JACKSONVILLE ASH SITE - LONNIE C. MILLER
JACKSONVILLE, DUVAL COUNTY, FLORIDA

CHEMICAL	HAZARD INDEX *			CARCINOGENIC RISK			Maximum Contaminant Levels (MCLs) (mg/L)	Florida MCLs (mg/L)
	0.1	1	3	10-6	10-5	10-4	--	--
Manganese	0.03	0.3	0.9	--	--	--	NE	--

Notes:
* Based on Child Exposure only
-- Not Applicable
NE Not Established

ROD Table 43

5.8.5 Risk Management Decision

The BHHRA named three refined COCs for groundwater, the PCB aroclor 1242, l, 2-dibromo-3-chloropropane and manganese and recommended additional sampling due to infrequent detection and low concentrations. The additional groundwater sampling was conducted in 2003. PCB Aroclor 1242 and l, 2-dibromo-3-chloropropane were not detected in the 2003 sampling event and are removed from the list of COCs for groundwater. EPA did observe a slight elevation of manganese concentrations near the site relative to the background wells. Manganese does not have a maximum contaminant levels (MCLs). However, of the 37 monitoring wells sampled during the 2003 event, all but one of the manganese concentrations (0.99 ppm) are within the noncarcinogenic risk range for manganese (i.e., 0.03 ppm to 0.9 ppm) as calculated in the Final Human Health Risk Assessment and the EPA Region 9 PRO safe drinking water level of 0.88 ppm.

EPA concludes that the groundwater sampling performed to date indicates a lack of significant groundwater impact from the ash contamination. However, groundwater monitoring will be instituted to verify the "No Action " decision on the groundwater.

5.9 Final Human Health Contaminants of Concern

Table 44 lists the final human health COCs for the Jacksonville Ash Site.

Table 44: Final Human Health Constituents of Concern
Soil
Antimony
Arsenic
Cadmium
Copper
Lead
Manganese
TEQ of 2,4J, 8, TCDD
Carcinogenic Polycyclic aromatic hydrocarbons
Aroclor-1260(C)
Aroclor-1254(L)
Barium (F) (C)
Nickel (L)
Thallium (L)
Vanadium (F) Zinc (L)
Notes on COC table: COCs without notation are common to all three sites. COCs with notations as follow are specific to that site: Forest Street (F) 5th & Cleveland (C) Lonnie C. Miller, Sr. Park (L) The COCs in soil were developed without the evaluation of background soil concentrations.

PART 6: SUMMARY OF ECOLOGICAL RISK

6.1 Summary of Ecological Risk Assessment

Like the Human Health Risk Assessment, the Ecological Risk Assessment (ERA) was performed by EPA. The ERA encompassed all ecological risk assessment activities at the Jacksonville Ash Site through Step 3 A of the Interim Final 8-Step Ecological Risk Assessment Process for Superfund (EPA 1997) developed by the EPA. The 8-Step Ecological Risk Assessment process includes the following:

- Step 1 - Screening - Level Problem Formulation and Ecological Effects Evaluation
- Step 2 - Screening - Level Exposure Estimate and Risk Calculation
- Step 3 - Problem Formulation
- Step 4 - Study Design and Data Quality Objective (DQO) Process
- Step 5 - Verification of Field Sampling Design
- Step 6 - Site Investigation and Data Analysis
- Step 7 - Risk Characterization
- Step 8 - Risk Management

6.1.1 Step 1 - Screening Level Problem Formulation and Ecological Effects Evaluation

For this initial step, EPA developed an understanding of the site based on the environmental setting of the site, suspected contaminants present, the fate and transport mechanisms of these contaminants, mechanisms of ecotoxicity for the chemicals, potential ecological receptors, and exposure pathways. Based on the information gathered to describe these elements, assessment and measurement endpoints were selected as a basis for defining risk. The outcome of Step 1 was the generation, by environmental media (i.e., soil, sediment, surface water), of a list of contaminants for consideration in Step 2.

6.1.2 Step 2 - Screening - Level Exposure Estimate and Risk Calculation

During this phase of the ERA, comparison of contaminants were made to surface soil, sediment and surface water ecological screening values (ESVs).

<u>Soil</u>: The surface soil analytical data set from the summer 2000 RI sampling was screened against the selected ESVs for soil. This initial screening indicated that several contaminants were present at concentrations exceeding these ESVs. Contaminants exceeding screening values (those presenting a screening hazard quotient (HQ) of 1 or greater) were retained as preliminary contaminants of potential ecological concern (PCOPEC).

<u>Sediment</u>: The sediment analytical data results were screened against the selected ESVs for sediment. This initial screening indicated that several contaminants were present at concentrations exceeding ESVs for sediment. Contaminants exceeding screening values (those presenting a screening HQ of 1 or greater) were retained as PCOPEC.

<u>Surface Water</u>: The surface water analytical data results were screened against the selected ESVs for surface water. This initial screening indicated that several contaminants were present at concentrations exceeding these ESVs. Contaminants exceeding screening values (those presenting a screening HQ of 1 or greater) were retained as PCOPEC.

6.1.3 Step 3a - Problem Formulation (Refinement of Contaminants of Potential Ecological Concern)

The first action taken under Step 3 of the ERA process is refinement of the PCOPECs identified in Step 2 to determine the need for, or focus of, further investigations. Contaminants that exceeded the approved ESVs, or that could not be screened due to a lack of an ESV (and therefore identified as PCOPEC) were primarily evaluated based on an approved set of ERVs. The ERVs for each contaminant were approved by EPA's Ecological Technical Assistance Group (ETAG) based on a comparative analysis of the available toxicological studies. Based on the ecological setting and the list of PCOPEC, a preliminary ecological exposure model was developed.

The preliminary ecological exposure model presents the most significant exposure pathways to ecological receptors based on the following principal exposure routes:

- Direct Exposure to the contaminants in a media of concern
- Food chain transfer of the contaminant in biological tissue of prey organisms

Refinement of PCOPEC was performed to determine contaminants of potential ecological concern (COPEC) for both direct exposure and through food chain exposure. Based on the refinement of COPEC presented in the ERA, the following conclusions were presented on a media-by-media basis for surface soils, sediment, and surface waters evaluated at the Jacksonville Ash Site. These conclusions also considered the quality of the available habitat and the benefits/drawbacks to continuing with additional evaluations to more accurately define the ecological risks.

- The ERA concluded that concentrations of COPEC in surface soil present a risk to terrestrial communities at all three sites. Some of the risk is associated with contaminants which pose risk from direct exposure while other risk is associated with contaminants which pose a risk from food chain exposure.
- The ERA concluded that concentrations of COPEC in sediment present a risk to aquatic communities at all three sites. Some of the risk is associated with contaminants which pose risk from direct exposure while other risk is associated with contaminants which pose a risk from food chain exposure.
- The surface water refinement determined that there were direct exposure COPEC observed in surface water at the 5th & Cleveland and Lonnie C. Miller Park sites. Forest Street was found to have no direct exposure COPECs in surface water. Surface water was not evaluated as a substrate media for food chain exposure because it represents a minor exposure pathway to wildlife. The ERA concluded that the surface water at all three sites is not a source of contamination, but a pathway that is highly transient and changes with climate conditions and that the ash related COPECs are relatively insoluble and a minor exposure pathway for wildlife. Therefore, no remediation is necessary.

Tables 45, 46, 47, 48, 49 and 50 list the COPECs for soil and sediment and the preliminary ecological remedial goals developed by the ERAs.

Table 5-1
Ecological Preliminary Remedial Goals for Surface Soils
Jacksonville Ash Superfund Site
Forrest Street

Contaminant	Preliminary Remedial Goal	Driver
Inorganics (mg/KG)		
ALUMINUM	600 b	Direct exposure
ANTIMONY	5	Direct exposure
CHROMIUM, TOTAL	32	Direct exposure
COPPER	61	Direct exposure
IRON	200	Direct exposure
LEAD	400 a	Food chain exposure
SILVER	10	Direct exposure
ZINC	200	Direct exposure
MERCURY	0.012 a	Food chain exposure
Pesticide/PCBs (ug/KG)		
4,4'-DDT	17.5	Direct exposure
ALPHA-CHLORDANE	100	Direct exposure
GAMMA-CHLORDANE	100	Direct exposure
AROCLOR-1260	40	Direct exposure

Notes:

a) Represents average soil concentration that should be the remedial goal for food-chain exposure driven COPEC.

b) The PRG for aluminum is based on the assumption of a soil pH less than 5.5.

ROD Table 45

Table 5-2
Ecological Preliminary Remedial Goals for Sediment
Jacksonville Ash Superfund Site
Forrest Street

Contaminant	Preliminary Remedial Goal[a]	Driver
Inorganics (mg/KG)		
ALUMINUM	NA	-
BERYLLIUM	200	Direct exposure
LEAD	71.2	Food chain exposure
SILVER	1.77	Direct exposure
VANADIUM	NA	-
THALLIUM	NA	-
ZINC	270	Direct exposure
Dioxins (ng/KG)		
TEQ of 2,3,7,8-TCDD	25	Direct exposure
Pesticides (ug/KG)		
ALPHA-CHLORDANE	4.79	Direct exposure
DIELDRIN	4.3	Direct exposure
GAMMA-CHLORDANE	4.79	Direct exposure
Semivolatiles (ug/KG)		
BENZO(a)ANTHRACENE	385	Direct exposure
BENZO(g,h,i)PERYLENE	170	Direct exposure
BENZO(k)FLUORANTHENE	240	Direct exposure
CARBAZOLE	NA	-
INDENO(1,2,3-cd)PYRENE	200	Direct exposure
SUM TOTAL PAHs	14000 (b)	Direct exposure

Notes:

a) Represents average sediment concentration that should be the remedial goal

b) COPC average protective concentration (LOAEC) for direct ex[posure to benthic invertebrates from Table 2 of DiToro and McGrath (2000)

NA - Not available due to a lack of toxicity data.

ROD Table 46

Table 5-1
Ecological Preliminary Remedial Goals for Surface Soils
Jacksonville Ash Superfund Site
5th and Cleveland
Page 1 of 1

Contaminant	Preliminary Remedial Goal	Driver
Inorganics (mg/KG)		
ANTIMONY	5	Direct exposure
BARIUM	500	Direct exposure
CHROMIUM, TOTAL	32	Direct exposure
COPPER	61	Direct exposure
IRON	200	Direct exposure
LEAD	400 a	Food chain exposure
ZINC	200	Direct exposure
VANADIUM	2	Direct exposure
MERCURY	0.1	Direct exposure
Pesticides (ug/KG)		
4,4-DDT	17.5	Direct exposure
DIELDRIN	0.5	Direct exposure
Semivolatiles (ug/KG)		
SUM TOTAL PAHs	5000	Direct exposure

Notes:

a) Represents average soil concentration that should be the remedial goal

ROD Table 47

Table 5-2
Ecological Preliminary Remedial Goals for Sediment
Jacksonville Ash Superfund Site
5th and Cleveland
Page 1 of 1

Contaminant	Preliminary Remedial Goal[a]	Driver
Dioxins/Furans (ng/KG)		
2,3,7,8-TCDD	25	Direct exposure
Inorganics (mg/KG)		
BARIUM	200	Direct exposure
COPPER	108	Direct exposure
IRON	20000	Direct exposure
LEAD	83	Food chain exposure
ZINC	270	Direct exposure
MERCURY	0.486	Direct exposure
Pesticides (ug/kg)		
ALPHA-BHC	6	Direct exposure
ALPHA-CHLORDANE	4.79	Direct exposure
DIELDRIN	4.3	Direct exposure
GAMMA-CHLORDANE	4.79	Direct exposure
p,p'-DDE	6.75	Direct exposure
p,p'-DDT	4.77	Direct exposure
Volatile Organic Compounds (ug/kg)		
ACETONE	453.37	Direct exposure
METHYL ETHYL KETONE	136.96	Direct exposure
Semivolatiles (ug/L)		
BENZO(a)ANTHRACENE	385	Direct exposure
BENZO(a)PYRENE	763	Direct exposure
BENZO(g,h,i)PERYLENE	170	Direct exposure
BENZO(k)FLUORANTHENE	240	Direct exposure
CHRYSENE	846	Direct exposure
DIBENZ(A,H)ANTHRACENE	135	Direct exposure
FLUORANTHENE	1494	Direct exposure
INDENO(1,2,3-cd)PYRENE	200	Direct exposure
PHENANTHRENE	515	Direct exposure
PYRENE	875	Direct exposure
SUM TOTAL PAHs	14000 (b)	Direct exposure

Notes:

a) Represents average sediment concentration that should be the remedial goal

b) COPC average protective concentration (LOAEC) for direct ex[posure to benthic invertebrates from Table 2 of DiToro and McGrath (2000)

ROD Table 48

Table 5-1
Ecological Preliminary Remedial Goals for Surface Soils
Jacksonville Ash Superfund Site
Lonnie C. Miller, Jr. Park

Contaminant	Preliminary Remedial Goal	Driver
Inorganics (mg/KG)		
ALUMINUM	600 (b)	Direct exposure
ANTIMONY	5	Direct exposure
CHROMIUM, TOTAL	32	Direct exposure
COPPER	61	Direct exposure
IRON	200	Direct exposure
LEAD	400 (a)	Food chain exposure
MANGANESE	500	Direct exposure
NICKEL	90	Direct exposure
SILVER	10	Direct exposure
ZINC	200	Direct exposure
MERCURY	0.012 (a)	Food chain exposure
Pesticide/PCBs (ug/KG)		
DIELDRIN	0.5	Direct exposure

Notes:

a) Represents average soil concentration that should be the remedial goal for food-chain exposure driven COPEC.
b) The PRG for aluminum is based on the assumption that the soil pH is less than 5.5.

ROD Table 49

Table 5-2
Ecological Preliminary Remedial Goals for Sediment
Jacksonville Ash Superfund Site
Lonnie C. Miller, Jr. Park

Contaminant	Preliminary Remedial Goal [a]	Driver
Inorganics (mg/KG)		
ALUMINUM	NA	-
COPPER	200	Direct exposure
LEAD	91.3	Direct exposure
ZINC	270	Direct exposure
Dioxins (ng/KG)		
ADJUSTED TEQ 2,3,7,8-TCDD	25	Food chain exposure
Semivolatiles (ug/KG)		
BENZO(g,h,i)PERYLENE	170	Direct exposure
BENZO(k)FLUORANTHENE	240	Direct exposure
SUM TOTAL PAHs	14000 (b)	Direct exposure

Notes:

a) Represents average sediment concentration that should be the remedial goal

b) COPC average protective concentration (LOAEC) for direct exposure to benthic invertebrates from Table 2 of DiToro and McGrath (2000)

NA - Not available due to a lack of toxicity data.

ROD Table 50

6.2 Risk Management Decision (Final Contaminants of Ecological Concern)

After completion of the ERA through Step 3A, a risk management decision was made that the ecological risks were well defined and no additional ecological evaluations or assessments were required to develop preliminary RGs for the COPECs.

A risk management decision was made that the COPECs and the preliminary ecological RGs identified in Step 3A of the ERA and presented in Tables 45, 46, 47, 48, 49 and 50 would serve as Contaminants of Ecological Concern (COEC) and ecological RGs for the Site.

6.3 Risk Management Decision (Soil Remediation for Ecological Cleanup)

Refinement of the COPECs and preliminary ecological RGs was possible. For example, many of the COPECs for soils are metals and other inorganic chemical that are naturally occurring in the environment. Some of the COPECs are organic chemicals that are also naturally occurring or ubiquitous in urban environments. To determine background concentrations of COPECs, soil sampling was performed. Surface soil was collected at a total of 60 background locations samples. In many cases, the background concentration of the COPEC was above the preliminary ecological RG (e. g., aluminum, iron). EPA does not require cleanup to below background levels.

With establishment of the environmental medium of concern (soil), identification of the COPECs and determination of surface soil background concentrations, an analysis was performed in Section 2.5 of the Feasibility Study on the geographic co-location of human health COCs and ecological COPECs

Cleanup to meet Ecological Direct Exposure COPECs: Although there are 19 COPECs for soil listed on Tables 45, 47 and 49, analyses of the Phase I and Phase II soil datasets (surface soil only) has shown that many of the COPECs are not significant because they are not found above their preliminary remedial goal or soil background concentration while other have been detected in few of the soil samples analyzed for that COPEC (low frequency of occurrence). The analyses of the Phase I and Phase II soil datasets have shown that lead, mercury and zinc to be the most significant COPECs in soil. The evaluation of the concentrations of lead, mercury and zinc in relation to ecological risk indicates that the vast majority of samples exceeding the preliminary RG for lead, mercury and zinc (or background concentrations if background is higher than the respective cleanup level) are already set for remediation for other reasons (e.g., residential soil greater than 400 ppm lead). In other words, the remediation decisions based on residential scenarios and human health appear to also address ecological risk from surface soil COPECs with respect to direct exposure.

EPA is making a risk management decision that the direct exposure ecological risk to soils in residential settings will be addressed by cleanup to satisfy human health risks. Any remaining ecological risk will be small. The remaining direct exposure ecological risk is considered insignificant for the following reasons:

- The preliminary ecological RGOs identified in the 2003 ERAs are conservative and further studies would likely increase the clean up concentrations.
- The ecological setting at Jacksonville Ash Site is not of high ecological value (i.e., it is an urban residential setting with little undisturbed land).

- A large mass of contaminants will be removed or covered to satisfy cleanup to residential human health. Removal or capping of soil to satisfy cleanup to residential human health will also remove or break most of the ecological exposure pathway.

Cleanup to meet Food Chain Exposure COPECs: Along with lead, mercury was identified as a significant food chain COPEC. The lead human health cleanup number is equivalent to the lead ecological preliminary RG, so the lead ecological problem will be addressed concurrently with the lead cleanup for human health. The ecological cleanup level for mercury are lower than respective human health values.

Analyses of the Phase I and Phase El soil datasets (surface soil only) in relation to ecological risk indicates that the vast majority of samples exceeding the preliminary ecological RG for mercury (or background concentrations if background is higher than the respective ecological cleanup level) are already set for remediation for other reasons (e.g., residential soil greater than 400 ppm lead). In other words, the remediation decisions based on residential scenarios and human health appear to also address ecological risk from surface soil COPECs with respect to food chain exposures.

EPA is making a risk management decision that the food chain ecological risk to soils in residential settings will be addressed by cleanup to satisfy human health risks. Any remaining ecological risk will be small. The remaining food chain ecological risk is considered insignificant for the following reasons:

- The preliminary ecological RGOs identified in the 2003 ERAs are conservative and further studies would likely increase the clean up concentrations.
- The ecological setting at Jacksonville Ash Site is not of high ecological value (i.e., it is an urban residential setting with little undisturbed land).
- The food chain exposure is averaged over a large exposure area. A large mass of contaminants will be removed or covered to satisfy cleanup to residential human health. Removal or capping of soil to satisfy cleanup to residential human health will also remove or break most of the ecological exposure pathway.

The overall conclusion is that cleanup to satisfy the human health RGs will also provide adequate cleanup to protect ecological receptors (i.e., separate actions to address ecological risk in soil is not needed).

6.4 Risk Management Decision (Sediment Remediation for Ecological Cleanup)

The analytical results of sediment in McCoy's Creek (Forest Street), Hogan Creek (5th & Cleveland) and Ribauld River (Lonnie C. Miller, Sr. Park) indicate some exceedences of the preliminary ecological remedial goals, although the evaluation of background concentration of sediments in McCoy's Creek and the Ribault River do not show a significant exceedence of sediment concentrations upstream of the sites. This evaluation indicates that the sites have not significantly contaminated the sediment above levels already present in the surface water bodies. No active remediation of the creek or river sediment is required, although the banks will be stabilized to prevent erosion into the surface water bodies of ash and soil contaminated with lead above 400 mg/kg or COPECs in excess of preliminary ecological RGs.

PART 7: DESCRIPTION OF REMEDIAL ALTERNATIVES

7.1 Remedial Action Objectives

Remedial Action Objectives (RAOs) are specific cleanup objectives. For example, RAOs are site-specific goals for protecting human health and the environment established based on the nature and extent of contamination, resources that are currently and potentially threatened, and the potential for human and environmental exposure.

The following RAOs have been identified for the Jacksonville Ash Site:

- Prevent human exposure to site COCs through contact, ingestion, or inhalation of soil contaminated from incinerator ash or other wastes disposed at the Jacksonville Ash Site with a carcinogenic risk greater than 1 x 10^{-6} (i.e., one in a million), with a noncarcinogenic hazard index greater than 1 and lead in excess of 400 mg/kg.
- Prevent impacts to terrestrial biota from exposure to surface soils contaminated from incinerator ash disposed at the Jacksonville Ash Site and containing contaminants of potential ecological concern (COPECs) in excess of preliminary ecological Remedial Goals (RGs) and soil background concentrations. [1]
- Prevent impacts to aquatic communities and viable insectivore (insect eating) and piscivore (fish eating) communities from exposure to sediment contaminated from incinerator ash at the Jacksonville Ash Site and containing chemicals of potential ecological concern (COPECs) in excess of ecological Preliminary Remediation Goals (PRGs) and sediment background concentrations. [2]
- Control erosion and transport of soils containing visible ash, lead in excess of 400 mg/kg or COPECs in excess of preliminary ecological RGs along the banks of rivers and creek to prevent possible unacceptable risks to human health or ecological impacts.
- Place geotextile (or other membrane) topped with gravel under residential houses with open crawlspaces (that can be accessed by children) with exceedences of human health RGs to further prevent direct contact with the soil. [3]
- Institute groundwater monitoring to verify the "No Action" decision for the groundwater. CERCLA 5 year Reviews of post-remedial groundwater monitoring will be used to determine effectiveness of this site specific source removal in reducing groundwater contaminant levels and the potential for discharge to surface water. [3]

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[1] Cleanup to satisfy the human health RGs will also provide adequate cleanup to protect ecological receptors (i.e., separate actions to address ecological risk in soil is not needed).

[2] Exceedences of ecological sediment PRGs in stream sediments have been found to be similar to sediment background concentrations upstream of the sites. No active remediation of the stream sediment is required. The drainage ditches at the 5th & Cleveland site and Lonnie Miller Park are not significant aquatic habitats due to the lack of water for most of the year. These ditches will be remediated to human health soil cleanup concentrations.

[3] Geotextile with gravel in open crawlspaces and groundwater monitoring were not part of the remedies submitted in the Feasibility Study. EPA has added these RAOs in response to concerns by Florida Department of Environmental Protection and community members.

7.2 Remedial Goals (i.e., cleanup levels)

Remedial Goals Options (RGOs) for residential exposure to soil, developed in the 2002/2003 HHBRAs, are listed in Tables 38, 40 and 42. EPA has chosen the RGs that meet the RAOs (to achieve the risk levels of 1 X 10^{-6} and HI of 1), from the RGOs developed during the HHBRA and FDEP's soil cleanup target levels (SCTLs). The Florida SCTLs for industrial scenarios were utilized as default RGs. The RGs for residential exposure to soil, industrial exposure to soil and ecological soil and sediment are in Table 51, 52, 53 and 54 respectively. These RGs were used in the Feasibility Study to direct the investigation and evaluation of possible remedial alternatives.

TABLE 51 : HUMAN HEALTH SOIL CONSTITUENTS OF CONCERN AND RESIDENTIAL RGs

Constituent of Concern	Soil Background (mg/kg)	Remedial Goals (mg/kg) *	RG Source
Antimony	0.68	27	FDEP Chapter 62-777
Arsenic	1.21	2.1	FDEP Chapter 62-777
Cadmium	0.36	82	FDEP Chapter 62-777
Copper	14.83	2,810	Jacksonville Ash HHBRA
Lead	84.9	400	FDEP Chapter 62-777
Manganese	46.41	3,500	FDEP Chapter 62-777
TEQ of 2,3,7,8, TCDD	0.00000882	0.000007	FDEP Chapter 62-777
Carcinogenic Polycyclic aromatic hydrocarbons	---	0.1	FDEP Chapter 62-777
Aroclor-1260(C)	0.06	0.5	FDEP Chapter 62-777
Aroclor-1254(L)	0.008	0.5	FDEP Chapter 62-777
Barium (F) (C)	34.65	4,166	Jacksonville Ash HHBRA
Nickel (L)	3.16	1,433	Jacksonville Ash HHBRA
Thallium (L)	0.2	6.1	FDEP Chapter 62-777
Vanadium (F)	9.29	491	Jacksonville Ash HHBRA
Zinc (L)	107.17	26,000	FDEP Chapter 62-777

Notes:
COCs without notation are common to all three sites. COCs with notations as follow are specific to that site:
Forest Street (F)
5t h & Cleveland (C)
Lonnie C. Miller, Sr. Park (L)

* If the background concentration for a specific constituents is above the RGs identified above, then cleanup will be to the background concentration.

- Background concentration currently not available

TABLE 52: HUMAN HEALTH SOIL CONSTITUENTS OF CONCERN AND INDUSTRIAL RGs		
Constituent of Concern	Remedial Goals (mg/kg) *	RG Source
Antimony	370	FDEP Chapter 62-777
Arsenic	12	FDEP Chapter 62-777
Barium	130,000	FDEP Chapter 62-777
Cadmium	1,700	FDEP Chapter 62-777
Copper	89,000	FDEP Chapter 62-777
Lead	1,400	FDEP Chapter 62-777
Manganese	43,000	FDEP Chapter 62-777
Nickel	35,000	FDEP Chapter 62-777
Thallium	150	FDEP Chapter 62-777
Vanadium	10,000	FDEP Chapter 62-777
Zinc	630,000	FDEP Chapter 62-777
Aroclor-1260 Aroclor-1245	2.6 (Aroclor mixture)	FDEP Chapter 62-777
Carcinogenic Polycyclic aromatic Hydrocarbons	0.7	FDEP Chapter 62-777
TEQ of 2,3,7,8, TCDD (dioxin)	0.00003	FDEP Chapter 62-777

Notes:
COCs without notation are common to all three sites. COCs with notations as follow are specific to that site: Forest Street (F)
5t h & Cleveland (C)
Lonnie C. Miller, Sr. Park (L)

* If the background concentration for a specific constituents is above the RGs identified above, then cleanup will be to the background concentration.

TABLE 53: ECOLOGICAL SOIL CONSTITUENTS OF CONCERN AND RGs			
Constituent of Concern	Soil Background (mg/kg)	Preliminary RG (mg/kg)	RG Source
Antimony	0.68	5	Jacksonville Ash Ecological Risk Assessments (ERAs)
Chromium	12.06	32	Jacksonville Ash ERAs
Copper	14.83	61	Jacksonville Ash ERAs
Iron	2,900	200	Jacksonville Ash ERAs
Lead	84.9	400	Jacksonville Ash ERAs
Mercury	0.12	0.012	Jacksonville Ash ERAs
Zinc	107.17	200	Jacksonville Ash ERAs
Aluminum (F) (L)	33,365	600	Jacksonville Ash ERAs
Barium (C)	34.65	500	Jacksonville Ash ERAs
Manganese (L)	46.41	500	Jacksonville Ash ERAs
Nickel (L)	3.16	90	Jacksonville Ash ERAs
Silver (F)(L)	-	10	Jacksonville Ash ERAs
Vanadium (C)	0.29	2	Jacksonville Ash ERAs
Aroclor 1260(F)	0.06	0.04	Jacksonville Ash ERAs
Alpha Chlordane (F)	-	0.1	Jacksonville Ash ERAs
Gamma Chlordane (F)	0.004	0.1	Jacksonville Ash ERAs
Dieldrin (C) (L)	0.004	0.0005	Jacksonville Ash ERAs
4,4 DDT (F) (C)	0.003	0.0175	Jacksonville Ash ERAs
Carcinogenic Polycyclic aromatic hydrocarbons (C)	-	5 (Sum)	Jacksonville Ash ERAs

COCs without notation are common to all three sites. COCs with notations as follow are specific to that site:
Forest Street (F)
5th & Cleveland (C)
Lonnie C. Miller, Sr. Park (L)

* If the background concentration for a specific constituents is above the RG identified above, then cleanup will be to the background concentration.

- Background concentration not available

TABLE 54: ECOLOGICAL SEDIMENT CONSTITUENTS OF CONCERN AND RGs			
Constituent of Concern	Soil Background (mg/kg)	Preliminary RG (mg/kg)	RG Source
Aluminum	3,382 (F) 10,482 (L)	NA	Jacksonville Ash ERAs
Copper	- (F) 286 (L)	108	Jacksonville Ash ERAs
Lead	246 (F) 98 (L)	91.3	Jacksonville Ash ERAs
Zinc	4,052 (F) 286 (L)	270	Jacksonville Ash ERAs
TEQ of 2,3,7,8, TCDD	-	0.000025	Jacksonville Ash ERAs
Carcinogenic Polycyclic aromatic hydrocarbons	-	14 (Sum)	Jacksonville Ash ERAs
Barium (C)	-	200	Jacksonville Ash ERAs
Beryllium (F)	0.4	200	Jacksonville Ash ERAs
Iron (C)	-	20,000	Jacksonville Ash ERAs
Mercury (C)	-	0.49	Jacksonville Ash ERAs
Silver (F)	0.5	1.77	Jacksonville Ash ERAs
Vanadium (F)	14.2	NA	Jacksonville Ash ERAs
Thallium (F)	0.8	NA	Jacksonville Ash ERAs
Alpha Chlordane(F)(C)	22.4 (F)	0.0048	Jacksonville Ash ERAs
Gamma Chlordane (F)	33.8	0.0048	Jacksonville Ash ERAs
Dieldrin (F)	4.8	0.0043	Jacksonville Ash ERAs
p, p'-DDE (C)	-	0.0675	Jacksonville Ash ERAs
p, p'-DDT (C)	-	0.048	Jacksonville Ash ERAs
Acetone (C)	-	0.453	Jacksonville Ash ERAs
Methyl Ethyl Ketone (C)	-	0.137	Jacksonville Ash ERAs

COCs without notation are common to all three sites. COCs with notations as follow are specific to that site:
Forest Street (F)
5th & Cleveland (C)
Lonnie C. Miller, Sr. Park (L)
NA - Not available due to lack of toxicity data
* If the background concentration for a specific constituents is above the RGs identified above, then cleanup will be to the background concentration.
- Background concentration not available

7.3 Description of Remedial Alternatives

To meet the RAOs and RGs outlined in Parts 7.1 and 7.2, a range of remedial actions were considered in the 2005 Feasibility Study. The purpose of this screening was to identify the technologies that may be applicable for remediation of the media of concern at the Site. The primary screening of technology types[4] and process options[5] used the following factors to evaluate the state of the technology: side conditions, waste characteristics, the nature and extent of contamination, the presence of constituents that could limit the effectiveness of the technology.

Technologies and process options that remained after the primary screening were further evaluated using a qualitative comparison based on effectiveness, implementability and cost. Those technologies and process options considered infeasible based on effectiveness, implementability and cost were removed from further consideration. The remedial technologies and process options that remained after the screening were then assembled into a range of alternatives, essentially four alternatives which will be explained in the following sub-parts.

Note that remedial alternatives which require any combination of soil excavation and/or cover installation also include restoration activities (e.g., replacement of flower beds, trees, shrubs, grass, etc.). Likewise, any remedial alternatives that require excavation will also require characterization of the excavated soil to determine proper disposal (i.e., determination if the soil is hazardous or not hazardous from a disposal standpoint). In addition, the three active alternatives all include the option for temporary relocation which will be provided to eligible residents upon their request.

Each alternative is summarizes in Parts 7.3.1 through 7.3.4 of the ROD. The (F) designation is for the Forest Street Incinerator site. The (C) designation is for the 5th & Cleveland Incinerator site. The (L) designation is for the Lonnie C. Miller, Sr. Park site.

7.3.1 Alternative 1: No Further Action

The no action alternative is included in the evaluation as a baseline comparison with the other remedies. Under this alternative, no remedial action would be performed to control exposure to COCs exceeding the RGs. Any reduction in soil or sediment contaminant concentrations would be due to natural dispersion, attenuation, and degradation processes.

Capital Cost:	$0 (F)
	$0(C)
	$0 (L)
Total All Three Sites:	**$0**

[4] For example, in situ biological treatment, consolidation, physical treatment, excavation, administrative controls, engineered caps, etc.

[5] For example, landfarming, onsite consolidation, stabilization/solidification, excavation, city ordinances, asphalt, etc.

Average Annual O&M Cost:	$5,200 (F)
(50 Years of O&M)	$5,200 (C)
	$5,200 (L)
Total All Three Sites:	**$15,6000**

Total Present Worth:	$70,000 (F)
(7% Discount Rate)	$70,000 (C)
	$70,000 (L)
Total All Three Sites:	**$210,000**

7.3.2 Alternative 2: Soil Cover with Excavation and Offsite Disposal

The remedial objectives would be met by Alternative 2 primarily by providing a 0.5 foot cover of uncontaminated soil over all parcels and areas exceeding RGs. This prevents direct contact, ingestion or inhalation of surficial soils by residents while also preventing impacts to terrestrial biota. Some excavation would be needed to allow for placement of the soil cover without creating storm water drainage problems or surface grade problems with fixed surface features or structures. Exposure to subsurface soils is addressed through administrative notices and restrictions on excavation of subsurface soil. Soil below existing structures and roadways would not be removed.

Erosion of soils and ash exceeding ecological RGs is also prevented in this alternative through stabilization of the banks of McCoy's Creek, Ribault River and Hogan Creek. Stream banks would be cleared of vegetation and banks judged to have an excessive slope would be cut back. Erosion control matting would be placed, cover soil added and a new grass cover established on the sideslopes. An option for providing at least two feet of clean soil between the bank stabilization measures and the ash/soil contamination would be also considered. Acceptable side slopes and other design elements for bank stabilization will be determined in remedial design by professional engineers.

The main components of Alternative 2 are as follows:

- Soil cover with excavation where required and offsite disposal
- Solidification/stabilization for disposal pursuant to RCRA treatment standards requirements at 40 CFR § 268
- Creek and river bank stabilization
- Administrative notices and restrictions (i.e., Institutional Controls)

The estimated times to complete Alternative 2 are 20 months for Forest Street, 34 months for 5th & Cleveland and 12 months for Lonnie C. Miller, Sr. Park.

Capital Cost:	$12,800,000 (F)
	$20,900,000 (C)
	$8,000,000 (L)
Total All Three Sites:	**$41,700,000**

Average Annual O&M Cost:	$31,000 (F)
(50 Years of O&M)	$38,000 (C)
	$77,000 (L)
Total All Three Sites:	**$146,000**
Total Present Worth:	$13,200,000 (F)
(7% Discount Rate)	$21,400,000 (C)
	$9,100,000 (L)
Total All Three Sites:	**$43,700,000**

7.3.3 Alternative 3: Shallow Excavation, Offsite Disposal and Soil Cover

The RGs would be met under Alternative 3 by providing at least 2 feet of soil meeting RGs over all parcels and areas exceeding RGs and administrative notices and restrictions on excavation of subsurface soil remaining above RGs. Subsurface soil remaining above RGs will be marked by a warning mesh or fabric (i.e., snow fencing, etc.) to indicate the presence of contamination. Lonnie C. Miller, Sr. Park's Alternative 3 was broken into two subalternatives in the Feasibility Study for an evaluation of the capping of the surface soil contamination above RGs in the park with two feet of uncontaminated soil (Alternative 3a) and the removal of two feet of contaminated soil and ash before the soil cover is placed (Alternative 3b).

In residential areas, the minimum 2 feet thick of soil meeting the RGs would require excavation and offsite disposal of the shallow soil (up to 2 feet) contaminated above RGs. There are exceptions to the 2 feet removal requirement in areas adjacent to the foundation of buildings and other structures and around the base of trees. In these type of situations, less than two feet of soil could be removed to protect the structural integrity of buildings and to prevent damage to tree root systems. The removal of trees is optional and at the discretion of the owner of the property. Areas exceeding RGs below buildings, roadways, asphalt or concrete driveways and sidewalks would be considered adequately covered.

The 2 feet of soil meeting the RGs in non-residential areas (e.g., the Lonnie C. Miller, Sr., Park Alternative 3a) would be met by installation of a 2 foot thick cover, with excavation as needed for placement of the cover. In addition, in areas where removal of contaminated soil below 2 feet would result in the complete removal of all soil contamination above RGs, excavation below 2 feet would be allowed to lessen the need for Institutional Controls.

Erosion of soils and ash exceeding ecological RGs is also prevented in this alternative through stabilization of the banks of McCoy's Creek, Ribault River and Hogan Creek. Stream banks would be cleared of vegetation and banks judged to have an excessive slope would be cut back. Erosion control matting would be placed, cover soil added and a new grass cover established on the sideslopes. Acceptable side slopes and other design elements for bank stabilization will be determined in remedial design by professional engineers. An option for providing at least two feet of clean soil between the bank stabilization measures and the ash/soil contamination would be also considered.

The main components of this alternative are:

- Shallow soil excavation, offsite disposal and soil cover in residential areas
- Soil cover with excavation as needed in non-residential areas (e.g., Lonnie. C. Miller, Park Alternative 3a)
- Temporary Relocation will be provided to eligible residents upon their request
- Solidification/stabilization for disposal pursuant to RCRA treatment standards requirements at 40 CFR § 268 • Creek and river bank stabilization
- Administrative notices and restrictions (i.e., Institutional Controls)

The estimated time to complete this alternative are 27 months for Forest Street, 45 months for 5th & Cleveland and 24 months (Alternative 3a) and 26 months (Alternative 3b) for Lonnie C. Miller, Sr. Park.

Alternative 3 Including Alternative 3a for Lonnie C. Miller, Sr. Park Site

Capital Cost:	$21,600,000 (F)
	$29,100,000 (C)
	$20,100,000 (L)
Total All Three Sites:	**$70,800,000**
Average Annual O&M Cost:	$65,000 (F)
(50 Years of O&M)	$31,000 (C)
	$195,000 (L)
Total All Three Sites:	**$291,000**
Total Present Worth:	$22,500,000 (F)
(7% Discount Rate)	$29,500,000 (C)
	$22,800,000 (L)
Total All Three Sites:	**$74,800,000**

Alternative 3 Including Alternative 3b for Lonnie C. Miller, Sr. Park Site

Capital Cost:	$21,600,000 (F)
	$29,100,000 (C)
	$51,800,000 (L)
Total All Three Sites:	**$102,500,000**
Average Annual O&M Cost:	$65,000 (F)
(50 Years of O&M)	$31,000 (C)
	$195,000 (L)
Total All Three Sites:	**$291,000**

Total Present Worth:	$22,500,000 (F)
(7% Discount Rate)	$29,500,000 (C)
	$54,500,000 (L)
Total All Three Sites:	**$106,500,000**

7.3.4 Alternative 4: Deep Excavation and Offsite Disposal

The RGs would be met under Alternative 4 (Deep Excavation and Offsite Disposal) by excavation of all soil exceeding RGs that is above the water table. Digging below the water table is deemed infeasible. Soil below existing structures and roadways would not be removed. To address subsurface soil remaining below structures, roadways, etc. and above RGs, administrative notices and restrictions on excavation would be utilized.

With removal of all soil exceeding RGs along stream banks, stabilization of the banks of creeks and rivers would not be needed.

The main components of this alternative are:

- Soil excavation and offsite disposal
- Solidification/stabilization for disposal pursuant to RCRA treatment standards requirements at 40 CFR § 268
- Administrative notices and restrictions (i.e., Institutional Controls)

The estimated time to complete this alternative are 27 months for Forest Street, 45 months for 5th & Cleveland and 32 months for Lonnie C. Miller, Sr. Park.

Capital Cost:	$24,200,000 (F)
	$29,700,000 (C)
	$112,200,000 (L)
Total All Three Sites:	**$166,100,000**
Average Annual O&M Cost:	$0 (F)
(50 Years of O&M)	$0 (C)
	$0 (L)
Total All Three Sites:	**$0**
Total Present Worth:	$24,200,000 (F)
(7% Discount Rate)	$29,700,000 (C)
	$112,200,000 (L)
Total All Three Sites:	**$166,100,000**

7.4 Common Elements and Distinguishing Features of Each Alternative

All of the alternatives, except Alternative 1 (no action) include some amount of excavation, covers, solidification/stabilization (when needed), offsite disposal in an appropriate landfill, monitoring, surface regrading and re-vegetation, and Institutional Controls. The main difference between the alternatives is related to the volume of soil removed and thickness of cover. For example, Alternative 2 would remove less soil than Alternative 3 because Alternative 2 envisions a 0.5 foot cover while Alternative 3 envisions a 2 foot cover. Alternative 3 would remove less soil than Alternative 4 because Alternative 3 envisions a 2 foot cover while Alternative 4 would remove all of the contaminated soil above the water table.

A similarity is that all of the remedial alternatives (except Alternative 1) require a combination of soil excavation and/or cover installation, which would necessitate restoration activities (e.g., post-excavation replacement of flower beds, trees, shrubs, grass, etc.). Likewise, Alternatives 2, 3 and 4 include offsite disposal of excavated soil; hence, these alternatives would also require characterization of the excavated soil to determine proper disposal (i.e., determine if the soil is hazardous from a disposal standpoint and in need of treatment). As more soil is removed, there is a greater chance that more soil would be found to be hazardous waste (i.e., fail TCLP) and hence require more stabilization/solidification pursuant to RCRA treatment standards requirements at 40 CFR § 268.

All of the alternatives (except Alternative 1) include Institutional Controls. A small difference between the alternatives is related to the amount of Institutional Controls necessary due to the amount of soil removed envisioned for removal. In general, as the volume of soil removed increases, less area will remain contaminated and in need of Institutional Controls. However, even if all of the contaminated soil in the yards is removed, contamination under houses, roads, driveways will remain and need Institutional Controls.

7.5 Expected Outcomes of Each Alternative

The No Action Alternative would leave the Site presenting the same risks as are currently present.

The expectation is that Alternatives 2 (Soil Cover with Excavation and Offsite Disposal), 3 (Shallow Excavation, Offsite Disposal and Soil Cover) and 4 (Deep Excavation and Offsite Disposal) would either eliminate and/or reduce or manage the risks due to contamination from the Site. However, the robustness of this elimination and/or risk management increases as the volume of soil removed increases and the thickness of clean cover increases. For example, the expectation is low that the soil cover thickness for Alternative 2 (i.e., 0.5 feet) in residential areas with remaining subsurface contamination will last over time. However, with a soil cover thickness of 2 feet (i.e., Alternative 3), more soil is available to create an incomplete pathway. In addition, Alternative 3's requirement for a 2 foot thick soil cover in residential areas would greatly increase the amount of contaminated soil removed from a particular piece of property, maybe even leading to the removal of all the contamination on a particular parcel except that which might exist under more permanent structures like houses, driveways, etc.

As previously noted, each of the alternatives would leave, at varying depths, a volume of contaminated soil which would require Institutional Controls. The expectation is that properly operating Institutional Controls will manage those digging activities which have the chance to encounter and move large volumes of contaminated subsurface soil. These Institutional Controls should function equivalently regardless of the alternative selected (i.e., regardless of the amount of soil removed or the thickness of the soil cover).

Because Alternatives 2, 3 and 4 all include removal or soil covering of at least the upper 0.5 foot of contaminated soil, the expectation is that all of these alternatives would reduce the risk to ecological receptors (i.e., terrestrial receptors) and greatly minimize, reduce or eliminate any future contaminant migration to creeks and rivers.

PART 8: EVALUATION OF REMEDIAL ALTERNATIVES

8.1 Comparative Analysis of Alternatives

In this Part of the ROD, each alternative is evaluated using the nine evaluation criteria required in Section 300.430(f)(5)(i) of the NCP. Specifically, the four alternatives are compared in relation to the evaluation criteria described in Table 55 to determine which alternative best eliminates or reduces risks posed by contaminated soil.

TABLE 55: CRITERIA FOR EVALUATING REMEDIAL ALTERNATIVES
In selecting a preferred cleanup alternative, EPA uses the following criteria to evaluate each alternative developed in the Focused Feasibility Study (FS).
Threshold Criteria - The first two criteria arc essential and if not met, an alternative is not considered further. 1. Overall Protection of Human Health and the Environment — Degree to which alternative eliminates, reduces, or controls health and environmental threats. 2. Compliance with **Applicable or Relevant and Appropriate Requirements (ARARs)** — Assesses compliance with Federal/State requirements.
Balancing Criteria - The next five criteria are balancing criteria used to further evaluate all options that meet the first two criteria. 3. Long-Term Effectiveness — How remedy maintains protection once cleanup goals have been met. 4. Reduction of Toxicity, Mobility, or Volume Through Treatment — Expected performance of the treatment technologies to lessen harmful nature, movement, or amount of contaminants. 5. Implementability - Technical feasibility and administrative ease of a remedy. 6. Short-Term Effectiveness - Length of time for remedy to achieve protection and impact of implementing the remedy. 7. Cost — Weighing of benefits of a remedy against the cost of implementation.
Modifying Criteria - The final two criteria are used to modify EPA's proposed plan after the public comment period has ended and comments from the community and the State have been received. 8. State Acceptance — Consideration of State's opinion of EPA's proposed plan. EPA seeks state concurrence. 9. Community Acceptance — Consideration of public comments on proposed plan.

The following sub-parts of this ROD profile the relative performance of each alternative against the two threshold criteria and the five balancing criteria and conclude with an opinion on which alternative compares most favorable against the criterium under consideration. The two modifying criteria are addressed in Parts 10 and 13 of the ROD.

Tables 56, 57 and 58 provides a side by side comparison of each alternative in relation to the threshold and balancing criteria.

TABLE 5-2
Detailed Evaluation of Remedial Alternatives
Forest Street Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
1. Overall protection of human health and the environment	• The risks to residents exposed to the surface or subsurface soil for the school property area and the fenced area north of the property would continue to exceed the acceptable non cancer risk threshold (HI greater than 1) and exceed an ELCR of 1×10^{-4}. • Soil lead concentrations would continue to exceed the RGO of 400 mg/kg. Lead concentrations greater than this value in residential areas surrounding the school property are considered a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Land use restrictions to minimize potential exposure to subsurface soil exceeding RGOs would not be enacted.	• The soil cover, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil will be minimized through administrative restrictions. • Risk assessment concluded that a potential unacceptable risk exists from ingestion of vegetables grown in soil with lead exceeding RGOs. Excavation and backfilling with topsoil to depths of 2 feet would be necessary in areas where residents maintain vegetable gardens. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 14,000 trucks during the 20-month construction period will be important.	• The soil cover, removal of shallow soils exceeding RGOs in residential areas, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil below 2 feet will be minimized through administrative restrictions. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 34,000 trucks during the 27-month construction period will be important.	• The excavation and offsite disposal of soils exceeding RGOs and stabilization of the creek banks are protective of human health and the environment. • Direct contact risks are eliminated through removal of the soil posing unacceptable risks. • Risks to terrestrial biota from direct contact with contaminated soil are nearly eliminated. Soil exceeding RGOs will remain below buildings, roadways, driveways, and sidewalks. • Risks related to construction could be significant and would have to be actively managed. Dust control efforts will be important because nearly all the ash with high concentrations of lead will be excavated, loaded into trucks and transported offsite. The potential for vehicle or pedestrian accidents is much higher for this alternative because of the estimated 39,000 trucks to be loaded and driven through the surrounding neighborhoods during the 27-month construction period.
2. Compliance with ARARs*	• The EPA chemical- specific ARAR of 400 mg/kg for lead would not be met by this alternative because exposure to soils containing 400 parts per million (ppm) lead could occur.	• The EPA chemical- specific ARAR of 400 mg/kg for lead would be met by this alternative. • FAC 62-785 Brownfield Cleanup Criteria of a minimum of 2 feet of soil meeting residential cleanup criteria would not be met. However this regulation is a TBC and is not required to be met for the Jacksonville Ash Site. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met. • Construction activities along the banks of McCoy Creek would be conducted in a manner that minimizes impacts to aquatic habitats.	• The EPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met. • Construction activities along the banks of McCoy Creek would be conducted in a manner that minimizes impacts to aquatic habitats.	• The EPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met. • Construction activities along the banks of McCoy Creek would be conducted in a manner that minimizes impacts to aquatic habitats.
3. Long-term effectiveness and permanence				
(a) Magnitude of residual risks	• No significant change in risk because no action taken. • Volume of soil exceeding RGOs is 227,000 yd^3.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil from resident excavations was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface site soil, these risks would be a HI of 538 and an ELCR of 5.3×10^{-4}. In addition lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 164,000 yd^3. • Potential unacceptable risks would occur if vegetables were grown in areas where lead exceeds RGOs in the root zone of the plants.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 538 and an ELCR of 5.3×10^{-4}. In addition, lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 96,000 yd^3.	• Residual risks related to direct contact would remain only if soils exceeding RGOs from below buildings, roadways, driveways and sidewalks are excavated and spread on the surface. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 538 and an ELCR of 5.3×10^{-4}. In addition, a potential public health threat from exposure to lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. • Residual volume of soil exceeding RGOs (i.e. below buildings, roadways, driveways and sidewalks) is 78,000 yd^3.

TABLE 5-2
Detailed Evaluation of Remedial Alternatives
Forest Street Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
(b) Adequacy and reliability of controls	• Not applicable	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate a large area of subsurface soil and spread it on the surface because it would require use of excavation equipment that most residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate soil from below 2 feet or excavate a large area of subsurface soil and spread it on the surface because it would most likely require use of excavation equipment that residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to be at depths greater than the 2 foot cover thickness or result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below buildings, roadways, driveways or sidewalks. Area contractors would most likely perform such excavations and would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit.
4. Reduction of toxicity, mobility, or volume through treatment				
(a) Treatment process used	• Not applicable.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.
(b) Degree and quantity of TMV reduction	• Not applicable.	• An estimated 5,000 yd^3 of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 13,000 yd^3 of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 15,000 yd^3 of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.
(c) Irreversibility of TMV reduction	• Not applicable.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.
(d) Type and quantity of treatment residuals	• None, because no treatment included.	• The treated residuals will include the 5,000 yd^3 of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 13,000 yd^3 of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 15,000 yd^3 of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.
(e) Statutory preference for treatment as a principal element	• Preference not met because no active treatment included.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.
5. Short-term effectiveness				
(a) Protection of workers during remedial action	• No construction activities, so no risks to workers.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.
(b) Protection of community during remedial action	• No construction activities, so no short-term risks to community.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 14,000 truckloads of soil that would be transported to or from the site. Based on a 20-month construction schedule about 23 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 34,000 truckloads of soil that would be transported to or from the site. Based on a 27-month construction schedule about 41 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 39,000 truckloads of soil that would be transported to or from the site. Based on a 27-month construction schedule about 47 trucks would be entering and leaving the site each day.
(c) Environmental impacts of remedial action	• No construction activities, so no environmental impacts from remedial action.	• Environmental impacts will likely be limited to erosion of soils during excavation. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.
(d) Time until RAOs are achieved	• RAO's not achieved.	• RAOs achieved at completion of the estimated 20-month construction schedule.	• RAOs achieved at completion of the estimated 27-month construction schedule.	• RAOs achieved at completion of the estimated 27-month construction schedule.

ROD Table 56

TABLE 5-2
Detailed Evaluation of Remedial Alternatives
Forest Street Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
6. Implementability				
(a) Technical feasibility	• No technical constraints.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.
(b) Administrative feasibility	• No impediments.	• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.	• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.	• Excavation on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.
(c) Availability of services and materials	• None needed.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.
7. Total Cost	Capital Cost $0 Average Annual O&M Cost $5,200 Total Present Worth Cost $70,000	Capital Cost $12,800,000 Average Annual O&M Cost $31,000 Total Present Worth Cost $13,200,000	Capital Cost $21,600,000 Average Annual O&M Cost $65,000 Total Present Worth Cost $22,500,000	Capital Cost $24,200,000 Average Annual O&M Cost $0 Total Present Worth Cost $24,200,000

*For a detailed listing and analysis of key ARARS, see Appendix D.

ROD Table 56

TABLE 6-1
Detailed Evaluation of Remedial Alternatives
5th & Cleveland Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
1. Overall protection of human health and the environment	• The risks to residents exposed to the surface or subsurface soil for the school property area and the fenced area north of the property would continue to exceed the acceptable non cancer risk threshold (HI greater than 1) and exceed an ELCR of 1 x 10^{-4}. • Soil lead concentrations would continue to exceed the RGO of 400 mg/kg. Lead concentrations greater than this value in residential areas surrounding the school property are considered a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Land use restrictions to minimize potential exposure to subsurface soil exceeding RGOs would not be enacted.	• The soil cover, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil will be minimized through administrative restrictions. • Risk assessment concluded that a potential unacceptable risk exists from ingestion of vegetables grown in soil with lead exceeding RGOs. Excavation and backfilling with topsoil to depths of 2 feet would be necessary in areas where residents maintain vegetable gardens. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 17,000 trucks during the 34-month construction period will be important.	• The soil cover, removal of shallow soils exceeding RGOs in residential areas, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil below 2 feet will be minimized through administrative restrictions. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 36,000 trucks during the 45 month construction period will be important.	• The excavation and offsite disposal of soils exceeding RGOs and stabilization of the creek banks are protective of human health and the environment. • Direct contact risks are eliminated through removal of the soil posing unacceptable risks. • Risks to terrestrial biota from direct contact with contaminated soil are nearly eliminated. Soil exceeding RGOs will remain below buildings, roadways, driveways, and sidewalks. • Erosion of surface soil and soil along stream banks exceeding RGOs is eliminated. • Risks related to construction could be significant and would have to be actively managed. Dust control efforts will be important because nearly all the ash with high concentrations of lead will be excavated, loaded into trucks and transported offsite. The potential for vehicle or pedestrian accidents is much higher for this alternative because of the estimated 38,000 trucks to be loaded and driven through the surrounding neighborhoods during the 45-month construction period.
2. Compliance with ARARs*	• The EPA chemical- specific ARAR of 400 mg/kg for lead would not be met by this alternative because exposure to soils containing 400 parts per million (ppm) lead could occur.	• The EPA chemical- specific ARAR of 400 mg/kg for lead would be met by this alternative. • FAC 62-785 Brownfield Cleanup Criteria of a minimum of 2 feet of soil meeting residential cleanup criteria would not be met. However this regulation is a TBC and is not required to be met for the Jacksonville Ash Site. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met.	• The EPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met.	• The EPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met.
3. Long-term effectiveness and permanence				
(a) Magnitude of residual risks	• No significant change in risk because no action taken. • Volume of soil exceeding RGOs is 240,000 yd³.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil from excavations was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 7 and an ELCR of 1.3 x 10^{-4}. In addition lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 175,000 yd³. • Potential unacceptable risks would occur if vegetables were grown in areas where lead exceeds RGOs in the root zone of the plants.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 7 and an ELCR of 1.3 x 10^{-4}. In addition lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 100,000 yd³.	• Residual risks related to direct contact would remain only if soils exceeding RGOs from below buildings, roadways, driveways and sidewalks are excavated and spread on the surface. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 7 and an ELCR of 1.3 x 10^{-4}. In addition a potential public health threat from exposure to lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. • Residual volume of soil exceeding RGOs (i.e. below buildings, roadways, driveways and sidewalks) is 95,000 yd³.

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TABLE 6-1
Detailed Evaluation of Remedial Alternatives
5th & Cleveland Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
(b) Adequacy and reliability of controls	• Not applicable	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate a large area of subsurface soil and spread it on the surface because it would require use of excavation equipment that most residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate soil from below 2 feet or excavate a large area of subsurface soil and spread it on the surface because it would most likely require use of excavation equipment that residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to be at depths greater than the 2 foot cover thickness or result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below buildings, roadways, driveways or sidewalks. Area contractors would most likely perform such excavations and would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit.
4. Reduction of toxicity, mobility, or volume through treatment				
(a) Treatment process used	• Not applicable.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.
(b) Degree and quantity of TMV reduction	• Not applicable.	• An estimated 6,500 yd³ of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 14,000 yd³ of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 14,500 yd³ of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.
(c) Irreversibility of TMV reduction	• Not applicable.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.
(d) Type and quantity of treatment residuals	• None, because no treatment included.	• The treated residuals will include the 6,500 yd³ of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 14,000 yd³ of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 14,500 yd³ of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.
(e) Statutory preference for treatment as a principal element	• Preference not met because no active treatment included.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.
5. Short-term effectiveness				
(a) Protection of workers during remedial action	• No construction activities, so no risks to workers.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.
(b) Protection of community during remedial action	• No construction activities, so no short-term risks to community.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 17,000 truckloads of soil that would be transported to or from the site. Based on a 34-month construction schedule about 16 trucks would be entering and leaving the site each day.	• -Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 36,000 truckloads of soil that would be transported to or from the site. Based on a 45-month construction schedule about 26 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 38,000 truckloads of soil that would be transported to or from the site. Based on a 45-month construction schedule about 27 trucks would be entering and leaving the site each day.
(c) Environmental impacts of remedial action	• No construction activities, so no environmental impacts from remedial action.	• Environmental impacts will likely be limited to erosion of soils during excavation. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.

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TABLE 6-1
Detailed Evaluation of Remedial Alternatives
5th & Cleveland Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
(d) Time until RAOs are achieved	• RAO's not achieved.	• RAOs achieved at completion of the estimated 34-month construction schedule.	• RAOs achieved at completion of the estimated 45 month construction schedule.	• RAOs achieved at completion of the estimated 45 month construction schedule.
6. Implementability				
(a) Technical feasibility	• No technical constraints.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance
(b) Administrative feasibility	• No impediments.	• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.	• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.	• Excavation on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.
(c) Availability of services and materials	• None needed.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.
7. Total Cost	Capital Cost $0 Average Annual O&M Cost $5,200 Total Present Worth Cost $70,000	Capital Cost $20,900,000 Average Annual O&M Cost $38,000 Total Present Worth Cost $21,400,000	Capital Cost $29,100,000 Average Annual O&M Cost $31,000 Total Present Worth Cost $29,500,000	Capital Cost $29,700,000 Average Annual O&M Cost $0 Total Present Worth Cost $29,700,000

[a]For a detailed listing and analysis of key ARARS, see **Appendix D**.

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TABLE 7-1
Detailed Evaluation of Remedial Alternatives
Lonnie C. Miller, Sr. Park Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3a- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 3b- Shallow Excavation, Offsite Disposal and Backfill	Alternative 4- Deep Excavation and Offsite Disposal
1. Overall protection of human health and the environment.	• The risks to residents exposed to the surface or subsurface soil for the school property area and the fenced area north of the property would continue to exceed the acceptable non cancer risk threshold (HI greater than 1) and exceed an ELCR of 1 x 10^{-4}. • Soil lead concentrations would continue to exceed the RGO of 400 mg/kg. Lead concentrations greater than this value in residential areas surrounding the school property are considered a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Land use restrictions to minimize potential exposure to subsurface soil exceeding RGOs would not be enacted.	• The soil cover, administrative restrictions, and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil will be minimized through administrative restrictions. • Risk assessment concluded that a potential unacceptable risk exists from ingestion of vegetables grown in soil with lead exceeding RGOs. Excavation and backfilling with topsoil to depths of 2 feet would be necessary in areas where residents maintain vegetable gardens. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 14,000 trucks during the 12-month construction period will be important.	• The soil cover, removal of shallow soils exceeding RGOs in residential areas, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil below 2 feet will be minimized through administrative restrictions. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 55,000 trucks during the 24-month construction period will be important.	• The soil cover, removal of shallow soils exceeding RGOs in residential areas, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Backfill minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil below 2 feet will be minimized through administrative restrictions. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil backfill cover. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 85,000 trucks during the 26-month construction period will be important.	• The excavation and offsite disposal of soils exceeding RGOs and stabilization of the creek banks are protective of human health and the environment. • Direct contact risks are eliminated through removal of the soil posing unacceptable risks. • Risks to terrestrial biota from direct contact with contaminated soil are nearly eliminated. Soil exceeding RGOs will remain below buildings, roadways, driveways, and sidewalks. • Risks related to construction could be significant and would have to be actively managed. Dust control efforts will be important because nearly all the ash with high concentrations of lead will be excavated, loaded into trucks and transported offsite. The potential for vehicle or pedestrian accidents is much higher for this alternative because of the estimated 217,000 trucks to be loaded and driven through the surrounding neighborhoods during the 32-month construction period.
2. Compliance with ARARs[a]	• The EPA chemical- specific ARAR of 400 mg/kg for lead would not be met by this alternative because exposure to soils containing 400 parts per million (ppm) lead could occur.	• The EPA chemical- specific ARAR of 400 mg/kg for lead would be met by this alternative. • FAC 62-785 Brownfield Cleanup Criteria of a minimum of 2 feet of soil meeting residential cleanup criteria would not be met. However this regulation is a TBC and is not required to be met for the Jacksonville Ash Site. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met.	• The EPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met.	• The EPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met.	• The EPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met.

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TABLE 7-1
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Lonnie C. Miller, Sr. Park Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3a- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 3b- Shallow Excavation, Offsite Disposal and Backfill	Alternative 4- Deep Excavation and Offsite Disposal
3. Long-term effectiveness and permanence					
(a) Magnitude of residual risks	• No significant change in risk because no action taken. • Volume of soil exceeding RGOs is 856,000 yd^3.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil from resident excavations was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 32 and an ELCR of 1.4 x 10^{-4}. In addition, lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 832,000 yd^3. • Potential unacceptable risks would occur if vegetables were grown in areas where lead exceeds RGOs in the root zone of the plants.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 32 and an ELCR of 1.4 x 10^{-4}. In addition, lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 763,000 yd^3.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 32 and an ELCR of 1.4 x 10^{-4}. In addition, lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 528,000 yd^3.	• Residual risks related to direct contact would remain only if soils exceeding RGOs from below buildings, roadways, driveways and sidewalks are excavated and spread on the surface. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 32 and an ELCR of 1.4 x 10^{-4}. In addition, a potential public health threat from exposure to lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. • Residual volume of soil exceeding RGOs (i.e. below buildings, roadways, driveways and sidewalks) is 21,000 yd^3.
(b) Adequacy and reliability of controls	• Not applicable	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate a large area of subsurface soil and spread it on the surface because it would require use of excavation equipment that most residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate soil from below 2 feet or excavate a large area of subsurface soil and spread it on the surface because it would most likely require use of excavation equipment that residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to be at depths greater than the 2 foot cover thickness or result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate soil from below 2 feet or excavate a large area of subsurface soil and spread it on the surface because it would most likely require use of excavation equipment that residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to be at depths greater than the 2 foot cover thickness or result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below buildings, roadways, driveways or sidewalks. Area contractors would most likely perform such excavations and would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit.
4. Reduction of toxicity, mobility, or volume through treatment					
(a) Treatment process used	• Not applicable.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.
(b) Degree and quantity of TMV reduction	• Not applicable.	• An estimated 2,400 yd^3 of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 9,300 yd^3 of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 32,800 yd^3 of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 83,500 yd^3 of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/l, as measured using the TCLP test.

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TABLE 7-1
Detailed Evaluation of Remedial Alternatives
Lonnie C. Miller, Sr. Park Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3a- Shallow Excavation, Offsite Disposal, and Soil Cover	Alternative 3b- Shallow Excavation, Offsite Disposal and Backfill	Alternative 4- Deep Excavation and Offsite Disposal
(c) Irreversibility of TMV reduction	• Not applicable.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.
(d) Type and quantity of treatment residuals	• None, because no treatment included.	• The treated residuals will include the 2,400 yd^3 of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 9,300 yd^3 of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 32,800 yd^3 of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 83,500 yd^3 of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.
(e) Statutory preference for treatment as a principal element	• Preference not met because no active treatment included.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.
5. Short-term effectiveness					
(a) Protection of workers during remedial action	• No construction activities, so no risks to workers.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.
(b) Protection of community during remedial action	• No construction activities, so no short-term risks to community.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 14,000 truckloads of soil that would be transported to or from the site. Based on an 12-month construction schedule about 38 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 55,000 truckloads of soil that would be transported to or from the site. Based on a 24-month construction schedule about 75 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 85,000 truckloads of soil that would be transported to or from the site. Based on a 26-month construction schedule about 110 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 217,000 truckloads of soil that would be transported to or from the site. Based on a 32-month construction schedule about 222 trucks would be entering and leaving the site each day.
(c) Environmental impacts of remedial action	• No construction activities, so no environmental impacts from remedial action.	• Environmental impacts will likely be limited to erosion of soils during excavation, particularly during stabilization of the stream banks. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation, particularly during stabilization of the stream banks. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation, particularly during stabilization of the stream banks. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation, particularly during stabilization of the stream banks. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.

ROD Table 58

TABLE 7-1
Detailed Evaluation of Remedial Alternatives
Lonnie C. Miller, Sr. Park Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative: Criterion	Alternative 1- No Further Action		Alternative 2- Soil Cover with Excavation and Offsite Disposal		Alternative 3a- Shallow Excavation, Offsite Disposal, and Soil Cover		Alternative 3b- Shallow Excavation, Offsite Disposal and Backfill		Alternative 4- Deep Excavation and Offsite Disposal	
(d) Time until RAOs are achieved	• RAOs not achieved.		• RAOs achieved at completion of the estimated 12-month construction schedule.		• RAOs achieved at completion of the estimated 24-month construction schedule.		• RAOs achieved at completion of the estimated 26 month construction schedule.		• RAOs achieved at completion of the estimated 32 month construction schedule.	
6. Implementability										
(a) Technical feasibility	• No technical constraints.		• No technical constraints although construction contractor selection and oversight will be important in successful project performance.		• No technical constraints although construction contractor selection and oversight will be important in successful project performance.		• No technical constraints although construction contractor selection and oversight will be important in successful project performance.		• No technical constraints although construction contractor selection and oversight will be important in successful project performance.	
(b) Administrative feasibility	• No impediments.		• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.		• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.		• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.		• Excavation on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.	
(c) Availability of services and materials	• None needed.		• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.		• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.		• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.		• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.	
7. Total Cost	Capital Cost	$0	Capital Cost	$8,000,000	Capital Cost	$20,100,000	Capital Cost	$51,800,000	Capital Cost	$112,200,000
	Average Annual O&M Cost	$5,200	Average Annual O&M Cost	$77,000	Average Annual O&M Cost	$195,000	Average Annual O&M Cost	$195,000	Average Annual O&M Cost	$0
	Total Present Worth Cost	$70,000	Total Present Worth Cost	$9,100,000	Total Present Worth Cost	22,800,000	Total Present Worth Cost	$54,500,000	Total Present Worth Cost	$112,200,000

[a] For a detailed listing and analysis of key ARARS, see **Appendix D**.

ROD Table 58

Table 59 summarizes the relative performance of the remedial alternatives summarized narratively in the following sub-parts. The numerical ranking in Table 59 attempts to provide a relative relationship, on a scale of 1-4, of each alternative's performance under each criteria. The higher the number, the better the rating of that alternative for the criterion under consideration (i.e., 1 is the least favorable). Some alternatives are deemed basically equivalent for certain criterion and carry the same rating.

TABLE 59: COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

Criteria	No Further Action (1)	Soil Cover with Excavation and Offsite Disposal (2)	Shallow Excavation, Offsite Disposal and Soil Cover (3)	Deep Excavation and Offsite Disposal (4)
1. Overall Protectiveness	1	2	3	4
2. Compliance with ARARS	1	2	3	3
3. Long-Term Effectiveness and Permanence	1	2	3	4
4. Reduction of Toxicity, Mobility, or Volume	1	2	3	4
5. Short-Term Effectiveness	1	4	3	2
6. Implementability	4	3	2	1
7. Present Worth Cost	\$70,000 (F) \$70,000 (C) \$70,000 (L)	\$13,200,000 (F) \$21,400,000(C) \$9,1 00,000 (L)	\$22,500,000 (F) \$29,500,000 (C) \$22,800,000 (L3a) \$54,500,000 (L3b)	\$24,200,000 (F) \$29,700,000 (C) \$112,200,000 (L)

(F) - Forest Street (C) - 5th & Cleveland (L) - Lonnie C. Miller, Sr. Park

8.2 Threshold Criterion 1 - Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced or controlled through treatment, engineering controls and/or institutional controls.

All of the alternatives, except the no-action alternative, are protective of human health and the environment by eliminating, reducing, or controlling risks posed by the Site through removal (and treatment where needed) of contaminated soil, engineering controls (i.e., soil cover), and/or institutional controls. Alternatives 2 and 3 are similar in their overall protectiveness because potential risks related to exposure to the contaminated soils are eliminated, reduced or managed and risks related to erosion of ash to creek and river banks are eliminated or reduced.

Alternative 3 (Shallow Excavation, Offsite Disposal and Soil Cover) is considered preferable to Alternatives 1 and 2 in terms of overall protection because it provides a thicker barrier of soil (i.e., 2 feet in Alternative 3 versus 0.5 feet in Alternative 2) to minimize the potential for risks related to exposure to subsurface soil contamination or accumulation of chemicals in vegetables for those who garden. In addition, Alternative 3' s requirement for up to 2 feet removal of contaminated soil residential areas would greatly increase the amount of contaminated soil removed from a particular piece of property, maybe even leading to the removal of all the contamination on a particular parcel except that which might exist under more permanent structures like houses, driveways, etc.

Because less contaminated soil is removed (or a thinner soil cover is utilized), Alternative 2 (Soil Cover with Excavation and Offsite Disposal) may pose increase risks related to digging activities in residential setting when compared to Alternative 3 (Shallow Excavation, Offsite Disposal and Soil Cover). However, the risks of uninformed large digging or construction operations under either Alternative 2 or 3 (or 4) should be manageable through Institutional Controls.

While Alternative 4 (Deep Excavation and Offsite Disposal) removes the greatest amount of soil exceeding RGs, this reduction in residual risk is counterbalanced by an increase in risks to the community during the extended construction period and the substantial truck traffic that would occur. These risks related to construction could be significant and would have to be actively managed. Dust control efforts will be important because nearly all the ash with high concentrations of lead will be excavated, loaded into trucks and transported offsite. The potential for vehicle or pedestrian accidents is much higher for Alternative 4 (Deep Excavation and Offsite Disposal) in relation to the other alternatives because of the estimated number of trucks to be loaded and driven through the surrounding neighborhoods during Alternative 4's the construction period.

Alternatives 3 and 4 would significantly eliminate or reduce the risk to both human health and the environment, possibly even lessening the area in need of ongoing Institutional Controls once remediation is complete.

All remedial alternatives (except Alternative 1) are deemed protective of Human Health and the Environment (i.e, Threshold Criteria 1 is met). The No Action Alternative will not meet any of the cleanup criteria, and will not be discussed in detail in the below text.

8.3 Threshold Criterion 2 - Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA and NCP § 300.430(f)(l)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations, which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4).

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those State standards that are identified by a state in a timely manner and that are more stringent than Federal requirements may be applicable. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner and are more stringent than Federal requirements may be relevant and appropriate.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides a basis for invoking waiver. Part 11.2 contains a more in-depth listing of the Site's ARARs.

None of the identified ARARs are expected to hinder implementation of Alternatives 3 and 4 to the point where the alternative cannot be pursued. Alternative 2 (Soil Cover with Excavation and Offsite Disposal) would not meet the FAC 62-785 Brownfield Cleanup Criteria for a minimum of 2 feet of soil meeting residential cleanup criteria because Alternative 2 (Soil Cover with Excavation and Offsite Disposal) provides only a minimum of 0.5 feet of cover soil rather than 2 feet. However, this 2 foot minimum is considered a to-be-considered (TBC) and not an ARAR.

8.4 Balancing Criterion 3 - Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up levels have been met. This criterion includes the consideration of residual risk that will remain onsite following remediation and the adequacy and reliability of controls.

Each alternative, except the No Action alternative, provides some degree of long-term protection. However, all alternatives result in varying amounts of soil remaining that exceed the RGs. For example, there is an estimated 227,000 cubic yards (cys) of contaminated soil at Forest Street, 240,000 cys of soil at 5th & Cleveland, and 856,000 cys of soil at Lonnie C. Miller Park above the water table that would remain under the No Action Alternative. Alternative 2 (Soil Cover with Excavation and Offsite Disposal) would result in removal of about 53,000 cys, leaving approximately 174,000 cys at Forest Street, removing 65,000 cys leaving approximately 175,000 cys at 5th & Cleveland, and removing 24,000 cys leaving approximately 832,000 cys at Lonnie C. Miller Park. Alternative 3 (Shallow Excavation, Offsite Disposal and Soil Cover) would result in a residual volume of about 96,000 cys at Forest Street, 100,000 cys at 5th & Cleveland and 763,000 cys (Alternative 3a, two foot cover) and 528,000 cys (Alternative 3b, two foot excavation) at Lonnie C. Miller Park. Alternative 4 (Deep Excavation and Offsite Disposal) would leave approximately 91,000 cys at Forest Street, 95,000 cys at 5th & Cleveland, and 21,000 cys at Lonnie C. Miller Park below roadways, buildings, driveways and sidewalks.

Alternatives 2, 3, and 4 all rely on Institutional Controls to prevent or manage excavation of subsurface soil exceeding RGs and subsequent spreading on the surface where long-term exposure could occur. Alternative 4 (Deep Excavation and Offsite Disposal) offers the greatest long-term effectiveness because, for the most part, it's reliance on Institutional Controls would be for soils that are already greatly isolated from the potential for exposure (i.e., below buildings, roadways, driveways, sidewalks, asphalt or concrete which maintains a break in the exposure pathway).

Alternative 2 (Soil Cover with Excavation and Offsite Disposal) is the least favorable in terms of long term effectiveness because it provides for only 0.5 feet of cover soil. However, the Institutional Controls for Alternative 2 (Soil Cover with Excavation and Offsite Disposal) are still considered adequate and reliable because only commercial construction contractors would have the equipment to engage in the amount of excavation that could result in enough subsurface soil to be spread on the surface to pose a substantial potential risk if not managed properly. These contractors would be notified of the requirements for excavation and proper disposal of soils through the construction permit process (i.e., one of the Institutional Control measures).

In contrast to the Institutional Controls which should be able to address commercial digging within the area of remaining subsurface contamination, it would be more difficult to ensure proper excavation of soils below either 0.5 feet (Alternative 2) or 2 feet (Alternative 3) by individual residents. However, these activities would typically be for small excavations such as planting bushes or installing posts, that would not result in substantial potential risk if the soil were dispersed on the surface. Alternative 2 (Soil Cover with Excavation and Offsite Disposal) would require some targeted deeper excavations based on land use to minimize risks (e.g., a deeper 2 foot soil cover in garden and playground areas.

In the following order, Alternatives 2, 3 and 4 provide an increasing degree of permanent reduction in risk and decreasing amount of residual risk after cleanup. It is believed that Alternative 4 (Deep Excavation and Offsite Disposal) provides the best long term effectiveness and permanence.

8.5 Balancing Criterion 4 - Reduction of Toxicity, Mobility, or Volume Through Treatment

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Instead of using an active treatment method, Alternatives 2, 3 and 4 address the threat of contaminated soil by breaking the exposure pathway. In order to accomplish the breaking of the exposure pathway, soil excavation (with offsite disposal) will occur in many locations. Toxicity Characteristic Leaching Procedures (TCLP) test data collected during the RI suggest that about 10% of the soil exceeding the RGs will fail the TCLP limit for lead and require solidification pursuant to RCRA treatment standard requirements at 40 CFR § 268 prior to offsite disposal. In other words, if TCLP testing finds the soil to be hazardous waste under RCRA, then treatment (i.e., stabilization/ solidification) is needed prior to land disposal. As a result, it is estimated that Alternatives 2, 3 and 4 will treat an estimated 5,000, 13,000 and 15,000 cys of soil, respectively at Forest Street, 6,500, 14,000 and 14,500 cys of soil, respectively at 5th & Cleveland, and 2,400, 9,300 (Alternative 3a), 328,400 (Alternative 3b), and 835,000 cys of soil, respectively at Lonnie C. Miller, Sr., Park. Solidification does not destroy the lead; therefore, it is a reversible process. However, the treated soil would be isolated in an appropriate landfill and would not be expected to leach to groundwater over the long-term.

Solidification pursuant to RCRA treatment standard requirements at 40 CFR § 268 will reduce the mobility of the contaminants; however, the volume is actually increased with the solidification materials. Therefore, the toxicity may be considered reduced proportionally over the increased volume, but the amount of contamination is not reduced.

All of the alternatives will, as needed, reduce the toxicity, mobility or volume of the contaminants. Although all of the alternatives would use basically the same treatment process if the need for treatment is triggered, because of the greater volume of material potentially available for treatment, Alternative 4 (Deep Excavation and Offsite Disposal) provides the largest potential for reduction of toxicity, mobility and volume of contaminants.

8.6 Balancing Criterion 5 - Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until RGs are achieved.

Because there would be no remedial construction activities associated with Alternative 1 (No Action Alternative), this alternative has the least short-term construction impacts. The other alternatives would include construction activities with varying levels of impacts to construction workers, the community and the environment. The amount of impact is proportional to the amount of excavation of contaminated soil and the amount of truck traffic through the neighborhoods. The estimated number of truck loads of soil, trucks per day and the duration of construction are estimated as follows:

Forest Street

1. Alternative 2 - 14,000 truck loads, 23 trucks/day, 20 months construction
2. Alternative 3 - 34,000 truck loads, 41 trucks/day, 27 months construction
3. Alternative 4 - 39,000 truck loads, 47 trucks/day, 27 months construction

5th & Cleveland

4. Alternative 2 - 17,000 truck loads, 16 trucks/day, 34 months construction
5. Alternative 3 - 36,000 truck loads, 26 trucks/day, 45 months construction
6. Alternative 4 - 37,000 truck loads, 27 trucks/day, 45 months construction

Lonnie C. Miller Park

7. Alternative 2 - 14,000 truck loads, 38 trucks/day, 12 months construction
8. Alternative 3a - 55,000 truck loads, 75 trucks/day, 24 months construction
9. Alternative 3b - 86,000 truck loads, 110 trucks/day, 26 months construction
10. Alternative 4 - 217,000 truck loads, 222 trucks/day, 32 months construction

Alternative 4 (Deep Excavation and Offsite Disposal) would have by far the greatest impact to the community during the estimated month construction period. Alternatives 2 and 3 have considerably less impact to the community. Potential impacts to workers can be minimized through adherence to proper health and safety requirements during excavation and cover activities. Likewise impacts to the environment can be minimized through mitigative measures such as use of silt fences to control erosion and watering of dry soils to minimize dust generation. Potential environmental impacts are most likely during bank stabilization of creek and rivers. Alternatives 2, 3 and 4 incorporate the same bank stabilization measures. It is believed that Alternative 2 (Soil Cover with Excavation and Offsite Disposal) would provide the most cleanup advantage relative to short-term effectiveness.

8.6 Balancing Criterion 6 - Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Excavation and placement of soil covers on residential properties will require extensive coordination with local community officials and individual residents. Alternatives 2 through 4 have the same implementability concerns relative to the substantial coordination because all three alternatives will target similar numbers of residential properties. The availability of local landfill capacity would be strained with implementation of Alternative 4 (Deep Excavation and Offsite Disposal) because of the large volume of soil to be disposed (approximately 1,323,000 cys).

Since Alternative 1 (No Action Alternative) is already implemented, it would be the easiest to implement. However, of the active alternatives, Alternative 2 (Soil Cover with Excavation and Offsite Disposal) would probably be the easiest to implement because this alternative has the smaller volume of soil to be removed.

8.7 Balancing Criterion 7 - Cost

The estimated costs for each alternative are in Section 7.3 and Tables 56, 57, 58 and 59.

The cost estimates presented above have been developed strictly for comparing the four alternatives. The final costs of the project and the resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, the implementation schedule, the firm selected for final engineering design, and other variables. For example, cost estimates in the Feasibility Study included parcels which were assumed to be contaminated based on sampling results from adjacent parcels because access was not being granted for sampling. Additional sampling during the Remedial Design or Remedial Action may change the number of parcels needing remediation. Therefore, final project costs will vary from the cost estimates. Because of these factors, project feasibility and funding needs must be reviewed carefully before specific financial decisions are made or project budgets are established to help ensure proper project evaluation and adequate funding.

The cost estimates are order of magnitude estimates having an intended accuracy range of+50 to -30 percent. The range does not account for changes in the scope of the alternatives. The specific details for remedial actions and cost estimates would be refined during final design.

A cost sensitivity analysis was performed to evaluate the effect of differing discount rates and volumes of contaminated media. Many other factors that have substantial uncertainty can also effect the present worth costs of alternatives but they are not as significant as the factors listed above. Remedy failure and its potential to require additional remedial work in future years is not significant at this site because the primary technologies are excavation and covering which are not technologies that are likely to fail. The project duration is also not likely to greatly effect the relative costs between alternatives because the duration would likely vary by only a few years at most.

Discount rates were varied because they effect the present work costs of operation and maintenance (O&M). Tables 60, 61 and 62 presents the effects of varying discount rates. The 7% discount rate was used to compute the present worth of the remedy alternatives.

8.8 Modifying Criterion 8 - State/Support Agency Acceptance

See Part 10 of the ROD

8.9 Modifying Criterion 9 - Community Acceptance

See Part 13 of the ROD

8.10 Principal Threat Wastes

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP § 300.430(a)(l)(iii)(A)). Identifying principal threat waste combines concepts of both hazard and risk. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile, which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur.

The contaminated soils at the Jacksonville Ash Site are not considered to be "principal threat wastes" because the COCs are not found at highly toxic concentrations that pose a significant risk to either human or ecological receptors and the contaminated soil can be reliable contained.

TABLE 5-4
Cost Sensitivity of Discount Rates
Forest Street Incinerator Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative	Total Present Worth Costs 3% Discount Rate ($)	Total Present Worth Costs 7% Discount Rate ($)	Total Present Worth Costs 10% Discount Rate ($)
Alternative 1–No Further Action	$130,000	$70,000	$50,000
Alternative 2–Soil Cover with Excavation and Offsite disposal	$13,600,000	$13,200,000	$13,100,000
Alternative 3–Shallow Excavation, Offsite Disposal, and Soil Cover	$23,300,000	$22,500,000	$22,200,000
Alternative 4–Deep Excavation and Offsite Disposal	$24,200,000	$24,200,000	$24,200,000

ROD Table 60

TABLE 6-3
Cost Sensitivity of Discount Rates
5th & Cleveland Incinerator Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative	Total Present Worth Costs 3% Discount Rate ($)	Total Present Worth Costs 7% Discount Rate ($)	Total Present Worth Costs 10% Discount Rate ($)
Alternative 1–No Further Action	$130,000	$70,000	$50,000
Alternative 2–Soil Cover with Excavation and Offsite disposal	$21,900,000	$21,400,000	$21,300,000
Alternative 3–Shallow Excavation, Offsite Disposal, and Soil Cover	$29,900,000	$29,500,000	$29,400,000
Alternative 4–Deep Excavation and Offsite Disposal	$29,700,000	$29,700,000	$29,700,000

ROD Table 61

TABLE 7-3
Cost Sensitivity of Discount Rates
Lonnie C. Miller, Sr. Park Site
Jacksonville Ash Feasibility Study, Revision 1

Alternative	Total Present Worth Costs 3% Discount Rate ($)	Total Present Worth Costs 7% Discount Rate ($)	Total Present Worth Costs 10% Discount Rate ($)
Alternative 1–No Further Action	$130,000	$70,000	$50,000
Alternative 2–Soil Cover with Excavation and Offsite disposal	$10,000,000	$9,100,000	$8,800,000
Alternative 3a–Shallow Excavation, Offsite Disposal, and Soil Cover	$25,100,000	$22,800,000	$22,000,000
Alternative 3b–Shallow Excavation, Offsite Disposal and Backfill of Soil Cover	$56,800,000	$54,500,000	$53,700,000
Alternative 4–Deep Excavation and Offsite Disposal	$112200,000	$112,200,000	$112,200,000

ROD Table 62

PART 9: SELECTED REMEDY

9.1 Remedial Action Objectives and Cleanup Levels

The RAOs for the Jacksonville Ash Site are as follows:

- Prevent human exposure to site COCs through contact, ingestion, or inhalation of soil contaminated from incinerator ash disposed at the Jacksonville Ash Site with a carcinogenic risk greater than 1 x 10^{-6} (i.e., one in a million), with a noncarcinogenic hazard index greater than 1 and lead in excess of 400 mg/kg.
- Prevent impacts to terrestrial biota from exposure to surface soils contaminated from incinerator ash disposed at the Jacksonville Ash Site and containing chemicals of potential ecological concern (COPECs) in excess of preliminary ecological Remedial Goals (RGs) and soil background concentrations.[6]
- Prevent impacts to aquatic communities and viable insectivore (insect eating) and piscivore (fish eating) communities at all three properties from exposure to sediment contaminated from incinerator ash at the Jacksonville Ash Site and containing chemicals of potential ecological concern (COPECs) in excess of ecological Preliminary Remediation Goals (PRGs) and sediment background concentrations.[7]
- Control erosion and transport of soils containing visible ash, lead in excess of 400 mg/kg or COPECs in excess of preliminary ecological RGs along the banks of creeks and rivers to prevent possible unacceptable risks to human health or ecological impacts.
- Place geotextile (or other membrane) topped with gravel under residential houses with open crawlspaces (that can be accessed by children) with exceedences of human health RGs to further prevent direct contact with the soil.[8]
- Institute groundwater monitoring to verify the "No Action" decision for the groundwater. CERCLA 5 year Reviews of post-remedial groundwater monitoring will be used to determine effectiveness of this site specific source removal in reducing groundwater contaminant levels and the potential for discharge to surface water.[8]

Remedial Goals (RGs) for residential soil exposure, industrial soil exposure and ecological soil and sediment were identified which meet the above RAOs (see Tables 51, 52, 53 and 54). Figures 16, 17 and 18 indicates the properties known (or suspected) to need remediation. This figure includes some assumed contaminated parcels based on their location relative to known contaminated parcels. As mentioned in Part 3.2, some properties are in need of RI Phase III sampling. Basically, the RI

[6] Cleanup to satisfy the human health RGs will also provide adequate cleanup to protect ecological receptors (i.e., separate actions to address ecological risk in soil is not needed).

[7] Exceedences of ecological sediment PRGs in stream sediments have been found to be similar to sediment background concentrations upstream of the sites. No active remediation of the stream sediment is required.

[8] Geotextile with gravel in open crawlspaces and groundwater monitoring were not part of the remedies submitted in the Feasibility Study. EPA has added these RAOs in response to concerns by Florida Department of Environmental Protection and community members.

Phase III sampling is of properties not previously sampled (mainly due to failure to obtain access) or properties in need of re-sampling because information on constituent concentrations is incomplete. The third round of RI sampling begins collection of information needed for quicker implementation of the cleanup once the remedy is selected. Information collected during RI Phase III will be used to further refine areas needing remediation, but will not alter the cleanup approach selected in this ROD. Any properties identified in RI Phase III as needing remediation will be addressed in a manner consistent with the selected remedy.

9.2 Selected Remedy

EPA has divided the Site into two Operable Units. The remediation of both Operable Units is covered by the RAO and RGs contained within this ROD. Based upon consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives, and public and state comments, the selected remedy for the Forest Street and 5th & Cleveland sites is Alternative 3 (Shallow Excavation, Offsite Disposal and Soil Cover) and Alternative 3a for the Lonnie C. Miller, Sr. Park. This alternative was the remedy proposed in the July 2005 Proposed Plan with the following clarification that removal of soils above RGs up to 2 feet and installation of the a soil cover is the remedy in residential areas. Installation of a soil cover in residential areas without excavation will only be considered in special circumstances such as where both of the following conditions are met:

- storm water drainage, surface grade conditions and surrounding aesthetics (i.e, no isolated mounds) allow installation of the 2 foot thick soil cover without excavation, and
- contamination does not exist in the upper surface soil (e.g., top foot and ½ or 2 feet) but contamination does exist at depths greater than 2 feet (i.e., excavation will not remove all of the contaminated soil exceeding RGs).

9.2.1 Summary of the Rationale for the Selected Remedy (Soil)

The Selected Remedy for soil is Alternative 3 and Alternative 3a for Lonnie C. Miller, Sr. Park (Shallow Excavation, Offsite Disposal and Soil Cover). Alternatives 3 and 4 both significantly reduce the risks to human and ecological receptors. However, Alternative 3 (Shallow Excavation, Offsite Disposal and Soil Cover) is significantly less expensive than Alternative 4 (Deep Excavation and Offsite Disposal), and the risk reduction benefit gained by excavating more soil in Alternative 4 (Deep Excavation and Offsite Disposal) relative to the removal planned for Alternative 3 (Shallow Excavation, Offsite Disposal and Soil Cover) is not deemed significant. In comparing Alternative 3 to Alternative 2, there was concern that Alternative 2's reliance on just a ½ foot of cover may not be sufficient over the long term.

9.3 Description of the Selected Remedy

A Remedial Design will be conducted prior to implementation. However, the following is an outline of the selected remedy. Implementation of Alternative 3 (Alternative 3a for Lonnie C. Miller, Sr. Park) will include the following major actions to meet the RGOs and the associated RGs (i.e., cleanup levels):

Implementation of Alternative 3 (Alternative 3a for Lonnie C. Miller, Sr. Park) would include the following actions to address soil *which exceeds residential RGs*:

Residential Property

- Prevention of human exposure to surface soil above RGs on properties zoned for residential use is provided by removal of soil above RGs in the upper two feet and installation of a soil cover. Excavated soil will undergo stabilization/solidification pursuant to RCRA treatment standards requirements at 40 CFR § 268 before off-site disposal at an appropriate Subtitle D landfill if it is found to be a hazardous waste by TCLP testing. Soil excavations in yards poses some very site-specific issues. Here are some examples of the types of site-specific issues the Remedial Design will have to address:
    - Excavation of less than 2 feet is to be allowed adjacent to the foundation of buildings and other structures and around the base of trees.
    - Removal of trees is to be optional in that large trees can remain undisturbed unless the property owner desires to have the tree removed for remediation purposes.
    - Excavation is to require removal of small yard vegetation and structures (e.g., bushes, small sheds, etc.) unless property owner specifically requests that such vegetation or structures remain undisturbed.
- Prevention of potential human exposure to subsurface soil above RGs below 2 feet is provided by installation of the 2 foot thick soil cover and Institutional Controls. Subsurface soil remaining above RGs will be marked by a warning mesh or fabric (i.e., snow fencing, etc.) to indicate the presence of contamination. Where practical, excavation below 2 feet is to be allowed to lesson or eliminate the need for institutional Controls.
- Place geotextile (or other membrane) topped with gravel under residential houses with open crawlspaces (that can be accessed by children) with exceedences of human health RGs to further prevent direct contact with the soil.
- Prevention of potential human exposure to the contaminated soil footprint above RGs under existing buildings, roads, driveways, sidewalks, asphalt, or concrete which maintain a break in the exposure pathway is provided by Institutional Controls.
- Temporary Relocation will be offered to eligible residents prior to excavation. Any Temporary Relocation will follow the *Superfund Response Actions: Temporary Relocation Guidance* (OSWER Directive 9230.0-97, April 2002).

Non-Industrial Properties (Parks, school yards, etc)

Non-Industrial Properties are properties that by their use require residential clean up but are not residential properties. Examples of these properties are school yards and parks where there is possible frequent exposure to the soil by children.

- Prevention of human exposure to surface soil above RGs by removal of the upper 2 feet of soil as needed to allow for installation of a 2 feet soil cover. Excavated soil will undergo stabilization/solidification pursuant to RCRA treatment standards requirements at 40 CFR § 268 before off-site disposal at an appropriate Subtitle D landfill if it is found to be a hazardous waste by TCLP testing. Excavation of less than 2 feet is to be allowed adjacent to the foundation of buildings and other structures and around the base of trees.
- Prevention of potential human exposure to subsurface soil below 2 feet by installation of 2

foot thick soil cover and Institutional Controls. Subsurface soil remaining above RGs will be marked by a warning mesh or fabric (i.e., snow fencing, etc.) to indicate the presence of contamination.
- Prevention of potential human exposure to the soil footprint under existing buildings, roads, driveways, sidewalks, asphalt, or concrete which maintain a break in the exposure pathway by Institutional Controls.

Implementation of Alternative 3 (Alternative 3a for Lonnie C. Miller, Sr. Park) would include the following actions to address soil, which exceeds industrial RGs, in industrial settings:

<u>Industrial Property (including Residential Property designated to be redeveloped for Industrial Use)</u>

- Prevention of human exposure to surface soil above RGs on properties zoned industrial and on residential property designated to be redeveloped for industrial use is provided by the presence of or installation of a barrier (e.g., building, roadway, driveway, sidewalk, asphalt, concrete or soil cover which maintain a break in the exposure pathway) with soil removal as needed to provide minimum 2 feet of clean cover.
- Prevention of potential human exposure to subsurface soil above RGs below 2 feet is provided by installation of the 2 foot thick soil cover and Institutional Controls. Subsurface soil remaining above RGs will be marked by a warning mesh or fabric (i.e., snow fencing, etc.) to indicate the presence of contamination.
- Prevention of potential human exposure to the soil footprint above RGs under existing buildings, roadway, driveway, sidewalk, asphalt, concrete or soil cover which maintain a break in the exposure pathway) is provided by Institutional Controls.
- Prevention of potential future human exposure to the upper 2 feet of surface soil exceeding residential RGs from a change in land use is provided by Institutional Controls.

Some residential property designated to be redeveloped for industrial use is identified in the City of Jacksonville enacted Ordinance 2003-892E on August 12, 2003. This Ordinance requires all development in the area of Forest Street Incinerator (and areas outside the site) to follow the North Riverside Action Plan (NR Action Plan) developed with the help of the North Riverside Community Development Corporation (TAP Community Group) and area business owners. The Ordinance and the NR Action Plan are included in Appendix E of this ROD along with zoning maps of the three properties. Some areas of the Forest Street site will change to light industrial/commercial to create a buffer between residential housing (which in some areas is dispersed among light industrial buildings) and commercial properties. The residential houses in the converted areas will be removed from the commercially zoned areas. This is discussed in Section 7 of the NR Action Plan in Appendix E of this ROD.

Implementation of Alternative 3 would include the following actions to control erosion and transport of contaminated bank soils into creeks and rivers:

<u>Creek and Rivers</u>

- Stabilization of the banks of McCoy's Creek, Ribault River and Hogan's Creek (e.g., clear banks, excavate soil to achieve acceptable side slopes, dispose of excavated soil/material pursuant to RCRA treatment standards requirements at 40 CFR § 268 before off-site disposal at an appropriate Subtitle D landfill, installation of erosion controls to prevent erosion of ash/contamination into creek, etc.). Acceptable side slopes and other design elements for bank stabilization will be determined in remedial design by professional engineers.

All actions which require any combination of cover installation and/or soil excavation include restoration activities (e.g., replacement of flower beds, trees, shrubs, grass, etc.). All actions that require excavation will also require characterization of the excavated soil to determine proper disposal (i.e., determination if the soil is hazardous or not hazardous from a disposal standpoint).

Temporary relocation will be provided to eligible residents upon their request.

9.3.1 Institutional Controls

EPA Institutional Controls (ICs) guidance (EPA 2000) recommends four specific factors be considered when documenting the ICs to be implemented at a Site: Objective, Mechanism, Timing and Responsibility. The following is a listing of these factors relative to the Jacksonville Ash Site.

1. **Objective**: The objective of the Institutional Controls is to assist the active portion of the selected remedy (i.e., the cover/excavation portion) in preventing and/or managing potential human exposure to subsurface soil contamination remaining above RGs (e.g., under buildings, at depths greater than 2 feet in yards, under asphalt, etc.). The Institutional Controls will also keep property remediated to industrial RGs from reverting to another use designation (e.g., residential) without proper remediation to satisfy the proposed non-industrial use.

2. **Mechanism**: The remedy relies on Institutional Controls to direct and control human behavior to eliminate or manage exposure to soil contamination remaining at the Site. Institutional Controls are non-engineered instruments, such as administrative and/or legal controls, that help to minimize and/or manage the potential for human exposure to contamination and/or protect the integrity of a remedy. The following are general explanations of the four categories of Institutional Control mechanisms available for use followed by those controls to be used for the Jacksonville Ash Site:

   - *Proprietary Controls* - These controls are based on State law and use a variety of tools to prohibit activities that may compromise the effectiveness of the remedy or restrict activities or future uses of resources that may result in unacceptable risk to human health or the environment. They may also be used to provide site access for operation and maintenance activities. The most common examples of proprietary controls are easements and covenants.

   - *Governmental Controls* - These controls impose land or resource restrictions using the authority of an existing unit of government. Typical examples of governmental controls include zoning, building codes, drilling permit requirements and State or local groundwater use regulations.

- *Enforcement and Permit Tools with IC Components* - These types of legal tools include orders, permits, and consent decrees. These instruments may be issued unilaterally or negotiated to compel a party to limit certain site activities as well as ensure the performance of affirmative obligations (e.g., to monitor and report on an IC's effectiveness).

- *Informational Devices* - These tools provide information or notification about whether a remedy is operating as designed and/or that residual or contained contamination may remain on Site. Typical information devices include State registries, deed notices, and advisories.

For the Jacksonville Ash Site, Institutional Controls, including some or all of the following, will be used:

a. *Proprietary Control* - Any land owned by the City that has contamination remaining at depth (> 2 feet) or under houses, concrete driveways, will have restrictions placed on the deed via restrictive covenants that run with the land to notify future interested parties or owners of the presence of contaminated soil and of the requirement to maintain the soil cover or barrier (e.g., building, roadways, driveways, sidewalks, asphalt or concrete which maintain a break in the exposure pathway). Any private property owner that has contamination remaining at levels above RGs at depth or under their house, concrete driveways, sidewalks, etc. which maintain a break in the exposure pathway will be offered the opportunity to and be assisted with setting up a proprietary control for their property.

b. *Governmental Controls*: The City of Jacksonville will establish Governmental Controls under its administrative authorities with the expressed intent to prevent and/or manage future human contact with subsurface (> 2 feet) or sub-structure contaminated soil. Implementation of at least one of the Governmental Controls should be analogous to the Aquifer Delineation Zone Program in Florida (Chapter 62-524). For example, the Aquifer Delineation Zone Program identifies a zone of groundwater contamination. When a permit application (e.g., well installation) is received, the application is checked against existing Aquifer Delineation Zones in that area. If the application is for a well within that zone, then certain well construction requirements are applied to ensure that contaminated groundwater does not enter the well (e.g., double casing of wells, ensuring the recovery zone is not within the contaminated zone, etc.). Similarly, the City of Jacksonville, in consultation with EPA, will identify a Jacksonville Ash Soil Delineation Zone for that area where soil contamination remains at depth after covering/excavation. When the City receives an application for an activity within the Jacksonville Ash Soil Delineation Zone (e.g., to dig for utilities, to build a house, to tear down a house, to add on to a house, to install a swimming pool, to dig a basement, to repair roads, etc.), then that application must be flagged and appropriate restrictions or appropriate management scheme applied prior to approval of the application.

Regarding the management scheme to be applied in the Soil Delineation Zone, the existing Ash Management Plan must be finalized and adopted as part of the Institutional Control. The Ash

Management Plan is envisioned to be one of the main management tools when digging within the Jacksonville Ash Soil Delineation Zone. The City's Ash Management Plan must include, at a minimum, procedures:

i. for identification of Ash,
ii. for notifications to City and regulatory officials if Ash is encountered,
iii. for handling, storing and characterizing Ash for proper disposal, transporting Ash,
iv. on minimum requirements for documenting Ash handling and disposal activities, and
v. tips to reduce exposure to contaminated soils.

The City of Jacksonville will also identify and work with other governmental permitting authorities (e.g., St. Johns River Water Management District, Army Corp of Engineers, etc.) to establish a procedure to ensure that appropriate restrictions or appropriate management scheme is applied prior to approval of an application by the other governmental authority which could impact soil contamination remaining in the Soil Delineation Zone.

d. *Information Device* - Any property owner that has contamination remaining at depth or under their house, concrete driveways, etc., will be offered the opportunity to and be assisted with drafting language that can be included in a homeowner's deed to notify potential buyers of contamination and/or restrict future activities of the property so as to maintain the soil cover.

3. **Timing**: The Institutional Controls must be explained in the Remedial Design (RD) and the Operations and Maintenance (O&M) Plan. These controls must stay in place as long as subsurface soil contamination remains at levels above RGs.

4. **Responsibility**: The City of Jacksonville is responsible for implementing and, where possible given the Institutional Control instrument, enforcing the above identified Institutional Controls. O&M Reports or similar status reports such as an IC Implementation Report, that summarizes all ICs implemented for the Site including mapping of all areas with soil above RGs left in place, location and type of ICs, deficiencies of the ICs, and other information as needed, will be prepared by the City of Jacksonville. EPA is responsible for monitoring (e.g., in O&M Report, in IC Implementation Report, during the 5 year reviews, etc.) the implementation and effectiveness of the Institutional Controls.

9.3.2 Risk Management Decision (Clarification of Remedy Implementation to meet Ecological Soil RGs)

Refinement of the COPECs and preliminary ecological RGs was possible. For example, many of the COPECs for soils are metals and other inorganic chemical are naturally occurring in the environment. Some of the COPECs are organic chemicals that are also naturally occurring or ubiquitous in urban environments. To determine background concentrations of COPECs, soil sampling was performed. Surface soil was collected at a total of 60 background locations samples. In many cases, the background concentration of the COPEC was above the preliminary ecological RG (e. g., aluminum, iron). EPA does not require cleanup to below background levels.

With establishment of the environmental medium of concern (soil), identification of the COPECs and determination of surface soil background concentrations, an analysis was performed in Section 2.5 of the Feasibility Study on the geographic co-location of human health COCs and ecological COPECs.

This analysis indicates that remediation of soils to human health RGs will remediate almost all of the exceedances of preliminary ecological RGs or soil background (whichever is higher). Remediation to human health RGs will remove or break the exposure pathway of a large amount of contaminated soil, thereby lowering the average concentration of ecological COPECs at the Site.

Due to the relatively low quality ecological habitat offered by urbanized settings, the ubiquitous nature of many of the ecological COPECs and the conservative nature of the preliminary ecological RGs, it is believed that those locations not targeted for soil cleanup to protect human health will not result in substantive remaining ecological risk and do not warrant establishment of specific ecological RGs. The overall conclusion is that cleanup to satisfy the human health RGs will also provide adequate cleanup to protect ecological receptors (i.e., separate actions to address ecological risk in soil is not needed).

9.3.3 Risk Management Decision (Clarification of Remedy Implementation to meet Ecological Sediment RGs)

The analytical results of sediment in McCoy's Creek (Forest Street) and Ribauld River (Lonnie C. Miller, Sr. Park) indicate some exceedences of the preliminary ecological remedial goals. However, exceedences of ecological sediment RGs in stream sediments next to the sites have been found to be similar to sediment background concentrations upstream of the sites. This evaluation in Section 2.5 of the Feasibility Study indicates that the sites have not significantly contaminated the sediment above levels already present in the surface water bodies. No active remediation of the creek or river sediment is required, although the banks will be stabilized to prevent erosion of ash into the surface water bodies.

EPA recognizes that a separate resolution between the PRP and FDEP or any other regulatory agencies is possible, whereby the multiple sources resulting in elevated levels of contaminants in the streams and in groundwater contaminant discharge to surface water will be addressed in a venue separate from the CERCLA remedy.

9.4 Summary of the Estimated Remedy Costs

Costs for Alternative 3 Including Alternative 3a for Lonnie C. Miller, Sr. Park Site

Capital Cost:	$21,600,000 (F)
	$29,100,000 (C)
	$20,100,000 (L)
Total All Three Sites:	**$70,800,000**

Average Annual O&M Cost:	$65,000 (F)
(50 Years of O&M)	$31,000 (C)
	$195,000 (L)
Total All Three Sites:	**$291,000**
Total Present Worth:	$22,500,000 (F)
(7% Discount Rate)	$29,500,000 (C)
	$22,800,000 (L)
Total All Three Sites:	**$74,800,000**

The information in the above cost estimate is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum in the Administrative Record file, an BSD, or a ROD amendment. This is an order-of-magnitude engineering cost estimate having an intended range of+50 to -30 percent of the actual project cost.

9.5 Expected Outcomes of the Selected Remedy

The expected outcome is removal of complete soil exposure pathways above RGs for both human and ecological receptors.

9.6 Available Land Use after Cleanup

<u>Residential Property</u>

The RGs (i.e., clean-up levels) were chosen based on residential, unrestricted use scenarios. After the soil excavations are completed, the property would be available for residential, commercial or industrial uses with restrictions or management scheme (i.e., Institutional Controls) at those locations where contaminants above RGs remain at depth or under soil cover or other barriers (e.g., buildings, sidewalks, driveways, asphalt, concrete which maintain a break in the exposure pathway).

<u>Non-Industrial Properties (Parks, school yards, etc)</u>

The RGs (i.e., clean-up levels) were chosen based on residential, unrestricted use scenarios. After the soil excavation and installation of the 2 foot of soil cover is completed, the property would be available for residential, commercial or industrial uses with restrictions or management scheme (i.e., Institutional Controls) at locations where contaminants above RGs remain at depth or under soil cover or other barriers (e.g., buildings, sidewalks, driveways, asphalt, concrete which maintain a break in the exposure pathway).

Industrial Property (including Residential Property designated to be redeveloped for Industrial Use)

The RGs (i.e., clean-up levels) were default values for industrial scenarios. After installation of a barrier (e.g., building, asphalt, concrete or soil cover with soil removal as needed to provide minimum 2 feet of clean cover), the property would be available for commercial or industrial uses with restrictions or management scheme (i.e., Institutional Controls) at locations where contaminants above RGs remain at depth or under soil cover or other barriers (e.g., buildings, sidewalks, driveways, asphalt, concrete which maintain a break in the exposure pathway).

9.7 Anticipated Environmental and Ecological Benefits

Removal of the contaminated soil and stabilization of creek banks will eliminate the potential for contaminated run-off to enter the creeks and river.

9.8 Final Clean-up Levels

The final RGs for human exposure to soil are listed in Tables 51 and 52. The final RGs for ecological exposure to soil and sediment are listed in Tables 53 and 54.

PART 10: SUPPORT AGENCY COMMENTS

10.1 State Opinion on the Remedy (NCP § 300.435(c)(2))

The State of Florida, as represented by the Florida Department of Environmental Protection (FDEP), has been the support agency during the field investigative and remedy analysis leading up to this ROD. In accordance with 40 CFR § 300.435, as the support agency, FDEP has provided input during this process. FDEP does not object to the selected remedy.

On April 26, 2005 and September 12, 2005, FDEP provided comments on the Proposed Plan. A response to their comments are included in the Responsiveness Summary (see Part 13.2).

PART 11: STATUTORY DETERMINATIONS (NCP § 300.430(f)(5)(ii) and (iii))

11.1 Protection of Human Health and the Environment (NCP § 300.430(f)(5)(ii)(A))

The selected remedy will adequately protect human health and the environment through soil excavation and associated engineering controls (i.e., soil cover) and Institutional Controls.

Engineering Controls (2 foot Thick Soil Cover) and Excavation

Surface Soil Contamination: For both residential and industrial scenarios posing cancer risks of greater than 1 x 10^{-6} or noncarcinogenic risk greater than a Hazard Quotient of 1, soil contaminant concentrations in the upper 2 feet will be addressed. Prevention of human exposure to surface soil contamination in residential areas above RGs is provided by soil removal up to 2 feet and installation of a soil cover. In industrial areas, prevention of human exposure to surface soil contamination above industrial RGs is provided by installation of an asphalt, concrete or soil cover with soil removal as needed to provide minimum 2 feet of clean cover. Subsurface soil remaining above RGs will be marked by a warning mesh or fabric (i.e., snow fencing, etc.) to indicate the presence of contamination.

Institutional Controls

Subsurface Soil Contamination: To ensure that significant volumes of soil contamination, remaining after shallow excavation or remaining under existing structures, is not disturbed unknowingly in the future, the City of Jacksonville will place Proprietary Controls on property it owns and will impose Governmental Controls on actions taken at property within the Jacksonville Ash Soil Delineation Zone. Propriety Controls or Informational Devices will be available for private property.

11.2 Compliance with Applicable or Relevant and Appropriate Requirements (NCP § 300.430(f)(5)(ii)(B))

ARARs include applicable or relevant and appropriate provisions of standards, requirements, criteria or limitations presented in the tables described below:

Chemical Specific ARARs

The primary chemical ARARS are provided in Tables 63.

Location Specific ARARs

Location specific ARARs are provided in Table 64.

Action Specific ARARs

Action specific ARARs are provided in Table 65.

TABLE 63: CHEMICAL - SPECIFIC ARARs				
Standard, Requirement, Criteria or Limitation	**Citation (certain provisions of)**	**Description**	**Federal or State ARAR**	**Comment**
Toxic Substances Control Act PCB Requirements	15 USC Sec. 2601-2629	Establishes storage and disposal requirements for PCBs. See 40 CFR Part 761, Subpart D.	Federal	PCBs are a site COC. Concentrations, however, may be below levels that require adherence to TSCA.
Clean Air Act National Primary and Secondary Ambient Air Quality Standards	42 USC Section 7401-7671	Establishes standards for ambient air quality to protect public health and welfare (including standards for particulate matter and lead). See 40 CFR Part 50.6, 50.7 and 50.12.	Federal	Relevant and Appropriate to activities which might result in air emissions during remedial actions
National Emission Standards for Hazardous Air Pollutants		Sets emission standards for designed hazardous pollutants. See 40 CFR Part 61 Subpart A	Federal	Regulates new installations that will or might reasonably be expected to become a source or indirect source of air pollution. Emissions of hazardous air pollutants is not anticipated under any alternatives.
"Global" Risk Based Corrective Action	Section 376.30701 FS	Establishes risk levels for cleanups (i.e., 1 X 10^{-6} for carcinogens and a hazard index of 1 for noncarcinogens).	State	NOTE: The only identified ARAR from Section 376.30701 and Chapter 62-780 are the risk levels.

TABLE 64: LOCATION - SPECIFIC ARARs				
Standard, Requirement, Criteria or Limitation	**Citation (certain provisions of)**	**Description**	**Federal or State ARAR**	**Comment**
Fish and Wildlife Coordination Act Regulations	33 CFR Subsection 320.3	Requires that the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and related state agencies be consulted prior to structural modification of any body of water, including wetlands. If modifications must be conducted, the regulation requires that adequate protection be provided for fish and wildlife resources.	Federal	If the remedy along Moncrief Creek involves creek alternation, these agencies would be consulted.
Endangered Species Act	16 USC Sec. 1531-1543	Requires that Federal agencies insure that any action authorized, funded, or carried by the agency is not likely to jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify critical habitat. See 40 CFR 6-302(h), 50 CFR Par 200, 50 CFR Part 402	Federal	If the remedy along Moncrief Creek impacts endangered species, then this order would be followed.

TABLE 64: LOCATION - SPECIFIC ARARs				
Standard, Requirement, Criteria or Limitation	**Citation (certain provisions of)**	**Description**	**Federal or State ARAR**	**Comment**
Executive Order on Wetlands	Exec. Order 11990	Requires action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural beneficial values of wetlands	Federal	If the remedy along Moncrief Creek involves wetlands, then this order would be followed.
National Environmental Policy Act (NEPA) Regulations, Wetlands, Floodplains, etc.	40 CFR SubSection 6.301(a)	These regulations contain the procedures for complying with Executive Order 11990 on wetlands protection. Appendix A state that no remedial alternative adversely affect a wetland if another practicable alternative is available. If no alternative is available, impact from implementing the chosen alternative must be mitigated.	Federal	If remedial action affects a wetland, these regulations would apply.
Executive Order on Floodplain Management	Exec. Order 11,988	Requires Federal agencies to evaluate the potential effects of actions they may take in a flood plain to avoid, to the maximum extent possible, the adverse impacts associate with direct and indirect development of a flood plain.	Federal	Applicable to remedial actions that affect or impinge on flood plains.

TABLE 65: ACTION- SPECIFIC ARARs				
Standard, Requirement, Criteria or Limitation	**Citation (certain provisions of)**	**Description**	**Federal or State ARAR**	**Comment**
Solid Waste Disposal Act	42 USC Sec. 6901-6987		Federal	
Identification and Listing of Hazardous Waste	40 CFR Part 261	Defines those solid wastes that are subject to regulation as hazardous wastes under 40 CFR Parts 262-265 and Parts 270, 271, 124	Federal	Determines potential waste classifications and applicability of land disposal restrictions under 40 CFR 268.
Standards Applicable to Generators of Hazardous Waste	40 CFR Part 262		Federal	
Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities	40 CFR Part 264	Establishes minimum national standards that define the acceptable management of hazardous waste fo rowners nad operations of facilities that treat, store or dispose of hazardous waste.	Federal	Onsite disposal of hazardous waste is not anticipated. Onsite treatment of characteristic waste in temporary units may be necessary.
Preparedness and Prevention	Subpart C	Specifies requirement for communications, alarm systems and coordination with local authorities	Federal	Onsite waste management of generated hazardous waste may be necessary based on hazardous waste determinations.
Contingency Plan and Emergency Procedures	Subpart D	Requires development of a contingency plan and designation of an emergency coordinator	Federal	Onsite waste management of generated hazardous waste may be necessary based on hazardous waste determinations.

TABLE 65: ACTION- SPECIFIC ARARs				
Standard, Requirement, Criteria or Limitation	**Citation (certain provisions of)**	**Description**	**Federal or State ARAR**	**Comment**
Manifest System, Record Keeping and Reporting	Subpart E	See 264.71 (Use of manifest system) and 264.73 (operating record)	Federal	Onsite waste management of generated hazardous waste may be necessary based on hazardous waste determinations.
Releases from Solid Waste Management Units Waste Piles	Subpart F		Federal	Requirements for detection of release from SWMUs are applicable for units treating generated hazardous waste.
Waste Piles	Subpart L	See 264.251 (Design and operating requirements), 264.254 (Monitoring and inspection), 264.258 (Closure and Post-closure care)	Federal	Onsite treatment of generated hazardous waste may be necessary based on hazardous waste determinations.
Corrective Action for Solid Waste Management Units	Subpart S - 264.553 (Temporary Units)	This part of the regulation includes the definition of a Temporary Unit (TU) to facilitate waste management treatment associated with cleanup activities. Hazardous waste treated within a TU is not subject to LDRs. However, the treated soil must meet LDRs prior to offsite disposal.	Federal	Onsite treatment of generated hazardous waste may be necessary based on hazardous waste determinations.

TABLE 65: ACTION- SPECIFIC ARARs				
Standard, Requirement, Criteria or Limitation	**Citation (certain provisions of)**	**Description**	**Federal or State ARAR**	**Comment**
Land Disposal Restrictions	40 CFR Part 268	Identifies hazardous waste that are restricted from land disposal	Federal	Based on hazardous waste determinations, compliance with LDRs may be needed.
Alternative Land Disposal Restriction Treatment Standards for Contaminated Soil	40 CFR Part 268.49	Achieve the greater of 90 percent reduction in total constituent concentrations or ten times the Universal Treatment Standards (UTS) for the constituent.	Federal	Based on hazardous waste determinations, compliance with LDRs may be needed.
Toxic Substance Control Act PCB Requirements	15 USC Sec. 2601-2629	Establishes storage and disposal requirements for PCBs (see 40 CFR Part 761, Subpart D).	Federal	PCBs are a site COC. Concentrations, however, may be below levels that require adherence to TSCA.
Florida Hazardous Waste Rules	Portions of FAC Chapter 62-730 comparable to the Federal ARARs identified in 40 CFR 261 through 268	Equivalent or more stringent than the Federal ARARs identified in 40 CFR 261 through 268.	State	If the State requirements are more stringent that the Federal requirements, then the State requirements will be followed.

TABLE 65: ACTION- SPECIFIC ARARs

Standard, Requirement, Criteria or Limitation	Citation (certain provisions of)	Description	Federal or State ARAR	Comment
Florida Air Pollution Rules - October 1992	FAC Chapter 62-2	Establishes permitting requirements for owners and operators of any source that emits any air pollutant. The rule also establishes ambient air quality standards for sulfur dioxide, PM_{10}, ozone.	State	
Florida Regulation of Stormwater Discharge - May 1993	FAC Chapter 62-25	Requirements for discharges of untreated storm water to ensure protection of the surface water of the state	State	
Florida Ambient air Quality Standards - December 1994	FAC Chapter 62-272	Establishes ambient air quality standards necessary to protect human health and public welfare.	State	
Florida Water Well Permitting and Construction Requirements - March 1992	FAC Chapter 62-532	Establishes minimum standards for the location, construction, repair an abandonment of water well. Permitting requirements and procedures are established.	State	

TABLE 65: ACTION- SPECIFIC ARARs				
Standard, Requirement, Criteria or Limitation	**Citation (certain provisions of)**	**Description**	**Federal or State ARAR**	**Comment**
Florida Rules on Hazardous Waste Warning Signs - July 1991	FAC Chapter 62-736	Requires warning signs at NPL and FDEP identified hazardous waste sites to inform the public of the presence of potentially harmful conditions	State	

"To-Be-Considered" (TBC) [9]

The following is a listing of those TBCs utilized in the remedy:

- Standards found in 20 CFR 1910 from the Occupational, Health and Safety Administration (OSHA) are carried as to-be-considered values pursuant to 40 CFR 300.400(g)(3).

- The soil cleanup target levels (SCTLs) for residential and industrial scenarios found Chapter 62-777 are utilized as default values to satisfy the State chemical-specific ARAR relating to a carcinogenic risk of 1 X 10^{-6} and a hazard index of 1 for noncarcinogens.

- Chapter 62-780's 2 foot minimum for breaking exposure pathways between people and contaminated soil is utilized as a default thickness.

11.3 ARAR Waivers (NCP § 300.430(f)(5)(ii)(C))

This Part of the ROD explains any federal or state laws that the remedy will not meet, the waiver invoked, and the justification for invoking the waiver.

No ARAR waivers are utilized in this ROD.

11.4 Cost Effectiveness (NCP § 300.430(f)(5)(ii)(D))

This Part of the ROD explains how the Selected Remedy meets the statutory requirement that all Superfund remedies be cost-effective. A cost-effective remedy in the Superfund program is one whose " costs are proportional to its overall effectiveness". (NCP § 300.430(f)(l)(ii)(D)). The "overall effectiveness" is determined by evaluating the following three of the five balancing criteria used in the detailed analysis of alternatives: (1) Long-term effectiveness and permanence; (2) Reduction in toxicity, mobility and volume (TMV) through treatment; and, (3) Short-term effectiveness. "Overall effectiveness is then compared to cost" to determine whether a remedy is cost-effective (NCP § 300.430(f)(l)(ii)(D)).

For determination of cost effectiveness, a cost effectiveness matrix was utilized (see Table 66). Ln the matrix, the alternatives were listed in order of increasing costs. For each alternative, information was presented on long term effectiveness and permanence, reduction of toxicity, mobility and volume through treatment, and short term effectiveness. The information in those three categories was compared to the prior alternative listed and evaluated as to whether it was more effective (+), less effective (-) or of equal effectiveness (=).

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[9] By definition, ARARs are promulgated, or legally enforceable federal and state requirements. EPA has also developed another category known as "to be considered" (TBCs), that includes nonpromulgated criteria, advisories, guidance, and proposed standards issued by federal or state governments. TBCs are not potential ARARs because they are neither promulgated nor enforceable. It may be necessary to consult TBCs to interpret ARARs, or to determine preliminary remediation goals when ARARs do not exist for particular contaminants. Identification and compliance with TBCs is not mandatory in the same way that it is for ARARs.

TABLE 66: COST EFFECTIVENESS MATRIX					
RELEVANT CONSIDERATIONS FOR COST EFFECTIVENESS DETERMINATION					
Alternative	**Cost Effective?**	**Present Worth Cost**	**Long Term Effectiveness and Permanence**	**Reduction of TMV[1] through Treatment**	**Short Term Effectiveness**
1) No Action	Not Applicable	\$70,000 (F) \$70,000 (C) \$70,000 (L)	No Reduction in Long Term Risk	No reduction of TMV	Continued Risk to Community and Environment
2) Soil Cover with Excavation and Offsite Disposal	Yes	\$13,200,000 (F) \$21,400,000 (C) \$9,100,000 (L)	+ Minimal Reduction in Long Term Risk	+ Reduction of TMV (via some soil treatment for offsite disposal)	+ Controllable risk to community and workers
3) Shallow Excavation, Offsite Disposal and Soil Cover	Yes	\$22,500,000 (F) \$29,500,000 (C) \$22,800,000 (L3a) \$54,500,000 (L3b)	+ Reduces Risks to Acceptable Levels	+ Reduction of TMV (via more soil treatment for offsite disposal)	= Controllable risk to community and workers
4) Deep Excavation and Offsite Disposal	No	\$24,200,000 (F) \$29,700,000 (C) \$112,200,000 (L)	= Reduces Risks to Acceptable Levels	+ Reduction of TMV (via more soil treatment for offsite disposal)	- Controllable risk with great effort and disruption to community. Controllable risk to workers

Notes:

1. TMV = Toxicity, Mobility and Volume

Key: + More effective than previous alternative
- Less effective than previous alternative
= No change in effectiveness over previous alternative

The selected remedy is considered cost effective because it is a permanent solution that reduces human health and ecological risks to acceptable levels at less expense than some of the other permanent, risk reducing alternatives evaluated.

11.5 Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable (MEP) (NCP § 300.430(f)(5)(ii)(E))

The selected remedy for soil, provides for reduction of toxicity, mobility and volume, but not through treatment. A large volume of contaminated soil will be transported off-site, resulting in a permanent solution. The selected remedy provides for treatment of contaminated soil only as needed to satisfy RCRA Land Ban Disposal requirements.

11.6 Preference for Treatment as a Principal Element (NCP § 300.430(f)(5)(ii)(F))

The selected remedy considers that a small percentage of the excavated soil will be in need of treatment. For example, it is believed that some of the soil contains hazardous characteristics requiring it to be considered a RCRA hazardous waste and in need of treatment pursuant to RCRA treatment standard requirements at 40 CFR § 268. .

11.7 Indication of the Remediation Goals (NCP § 300.430(f)(5)(iii)(A))

Tables 51, 52, 53 and 54 list the RGs to be met by the remedy. Confirmatory sampling or similar means will be used to determine satisfaction of the RGs and disposal requirements.

11.8 Documentation of Significant Changes from Preferred Alternative of Proposed Plan (NCP § 300.430(f)(5)(iii)(B))

The Proposed Plan for the Jacksonville Ash Site was released for public comment in July 2005. The public comment period was from July 28, 2005, to September 12, 2005. The Proposed Plan identified Alternative 3 (Alternative 3a for Lonnie C. Miller Park) as the remedy. Written comments were received by EPA during the public comment period. EPA reviewed the verbal comments submitted during the public meeting, which was transcribed by a court reporter. See Part 13 of this ROD for a response to the comments received.

Based on concerns expressed by the Florida Department of Environmental Protection and community members, the preferred remedy was changed to include groundwater monitoring to verify the "No Action" decision on the groundwater and geotextile mat (or other appropriate membrane) topped with gravel will be placed under houses with open crawlspaces (that are accessible by children) with soil containing COCs above RGs. The geotextile and gravel will remove the possibility of exposure to soils under houses with open crawlspaces.

References to the voluntary removal of ash > 25% that were made in the Proposed Plan have been removed from the final remedy in the ROD. This is a remedy implementation issue that can be considered during Remedial Design and not a remedial goal.

11.9 Five-Year Requirements (NCP § 300.430(f)(5)(iii)(C))

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that do not allow for unlimited use and unrestricted exposure, a statutory 5 year review will be conducted within five years of construction completion for the site to ensure that the remedy is, or will be, protective of human health and the environment.

PART 12: COMMUNITY OUTREACH LEADING UP TO PROPOSED PLAN

12.1 Community Outreach

The first EPA Fact Sheets discussing the Jacksonville Ash Site was distributed in September 1999 and February 2000. Community interviews were conducted in December 1999 and a Community Relations Plan was prepared in March 2000. A RI/FS Kickoff public meeting was held on May 1, 2000, with a Fact Sheet prepared to inform the public about the start of the RI/FS.

In January 2000, the North Riverside Community Association was chosen as the Technical Assistance Plan (TAP) community group to hire a technical advisor to review and comment on the technical aspects of the RI/FS and to communicate information to the affected community. The technical advisors have been sent all major technical documents for review and comment during the RI/FS.

In order to increase participation in the RI sampling of residential yards, an EPA Fact Sheet requesting access for sampling was issued in December 2001. In January 2002, the EPA and the City walked through the neighborhood making contact with people who had not returned previous requests for access. During the walk through the community, questions on the access agreements and the importance of the additional sampling were answered.

In March 2002, U.S. Representative Corrine Brown sent a letter to individuals who had not signed the access agreements. Representative Brown's letter encouraged people to sign the access agreement so sampling could take place to determine if incinerator ash and contaminated soil are present.

Another EPA Fact Sheet was distributed to the community in May, 2002 providing the status of the investigation and again asking for cooperation with any future access requests for sampling. In January 2003 and August 2005, EPA Fact Sheets were distributed to the community providing the status of the investigation.

The EPA Fact Sheet presenting the proposed remedy for the Site was issued in July 2005.

Several public meetings were held throughout the RI/FS to keep the community informed of the status of the sites and to allow the public to ask questions. The dates of some of these public meetings are November 13, 1999, September 11, 2000, February 19, 2000, March 28, 2001 and June 7, 2002. A public availability session was held on September 8, 2005 during the public comment period for the Proposed Plan.

PART 13: PUBLIC PARTICIPATION IN REMEDY SELECTION (NCP § 300.430(f)(3))

13.1 Public Notice (NCP § 300.430(f)(3)(i)(A)), Public Comment (NCP § 300.430(f)(3)(i)(B) and (C), Public Meeting (NCP § 300.435(f)(3)(i)(D) and (E))

Mailing of the Proposed Plan Fact Sheet to the community began on July 28, 2005. The Administrative Record file was made available to the public on August 1, 2005. The Administrative Record was also placed in the information repositories maintained at the EPA Region 4 Superfund Record Center and at the Emmett Reed Community Center, Jacksonville Urban League Office and Bradham Brooks Public Library. The notice of the availability of the Administrative Record and an announcement of the Proposed Plan public meeting was published in the Jacksonville Times Union on August 2, 2005. A public comment period was held from July 28, 2005, to September 28, 2005. The public comment period was expanded until September 12, 2005. The Proposed Plan was presented to the community in a public meeting on August 10, 2005, at the Emmett Reed Community Center. At this meeting, representatives from EPA answered questions about the Site and the proposed remedy and accepted public comments.

13.2 Significant Changes from Preferred Alternative of Proposed Plan

Based on concerns expressed by the Florida Department of Environmental Protection and community members, the preferred remedy was changed to include groundwater monitoring to verify the "No Action" decision on the groundwater and geotextile mat (or other appropriate membrane) topped with gravel will be placed under houses with open crawlspaces (that are accessible by children) with soil containing COCs above RGs. The geotextile and gravel will remove the possibility of exposure to soils under houses with open crawlspaces.

References to the voluntary removal of ash > 25% that were made in the Proposed Plan have been removed from the final remedy in the ROD. This is a remedy implementation issue that can be considered during Remedial Design and not a remedial goal.

13.3 Responsiveness Summary ((NCP § 300.430(f)(3)(i)(F))

Written and verbal comments were received during the public comment period. A copy of the written comments and a copy of the public meeting transcript is in the Administrative Record. A brief summary of the major comments is contained in the following paragraphs:

<u>Comments from the Community</u>

Verbal and written comments were received during the public comment period. Many questions were asked and answered at the public meeting. A copy of the written comments and a copy of the public meeting transcript (including EPA responses at the meeting) are in the Administrative Record. When viewed as a whole, there were several themes found in the written and verbal comments received. A brief summary of the major themes/comments is contained in the following paragraphs followed by EPA's response.

Summary of Verbal Comments from Public Meeting: Some community members expressed concern with contamination remaining at depths below 2 feet, below trees, houses, and roads after installation of the soil cover and associated soil excavation is complete.

Response: *The prevention of human exposure to surface soil is provided by 2 feet of uncontaminated soil, and along with the Institutional Controls constitute a protective remedy by eliminating and/or managing future human contact with subsurface or sub-structure contaminated soil. Use of a thickness of 2 feet of clean soil to break the exposure pathway is actually very protective; in fact, more protective than what is being done at many other lead sites across the country. For example, on page 37 of the Superfund Lead-Contaminated Residential Sites Handbook (i.e.. Lead Handbook; OSWER 9285.7-50, June 2003), it is stated that "... the top 12 inches in a residential yard can be considered to be available for direct human contact. With the exception of gardening, the typical activities of children and adults in residential properties do not extend below a 12-inch depth. Thus, placement of a barrier of at least 12 inches of clean soil will generally prevent direct human contact and exposure to contaminated soil left at depth... Twenty-four (24) inches of clean soil cover is generally considered to be adequate for gardening areas... 24-inch barrier normally is necessary to prevent contact of contaminated soil at depth with plant roots, root vegetables, and clean soil that is mixed via rototilling."*

On page 44 of the Superfund Lead Handbook (EPA 2003f), the following point is made regarding placement of a marker, which will be placed in all areas at the Jacksonville Ash Site where contamination above the RGs remain at depth, "[i]f contamination is not removed to the full depth of contamination on a property, a permanent barrier/marker that is permeable, easily visible and not prone to frost heave, should be placed to separate the clean fill from the contamination... Examples of suitable barriers/markers include snow fencing (usually orange), a clean, crushed limestone layer, and geofabric."

Implementation of the remedy at the Jacksonville Ash Site will result in some areas with soil contamination remaining at depth (i.e., under the 2 foot thick soil cover, under houses, roads, etc.). To address those areas with contamination remaining above RGs, the remedy relies on Institutional Controls to eliminate or manage exposure to soil contamination remaining at the Site. Institutional Controls are non-engineered instruments, such as administrative and/or legal controls, that help to minimize and/or manage the potential for human exposure to contamination and/or protect the integrity of a remedy.

Summary of Verbal and Written Comments from Public Meeting: Some community members expressed a desire to be relocated.

Response*: EPA ' s preference is to address the risks and choose methods of cleanup which allow people to remain safely in their homes and businesses. However, the National Contingency Plan (NCP-40 CFR part 300, App. D(g)) does state that, "[t]emporary or permanent relocation of residents, businesses, and community facilities may be provided where it is determined necessary to protect human health and the environment. " Temporary relocation for eligible residents upon their request is specifically provided for in the ROD. Regarding application of permanent relocation, two possible EPA triggers for using permanent relocation were identified during stakeholder forums hosted by EPA and held between May 1996 and October 1997 on the Interim*

Policy on the Use of Permanent Relocations as Part of Superfund Remedial Actions. Specifically, EPA stated that its primary reasons for conducting a permanent relocation would be to address an immediate risk to human health (where an engineering solution is not readily available) or where the structures (e.g., homes or businesses) are an impediment to implementing a protective cleanup.

In the July 8, 1999, EPA Federal Register public noticing the Interim Policy on the Use of Permanent Relocations as Part of Superfund Remedial Actions the following was stated: "[t]o date, the overwhelming majority of Superfund sites located in residential areas are being cleaned up without the need to permanently relocate residents and businesses. For example, at the Glen Ridge, Montclair/West Orange Radium Sites in New Jersey, and the Bunker Hill Mining Site in Idaho, EPA has successfully excavated contaminated soils from approximately 5,000 residential properties down to levels of contamination that no longer pose unacceptable risks. By addressing the risks at these three Sites through cleanups, people were able to remain in their homes and entire communities were kept intact. " In summary, EPA Region 4 believes that the removal of two feet of soil where contamination exists in residential areas, followed by institutional controls, around existing homes/buildings is technically feasible, reasonable, cost effective and protective of human health and the environment at the Jacksonville Ash Site.

Summary of Verbal Comments from Public Meeting: Some community members expressed concern that their minority community is being treated differently with regard to the proposed cleanup approach.

Response*: The U.S. EPA is committed to the fair treatment of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear disproportionately high and adverse human health or environmental effects resulting from Federal agency programs, policies, and activities. The remedy selection process has been undertaken with this definition of fair treatment.*

Summary of Verbal and Written Comments from Public Meeting: Some community members asked if the Forest Park Head Start School was safe for their children to attend.

Response*: The contaminated soil around the school (i.e., the playground, parking lot and public parks) has been covered with clean soil to prevent exposure to ash contamination. The Duval County Department of Health annually tests the blood lead levels of children attending the school and has found blood lead level to be below the criteria of 10 micrograms/deciliter and below the average child blood lead level for the county. All available data indicates that the children at the Head Start School are not exposed to ash contamination and are safe.*

Summary of Written Comments from Public Meeting: Some community members expressed the desire for more time for public comment and an additional public information meeting.

Response*: The 30-day public comment period required by the NCP was originally planned to end on August 28, 2005. Based on public requests and a desire by EPA to allow the community to* *communicate their concerns, the public comment period was extended until September 12, 2005. In addition to the August 10, 2005 Proposed Plan public meeting, a public information meeting was held on September 8, 2005 to allow the community to ask questions and to offer-more comments. EPA believes the additional steps to involve the public has been successful in obtaining meaningful input from the community.*

Summary of Written Comments from Public Meeting: Some community members expressed the desire to have soil removed from under the buildings with open crawl space.

Response: *Risk associated with elevated soil lead levels is directly proportional to the duration and frequency of exposure. Although it is EPA ' s technical judgement that the levels under crawl spaces are not frequented nor is the duration such that unacceptable risks occur, in an attempt to eliminate any possible direct exposure to soil in available open crawl space accessible to children, the remedy has been modified to include placement of a geotextile mat (or other membrane) topped with a layer of gravel.*

Summary of Written Comments from Public Meeting: Some community members expressed the desire to have the Brooklyn area tested for contamination.

Response*: Parts of Brooklyn have already been sampled with additional sampling planned in Operable Unit 2. Operable Unit 2 will be sampled once the remedy for Operable Unit I is underway. There is a possibility of ash contamination existing in other parts of the city. These areas cannot be brought into the Jacksonville Ash Site as they are not contiguous but will have to handled as different sites. The Florida Department of Environmental Protection or EPA will evaluate any suspected area of ash contamination and determine if it should be handled as a Superfund site or through another State environmental program.*

Summary of Written Comments from Public Meeting: A community member asked what effect will testing have on property values.

Response*: Testing of properties allows EPA to determine whether there is contamination present that warrants remediation. With knowledge of the presence or absence of contamination on a property, that lot can be determined to be safe or included in the cleanup by the City of Jacksonville. The remedy, which includes excavation of contamination to 2 feet in residential areas, will remove the majority of ash contamination on most lots. Having the contamination removed from a property should help maintain properties values better than leaving the contamination on the lot. The remedy should aid the real estate values by removing uncertainty which exists due to the existing contamination. EPA believes that the cleanup approach does not preclude and may even lead to redevelopment in the area.*

Summary of Written Comments from Public Meeting: A community member asked who decides what option will be used for clean up.

Response*: EPA ' s remediation decision is based on site facts as applied to established Agency regulations, policies and guidance. EPA, with input from the EPA National Remedy Review Board and the Florida Department of Environmental Protection, makes the final cleanup decision after* *considering a variety of alternatives using the nine remedy evaluation criteria stated in Part 8.1 of the ROD. One of the modifying criteria for selecting the final remedy is community acceptance of the remedy based on comments received during the Proposed Plan public comment period and public meetings.*

Summary of Written Comments from Public Meeting: A community member asked if there was monetary assistance available for citizens to clean up a property so they can buy it.

Response: *EPA is not aware of monetary assistance for citizen initiated cleanups. It is anticipated that the Responsible Party (the City of Jacksonville) will fund and perform the cleanups.*

Comments from the TAP Community Group

Verbatim Written Comment Received on September 21, 2005:
Comments on the selected remedy for the Jacksonville Ash Sites, August 22, 2005 Submitted to the North Riverside Community Association under the TAP grant. Dr. R. Kevin Pegg, Technical Advisor to the North Riverside Community Association

Overview of materials for evaluating the remedy
We recently received for review and comment several documents from the Environmental Protection Agency related to cleanup of the contaminated ash sites in Jacksonville, Florida. The Remedial Investigation report dated December 2004 provides the most recent data on testing in the contaminated neighborhoods surrounding former incinerators and Lonnie C. Miller Sr. Park. The Feasibility Study report dated May 2005 discusses several scenarios for cleaning up the sites and gives supporting documentation. The Removal Action Work Plan for the 5th and Cleveland Incinerator site dated July 2005 gives specific information on one area requiring cleanup. The Superfund Fact Sheet Proposed Plan Jacksonville Ash Superfund Site Dated July 2005 provides a broad overview of the three sites and discusses EPA's rationale for choosing a remedial plan based on partial removal and covering. In addition to the Remedial Investigation and Feasibility Study, we also used information from the Human Health Baseline Risk Assessment in evaluating the remedies selected by EPA and the City of Jacksonville. Finally, we received a copy of the EPA presentation from the public meeting on August 10, 2005, with a cover letter discussing the meeting. Our understanding of the plan is inclusive of the verbal commentary at the meeting and the slides presented to the public.

Issue 1: Differences between the Feasibility Study and the plan proposed at the public meeting.

Based on a critical reading of the Feasibility Study Alternative 3 states that 2 feet of clean fill covering areas of ash is the remedy, and excavation occurs only when the additional 2 feet height would result in drainage problems. When drainage problems from the additional surface elevation occur then excavation would be used, however only to the extent that allows a cover fill. The EPA's Fact Sheet handed out in advance of the public meeting is less clear than the Feasibility Study regarding the amount of excavation. It is our understanding from the public meeting slide presentation, and the verbal description of the remedy by Mr. Joseph Alfano, that the remedy would include excavation of all ash above 25% and contaminants on the private residential lands of the neighborhoods and backfilling to grade. The Record of Decision and any Statement or Scope of Work should spell out in detail site residential cleanup methodology.

Issue 2: Clarification of private residential properties versus public properties

The Feasibility Study does not differentiate between public and private lands, or between current residential properties and future public areas. People in this area are more likely to be exposed at home or from a neighboring home site than from exposure in city facilities or from occasional use of a city park.

Alternative 3 chosen by the EPA for cleaning up the sites is reasonable and appropriate only for remediating public lands. Only alternative 4, removal of all ash and contaminates, is appropriate for private residential properties. Alternative 4 will better meet both the protective of human health and long-term effectiveness requirements under Superfund law for private residential property.

In the copy of the Public Meeting slides provided by EPA "Proposed Remedy (continued)" slides do differentiate between cleanups on private and public lands (the slides were not numbered, in our file these are slides 54 and 55). Removal of contamination in the upper two feet of soil is discussed in the slides for residential property. In the slides a nonresidential property has a cleanup consisting of a two-foot deep cover of clean compacted soil. These are significantly different cleanups. Essentially the EPA public meeting slides describe a different cleanup than that described in the FS.

The ROD and SOW should clearly describe the types of cleanups that occur on residential private property and the types of cleanups that occur on commercial or public properties. Each has a significant different risk associated with it, and compositing risk for this neighborhood is inappropriate.

Response to Issues 1 and 2: The Feasibility Study does use language that is not clear as to the extent to which contaminated soil will be excavated or covered. EPA clarified its position in the July 2005 Proposed Plan by specifying the type of remediation that is required for different land uses. Remediation for residential property is stated as removal of contaminated soils above remedial goals of up to two feet before placement of a soil cover. Removal of less than two feet is acceptable when there is less than two feet of contaminated soil above remedial goals, around building foundations and other structures and around the base of trees if they are left in place. Excavation of contaminated soil greater than two feet is allowed, but not required, to remove all contaminated soils and lessen the need for institutional controls. On industrial properties and non-residential properties such as the city-owned parks the remedy is excavation of contaminated soils as needed to allow installation of a two foot soil cover. EPA ' s position that residential properties will have up to two feet of contaminated soil above remedial goals removed before placement of a soil cover will be clearly stated in the Record of Decision.

As to the choice of Alternative 3 over Alternative 4. EPA believes that prevention of human exposure to surface soil is provided by 2 feet of uncontaminated soil, and along with the Institutional Controls constitute a protective remedy by eliminating and/or managing future human contact with subsurface or sub-structure contaminated soil. Use of a thickness of 2 feet of clean soil to break the *exposure pathway is more protective than what is being done at many other lead sites across the country. For example, on page 37 of the EPA 's Lead Handbook, it is stated that "... the top 12 inches in a residential yard can be considered to be available for direct human contact. With the exception of gardening, the typical activities of children and adults in residential properties do not extend below a 12-inch depth. Thus, placement of a barrier of at least 12 inches of clean soil will generally prevent direct human contact and exposure to contaminated soil left at depth... Twenty-four (24) inches of clean soil cover is generally considered to be adequate for gardening areas... 24-inch barrier normally is necessary to prevent contact of contaminated soil at depth with plant roots, root vegetables, and clean soil that is mixed via rototilling."*

To address those areas with contamination remaining above RGs, the remedy relies on Institutional Controls to eliminate or manage exposure to soil contamination remaining at the Site. Institutional Controls are non-engineered instruments, such as administrative and/or legal controls, that help to minimize and/or manage the potential for human exposure to contamination and/or protect the integrity of a remedy.

Issue 3: Cleanup lacks completeness

The cleanup plan presented by the EPA includes buffer zones where no cleanup occurs near homes and some trees. While cleanup under pad foundations is not a necessity for this type of waste many of the homes in the area, especially the older homes, have pier foundations with crawl spaces. The technology to remove ash safely and efficiently certainly exists and should be utilized. Many of the trees where ash occurs only have surface contamination and can be effectively and safely remediated. The language in the FS is "corner cutting" to reduce the cleanup volumes in violation of the intent of Superfund criteria for reductions in toxicity and effectiveness.

EPA should provide a parcel-by-parcel decision of actual cleanup technologies for each private lot.

Response to Issue 3: Risk associated with elevated soil lead levels is directly proportional to the duration and frequency of exposure. Although it is EPA's technical judgement that the levels under crawl spaces are not frequented nor is the duration such that unacceptable risks occur, in an attempt to eliminate any possible direct exposure to available and utilized crawl space, the remedy has been modified to include placement of a geotextile mat topped with a layer of gravel

If property owners do not wish vegetation to be removed (e.g., trees), then hand digging around such vegetation will occur. However, the target depth of two feet might not be reached (i.e., soil removal will have to be to a practicable extent). It is EPA's technical judgement that the risk associated with contaminated soil remaining above RGs under bushes, trees, etc. is minor. Risk in a residential setting is apportioned across the entire property. In other words, the exposure area is the specific parcel under review. EPA believes that spatially averaged (i.e., mean, composite) concentrations best represents exposure to site contaminants over the long term. For risk assessment purposes, any individual is assumed to move randomly across the exposure area over time. It is not believed that the small pockets of remaining contamination associated with trees, bushes, etc. will pose an unacceptable risk. Alternatively, trees and other vegetation could be removed if the home owner *wishes to have it removed, if removed, they will be replaced with a less mature tree which, with time, will grow leading to the replacement of the tree canopy.*

Parcel-by-parcel remedial decisions are not made in the Record of Decision. Parcel-by-parcel remedial decisions will be made during the remedial design of the selected remedy.

Issue 4: Confusing language regarding eminent domain

The language on properties included under eminent domain removal actions in the Feasibility Study is far too vague and should be clarified. EPA's presentation did not discuss eminent domain at all. How is ED to be applied? If a private residential lot cleanup cost exceeds some arbitrary value set by the City will the responsible party utilize ED to convert to public property and reduce its costs? There should be a public benefit, not just a cost saving to the city, when ED is utilized.

Response to Issue 4: The City of Jacksonville has the power of eminent domain and will be responsible for decisions concerning changes in land use. EPA is committed to preserving the communities proposed for remediation and will use its authority to the extent possible to prevent shortcuts designed to cut costs at the expense of the communities. The specifics of the remediation will be decided during the remedial design phase with input from the City. EPA, the Florida Department of Environmental Protection and the Remedial Design/Remedial Action community group.

Issue 5: Clarification of standards and when they apply

Language regarding the applicability of state standards for heavy metals and organic toxins should be strengthened, especially regarding how the state standards should be met. State of Florida cleanup standards should always be met by direct testing using EPA methods, not by interpolations of TCLP methods.

The language of slide 42 ("Feasibility study, continued") regarding additional testing to comply with new state standards should be clarified. According to the slide additional sampling is done concurrent with remedial design activities; however, the full extent of contamination for Operable Unit 1 cannot be known until sampling is complete, therefore a Remedial Design could not be finalized. Perhaps there are RD stages I, II, III, etc., but this is not clear at this point.

Response: The Agency has recognized the carcinogenic risk level of 10^{-6} *and the noncarcinogenic hazard index of I as applicable or relevant and appropriate requirements (ARARs) that by law must be met or waived. As such, the RGs in the ROD were selected to meet these risk levels. Direct testing using EPA methods are used to make remedial decisions. TCLP is used to determine if a material is a hazardous waste subject to RCRA Subtitle C requirements.*

Results of the proposed additional sampling will be incorporated into the remedial design as the information becomes available. The complexity of the remediation and the time period expected to implement the remedy will allow for the continued evaluation of areas requiring remediation. If all the sampling data is not available when the first remedial design document is completed there will be additional phases of remedial design. It should also be noted that EPA does not expect the *additional sampling to add significantly to the parcels to be remediated. The large majority of Operable Unit I properties should be included in the first remedial design document.*

Issue 6: Stabilization of the banks of Ribault River, Hogan's Creek, and McCoys Creek.

The discussion in the Feasibility Study and in the EPA Fact Sheet and in the presentation regarding this issue is totally inadequate. There are no bona fide volumes estimates, no discussion of remediation targets, no detailed maps showing areas to be remediated versus not remediated, no cost estimates. What are the " acceptable side slopes?" Are these side slope degrees based on State or Federal standards? What are the engineering estimates for long-term stability? If information was provided on this important aspect of the cleanup, it was not indexed so that it could be examined critically. A separate remedial design plan is probably needed for understanding this part of the cleanup plan.

Response to Issue 6: The details of the stabilization of the stream banks will be determined in the remedial design. Acceptable side slopes and other design elements for the bank stabilization will be determined by professional engineers trained in slope stability and bank stabilization design. The design will be reviewed by EPA using a professional engineer, possibly the Army Corps of Engineers. Although there are no specific costs associated with stream bank stabilization in the Feasibility Study, it is not expected to significantly alter the overall estimated cost of the remedy at $74,800,000. Part of the City's annual operations and maintenance activities will require inspecting the stabilized slopes and repairing any damage to ensure the protectiveness and longevity of the remedy.

Issue 7: Cost breakdowns unclear or missing.

As noted above, there are seems to be no estimate for the waterways. Further, the cost breakdown provided is incomplete since the costs of only remediating private residential lots are not included. As provided the costs are biased due to the higher volumes of waste (thicker and deeper layers) occurring on public sector property.

EPA should provide a parcel-by-parcel breakdown of actual cleanup costs for each lot, so that the public can see how cleanup funds are truly allocated in this cleanup. We believe this may show that most of the funds are spent to clean lands with the least potential for causing harm to neighborhood residents. Essentially, it appears the City of Jacksonville may have chosen to spend tax dollars primarily to remediate City of Jacksonville lands under this proposed cleanup. The cleanup volume estimates provided in the RI/FS indicate that complete remediation of residential property is reasonable and can be accomplished without significantly impacting the total cleanup costs for this site.

Response to Issue 7: The selected remedy for both residential and non-residential properties is to remove direct contact with the first two feet of contaminated soil above remedial goals by either removal of the first two feet followed by backfilling with clean soil or covering with 2 feet of uncontaminated soil. The specific remedy in residential areas is removal of contaminated soil above remedial goals with disposal of contaminated soil followed by backfilling. This is inherently more costly than the covering of contamination that may occur on non-residential public lands. Remediation on residential properties will be relatively more expensive than on non-residential public lands.

Furthermore, the cost estimates in Appendices F, G and H in the Feasibility Study does break down estimated costs for remediating residential versus non-residential properties. Two out of three of the sites have estimated residential remedial costs significantly higher than non-residential public lands. Only the Forest Street site has higher estimated non-residential remedial costs versus residential remedial costs, this reflects the greater proportion of non-residential properties to residential properties present at the Forest Street site.

Finally, we respectfully request our issues be made part of the permanent administrative record (AR) for this site. Also, we would prefer a point-by-point response to each of the seven issues, not a composite or "blanket" response as is sometimes given. The breakdown in communication between EPA and the community at the public meeting made asking our questions in the open forum impossible. It would be especially helpful if we could comment on drafts of the Record of Decision for the Jacksonville Ash sites.

Response: Your issues have been included in the Responsiveness Summary to the Record of Decision along with EPA's response, and as such will be included in the Administrative Record. EPA has incorporated your concerns as much as possible in the shaping of the final Record of Decision.

<u>Comments by Florida Department of Environmental Protection (FDEP)</u>

FDEP provided EPA with comments on the Proposed Plan in a letter dated September 12, 2005. The FDEP letter's content is reproduced below, and changes to the ROD, where possible, have been incorporated into the ROD.

Verbatim Written Comment Received on September 12, 2005:
The Florida Department of Environmental Protection (FDEP) is committed to working with the U.S. Environmental Protection Agency (EPA) and the City of Jacksonville to develop a plan that will best remediate Brown's Dump and the Jacksonville Ash Sites. We appreciate your dedication and focus in developing a plan to clean up these sites. Through our collective efforts and expertise, we will be able to develop a comprehensive plan best suited for these neighborhoods. Below, we have offered a few comments regarding the above referenced sites:

Upon completion of the delineation of ash disposal areas, DEP has no objection to leaving contamination on-site if appropriate engineering and institutional controls are put in place to reduce or eliminate exposure to contaminants. The proposal to remove the upper two feet of ash and ash-impacted soils would meet a portion of DEP's requirements. At the same time, the overall remedial approach must include institutional controls equivalent to those described in DEP's Institutional Controls Procedures Guidance (November 2004) cited in the Referenced Guidelines section in Florida Administrative Code Chapter 62-780, Contaminated Site Cleanup Criteria. While existing building pads and paved areas may serve initially as an engineering control, without the corresponding properly recorded institutional control (i.e., restrictive covenants), assurance cannot be given that the engineering controls will remain in place, particularly upon property transfer.

The proposed remedial approach does not address accessing properties with uncooperative property owners. Due to the large number of properties that have not been sampled because the property owners have not yet granted site access, the approach needs to be improved to address this aspect of remediation. The City of Jacksonville needs to have a plan in place to eliminate or minimize exposure to contaminants through sampling of all properties. A complete sampling plan will reduce exposure risks. This should also include sampling at the limits of the defined ash sites needed to clearly demonstrate that all areas of ash have been found. That sampling should also include nonresidential and city owned properties, such as Brooklyn Park. Also, we understand that EPA does not intend to compel the responsible party (City of Jacksonville) to remediate properties with uncooperative owners. DEP is concerned that this approach may leave areas of contamination unaddressed.

The engineering control of leaving waste in place under existing buildings, in conjunction with a corresponding institutional control ensuring the buildings will remain in place appears adequate in these projects except for buildings that are above grade. We would appreciate information on the following questions:

" What data exists to characterize the levels of contamination under these buildings?

" What engineering controls are proposed to prevent animals and small children from exposure by crawling under these structures'?

" Is EPA proposing to leave paving, such as driveways or parking lots, in place as the engineering control for the material beneath the paving?

" How will the proposal to leave trees, shrubs and vegetation with underlying ash and ash-impacted soils, be evaluated in the exposure risks on the individual lots?

DEP's rules require that a Professional Engineer certify that this engineering control is consistent with commonly accepted engineering practices and is appropriately designed and constructed for its intended purpose. A corresponding institutional control will be necessary to ensure that driveways or parking lots are properly maintained and not removed.

As previously commented on April 26, 2005, DEP requests that the remedial goals for Copper and Barium in soils be set at 150 and 120 mg/kg, respectively, to comply with State cleanup target levels. The potential for surface water impacts from the concentrations of iron in groundwater should also be addressed.

Response*: Although many of the comments are remedy implementation issues, and not directly related to the remedy selection process of the ROD, the following paragraphs contain EPA's response, observation or technical opinion to each statement made by FDEP in its comment letter.*

EPA believes that Institutional Control mechanisms identified in this ROD, namely governmental controls and voluntary proprietary controls (deed restrictions), along with EPA monitoring of the institutional control will be equally successful to forced restrictive covenants in addressing the State's concern that engineering controls remain in place (and effective). It is not EPA policy to force deed restrictions onto private property owners. EPA does not view a specific Institutional

Control mechanism in isolation. The selected remedy's approach is to identify several specific types of Institutional Controls for use in meeting the objective of preventing and/or managing potential human exposure to subsurface soil contamination remaining above RGs while the responsibility for monitoring the implementation and effectiveness of the control will be with EPA. During the Remedial Design, EPA will explore several forms of Institutional Controls with the City of Jacksonville including annual notification letters and the possible use of Florida's real estate statutes.

EPA believes the homeowners should be able to make an informed decision about allowing their property to be remediated. EPA will insure that the City of Jacksonville provides information about the Site contaminants and their potential risks. However, EPA believes that private homeowners have the right to refuse cleanup. It is not EPA's policy to force remediation on land owners who refuse it. Furthermore, it is not EPA policy to force access for sampling, although EPA did allow tenants of rental properties to sign access during RI sampling if the property owner did not sign the access. Once again EPA thinks it is the right of the property owner or tenant to decide if the property will be sampled. It will be up to the City of Jacksonville to decide whether to force access and by what means. EPA will look at expanding the model Consent Decree language which typically states that the PRP will use all available means to gain access to properties. EPA will work with the City to gain access for sampling all identified parcels in need of sampling. EPA will require the City of Jacksonville to mail annual letters notifying residents of the presence of contamination and offering to sample and remediate the contamination.

Risk associated with elevated soil lead levels is directly proportional to the duration and frequency of exposure. Although EPA believes that the soil under crawl spaces are not frequented nor is the duration such that unacceptable risks occur, in an attempt to eliminate any possible direct exposure to soil in open crawl space that are accessible by children, the remedy has been modified to include placement of a geotextile mat topped with a layer of gravel.

If property owners do not wish vegetation to be removed (e.g., trees), then hand digging around such vegetation will occur. However, the target depth of two feet might not be reached (i.e., soil removal will have to be to a practicable extent). It is EPA's technical judgement that the risk associated with contaminated soil remaining above RGs under bushes, trees, etc. is minor. Risk in a residential setting is apportioned across the entire property. EPA believes that spatially averaged (i.e., mean, composite) concentrations best represents exposure to site contaminants over the long term because it is assumed that any individual moves randomly across the exposure area over time, ft is not believed that the small pockets of remaining contamination associated with trees, bushes, etc. will pose an unacceptable risk, although EPA will seek to use the City of Jacksonville's tree cutting ordinance as a method to have City oversight of tree removal that might result in soil exposures.

During implementation of the remedy, the status of constructed driveways will be determined. Such structures will have to be adequate to serve as barriers to contaminated soil.

EPA has calculated chronic exposure levels for these constituents in its Human Health Baseline Risk Assessments (HHBRA) that correspond to a carcinogenic risk of 10^{-6} and non-cancer risk of HI = 1.

EPA's Technical Service Section has written a Technical Memo dated October 25, 2005 stating EPA's disagreement with the methodology used to calculate these acute values. As EPA's Superfund risk assessment policy and guidance has not adopted this acute based methodology, EPA will use the chronic exposure levels calculated for these constituents in its HHBRA which EPA consider protective of human health. EPA believes that remediation of soil with exceedences of the main drivers for the remediation (lead, arsenic) will also remediate these constituents.

According to Eco Risk Assessments. Manganese is not a COC in surface water. Iron is a COC at Lonnie Miller and 5th & Cleveland. Surface water background concentrations are above Florida ' s surface water criteria (0.3 mg/L for iron and 0.1 mg/L for Manganese for shellfish consumption but otherwise there is not one due to the low toxicity of manganese). Manganese surface water background is 0.224 mg/L in McCoy's Creek (Forest Street) and 0.16 mg/L in Ribault River (Lonnie Miller). Iron surface water background is 1.56 mg/L in McCoy's Creek (Forest Street) and 2.33 mg/L in Ribault River (Lonnie Miller). EPA does not clean up below background levels. The groundwater in wells adjacent to the surface water bodies are below level of iron and manganese (except one well) in the surface water. The benthic life is actually subjected to lower concentrations of iron and manganese from the discharging groundwater than the existing surface water. Groundwater controls at this Site would have no environmental benefit for the surface water, however EPA will institute groundwater monitoring to determine the effects of the soil remediation on the groundwater discharge to the surface water.

Department of Health

Verbatim Written Comment Received on September 12, 2005:
Our mission is to continually improve the health and environment of our community. We would like to thank you for the opportunity to provide comments related to the Jacksonville Ash sites and the Brown's Dump feasibility study. First, I would like to express our appreciation for your excellent efforts and strong support while we worked together as a team to successfully address the many challenges and opportunities that the Jacksonville Ash sites and Brown's Dump brought to our city.

The additional availability sessions were appreciated by the residents and our local community. You worked diligently with us to ensure that the health and safety of the residents of Jacksonville were addressed at the community meetings. Teamwork was vital to our success and your organization was a key player. I am confident that our shared commitment to excellence and partnership will better prepare us to respond to all matters of public health and safety in the near future.

Response: *EPA appreciates the sentiment expressed in these opening paragraphs. EPA has also found the working relationship with the Department of Health worthwhile and useful as the Agency has tried to address the many challenging aspects associated with the Jacksonville Ash Site.*

Below is a list of recommendations from the Duval County Health Department from their review.

- All properties within the delineation of contaminated areas should be required to be remediated with appropriate engineering and institutional controls to reduce or eliminate exposure to contaminants. This should also include properties that have crawl spaces located under them where children and pets could be potentially exposed.

Response*: EPA believes that Institutional Control mechanisms identified in this ROD, namely governmental controls and voluntary proprietary controls (deed restrictions), along with EPA monitoring of the control will be successful in insuring that engineering controls remain in place (and effective). It is not EPA policy to force deed restrictions onto private property owners. During the Remedial Design, EPA will explore several forms of Institutional Controls with the City of Jacksonville including annual notification letters and the possible use of Florida's real estate statute.*

Risk associated with elevated soil lead levels is directly proportional to the duration and frequency of exposure. Although EPA believes that the soil under crawl spaces are not frequented nor is the duration such that unacceptable risks occur, in an attempt to eliminate any possible direct exposure to soil in open crawl space that are accessible to children, the remedy has been modified to include placement of a geotextile mat topped with a layer of gravel.

- The remedial goals for contaminants should be set according to the Florida Administrative Code Chapter 62-780, Contaminated Site Cleanup Criteria for all Jacksonville Ash Sites and Brown's Dump.

Response*: The Agency has recognized the carcinogenic risk level of* 10^{-6} *and the noncarcinogenic hazard index of 1 as ARARs. As such, the remedial goals in the ROD were selected to meet these risk levels.*

- The proposal should allow removal of up to 3 feet of soil to minimize the amount of contaminated media left subsurface. * *The current proposal does not adequately address the remediation strategy for the contaminated media surrounding trees and shrubbery.*

Response: *At EPA lead sites, the Agency's experience is that a minimum of one foot of clean soil should establish an adequate barrier from contaminated soil in a residential yard for the protection of human health. The rationale for establishing a minimum cover thickness of one foot is that the top 12 inches of soil in a residential yard can be considered to be available for direct human contact. For those areas used for vegetable gardening purposes, EPA recommends 2 feet. EPA is expanding on EPA's recommended practice by using 2 feet, not one foot, at the Jacksonville Ash Site. It is EPA technical judgement that this interval is protective, and there is no need to increase this interval to 3 feet.*

If property owners do not wish vegetation to be removed (e.g., trees), then hand digging around such vegetation will occur. However, the target depth of two feet might not be reached (i.e., soil removal will have to be to a practicable extent). EPA believes that the risk associated with contaminated soil remaining above RCs under bushes, trees, etc. is minor. Risk in a residential setting is apportioned across the entire property. In other words, the exposure area is the specific parcel under review.

EPA believes that spatially averaged (i.e., mean, composite) concentrations best represents exposure to site contaminants over the long term. For risk assessment purposes, any individual is assumed to move randomly across the exposure area over time. It is not believed that the small pockets of remaining contamination associated with trees, bushes, etc. will pose an unacceptable risk.

- The owner shall execute an agreement with the City of Jacksonville, under which the owner agrees to have a covenant placed upon the deed that restricts excavation, construction, conveyance, sale or other transfer of title of the property within the delineated areas.

***Response**: Although the comment, as written, states that the Department of Health recommends that property within the delineated areas cannot be conveyed, sold or transferred, EPA interprets the comment to actually mean that such property transfers can occur but with proper notification as offered in the recommended covenant.*

EPA believes that Institutional Control mechanisms identified in this ROD, namely governmental controls and voluntary proprietary controls (deed restrictions), along with EPA monitoring of the control will be successful in addressing the State's concern that engineering controls remain in place (and effective). It is not EPA policy to force deed restrictions onto private property owners. EPA does not view a specific Institutional Control mechanism in isolation. The selected remedy's approach is to identify several specific types of Institutional Controls for use in meeting the objective of preventing and/or managing potential human exposure to subsurface soil contamination remaining above RGs while the responsibility for monitoring the implementation and effectiveness of the control will be with EPA. During the Remedial Design, EPA will explore several forms of Institutional Controls with the City of Jacksonville including annual notification letters and the possible use of Florida's real estate statute.

PART 14: COMMUNITY RELATIONS WHEN THE RECORD OF DECISION IS SIGNED (NCP § 300.430(f)(6)(i) and (ii))

14.1 Public Notice of Availability of ROD (NCP § 300.430(f)(6)(i))

The availability of the ROD will be public noticed in the Florida Times Union within thirty (30) calendar days from signature of the ROD.

14.2 Availability of ROD (NCP § 300.430(f)(6)(ii))

Upon signature, the ROD will be included in the Administrative Record. The updated Administrative Record will be sent to the local repositories within thirty (30) calendar days of signature of the ROD. The local repositories are located at:

Emmett Reed Center	Jacksonville Urban League	Bradham Brooks Public Library
1093 West 6th Street	903 West Union Street	1755 W. Edgewood Avenue
Jacksonville, Florida 32209	Jacksonville, Florida 32204	Jacksonville, Florida 32208
(904) 630-0958	(904) 366-3461	(904) 765-5402

Supporting information for the ROD is already in the Administrative Record, which also resides at the local repositories.

PART 15: REFERENCES

The references listed below are the documents used in writing this ROD.

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Appendix A

Cancer Risk Assessment Summary - Reasonable Maximum Exposure
(Tables 10.1 thru 10.13 from BHHRA)

TABLE 10.4 RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Forest Street Site Proper Area 1											
			CPAH (TEF)	6.3E-006		4.2E-006	1.1E-005						
			2,3,7,8-TCDD (TEQ)	1.0E-005		7.8E-007	1.1E-005						
			Arsenic	8.9E-006		3.7E-007	9.3E-006						
			(Total)	2.5E-005		5.4E-006	3E-005						
Water	Surface Water	McCoy's Creek											
			CPAHs	3.4E-007		3.9E-004	3.9E-004						
			(Total)	3.4E-007		3.9E-004	4E-004						
			Total Risk Across All Media and All Exposure Routes				4E-004		Total Hazard Index Across All Media and All Exposure Routes				

TABLE 10.5 RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Forest Street Site Proper Area 1											
			CPAH (TEF)	3.8E-006		2.5E-006	6.3E-006						
			2,3,7,8-TCDD (TEQ)	1.3E-005		1.0E-005	2.3E-005						
			Arsenic	5.1E-004		2.1E-005	5.3E-004						
			(Total)	5.3E-004		3.4E-005	6E-004						
Water	Surface Water	McCoy's Creek											
			CPAHs	3.4E-007		3.9E-004	3.9E-004						
			(Total)	3.4E-007		3.9E-004	4E-004						
			Total Risk Across All Media and All Exposure Routes				1E-003		Total Hazard Index Across All Media and All Exposure Routes				

TABLE 10.5a RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Area North of McCoy's Creek	Arsenic	5.3E-006		2.2E-007	5.5E-006						
			(Total)	5.3E-006		2.2E-007	6E-006						
Water	Surface Water	McCoy's Creek	CPAHs	3.4E-007		3.9E-004	3.9E-004						
			(Total)	3.4E-007		3.9E-004	4E-004						
Total Risk Across All Media and All Exposure Routes							4E-004	Total Hazard Index Across All Media and All Exposure Routes					

TABLE 10.3.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Emmett Reed Community Center											
			CPAHs	2.6E-006		1.8E-006	4.4E-006						
			2,3,7,8-TCDD (TEQ) Dioxin	7.4E-006		5.8E-006	1.3E-005						
			Arsenic	5.0E-006		2.1E-007	5.2E-006						
			(Total)	1.5E-005		7.8E-006	2.3E-005						
Surface Water	Surface Water	Unnamed Creek											
			CPAHs	1.0E-008		1.2E-005	1.2E-005						
			(Total)	1.0E-008		1.2E-005	1.2E-005						
Groundwater	Groundwater	Tap											
			1,2-Dibromo-3-Chloropropanol	6.5E-005	5.8E-008	4.2E-005	1.1E-004						
			PCB-1242 (Arochlor 1242)	2.1E-005	--	--	2.1E-005						
			Arsenic	4.7E-005		--	4.7E-005						
			(Total)	1.3E-004	5.8E-008	4.2E-005	1.8E-004						
			Total Risk Across All Media and All Exposure Routes				2E-004		Total Hazard Index Across All Media and All Exposure Routes				

TABLE 10.4.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Emmett Reed Community Center											
			CPAHs	4.7E-006	--	3.2E-006	7.9E-006						
			2,3,7,8-TCDD (TEQ)	4.5E-006	--	3.5E-006	8.0E-006						
			Arsenic	3.3E-005	--	1.4E-006	3.4E-005						
			(Total)	4.2E-005		8.1E-006	5.0E-005						
Surface Water	Surface Water	Unnamed Creek											
			CPAHs	1.0E-008		1.2E-005	1.2E-005						
			(Total)	1.0E-008		1.2E-005	1.2E-005						
Groundwater	Groundwater	Tap											
			1,2-Dibromo-3-Chloropropanol	6.5E-005	5.8E-008	4.2E-005	1.1E-004						
			PCB-1242 (Arochlor 1242)	2.1E-005	--	--	2.1E-005						
			Arsenic	4.7E-005		--	4.7E-005						
			(Total)	1.3E-004	5.8E-008	4.2E-005	1.8E-004						
			Total Risk Across All Media and All Exposure Routes				2E-004	Total Hazard Index Across All Media and All Exposure Routes					

TABLE 10.8.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	The Park - Emmett Reed											
			CPAHs	3.7E-005		2.5E-005	6.2E-005						
			2,3,7,8-TCDD (TEQ) Dioxin	5.0E-006		3.9E-006	8.9E-006						
			PCB-1260 (Aroclor 1260)	1.6E-006		1.2E-006	2.8E-006						
			Arsenic	3.3E-005		1.4E-006	3.4E-005						
			(Total)	7.7E-005		3.2E-005	1.1E-004						
Surface Water	Surface Water	Unnamed Creek											
			CPAHs	1.0E-008		1.2E-005	1.2E-005						
			(Total)	1.0E-008		1.2E-005	1.2E-005						
Groundwater	Groundwater	Tap											
			1,2-Dibromo-3-Chloropropanol	6.5E-005	5.8E-008	4.2E-005	1.1E-004						
			PCB-1242 *(Arochlor 1242)*	2.1E-005	--	--	2.1E-005						
			Arsenic	4.7E-005		--	4.7E-005						
			(Total)	1.3E-004	5.8E-008	4.2E-005	1.8E-004						
			Total Risk Across All Media and All Exposure Routes				3E-004		Total Hazard Index Across All Media and All Exposure Routes				

TABLE 10.9.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	The Park - Emmett Reed	CPAHs	2.9E-005		2.0E-005	4.9E-005						
			Arsenic	7.6E-005		3.2E-006	7.9E-005						
			(Total)	1.1E-004		2.3E-005	1.3E-004						
Surface Water	Surface Water	Unnamed Creek	CPAHs	1.0E-008		1.2E-005	1.2E-005						
			(Total)	1.0E-008		1.2E-005	1.2E-005						
Groundwater	Groundwater	Tap	1,2-Dibromo-3-Chloropropanol	6.5E-005	5.8E-008	4.2E-005	1.1E-004						
			PCB-1242 (Arochlor 1242)	2.1E-005	--	--	2.1E-005						
			Arsenic	4.7E-005		--	4.7E-005						
			(Total)	1.3E-004	5.8E-008	4.2E-005	1.8E-004						
			Total Risk Across All Media and All Exposure Routes				3E-004		Total Hazard Index Across All Media and All Exposure Routes				

TABLE 10.12.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Apartment Complex											
			CPAHs	2.3E-006		1.6E-006	3.9E-006						
			2,3,7,8-TCDD (TEQ) Dioxin	1.3E-006		1.0E-006	2.3E-006						
			Arsenic	2.8E-006		1.2E-007	2.9E-006						
			(Total)	6.4E-006		2.7E-006	9.1E-006						
Surface Water	Surface Water	Unnamed Creek											
			CPAHs	1.0E-008		1.2E-005	1.2E-005						
			(Total)	1.0E-008		1.2E-005	1.2E-005						
Groundwater	Groundwater	Tap											
			1,2-Dibromo-3-Chloropropanol	6.5E-005	5.8E-008	4.2E-005	1.1E-004						
			PCB-1242 (Arochlor 1242)	2.1E-005	--	--	2.1E-005						
			Arsenic	4.7E-005		--	4.7E-005						
			(Total)	1.3E-004	5.8E-008	4.2E-005	1.8E-004						
			Total Risk Across All Media and All Exposure Routes				2E-004		Total Hazard Index Across All Media and All Exposure Routes				

TABLE 10.13.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Apartment Complex											
			CPAHs	2.5E-006	--	1.7E-006	4.2E-006						
			Arsenic	1.6E-005	--	6.6E-007	1.7E-005						
			(Total)	1.9E-005		2.4E-006	2.1E-005						
Surface Water	Surface Water	Unnamed Creek											
			CPAHs	1.0E-008		1.2E-005	1.2E-005						
			(Total)	1.0E-008		1.2E-005	1.2E-005						
Groundwater	Groundwater	Tap											
			1,2-Dibromo-3-Chloropropanol	6.5E-005	5.8E-008	4.2E-005	1.1E-004						
			PCB-1242 (Arochlor 1242)	2.1E-005	--	--	2.1E-005						
			Arsenic	4.7E-005		--	4.7E-005						
			(Total)	1.3E-004	5.8E-008	4.2E-005	1.8E-004						
			Total Risk Across All Media and All Exposure Routes				2E-004		Total Hazard Index Across All Media and All Exposure Routes				

TABLE 10.1.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
LONNIE C. MILLER

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil/Sediment	Lonnie C. Miller Park											
			CPAH (TEF)	4.4E-006		2.9E-06	7.3E-06	Antimony	Blood	1.2E+000		2.4E+000	3.6E+000
			2,3,7,8-TCDD	1.1E-05		8.6E-06	2.0E-05	Arsenic	Skin	7.6E-001		1.6E-002	7.8E-001
								Cadmium	Kidney	2.1E-001		8.5E-002	3.0E-001
								Chromium	Skin	4.8E-001		4.8E-001	9.6E-001
								Copper	GI Tract	1.3E+000		1.3E-001	1.4E+000
								Iron	Unknown	8.7E+000		1.2E+000	9.9E+000
								Lead	Unknown	--		--	--
								Manganese	CNS	9.6E-001		9.6E-002	1.1E+000
								Thallium	Unknown	2.6E-001		3.5E-002	3.0E-001
								Zinc	Blood	2.3E-001		2.3E-002	2.5E-001
			(Total)	1.5E-05		1.2E-05	2.7E-05	(Total)		13.4		4.5	17.9
Surface Water	Surface Water	Unnamed Tributary											
			CPAHs	4.1E-007		4.7E-004	4.7E-004						
			(Total)	4.1E-007		4.7E-004	4.7E-004						
			Total Risk Across All Media and All Exposure Routes				5E-04	Total Hazard Index Across All Media and All Exposure Routes					18

Total Skin HI =	2
Total Kidney HI =	0.3
Total GI Tract HI=	1
Total Unknown HI =	10
Total Blood HI =	4
Total CNS HI =	0.4

TABLE 10.2 RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
LONNIE C. MILLER

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil/Sediment	Lonnie C. Miller Park	CPAH (TEF)	4.4E-006		2.9E-06	7.3E-06	Antimony	Blood	1.2E+000		2.4E+000	3.6E+000
			2,3,7,8-TCDD	1.1E-05		8.6E-06	2E-05	Arsenic	Skin	7.6E-001		1.6E-002	7.8E-001
								Cadmium	Kidney	2.1E-001		8.5E-002	3.0E-001
								Chromium	Skin	4.8E-001		4.8E-001	9.6E-001
								Copper	GI Tract	1.3E+000		1.3E-001	1.4E+000
								Iron	Unknown	8.7E+000		1.2E+000	9.9E+000
								Lead	Unknown	--		--	--
								Manganese	CNS	9.6E-001		9.6E-002	1.1E+000
								Thallium	Unknown	2.6E-001		3.5E-002	3.0E-001
								Zinc	Blood	2.3E-001		2.3E-002	2.5E-001
			(Total)	1.5E-05		1.2E-05	2.7E-05	(Total)		13.4		4.5	17.9
Surface Water	Surface Water	Unnamed Tributary	CPAHs	4.1E-007		4.7E-004	4.7E-004						
			(Total)	4.1E-007		4.7E-004	4.7E-004						
Groundwater	Groundwater	Surficial Aquifer	Vinly Chloride	1.1E-005	6.3E-008	5.9E-006	1.7E-005	1,2-Dichloroethylene	Blood	1.0E-001	--	5.1E-002	1.5E-001
								Cresol M & P	CNS	9.6E-001	--	--	9.6E-01
								Cadmium	Kidney	4.4E-001	--	--	4.4E-001
								Manganese	CNS	3.8E-001	--	--	3.8E-001
			(Total)	1.2E-005	6.3E-008	5.9E-06	1.7E-05	(Total)		1.9		0.051	2.0
			Total Risk Across All Media and All Exposure Routes				5E-04	Total Hazard Index Across All Media and All Exposure Routes					20

Total Skin HI =	2
Total Kidney HI =	0.7
Total CNS HI =	2
Total Unknown HI =	10
Total Blood HI =	4
Total GI Tract HI =	1

TABLE 10.3.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
LONNIE C. MILLER

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Lonnie C. Miller Park	CPAHs	5.0E-006		3.4E-006	8.4E-006	PCB-1254 (Aroclor 1254	Unknown	4.8E-01		4.8E-02	5.3E-01
			PCB-1254 (Aroclor 1254	1.6E-07		1.3E-06	1.5E-06	Antimony	Blood	2.0E+000		4.0E+000	6.0E+000
			2,3,7,8-TCDD	1.5E-05		1.2E-05	2.7E-05	Arsenic	Skin	2.5E+000		5.2E-002	2.6E+000
			Arsenic	9.6E-005		4.0E-006	1.0E-004	Cadmium	Kidney	4.7E-001		1.9E-001	6.6E-001
								Chromium (Total)	Skin	6.2E-001		6.2E-001	1.2E+000
								Copper	GI Tract	1.6E+000		1.6E-001	1.8E+000
								Iron	Unknown	1.3E+001		1.7E+000	1.5E+001
								Lead	Unknown	--		--	--
								Manganese	CNS	3.2E+000		3.2E-001	3.5E+000
								Nickel	Body Weight	2.2E-001		1.7E-002	2.4E-001
								Thallium	Unknown	2.6E-001		3.5E-002	3.0E-001
								Zinc	Blood	1.6E-001		1.6E-002	1.8E-001
			(Total)	1.2E-04		2.1E-05	1.4E-04	(Total)		22.2		7.2	29.8
Surface Water	Surface Water	Unnamed Tributary	CPAHs	4.1E-007		4.7E-004	4.7E-004						
			(Total)	4.1E-007		4.7E-004	4.7E-004						
Groundwater	Groundwater	Surficial Aquifer	Vinyl Chloride	1.1E-005	6.3E-008	5.9E-006	1.7E-005	1,2-Dichloroethylene	Blood	1.0E-001	--	5.1E-002	1.5E-001
								Cresol M & P	CNS	9.6E-001	--	--	9.6E-01
								Cadmium	Kidney	4.4E-001	--	--	4.4E-001
								Manganese	CNS	3.8E-001	--	--	3.8E-001
			(Total)	1.1E-05	6.3E-008	5.9E-06	1.7E-05	(Total)		1.9		0.051	2.0
			Total Risk Across All Media and All Exposure Routes				6E-04	Total Hazard Index Across All Media and All Exposure Routes					20

Total Skin HI =	4
Total Kidney HI =	1
Total CNS HI =	3
Total Blood HI =	6
Total GI Tract HI =	2
Total Unknown HI =	16
Total Body Weight HI =	0.2

Appendix B

Non-Cancer Risk Assessment Summary - Reasonable Maximum Exposure (Tables 10.1 thru 10.11 from BHHRA)

TABLE 10.1.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Forest Street Site Proper Area 1						Antimony	Blood	6.2E-001		1.2E+000	1.9E+000
								Arsenic	Skin	2.1E-001		4.8E-003	2.1E-001
								Cadmium	Kidney	1.2E-001		4.8E-002	1.7E-001
								Chromium	Skin	1.1E-001		1.1E-001	2.3E-001
								Copper	GI Tract	2.6E-001		2.6E-002	2.8E-001
								Iron	Unknown	1.2E+000		1.7E-001	1.4E+000
								(Total)		2.5		1.6	4
			Total Risk Across All Media and All Exposure Routes					Total Hazard Index Across All Media and All Exposure Routes					4

Total Skin HI =	0.4
Total Kidney HI =	0.2
Total GI Tract HI=	0.3
Total Unknown HI =	1
Total Blood HI =	2

TABLE 10.2 RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Forest Street Site Proper Area 1						Antimony	Blood	6.2E-001		1.2E+000	1.9E+000
								Arsenic	Skin	2.1E-001		4.8E-003	2.1E-001
								Cadmium	Kidney	1.2E-001		4.8E-002	1.7E-001
								Chromium	Skin	1.1E-001		1.1E-001	2.3E-001
								Copper	GI Tract	2.6E-001		2.6E-002	2.8E-001
								Iron	Unknown	1.2E+000		1.7E-001	1.4E+000
								(Total)		2.5		1.6	4
Water	Groundwater	Tap						Barium	Kidney	3.0E-001		--	3.0E-001
								Iron	Unknown	3.4E+000		--	3.4E+000
								Manganese	CNS	1.7E+000		--	1.7E+000
								(Total)		5.4		--	5.4

Total Risk Across All Media and All Exposure Routes

Total Hazard Index Across All Media and All Exposure Routes: 9

Total Skin HI =	0.4
Total Kidney HI =	0.5
Total CNS HI =	2
Total Unknown HI =	5
Total Blood HI =	2

TABLE 10.3.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Forest Street Site Proper Area 1						Antimony	Blood	2.5E+000		5.0E+000	7.5E+000
								Arsenic	Skin	1.3E+001		2.8E-001	1.4E+001
								Barium	Kidney	2.8E-001		8.0E-002	3.6E-001
								Cadmium	Kidney	3.4E+002		1.4E+002	4.7E+002
								Chromium (Total)	Skin	1.6E-001		1.6E-001	3.2E-001
								Cobalt	Unknown	1.1E-001		1.1E-002	1.3E-001
								Copper	GI Tract	2.3E+001		2.3E+000	2.5E+001
								Iron	Unknown	6.5E+000		8.7E-001	7.4E+000
								Lead	Unknown	--		--	--
								Manganese	CNS	3.3E-001		1.3E-001	4.7E-001
								Nickel	Body Weight	1.3E-001		9.6E-003	1.4E-001
								Silver	Skin	4.7E-001		4.7E-002	5.1E-001
								Thallium	Unknown	8.4E-001		1.1E-001	9.6E-001
								Vanadium	Unknown	3.7E+000		3.7E-001	4.1E+000
								Zinc	Blood	1.6E-001		1.6E-002	1.8E-001
								(Total)		391		147	538
Water	Groundwater	Tap						Barium	Kidney	3.0E-001		--	3.0E-001
								Iron	Unknown	3.4E+000		--	3.4E+000
								Manganese	CNS	1.7E+000		--	1.7E+000
								(Total)		5.4		--	5.4
			Total Risk Across All Media and All Exposure Routes					Total Hazard Index Across All Media and All Exposure Routes					543

Total Skin HI =	14
Total Kidney HI =	471
Total CNS HI =	2
Total Blood HI =	8
Total GI Tract HI =	25
Total Unknown HI =	16
Total Body Weight HI =	0.1

TABLE 10.3.a.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface soil	Area North of McCoy's Creek						Arsenic	Skin	1.4E-001		2.9E-003	1.4E-001
								Iron	Unknown	2.5E-001		3.4E-002	2.8E-001
								(Total)		0.4		0.04	0.4
Water	Groundwater	Tap						Barium	Kidney	3.0E-001		--	3.0E-001
								Iron	Unknown	3.4E+000		--	3.4E+000
								Manganese	CNS	1.7E+000		--	1.7E+000
								(Total)		5.4		--	5.4
Total Risk Across All Media and All Exposure Routes								Total Hazard Index Across All Media and All Exposure Routes					6

Total Skin HI =	0.1
Total Kidney HI =	0.3
Total CNS HI =	2
Total Unknown HI =	4

TABLE 10.3.b.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface soil	Area North of McCoy's Creek						Arsenic	Skin	1.3E-001		2.8E-003	1.3E-001
								Iron	Unknown	2.6E-001		3.4E-002	2.9E-001
								(Total)		0.4		0.04	0.4
Water	Groundwater	Tap						Barium	Kidney	3.0E-001		--	3.0E-001
								Iron	Unknown	3.4E+000		--	3.4E+000
								Manganese	CNS	1.7E+000		--	1.7E+000
								(Total)		5.4		--	5.4
Total Risk Across All Media and All Exposure Routes								Total Hazard Index Across All Media and All Exposure Routes					6

Total Skin HI =	0.1
Total Kidney HI =	0.3
Total CNS HI =	2
Total Unknown HI =	4

TABLE 10.1.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tot:
Soil	Surface Soil	Emmett Reed Community Center											
								Antimony	Blood	5.9E-002		1.2E-001	1.8E-001
								Arsenic	Skin	1.3E-001		2.7E-003	1.3E-001
								Iron	Unknown	3.0E-001		4.0E-002	3.4E-001
			(Total)					(Total)		0.5		0.2	0.7
Groundwater	Groundwater	Tap											
								1,2-Dibromo-3-Chloropropanol	Testicles	--	1.7E+000	--	1.7E+000
								Arsenic	Skin	4.5E-001		--	4.5E-001
								Iron	Unknown	8.4E-001		--	8.4E-001
			(Total)					(Total)		1.3	1.7	--	3
			Total Risk Across All Media and All Exposure Routes						Total Hazard Index Across All Media and All Exposure Routes				4

Total Skin HI =	0.6
Total Blood HI =	0.2
Total Testicles HI =	2
Total Unknown HI =	1

TABLE 10.2.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Emmett Reed Community Center						Antimony	Blood	5.5E-001		1.1E+000	1.7E+000
								Arsenic	Skin	8.7E-001		1.8E-002	8.9E-001
								Barium	Kidney	2.0E-001		5.8E-002	2.6E-001
								Cadmium	Kidney	1.0E-001		6.3E-006	1.0E-001
								Chromium	Skin	1.6E-001		1.6E-001	3.2E-001
								Copper	GI Tract	2.2E-001		2.2E-002	2.4E-001
								Iron	Unknown	2.6E+000		3.4E-001	2.9E+000
								Manganese	CNS	1.5E-001		6.1E-002	2.1E-001
			(Total)					(Total)		4.9		1.8	7
Groundwater	Groundwater	Tap						1,2-Dibromo-3-Chloropropanol	Testicles	--	1.7E+000	--	1.7E+000
								Arsenic	Skin	4.5E-001		--	4.5E-001
								Iron	Unknown	8.4E-001		--	8.4E-001
			(Total)					(Total)		1.3	1.7	--	3
			Total Risk Across All Media and All Exposure Routes					Total Hazard Index Across All Media and All Exposure Routes					10

Total Skin HI =	2
Total Kidney HI =	0.4
Total CNS HI =	0.2
Total Blood HI =	2
Total GI Tract HI =	0.2
Total Testicles HI =	2
Total Unknown HI =	4

TABLE 10.5.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	The Park - Emmett Reed											
								Antimony	Blood	3.0E+001		5.9E+001	8.9E+001
								Arsenic	Skin	8.7E-001		1.8E-002	8.9E-001
								Barium	Kidney	1.0E-001		2.9E-002	1.3E-001
								Cadmium	Kidney	1.3E-001		5.1E-002	1.8E-001
								Chromium	Skin	1.2E-001		1.2E-001	2.4E-001
								Copper	GI Tract	1.4E-001		1.4E-002	1.5E-001
								Iron	Unknown	1.4E+000		1.9E-001	1.6E+000
								(Total)		33		59	92
			Total Risk Across All Media and All Exposure Routes					Total Hazard Index Across All Media and All Exposure Routes					92

Total Skin HI =	1
Total Kidney HI =	0.3
Total Blood HI =	89
Total GI Tract HI =	0.2
Total Unknown HI =	2

TABLE 10.6.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	The Park - Emmett Reed											
								Antimony	Blood	3.0E+001		5.9E+001	8.9E+001
								Arsenic	Skin	8.7E-001		1.8E-002	8.9E-001
								Barium	Kidney	1.0E-001		2.9E-002	1.3E-001
								Cadmium	Kidney	1.3E-001		5.1E-002	1.8E-001
								Chromium	Skin	1.2E-001		1.2E-001	2.4E-001
								Copper	GI Tract	1.4E-001		1.4E-002	1.5E-001
								Iron	Unknown	1.4E+000		1.9E-001	1.6E+000
								(Total)		33		59	92
Groundwater	Groundwater	Tap											
								1,2-Dibromo-3-Chloropropanol	Testicles	--	1.7E+000	--	1.7E+000
								Arsenic	Skin	4.5E-001		--	4.5E-001
								Iron	Unknown	8.4E-001		--	8.4E-001
								(Total)		1.3	1.7	--	3
Total Risk Across All Media and All Exposure Routes								Total Hazard Index Across All Media and All Exposure Routes					95

Total Skin HI =	2
Total Kidney HI =	0.3
Total Blood HI =	89
Total GI Tract HI =	0.2
Total Testicles HI =	2
Total Unknown HI =	2

TABLE 10.7.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Soil	Subsurface Soil	The Park - Emmett Rees						Aluminum	Unknown	1.0E-001		2.1E-002	1.2E-001
								Antimony	Blood	3.9E-001		7.8E-001	1.2E+000
								Arsenic	Skin	2.0E+000		4.1E-002	2.0E+000
								Barium	Kidney	1.4E-001		3.9E-002	1.8E-001
								Cadmium	Kidney	2.3E-001		9.4E-002	3.2E-001
								Chromium	Skin	1.8E-001		1.8E-001	3.6E-001
								Copper	GI Tract	3.3E-001		3.3E-002	3.6E-001
								Iron	Unknown	3.3E+000		4.3E-001	3.7E+000
								Manganese	CNS	1.4E-001		5.4E-002	1.9E-001
								Zinc	Unknown	1.2E-001		1.2E-002	1.3E-001
								(Total)		7		1.7	9
Groundwater	Groundwater	Tap						1,2-Dibromo-3-Chloropropanol	Testicles	--	1.7E+000	--	1.7E+000
								Arsenic	Skin	4.5E-001	--	--	4.5E-001
								Iron	Unknown	8.4E-001	--	--	8.4E-001
								(Total)		1.3	1.7	--	3
Total Risk Across All Media and All Exposure Routes								Total Hazard Index Across All Media and All Exposure Routes					12

Total Skin HI = 3
Total Kidney HI = 0.5
Total Blood HI = 1
Total CNS HI = 0.2
Total GI Tract HI = 0.4
Total Testicles HI = 2
Total Unknown HI = 5

TABLE 10.10.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Apartment Complex						Iron	Unknown	2.1E-001		2.8E-002	2.4E-001
								(Total)		0.2		0.03	0.2
Groundwater	Groundwater	Tap						1,2-Dibromo-3-Chloropropanol	Testicles	--	1.7E+000	--	1.7E+000
								Arsenic	Skin	4.5E-001		--	4.5E-001
								Iron	Unknown	8.4E-001		--	8.4E-001
								(Total)		1.3	1.7	--	3
			Total Risk Across All Media and All Exposure Routes					Total Hazard Index Across All Media and All Exposure Routes					3

Total Skin HI = 0.5
Total Testicles HI = 2
Total Unknown HI = 1

TABLE 10.11.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Apartment Complex						Antimony	Blood	2.5E-001		5.1E-001	7.6E-001
								Arsenic	Skin	4.2E-001		8.6E-003	4.3E-001
								Copper	GI Tract	1.1E-001		1.1E-002	1.2E-001
								Iron	Unknown	6.9E-001		9.2E-002	7.8E-001
								(Total)		1.5		0.6	2.1
Groundwater	Groundwater	Tap						1,2-Dibromo-3-Chloropropanol	Testicles	--	1.7E+000	--	1.7E+000
								Arsenic	Skin	4.5E-001	--	--	4.5E-001
								Iron	Unknown	8.4E-001	--	--	8.4E-001
								(Total)		1.3	1.7	--	3
Total Risk Across All Media and All Exposure Routes								Total Hazard Index Across All Media and All Exposure Routes					5

Total Skin HI =	0.9
Total Blood HI =	0.8
Total GI Tract HI =	0.1
Total Testicles HI =	2
Total Unknown HI =	2

TABLE 10.1.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
LONNIE C. MILLER

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil/Sediment	Lonnie C. Miller Park											
			CPAH (TEF)	4.4E-006		2.9E-06	7.3E-06	Antimony	Blood	1.2E+000		2.4E+000	3.6E+000
			2,3,7,8-TCDD	1.1E-05		8.6E-06	2.0E-05	Arsenic	Skin	7.6E-001		1.6E-002	7.8E-001
								Cadmium	Kidney	2.1E-001		8.5E-002	3.0E-001
								Chromium	Skin	4.8E-001		4.8E-001	9.6E-001
								Copper	GI Tract	1.3E+000		1.3E-001	1.4E+000
								Iron	Unknown	8.7E+000		1.2E+000	9.9E+000
								Lead	Unknown	--		--	--
								Manganese	CNS	9.6E-001		9.6E-002	1.1E+000
								Thallium	Unknown	2.6E-001		3.5E-002	3.0E-001
								Zinc	Blood	2.3E-001		2.3E-002	2.5E-001
			(Total)	1.5E-05		1.2E-05	2.7E-05	(Total)		13.4		4.5	17.9
Surface Water	Surface Water	Unnamed Tributary											
			CPAHs	4.1E-007		4.7E-004	4.7E-004						
			(Total)	4.1E-007		4.7E-004	4.7E-004						
			Total Risk Across All Media and All Exposure Routes				5E-04	Total Hazard Index Across All Media and All Exposure Routes					18

Total Skin HI =	2
Total Kidney HI =	0.3
Total GI Tract HI=	1
Total Unknown HI =	10
Total Blood HI =	4
Total CNS HI =	0.4

TABLE 10.2 RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
LONNIE C. MILLER

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil/Sediment	Lonnie C. Miller Park											
			CPAH (TEF)	4.4E-006		2.9E-06	7.3E-06	Antimony	Blood	1.2E+000		2.4E+000	3.6E+000
			2,3,7,8-TCDD	1.1E-05		8.6E-06	2E-05	Arsenic	Skin	7.6E-001		1.6E-002	7.8E-001
								Cadmium	Kidney	2.1E-001		8.5E-002	3.0E-001
								Chromium	Skin	4.8E-001		4.8E-001	9.6E-001
								Copper	GI Tract	1.3E+000		1.3E-001	1.4E+000
								Iron	Unknown	8.7E+000		1.2E+000	9.9E+000
								Lead	Unknown	--		--	--
								Manganese	CNS	9.6E-001		9.6E-002	1.1E+000
								Thallium	Unknown	2.6E-001		3.5E-002	3.0E-001
								Zinc	Blood	2.3E-001		2.3E-002	2.5E-001
			(Total)	1.5E-05		1.2E-05	2.7E-05	(Total)		13.4		4.5	17.9
Surface Water	Surface Water	Unnamed Tributary											
			CPAHs	4.1E-007		4.7E-004	4.7E-004						
			(Total)	4.1E-007		4.7E-004	4.7E-004						
Groundwater	Groundwater	Surficial Aquifer											
			Vinly Chloride	1.1E-005	6.3E-008	5.9E-006	1.7E-005	1,2-Dichloroethylene	Blood	1.0E-001	--	5.1E-002	1.5E-001
								Cresol M & P	CNS	9.6E-001	--	--	9.6E-01
								Cadmium	Kidney	4.4E-001	--	--	4.4E-001
								Manganese	CNS	3.8E-001	--	--	3.8E-001
			(Total)	1.2E-005	6.3E-008	5.9E-06	1.7E-05	(Total)		1.9		0.051	2.0
			Total Risk Across All Media and All Exposure Routes				5E-04	Total Hazard Index Across All Media and All Exposure Routes					20

Total Skin HI =	2
Total Kidney HI =	0.7
Total CNS HI =	2
Total Unknown HI =	10
Total Blood HI =	4
Total GI Tract HI =	1

TABLE 10.3.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
JACKSONVILLE ASH SITES
LONNIE C. MILLER

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

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Lonnie C. Miller Park	CPAHs	5.0E-006		3.4E-006	8.4E-006	PCB-1254 (Aroclor 1254	Unknown	4.8E-01		4.8E-02	5.3E-01
			PCB-1254 (Aroclor 1254	1.6E-07		1.3E-06	1.5E-06	Antimony	Blood	2.0E+000		4.0E+000	6.0E+000
			2,3,7,8-TCDD	1.5E-05		1.2E-05	2.7E-05	Arsenic	Skin	2.5E+000		5.2E-002	2.6E+000
			Arsenic	9.6E-005		4.0E-006	1.0E-004	Cadmium	Kidney	4.7E-001		1.9E-001	6.6E-001
								Chromium (Total)	Skin	6.2E-001		6.2E-001	1.2E+000
								Copper	GI Tract	1.6E+000		1.6E-001	1.8E+000
								Iron	Unknown	1.3E+001		1.7E+000	1.5E+001
								Lead	Unknown	--		--	--
								Manganese	CNS	3.2E+000		3.2E-001	3.5E+000
								Nickel	Body Weight	2.2E-001		1.7E-002	2.4E-001
								Thallium	Unknown	2.6E-001		3.5E-002	3.0E-001
								Zinc	Blood	1.6E-001		1.6E-002	1.8E-001
			(Total)	1.2E-04		2.1E-05	1.4E-04	(Total)		22.2		7.2	29.8
Surface Water	Surface Water	Unnamed Tributary	CPAHs	4.1E-007		4.7E-004	4.7E-004						
			(Total)	4.1E-007		4.7E-004	4.7E-004						
Groundwater	Groundwater	Surficial Aquifer	Vinyl Chloride	1.1E-005	6.3E-008	5.9E-006	1.7E-005	1,2-Dichloroethylene	Blood	1.0E-001	--	5.1E-002	1.5E-001
								Cresol M & P	CNS	9.6E-001	--	--	9.6E-01
								Cadmium	Kidney	4.4E-001	--	--	4.4E-001
								Manganese	CNS	3.8E-001	--	--	3.8E-001
			(Total)	1.1E-05	6.3E-008	5.9E-06	1.7E-05	(Total)		1.9		0.051	2.0
			Total Risk Across All Media and All Exposure Routes				6E-04	Total Hazard Index Across All Media and All Exposure Routes					20

Total Skin HI =	4
Total Kidney HI =	1
Total CNS HI =	3
Total Blood HI =	6
Total GI Tract HI =	2
Total Unknown HI =	16
Total Body Weight HI =	0.2

Appendix C

Occurrence, Distribution and Selection of Chemicals of Potential Concern (Tables 2.1 thru 2.10 from BHHRA)

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
67641	Acetone	46		48		ug/kg	FSSB108	1/13	9 - 20	48	NA	1600	N			NO	BSL
83329	Acenaphthene	45	J	340	J	ug/kg	FSSS12	3/14	340 - 310	340	NA	370000	N			NO	BSL
120127	Anthracene	42	J	240	J	ug/kg	FSSB088	8/14	340 - 410	240	NA	2200000	N			NO	BSL
56553	Benzo(a)anthracene	96	J	720		ug/kg	FSSB088	10/14	340 - 410	720	NA	620	C			YES	CPAH
50328	Benzo(a)pyrene	79	J	680		ug/kg	FSSB088	12/14	340 - 410	680	NA	62	C			YES	ASL
205992	Benzo(b and/or k)fluoranthene	52	J	1800	J	ug/kg	FSSS12	11/11	NA	1,800	NA	620	C			YES	ASL
205992	Benzo(b)fluoranthene	120	J	820		ug/kg	FSSB088	3/3	NA	820	NA	620	C			YES	ASL
	Benzo(ghi)Perylene	48	J	380	J	ug/kg	FSSB088	12/14	350 - 410	380	NA	2,300,000**	C			NO	BSL
205992	Benzo(k)fluoranthene	255	J	720		ug/kg	FSSB088	3/3	NA	720	NA	6,200	C			YES	CPAH
117817	Bis(2-ethyl hexyl)phthalate	110	J	680		ug/kg	FSSB088	3/14	340 - 410	680	NA	35,000	C			NO	BSL
	Carbazole	39	J	350		ug/kg	FSSS08	6/14	340 - 410	350	NA	24,000	C			NO	BSL
218019	Chrysene	52	J	780		ug/kg	FSSB088	13/14	340	780	NA	62,000	C			YES	CPAH
84662	Diethyl Phthalate	430		430		ug/kg	FSSB110	1/14	NA	430	NA	4,900,000	N			NO	BSL
206440	Fluoranthene	74	J	2,900		ug/kg	FSSS02	14/14	NA	2,900	NA	230,000	N			NO	BSL
	Fluorene	40	J	360	J	ug/kg	FSSS05	4/14	340 - 410	360	NA	260,000	N			NO	BSL
103395	Indeno (1,2,3-cd) pyrene	54	J	340	J	ug/kg	FSSB088	11/14	350	340	NA	620	C			YES	CPAH
85018	Phenanthrene	38	J	1,300		ug/kg	FSSS02	13/14	350	1,300	NA	2,000,000**	N			NO	BSL
206440	Pyrene	60	J	1,200		ug/kg	FSSB088/FSSS02	14/14	NA	1,200	NA	230,000	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000 residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

(6) The screening value for endrin was used.

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- W = Water
- NF = Nonfood
- F = Food
- c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
72559	4,4'-DDE	8.9		57	J	ug/kg	FSSB088	4/14	8.1 - 180	57	NA	1,700	C			NO	BSL
50293	4,4'-DDT	95	J	95	J	ug/kg	FSSB088	1/14	8.1 - 180	95	NA	1,700	C			NO	BSL
309002	Aldrin	1.3		2.6		ug/kg	FSSS03	2/14	1.7 - 97	2.6	NA	290	C			NO	BSL
	Alpha-Chlordane	5.2	n	49	n	ug/kg	FSSS02	4/14	1.9 - 97	49	NA	1,600	C			NO	BSL
60571	Dieldrin	25		25		ug/kg	FSSS03	1/14	3.4 - 180	25	NA	30	C			NO	BSL
72208	Endrin Ketone	2.1	J	2.1	J	ug/kg	FSSS03	1/11	3.4 - 180	2.1	NA	1,800 (6)	N			NO	BSL
	Gamma-Chlordane	1.8	J	100	n	ug/kg	FSSS02	4/14	1.9 - 92	100	NA	1,600	C			NO	BSL
76448	Heptachlor	1.3	J	14	nJ	ug/kg	FSSS02	3/14	1.8 - 97	14	NA	110	C			NO	BSL
1024573	Heptachlor Epoxide	7.2	J	21	J	ug/kg	FSSS02	3/14	1.8 - 97	21	NA	53	C			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	8.7	J	1900	c	ug/kg	FSSS11	3/14	34 - 120	1,900	NA	220	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000 residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) *EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented* in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

(6) The screening value for endrin was used.

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- NE = Not Established
- SQL = Sample Quantitation Limit
- *COPC = Chemical of Potential Concern*
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- W = Water
- NF = Nonfood
- F = Food
- c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	990		28,000		mg/kg	FSSS11	16/18	NA	28,000	NA	7,600	N			YES	ASL
7440360	Antimony	0.67	J	36.5	J	mg/kg	FSSB110	2/12	0.52 - 20	36.5	NA	3.1	N			YES	ASL
7440382	Arsenic	0.99	J	5.7		mg/kg	FSSB088	15/18	0.43 - 2	5.7	NA	0.39	C			YES	ASL
7440393	Barium	12		530		mg/kg	FSSS11	17/18	29	530	NA	110**	N			YES	ASL
7440417	Beryllium	0.05	J	0.165	J	mg/kg	FSSB110	7/17	0.053 - 1	0.165	NA	15	N			NO	BSL
7440439	Cadmium	0.33	J	9.4		mg/kg	FSSS11	16/18	0.094 - 0.25	9.4	NA	3.7	N			YES	ASL
	Calcium	430	J	51,000		mg/kg	FSSS03	18/18	NA	51,000	NA	NA				NO	NUT
16540299	Chromium, Total	1.7	J	74	J	mg/kg	FSSB110	18/18	NA	74	NA	23	C			YES	ASL
7440484	Cobalt	0.28	J	7.8	J	mg/kg	FSSS11	16/18	0.33 - 1	7.8	NA	470	N			NO	BSL
7440508	Copper	3.1	J	1,800	J	mg/kg	FSSB110	18/18	NA	1,800	NA	110**	N			YES	ASL
57125	Cyanide	1.2		1.2		mg/kg	FSSS11	2/18	0.2 - 0.6	1.2	NA	1.1	N			YES	ASL
7439896	Iron	980		78,000		mg/kg	FSSB110	18/18	NA	78,000	NA	2,300	N			YES	ASL
7439921	Lead	22		3,500		mg/kg	FSSS110	33/35	38 - 48	3,500	NA	400	N			YES	ASL
7439954	Magnesium	60	J	2,200		mg/kg	FSSS11/09	17/18	130	2,200	NA	NA				NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000 residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1.
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason:
Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) The screening value for endrin was used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439965	Manganese	10		720		mg/kg	FSSS11	18/18	NA	720	NA	180	N			YES	ASL
7439976	Mercury	0.028	J	0.89		mg/kg	FSSS08	14/18	0.05 - 0.1	0.89	NA	2.3	N			NO	BSL
7440020	Nickel	1.1	J	87.5		mg/kg	FSSB110	17/18	1 - 4.8	87.5	NA	110**	N			NO	BSL
	Potassium	50	J	1,700		mg/kg	FSSS11	16/16	NA	1,700	NA	NA				NO	NUT
7440224	Silver	0.2	J	14	J	mg/kg	FSSS11	10/18	0.18 - 1	14	NA	39	N			NO	BSL
7440235	Sodium	49	J	2,300		mg/kg	FSSS11	8/18	50 - 97	2,300	NA	NA				NO	NUT
7440622	Vanadium	1.7	J	26		mg/kg	FSSS11	18/18	NA	26	NA	15**	N			YES	ASL
7440666	Zinc	14	J	2,100		mg/kg	FSSS11	18/16	NA	2,100	NA	2,300	N			NO	BSL
1746016	2,3,7,8-TCDD (TEQ)	0.6	J	200		ng/kg	FSSS04	21/21	NA	200	NA	3.9	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000 residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) The screening value for endrin was used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	I-10/I-95 Interchange East

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
83329	Acenaphthylene	360		360		ug/kg	FSSB316	1/2	350	360	NA	1,100,000**	N			NO	BSL
120127	Anthracene	400		400		ug/kg	FSSB316	1/2	350	400	NA	2,200,000	N	39,000,000	IND	NO	BSL
56553	Benzo(a)anthracene	710		710		ug/kg	FSSB316	1/2	350	710	NA	620	C	2,900	IND	YES	CPAH
50328	Benzo(a)pyrene	780		780		ug/kg	FSSB316	1/2	350	780	NA	62	C	290	IND	YES	ASL
205992	Benzo(b)fluoranthene	930		930		ug/kg	FSSB316	1/2	350	930	NA	620	C	2,900	IND	YES	CPAH
	Benzo(g,h,i)perylene	490		490		ug/kg	FSSB316	1/2	350	490	NA	2,300,000**	C	41,000,000	IND	NO	BSL
205992	Benzo(k)fluoranthene	840		840		ug/kg	FSSB316	1/2	350	840	NA	6,200	C	29,000	IND	YES	CPAH
117817	bis(2-ethylhexyl) Phthalate	140	J	140	J	ug/kg	FSSB051	1/2	340	140	NA	35,000	C	180,000	IND	NO	BSL
218019	Chrysene	770		770		ug/kg	FSSB316	1/2	350	770	NA	62,000	C	290,000	IND	YES	CPAH
206440	Fluoranthene	1,500		1,500		ug/kg	FSSB316	1/2	350	1,500	NA	230,000	N	3,000,000	IND	NO	BSL
86737	Fluorene	79	J	79	J	ug/kg	FSSB316	1/2	350	79	NA	260,000	N	3,300,000	IND	NO	BSL
103395	Indeno(1,2,3-c,d)pyrene	470		470		ug/kg	FSSB316	1/2	350	470	NA	620	C	2,900	IND	YES	CPAH
85018	Phenanthrene	850		850		ug/kg	FSSB316	1/2	350	850	NA	2,000,000**	N	30,000,000	IND	NO	BSL
129000	Pyrene	1,100		1,100		ug/kg	FSSB316	1/2	350	1,100	NA	230,000	N	5,400,000	IND	NO	BSL
11096825	PCB-1260 (AROCHLOR 1260	32	J	88		ug/kg	FSSB051	2/2	NA	88	NA	220	C	1,000	IND	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG Industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.2 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	I-10/I-95 Interchange East

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
7429905	Aluminum	1,450		1,900		mg/kg	FSSB318	13/13	NA	1,900	NA	7,600	N	100,000	IND	NO	BSL
7440360	Antimony	0.87	J	1.4	J	mg/kg	FSSB325	2/13	0.45 - 0.56	1.4	NA	3.1	N	82	IND	NO	BSL
7440382	Arsenic	0.71	J	3.1		mg/kg	FSSB325	6/13	0.46 - 1.15	3.1	NA	0.39	C	2.7	IND	YES	ASL
7440393	Barium	5.5	J	420		mg/kg	FSSB325	13/13	NA	420	NA	110**	N	87,000	IND	NO	BSL
7440417	Beryllium	0.061	J	0.096	J	mg/kg	FSSB325	9/13	0.058 - 0.059	0.096	NA	15	N	2,200	IND	NO	BSL
7440439	Cadmium	0.13	J	3		mg/kg	FSSB047	12/13	0.09	3	NA	3.7	N	81	IND	NO	BSL
	Calcium	1,000	J	38,000		mg/kg	FSSB316	13/13	NA	38,000	NA	NA		NA	IND	NO	NUT
18540299	Chromium, Total	1.6	J	19		mg/kg	FSSB325	13/13	NA	19	NA	23	C	450	IND	NO	BSL
7440484	Cobalt	0.27	J	1.7	J	mg/kg	FSSB325	11/13	0.2	1.7	NA	470	N	100,000	IND	NO	BSL
7440508	Copper	9.3		45		mg/kg	FSSB316	7/13	1.1 - 31	45	NA	110**	N	76,000	IND	NO	BSL
57125	Cyanide	0.53	J	0.78	J	mg/kg	FSSB325	7/13	0.51 - 0.57	0.78	NA	1.1	N	3.5	IND	NO	BSL
7439896	Iron	480	J	6,100	J	mg/kg	FSSB047	13/13	NA	6,100	NA	2,300	N	100,000	IND	NO	BSL
7439921	Lead	51	J	1,013		mg/kg	FSSB052	27/27	NA	1,013	NA	400	N	750	IND	YES	ASL
7439954	Magnesium	88	J	610	J	mg/kg	FSSB316	13/13	NA	610	NA	NA		NA	IND	NO	NUT
7439965	Manganese	6.9	J	160	J	mg/kg	FSSB325	13/13	NA	160	NA	180	N	3,200	IND	NO	BSL
7439976	Mercury	0.035	J	1.7		mg/kg	FSSB047	11/13	0.015 - 0.09	1.7	NA	2.3	N	61	IND	NO	BSL
7440020	Nickel	1.4	J	4.3	J	mg/kg	FSSB047	7/13	0.82 - 6.9	4.3	NA	110**	N	28,000	IND	NO	BSL
	Potassium	39	J	115	J	mg/kg	FSSB318	13/13	NA	115	NA	NA		NA	IND	NO	NUT
7440224	Silver	0.175	J	0.35	J	mg/kg	FSSB316	5/13	0.18 - 0.2	0.35	NA	39	N	1,000	IND	NO	BSL
7440622	Vanadium	2.3	J	9	J	mg/kg	FSSB318	13/13	NA	9	NA	15**	N	7,400	IND	NO	BSL
7440666	Zinc	20.0	J	980	J	mg/kg	FSSB325	13/13	NA	980	NA	2,300	N	100,000	IND	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG Industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	I-10/I-95 Interchange West

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7429905	Aluminum	1,300		3,000		mg/kg	FSSB060	5/5	NA	3,000	NA	7,600 N	100,000	IND	NO	BSL
7440360	Antimony	2.2	J	5.3	J	mg/kg	FSSB058	3/5	0.43 - 0.53	5.3	NA	3.1 N	82	IND	NO	BSL
7440382	Arsenic	3.6		9.3		mg/kg	FSSB058	4/5	0.48	9.3	NA	0.39 C	2.7	IND	YES	ASL
7440393	Barium	6.6	J	410		mg/kg	FSSB058	5/5	NA	410	NA	110** N	87,000	IND	NO	BSL
7440417	Beryllium	0.056	J	0.37	J	mg/kg	FSSB058	4/5	0.061	0.37	NA	15 N	2,200	IND	NO	BSL
7440439	Cadmium	0.93		16		mg/kg	FSSB058	4/5	0.093	16	NA	3.7 N	81	IND	NO	BSL
	Calcium	2,200		63,000		mg/kg	FSSB058	5/5	NA	63,000	NA	NA	NA	IND	NO	NUT
18540299	Chromium, Total	3.6		86		mg/kg	FSSB058	5/5	NA	86	NA	23 C	450	IND	NO	BSL
7440484	Cobalt	0.26	J	7.3	J	mg/kg	FSSB058	4/5	0.2	7.3	NA	470 N	100,000	IND	NO	BSL
7440508	Copper	9.4		170		mg/kg	FSSB061	5/5	NA	170	NA	110** N	76,000	IND	NO	BSL
57125	Cyanide	16		16		mg/kg	FSSB058	1/5	0.52 - 0.56	16	NA	1.1	3.5	IND	YES	ASL
7439896	Iron	410		28,000		mg/kg	FSSB061	5/5	NA	28,000	NA	2,300 N	100,000	IND	NO	BSL
7439921	Lead	13		1,010		mg/kg	FSSB057	13/15	15 - 58	1,010	NA	400 N	750	IND	YES	ASL
7439954	Magnesium	75	J	730	J	mg/kg	FSSB058	5/5	NA	730	NA	NA	NA	IND	NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.3 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	I-10/I-95 Interchange West

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439965	Manganese	6.1		280		mg/kg	FSSB061	5/5	NA	280	NA	180	N	3,200	IND	NO	BSL
7439976	Mercury	0.057	J	0.77	J	mg/kg	FSSB060	5/5	NA	0.77	NA	2.3	N	61	IND	NO	BSL
7440020	Nickel	0.81	J	28		mg/kg	FSSB061	5/5	NA	28	NA	110**	N	28,000	IND	NO	BSL
	Potassium	36	J	210	J	mg/kg	FSSB058	5/5	NA	210	NA	NA		NA	IND	NO	NUT
7782492	Selenium	2		2		mg/kg	FSSB058	1/5	0.37 - 0.46	2	NA	39	N	1,000	IND	NO	BSL
7440224	Silver	0.3	J	88		mg/kg	FSSB061	4/5	0.2	88	NA	39	N	1,000	IND	NO	BSL
7440235	Sodium	44	J	560	J	mg/kg	FSSB058	4/5	52	560	NA	NA		NA	IND	NO	NUT
7440622	Vanadium	1.5	J	14		mg/kg	FSSB058	5/5	NA	14	NA	15**	N	7,400	IND	NO	BSL
7440666	Zinc	15		1,100	J	mg/kg	FSSB058	5/5	NA	1100	NA	2,300	N	100,000	IND	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG Industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
129000	Pyrene	110	J	110	J	ug/kg	FSSB018	1/1	NA	110	NA	230,000	N	5,400,000	IND	NO	BSL
7429905	Aluminum	190		2,800		mg/kg	FSSB391	7/7	NA	2,800	NA	7,600	N	100,000	IND	NO	BSL
7440360	Antimony	0.92	J	1.2	J	mg/kg	FSSB391	2/7	0.47 - 0.69	1.2	NA	3.1	N	82	IND	NO	BSL
7440382	Arsenic	0.52	J	3.2	J	mg/kg	FSSB018	6/7	0.45	3.2	NA	0.39	C	2.7	IND	YES	ASL
7440393	Barium	4	J	140		mg/kg	FSSB391	7/7	NA	140	NA	110**	N	87,000	IND	NO	BSL
7440417	Beryllium	0.09	J	0.16	J	mg/kg	FSSB392	5/7	0.053 - 0.059	0.16	NA	15	N	2,200	IND	NO	BSL
7440439	Cadmium	0.24	J	0.97	J	mg/kg	FSSB391	6/7	0.09	0.97	NA	3.7	N	81	IND	NO	BSL
	Calcium	650	J	400,000		mg/kg	FSSB363	7/7	NA	400,000	NA	NA		NA	IND	NO	NUT
18540299	Chromium, Total	2.4		22		mg/kg	FSSB391	7/7	NA	22	NA	23	C	450	IND	NO	BSL
7440484	Cobalt	0.2	J	1	J	mg/kg	FSSB391	6/7	0.19	1	NA	470	N	100,000	IND	NO	BSL
7440508	Copper	2.3	J	89		mg/kg	FSSB391	6/7	1.2	89	NA	110**	N	76,000	IND	NO	BSL
57125	Cyanide	0.58	J	2.2		mg/kg	FSSB018	2/7	0.54 - 0.57	2.2	NA	1.1	N	3.5	IND	NO	BSL
7439896	Iron	290	J	5,800		mg/kg	FSSB391	7/7	NA	5,800	NA	2,300	N	100,000	IND	NO	BSL
7439921	Lead	8.3		225	J	mg/kg	FSSB391	11/14	0.69 - 45	225	NA	400	N	750	IND	NO	BSL
7439954	Magnesium	94	J	2,900		mg/kg	FSSB363	7/7	NA	2,900	NA	NA		NA	IND	NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.4 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7439965	Manganese	5.85		190		mg/kg	FSSB391	7/7	NA	190	NA	180	N	3,200	IND	NO	BSL
7439976	Mercury	0.0091	J	0.12	J	mg/kg	FSSB018	4/7	0.0028 - 0.056	0.12	NA	2.3	N	61	IND	NO	BSL
7440020	Nickel	0.79	J	4.4	J	mg/kg	FSSB391	7/7	NA	4.4	NA	110**	N	4,100	IND	NO	BSL
	Potassium	46	J	150	J	mg/kg	FSSB392	7/7	NA	150	NA	NA		NA	IND	NO	NUT
7440224	Silver	0.41	J	0.5	J	mg/kg	FSSB392	2/7	0.19 - 0.26	0.5	NA	39	N	1,000	IND	NO	BSL
	Sodium	54	J	185.5	J	mg/kg	FSSB018	5/7	50.5 - 190	185.5	NA	NA		NA	IND	NO	NUT
7440622	Vanadium	3.85	J	11.5		mg/kg	FSSB018	7/7	NA	11.5	NA	15**	N	1,400	IND	NO	BSL
7440666	Zinc	16.0		600	J	mg/kg	FSSB391	6/7	2.9	600	NA	1,100	N	100,000	IND	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG Industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.4a
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
129000	Pyrene	110	J	110	J	ug/kg	FSSB018	1/1	NA	110	NA	230,000 N	5,400,000	RES	NO	BSL
7429905	Aluminum	190		2,800		mg/kg	FSSB391	7/7	NA	2,800	NA	7,800 N	100,000	RES	NO	BSL
7440360	Antimony	0.92	J	1.2	J	mg/kg	FSSB391	2/7	0.47 - 0.69	1.2	NA	3.1 N	82	RES	NO	BSL
7440382	Arsenic	0.52	J	3.2	J	mg/kg	FSSB018	6/7	0.45	3.2	NA	0.39 C	2.7	RES	YES	ASL
7440393	Barium	4	J	140		mg/kg	FSSB391	7/7	NA	140	NA	110** N	87,000	RES	YES	ASL
7440417	Beryllium	0.09	J	0.16	J	mg/kg	FSSB392	5/7	0.053 - 0.059	0.16	NA	15 N	2,200	RES	NO	BSL
7440439	Cadmium	0.24	J	0.97	J	mg/kg	FSSB391	6/7	0.09	0.97	NA	3.7 N	81	RES	NO	BSL
	Calcium	650	J	400,000		mg/kg	FSSB363	7/7	NA	400,000	NA	NA	NA	RES	NO	NUT
18540299	Chromium, Total	2.4		22		mg/kg	FSSB391	7/7	NA	22	NA	23 C	450	RES	NO	BSL
7440484	Cobalt	0.2	J	1	J	mg/kg	FSSB391	6/7	0.19	1	NA	470 N	100,000	RES	NO	BSL
7440508	Copper	2.3	J	89		mg/kg	FSSB391	6/7	1.2	89	NA	110** N	76,000	RES	NO	BSL
57125	Cyanide	0.58	J	2.2		mg/kg	FSSB018	2/7	0.54 - 0.57	2.2	NA	1.1 N	3.5	RES	YES	ASL
7439896	Iron	290	J	5,800		mg/kg	FSSB391	7/7	NA	5,800	NA	2,300 N	100,000	RES	YES	ASL
7439921	Lead	8.3		225	J	mg/kg	FSSB391	11/14	0.69 - 45	225	NA	400 N	750	RES	NO	BSL
7439954	Magnesium	94	J	2,900		mg/kg	FSSB363	7/7	NA	2,900	NA	NA	NA	RES	NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
RES=Region 9 PRG residential values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.4a (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439965	Manganese	5.85		190		mg/kg	FSSB391	7/7	NA	190	NA	180	N	3,200	RES	YES	ASL
7439976	Mercury	0.0091	J	0.12	J	mg/kg	FSSB018	4/7	0.0028 - 0.056	0.12	NA	2.3	N	61	RES	NO	BSL
7440020	Nickel	0.79	J	4.4	J	mg/kg	FSSB391	7/7	NA	4.4	NA	110**	N	28,000	RES	NO	BSL
	Potassium	46	J	150	J	mg/kg	FSSB392	7/7	NA	150	NA	NA		NA	RES	NO	NUT
7440224	Silver	0.41	J	0.5	J	mg/kg	FSSB392	2/7	0.19 - 0.26	0.5	NA	39	N	1,000	RES	NO	BSL
	Sodium	54	J	185.5	J	mg/kg	FSSB018	5/7	50.5 - 190	185.5	NA	NA		NA	RES	NO	NUT
7440622	Vanadium	3.85	J	11.5		mg/kg	FSSB018	7/7	NA	11.5	NA	15**	N	7,400	RES	NO	BSL
7440666	Zinc	16.0		600	J	mg/kg	FSSB391	6/7	2.9	600	NA	1,100	N	100,000	RES	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1.
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
RES=Region 9 PRG residential values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
56553	Benzo(a)anthracene	67	J	340	J	ug/kg	FSSB009	4/6	NA	340	NA	620	C			YES	CPAH
50328	Benzo(a)pyrene	86	J	380	J	ug/kg	FSSB009	3/6	460	380	NA	62	C			YES	ASL
205992	Benzo(b and/or k)fluoranthene	190	J	680	J	ug/kg	FSSB009	3/6	460	680	NA	620	C			YES	ASL
	Benzo(g,h,i)perylene	100	J	210	J	ug/kg	FSSB009	3/6	460	210	NA	2,300,000**	N			NO	BSL
86748	Carbazole	55	J	55	J	ug/kg	FSSB006	1/6	380 - 530	55	NA	24,000	C			NO	BSL
218019	Chrysene	71	J	340	J	ug/kg	FSSB009	4/6	NA	340	NA	62,000	C			YES	CPAH
	Dibenzo(a,h)anthracene	40	J	40	J	ug/kg	FSSB008	1/6	400 - 530	40	NA	62	C			YES	CPAH
206440	Fluoranthene	120	J	670		ug/kg	FSSB009	4/6	NA	670	NA	230,000	N			NO	BSL
86737	Fluorene	65	J	65	J	ug/kg	FSSB006	1/6	380 - 530	65	NA	260,000	N			NO	BSL
103395	Indeno(1,2,3-c,d)pyrene	66	J	190	J	ug/kg	FSSB009	3/6	460	190	NA	620	C			YES	CPAH
85018	Phenanthrene	200	J	490	J	ug/kg	FSSB006	3/6	530	490	NA	2,000,000**	N			NO	BSL
129000	Pyrene	82	J	480		ug/kg	FSSB009	4/6	NA	480	NA	230,000	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.5 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (Contaminant Deletion or Selection
	Alpha-Chlordane /2	6.6		7		ug/kg	FSSB008	1/6	2.1 - 2.7	7	NA	1,600 C			NO	BSL
60571	Dieldrin	4		4		ug/kg	FSSB008	1/6	4.0 - 5.3	4	NA	30 C			NO	BSL
72208	Endrin	1.3	JN	1	JN	ug/kg	FSSB006	1/6	3.9 - 5.3	1.3	NA	1,800 N			NO	BSL
	Gamma-Chlordane /2	2.9		15		ug/kg	FSSB008	2/6	2.1 - 2.4	15	NA	1,600 C			NO	BSL
7429905	Aluminum	490		8,700		mg/kg	FSSB110	13/13	NA	8,700	NA	7,600 N			YES	ASL
7440360	Antimony	1.07	J	77	J	mg/kg	FSSB110	5/13	0.47 - 9	77	NA	3.1 N			YES	ASL
7440382	Arsenic	1.3	J	310	J	mg/kg	FSSB007	8/11	0.51 - 1.9	310	NA	0.39 C			YES	ASL
7440393	Barium	4.1	J	1,500	J	mg/kg	FSSB110	13/13	1	1,500	NA	110** N			YES	ASL
7440417	Beryllium	0.07	J	9.4		mg/kg	FSSB007	9/13	0.064 - 1	9.4	NA	15 N			NO	BSL
7440439	Cadmium	0.082	J	13,000		mg/kg	FSSB007	10/13	0.089 - 0.1	13,000	NA	3.7 N			YES	ASL
	Calcium	38	J	39,000		mg/kg	FSSB095	13/13	NA	39,000	NA	NA			NO	NUT
18540299	Chromium, Total	4	J	70	J	mg/kg	FSSB110	11/13	0.93 - 3	70	NA	23 C			YES	ASL
7440484	Cobalt	0.23	J	530	J	mg/kg	FSSB007	11/13	0.21 - 0.23	530	NA	470 N			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.5 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
7440508	Copper	5.4		71,000		mg/kg	FSSB007	9/13	0.61 - 73	71,000	NA	110**	N			YES	ASL
57125	Cyanide	0.33		1.25		mg/kg	FSSB095	5/13	0.51 - 0.62	1.25	NA	1.1	N			YES	ASL
7439896	Iron	230	J	150,000		mg/kg	FSSB110	13/13	NA	150,000	NA	2,300	N			YES	ASL
7439921	Lead	21.6		5,310	J	mg/kg	FSSB110	20/26	41 - 48	5,310	NA	400	N			YES	ASL
7439954	Magnesium	24	J	3,000		mg/kg	FSSB095	12/13	34	3,000	NA	NA				NO	NUT
7439965	Manganese	6.7	J	1,800		mg/kg	FSSB110	12/13	NA	1,800	NA	180	N			YES	ASL
7439976	Mercury	0.0059	J	13		mg/kg	FSSB007	12/13	0.0089	13	NA	2.3	N			YES	ASL
7440020	Nickel	0.53	J	200	J	mg/kg	FSSB007	12/13	0.48	200	NA	110**	N			YES	ASL
7440097	Potassium	1.7		1,200	J	mg/kg	FSSB110	13/13	NA	1,200	NA	NA				NO	NUT
7782492	Selenium	0.52	J	2	J	mg/kg	FSSB007	3/13	0.4 - 1	2	NA	39	N			NO	BSL
7440224	Silver	0.21	J	180		mg/kg	FSSB007	6/13	0.18 - 3	180	NA	39	N			YES	ASL
7440235	Sodium	190		1,200		mg/kg	FSSB110	5/13	0.68 - 160	1,200	NA	NA				NO	NUT
	Thallium	6.9	J	7	J	mg/kg	FSSB007	1/13	0.53 - 2	7	NA	0.55	N			YES	ASL
7440622	Vanadium	1	J	2,000		mg/kg	FSSB007	13/13	NA	2,000	NA	15**	N			YES	ASL
7440666	Zinc	1.4	J	3,800		mg/kg	FSSB110	12/13	3.8	3,800	NA	2,300	N			YES	ASL
1746016	2,3,7,8-TCDD (TEQ)	7.8	J	81		ng/kg	FSSB110	3/3	NA	81	NA	3.9	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes
- Selection Reason:
  - Infrequent Detection but Associated Historically (HIST)
  - Frequent Detection (FD)
  - Toxicity Information Available (TX)
  - Above Screening Levels (ASL)
- Deletion Reason:
  - Infrequent Detection (IFD)
  - Background Levels (BKG)
  - No Toxicity Information (NTX)
  - Essential Nutrient (NUT)
  - Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- W = Water
- F = Food

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	I-10/I-95 Interchange East

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7429905	Aluminum	1,900		1,900		mg/kg	FSSB331	1/1	NA	1,900	NA	7,600 N	100,000	IND	NO	BSL
7440382	Arsenic	6.8		6.8		mg/kg	FSSB331	1/1	NA	6.8	NA	0.39 C	2.7	IND	YES	ASL
7440393	Barium	610		610		mg/kg	FSSB331	1/1	NA	610	NA	110** N	87,000	IND	NO	BSL
7440417	Beryllium	0.06	J	0.06	J	mg/kg	FSSB331	1/1	NA	0.06	NA	15 N	22,000	IND	NO	BSL
7440439	Cadmium	1.4		1.4		mg/kg	FSSB331	1/1	NA	1.4	NA	3.7 N	81	IND	NO	BSL
	Calcium	3,300		3,300		mg/kg	FSSB331	1/1	NA	3,300	NA	NA	NA	IND	NO	NUT
18540299	Chromium, Total	7.2		7.2		mg/kg	FSSB331	1/1	NA	7.2	NA	23 C	450	IND	NO	BSL
7440484	Cobalt	0.72	J	0.72	J	mg/kg	FSSB331	1/1	NA	0.72	NA	470 N	100,000	IND	NO	BSL
7440508	Copper	20		20		mg/kg	FSSB331	1/1	NA	20	NA	110** N	76,000	IND	NO	BSL
57125	Cyanide	0.98	J	0.98	J	mg/kg	FSSB331	1/1	NA	0.98	NA	1.1	3.5	IND	NO	BSL
7439896	Iron	3,200		3,200		mg/kg	FSSB331	1/1	NA	3,200	NA	2,300 N	100,000	IND	NO	BSL
7439921	Lead	16.3		1,030		mg/kg	FSSB045	9/28	8.8 - 41	1,030	NA	400 N	750	IND	YES	ASL
7439954	Magnesium	190	J	190	J	mg/kg	FSSB331	1/1	NA	190	NA	NA	NA	IND	NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.6 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	I-10/I-95 Interchange East

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7439965	Manganese	61		61		mg/kg	FSSB331	1/1	NA	61	NA	180 N	3,200	IND	NO	BSL
7439976	Mercury	0.6	J	0.6	J	mg/kg	FSSB331	1/1	NA	0.6	NA	2.3 N	61	IND	NO	BSL
7440020	Nickel	3.8	J	3.8	J	mg/kg	FSSB331	1/1	NA	3.8	NA	110** N	28,000	IND	NO	BSL
	Potassium	73	J	73	J	mg/kg	FSSB331	1/1	NA	73	NA	NA	NA	IND	NO	NUT
7440622	Vanadium	4.6	J	4.6	J	mg/kg	FSSB331	1/1	NA	4.6	NA	15** N	7,400	IND	NO	BSL
7440666	Zinc	600	J	600	J	mg/kg	FSSB331	1/1	NA	600	NA	2,300 N	100,000	IND	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason:
Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG Industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	I-10/I-95 Interchange West

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
7429905	Aluminum	560		7,800		mg/kg	FSSB057	5/5	NA	7,800	NA	7,600	N	100,000	IND	NO	BSL
7440360	Antimony	2.1	J	8.8	J	mg/kg	FSSB061	2/5	0.56- 0.98	8.8	NA	3.1	N	82	IND	NO	BSL
7440382	Arsenic	6		13		mg/kg	FSSB057	3/5	0.51 - 0.57	13	NA	0.39	C	2.7	IND	YES	ASL
7440393	Barium	3.8	J	420		mg/kg	FSSB061	5/5	NA	420	NA	110**	N	87,000	IND	NO	BSL
7440417	Beryllium	0.12	J	0.43	J	mg/kg	FSSB057	3/5	0.064 - 0.072	0.43	NA	15	N	2,200	IND	NO	BSL
7440439	Cadmium	1.1	J	8.6		mg/kg	FSSB057	3/5	0.098 - 0.11	8.60	NA	3.7	N	81	IND	NO	BSL
	Calcium	180	J	28,000		mg/kg	FSSB057	5/5	NA	28,000	NA	NA		NA	IND	NO	NUT
16540299	Chromium, Total	0.85	J	83		mg/kg	FSSB057	5/5	NA	83	NA	23	C	450	IND	NO	BSL
7440484	Cobalt	0.33	J	86		mg/kg	FSSB057	4/5	0.24	86	NA	470	N	100,000	IND	NO	BSL
7440508	Copper	190		2,300		mg/kg	FSSB057	3/5	0.81 - 0.91	2,300	NA	110**	N	76,000	IND	NO	BSL
7439896	Iron	140		180,000		mg/kg	FSSB057	5/5	NA	180,000	NA	2,300	N	100,000	IND	YES	ASL
7439921	Lead	1.1		1,480		mg/kg	FSSB061	23/41	15 - 43	1,010	NA	400	N	750	IND	YES	ASL
7439954	Magnesium	24	J	9,100		mg/kg	FSSB057	3/3	NA	9,100	NA	NA		NA	IND	NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.7 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	I-10/I-95 Interchange West

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7439965	Manganese	3.9		1,500		mg/kg	FSSB057	5/5	NA	1,500	NA	180	N	3,200	IND	NO	BSL
7439976	Mercury	0.63	J	1.7	J	mg/kg	FSSB060	3/5	0.01 - 0.016	1.7	NA	2.3	N	61	IND	NO	BSL
7440020	Nickel	0.5	J	38		mg/kg	FSSB057	4/5	0.54	38	NA	110**	N	28,000	IND	NO	BSL
	Potassium	26	J	1,500		mg/kg	FSSB057	5/5	NA	1,500	NA	NA		NA	IND	NO	NUT
7440224	Silver	0.33	J	5.6		mg/kg	FSSB061	3/5	0.21 - 0.24	5.6	NA	39	N	1,000	IND	NO	BSL
7440235	Sodium	55	J	1,100		mg/kg	FSSB057	4/5	62	1,100	NA	NA		NA	IND	NO	NUT
7440622	Vanadium	0.38	J	120		mg/kg	FSSB057	5/5	NA	120	NA	15**	N	7,400	IND	NO	BSL
7440666	Zinc	9.4	J	9,800	J	mg/kg	FSSB057	4/5	1.1	9,800	NA	2,300	N	100,000	IND	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes
Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
7429905	Aluminum	2,900		3,600		mg/kg	FSSB364	2/2	NA	3,600	NA	7,600	N	100,000	IND	NO	BSL
7440382	Arsenic	1.2	J	3.1		mg/kg	FSSB364	2/2	NA	3.1	NA	0.39	C	2.7	IND	YES	ASL
7440393	Barium	15	J	160	J	mg/kg	FSSB364	2/2	NA	160	NA	110**	N	67,000	IND	NO	BSL
7440417	Beryllium	0.19	J	0.62	J	mg/kg	FSSB364	2/2	NA	0.62	NA	15	N	2,200	IND	NO	BSL
7440439	Cadmium	0.1	J	0.13	J	mg/kg	FSSB006	2/2	NA	0.13	NA	3.7	N	81	IND	NO	BSL
	Calcium	12,000		91,000		mg/kg	FSSB006	2/2	NA	91,000	NA	NA		NA	IND	NO	NUT
18540299	Chromium, Total	5	J	8.5	J	mg/kg	FSSB364	2/2	NA	8.50	NA	23	C	450	IND	NO	BSL
7440484	Cobalt	1.4	J	1.8	J	mg/kg	FSSB364	2/2	NA	1.8	NA	470	N	100,000	IND	NO	BSL
7440508	Copper	18		18		mg/kg	FSSB006	1/2	22	18	NA	110**	N	76,000	IND	NO	BSL
7439896	Iron	3,800	J	5,900	J	mg/kg	FSSB364	2/2	NA	5,900	NA	2,300	N	100,000	IND	NO	BSL
7439921	Lead	10		152		mg/kg	FSSB020	9/13	NA	152	NA	400	N	750	IND	NO	BSL
7439954	Magnesium	420	J	540	J	mg/kg	FSSB364	2/2	NA	540	NA	NA		NA	IND	NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.8 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7439965	Manganese	76	J	130	J	mg/kg	FSSB364	2/2	NA	130	NA	180	N	3,200	IND	NO	BSL
7439976	Mercury	0.023	J	0.028	J	mg/kg	FSSB364	2/2	NA	0.028	NA	2.3	N	61	IND	NO	BSL
7440020	Nickel	3	J	4.3	J	mg/kg	FSSB364	2/2	NA	4.3	NA	110**	N	28,000	IND	NO	BSL
	Potassium	140	J	400	J	mg/kg	FSSB364	2/2	NA	400	NA	NA		NA	IND	NO	NUT
7440622	Vanadium	5	J	7.3	J	mg/kg	FSSB364	2/2	NA	7.3	NA	15**	N	7,400	IND	NO	BSL
7440666	Zinc	60.0		60		mg/kg	FSSB006	1/2	39	60	NA	1,100	N	100,000	IND	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
IND=Region 9 PRG industrial values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.8a
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7429905	Aluminum	2,900		3,600		mg/kg	FSSB364	2/2	NA	3,600	NA	7,600	N	100,000	RES	NO	BSL
7440382	Arsenic	1.2	J	3.1		mg/kg	FSSB364	2/2	NA	3.1	NA	0.39	C	2.7	RES	YES	ASL
7440393	Barium	15	J	160	J	mg/kg	FSSB364	2/2	NA	160	NA	110**	N	87,000	RES	YES	ASL
7440417	Beryllium	0.19	J	0.62	J	mg/kg	FSSB364	2/2	NA	0.62	NA	15	N	2,200	RES	NO	BSL
7440439	Cadmium	0.1	J	0.13	J	mg/kg	FSSB006	2/2	NA	0.13	NA	3.7	N	81	RES	NO	BSL
	Calcium	12,000		91,000		mg/kg	FSSB006	2/2	NA	91,000	NA	NA		NA	RES	NO	NUT
18540299	Chromium, Total	5	J	8.5	J	mg/kg	FSSB364	2/2	NA	8.50	NA	23	C	450	RES	NO	BSL
7440484	Cobalt	1.4	J	1.8	J	mg/kg	FSSB364	2/2	NA	1.8	NA	470	N	100,000	RES	NO	BSL
7440508	Copper	18		18		mg/kg	FSSB006	1/2	22	18	NA	110**	N	76,000	RES	NO	BSL
7439896	Iron	3,800	J	5,900	J	mg/kg	FSSB364	2/2	NA	5,900	NA	2,300	N	100,000	RES	YES	ASL
7439921	Lead	10		152		mg/kg	FSSB020	9/13	NA	152	NA	400	N	750	RES	NO	BSL
7439954	Magnesium	420	J	540	J	mg/kg	FSSB364	2/2	NA	540	NA	NA		NA	RES	NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes

Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- W = Water
- NF = Nonfood
- F = Food
- RES=Region 9 PRG residential values equal to a carcinogenic risk of 1E-06 or a hazard quotient of 0.1

TABLE 2.8a (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Area North of McCoy's Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439965	Manganese	76	J	130	J	mg/kg	FSSB364	2/2	NA	130	NA	180	N	3,200	RES	NO	BSL
7439976	Mercury	0.023	J	0.028	J	mg/kg	FSSB364	2/2	NA	0.028	NA	2.3	N	61	RES	NO	BSL
7440020	Nickel	3	J	4.3	J	mg/kg	FSSB364	2/2	NA	4.3	NA	110**	N	28,000	RES	NO	BSL
	Potassium	140	J	400	J	mg/kg	FSSB364	2/2	NA	400	NA	NA		NA	RES	NO	NUT
7440622	Vanadium	5	J	7.3	J	mg/kg	FSSB364	2/2	NA	7.3	NA	15**	N	7,400	RES	NO	BSL
7440666	Zinc	60.0		60		mg/kg	FSSB006	1/2	39	60	NA	1,100	N	100,000	RES	NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
RES=Region 9 PRG residential values equal to a carcinogenic risk of 1E-06 or a hazard qu

TABLE 2.9
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	McCoy's Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
	1,2,4-Trichlorobenzene	3.6	J	3.6	J	ug/L	FSSW007	1/3	10	3.6	NA	120,000*	N			NO	BSL
56553	Benzo(a)anthracene	0.63	J	2	J	ug/L	FSSW004	2/8	10	2	NA	0.0044	C			YES	ASL
50328	Benzo(a)pyrene	2.2	J	2.2	J	ug/L	FSSW004	1/8	10	2.2	NA	0.0044	C			YES	ASL
205992	Benzo(b)fluoranthene	2.2	J	2.2	J	ug/L	FSSW004	1/8	10	2.2	NA	0.0044	C			YES	ASL
191242	Benzo(g,h,i)perylene	0.7	J	2.1	J	ug/L	FSSW004	2/8	10	2.1	NA	NE				NO	NTX
207089	Benzo(k)fluoranthene	1.7	J	1.7	J	ug/L	FSSW004	1/8	10	1.7	NA	0.0044	C			YES	ASL
85687	Benzyl Butyl Phthalate	2	J	2	J	ug/L	FSSW004	1/8	10	2	NA	3,000	N			NO	BSL
	bis(2-ethylhexyl)phthalate	2.2	J	10	J	ug/L	FSSW003	2/8	10 - 19	10	NA	1.8	C			YES	ASL
86748	Carbazole	2	J	2	J	ug/L	FSSW004	1/8	10	2	NA	NE	C			NO	NTX
218019	Chrysene	0.53	J	2.2	J	ug/L	FSSW004	2/8	10	2.2	NA	0.0044	C			YES	ASL
53703	Dibenz(a,h)anthracene	1.1	J	1.1	J	ug/L	FSSW004	1/8	10	1.1	NA	0.0044	C			YES	ASL
84742	Di-n-Butyl Phthalate	1	J	1	J	ug/L	FSSW004	1/8	10	1	NA	2,700	N			NO	BSL
117840	Di-n-Octylphthalate	1.5	J	1.5	J	ug/L	FSSW004	1/8	10	1.5	NA	2,700	N			NO	BSL
206440	Fluoranthene	2	J	2	J	ug/L	FSSW004	1/8	10	2	NA	300	N			NO	BSL

*The Florida Surface Water Target Levels were used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) U.S. EPA National Recommended Water Quality Criteria-Correction April 1999, human health for consumption of water and organism values

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes

Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- NE = Not Established
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic

TABLE 2.9 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASN SITE
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	McCoy's Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
193395	Indeno(1,2,3-c,d)pyrene	0.65	J	2.1	J	ug/L	FSSW004	2/8	10	2.1	NA	0.0044 C			YES	ASL
120000	Pyrene	2.1	J	2.1	J	ug/L	FSSW004	1/8	10	2.1	NA	960 N			NO	BSL
7440393	Barium	0.044	J	0.064	J	mg/L	FSSW001	8/8	NA	0.064	NA	NE N			YES	TX
7440439	Cadmium	0.0048	J	0.0048	J	mg/L	FSSW008	1/8	0.00071	0.0048	NA	0.0093 N			NO	BSL
	Calcium	73		160		mg/L	FSSW006	8/8	NA	160	NA	NE			NO	NUT
7440508	Copper	0.003	J	0.003	J	mg/L	FSSW008	1/8	0.00115 - 0.0035	0.003	NA	1,300 N			NO	BSL
57125	Cyanide	0.0059	J	0.0099	J	mg/L	FSSW006	4/8	0.005	0.0099	NA	700 N			NO	BSL
7439896	Iron	0.32		0.42		mg/L	FSSW003	8/8	NA	0.42	NA	0.3 N			YES	ASL
7439954	Magnesium	26.5		450		mg/L	FSSW006	8/8	NA	450	NA	NE			NO	NUT
7439965	Manganese	0.046		0.0795		mg/L	FSSW007	8/8	NA	0.0795	NA	0.05 N			YES	ASL
	Potassium	8.55		160	J	mg/L	FSSW006	8/8	NA	160	NA	NE			NO	NUT
	Sodium	140		3,400		mg/L	FSSW006	8/8	NA	3,400	NA	NE			NO	NUT
7440622	Vanadium	0.0055	J	0.0055	J	mg/L	FSSW003	1/8	0.0022 - 0.0063	0.0055	NA	0.026 N			NO	BSL
7440666	Zinc	0.0089	J	0.0133	J	mg/L	FSSW007	7/8	0.0079	0.0133	NA	9,100 N			NO	BSL

*The Florida Surface Water Target Levels were used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) U.S. EPA National Recommended Water Quality Criteria-Correction April 1999, human health for consumption of water and organism values

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2.10
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Surficial Aquifer

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/ TBC Value	Potential ARAR/ TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
75150	Carbon Disulfide	0.8	J	0.8	J	ug/L	FSMW012	1/9	10	0.8	NA	100 N			NO	BSL
156592	cis-1,2-Dichloroethylene	0.9	J	1	J	ug/L	FSMW014	2/9	10	1	NA	6.1			NO	BSL
7429905	Aluminum	0.074	J	0.47		mg/L	FSMW013	2/19	0.027 - 0.066	0.47	1.97	3.6 N			NO	BSL,BKG
7440393	Barium	0.022	J	0.35		mg/L	FSMW014	19/19	NA	0.35	0.02	0.26 N			YES	ASL
	Calcium	17		150		mg/L	FSMW010	19/19	NA	150	40.5	NA			NO	NUT
7440484	Cobalt	0.002	J	0.002	J	mg/L	FSMW009	1/19	0.0014	0.002	0.002	0.22 N			NO	BSL,BKG
57125	Cyanide	0.0073	J	0.0073	J	mg/L	FSMW005	1/19	0.005	0.0073	ND	0.00062 N			YES	ASL
7439896	Iron	0.15		24		mg/L	FSMW008	3/19	0.025 - 0.081	24	0.5	1.1 N			YES	ASL
7439921	Lead	0.00298		0.00617		mg/L	FSMW005	2/19	0.0015 - 0.0034	0.00617	ND	0.015 N			NO	BSL
	Magnesium	3.2	J	31		mg/L	FSMW010	19/19	NA	31	11.7	NA			NO	NUT
7439965	Manganese	0.0045	J	0.75		mg/L	FSMW005	19/19	NA	0.75	0.04	0.088 N			YES	ASL
	Potassium	1.1	J	24		mg/L	FSMW010	19/19	NA	24	8.4	NA			NO	NUT
	Sodium	5.3		73		mg/L	FSMW018	19/19	NA	73	34	NA			NO	NUT
7440622	Vanadium	0.0044	J	0.0044	J	mg/L	FSMW019	18/19	0.0022	0.0044	0.006	0.026 N			NO	BSL
7440666	Zinc	0.072		0.13		mg/L	FSMW014	2/19	0.0059 - 0.023	0.13	0.006	1.1 N			NO	BSL

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, tap water values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1.

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- NE = Not Established
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considere
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- NF = Nonfood

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Emmett Reed Community Center

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
56553	Benzo(a)anthracene	240	J	240	J	ug/kg	FCSB028	1/2	350	240	NA	620	C			YES	CPAH
50328	Benz(a)pyrene	260	J	260	J	ug/kg	FCSB028	1/2	350	260	NA	62	C			YES	ASL, CPAH
205992	Benzo(b)fluoranthene	260	J	260	J	ug/kg	FCSB028	1/2	350	260	NA	620	C			YES	CPAH
191242	Benzo(ghi)Perylene	140	J	140	J	ug/kg	FCSB028	1/2	350	140	NA	2,300,000**	C			NO	BSL
205992	Benzo(k)fluoranthene	220	J	220	J	ug/kg	FCSB028	1/2	350	220	NA	6,200	C			YES	CPAH
218019	Chrysene	250	J	250	J	ug/kg	FCSB028	1/2	350	250	NA	62,000	C			YES	CPAH
84662	Diethyl Phthalate	970		1,100		ug/kg	FCSB028	2/2	NA	1,100	NA	4,900,000	N			NO	BSL
206440	Fluoranthene	510		510		ug/kg	FCSB028	1/2	350	510	NA	230,000	N			NO	BSL
103395	Indeno (1,2,3-cd) pyrene	130	J	130	J	ug/kg	FCSB028	1/2	350	130	NA	620	C			YES	CPAH
85018	Phenanthrene	180	J	180	J	ug/kg	FCSB028	1/2	350	180	NA	2,000,000**	N			NO	BSL
206440	Pyrene	360		360		ug/kg	FCSB028	1/2	350	360	NA	230,000	N			NO	BSL
50293	P,P'-DDT	9.9	J	9.9	J	ug/kg	FCSB028	1/2	35	9.9	NA	1,700	C			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	20	J	39		ug/kg	FCSB028	2/2	NA	39	NA	220	C			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Emmett Reed Community Center

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	1,000		2,500		mg/kg	FCSB009	11/11	NA	2,500	NA	7,600	N			NO	BSL
7440360	Antimony	0.77	J	3.2	J	mg/kg	FCSB028	4/11	0.46 - 0.52	3.2	NA	3.1	N			YES	ASL
7440382	Arsenic	3.2		4.2		mg/kg	FCSB009	2/11	0.42 - 1.6	4.2	NA	0.39	C			YES	ASL
7440393	Barium	9.6	J	370		mg/kg	FCSB009	11/11	NA	370	NA	110**	N			YES	ASL
7440417	Beryllium	0.065	J	0.2	J	mg/kg	FCSB028	8/11	0.054 - 0.059	0.2	NA	15	N			NO	BSL
7440439	Cadmium	0.089	J	3.4		mg/kg	FCSB009	9/11	0.082 - 0.09	3.4	NA	3.7	N			NO	BSL
7440702	Calcium	390	J	130,000		mg/kg	FCSB006	11/11	NA	130,000	NA	NA				NO	NUT
18540299	Chromium	2.6		21		mg/kg	FCSB009	11/11	NA	21	NA	23	C			NO	BSL
7440484	Cobalt	0.19	J	1.8	J	mg/kg	FCSB009	10/11	0.2	1.8	NA	470	N			NO	BSL
7440508	Copper	4.8	J	110		mg/kg	FCSB009	11/11	NA	110	NA	110**	N			YES	ASL
57125	Cyanide	2.1		2.1		mg/kg	FCSB009	1/11	0.51 - 0.55	2.1	NA	30**	N			NO	BSL
7439896	Iron	1,600		14,000		mg/kg	FCSB028	11/11	NA	14,000	NA	2,300	N			YES	ASL
7439921	Lead	47.1		950	J	mg/kg	FCSB009	9/19		950	NA	400	N			YES	ASL
7439954	Magnesium	64	J	1,100	J	mg/kg	FCSB006	11/11	NA	1,100	NA	NA				NO	NUT

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Emmett Reed Community Center

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7439965	Manganese	14		99		mg/kg	FCSB028	11/11	NA	99	NA	180	N			NO	BSL
7439976	Mercury	0.02	J	0.34	J	mg/kg	FCSB009	11/11	NA	0.34	NA	2.3	N			NO	BSL
7440020	Nickel	1	J	6.5	J	mg/kg	FCSB009	11/11	NA	6.5	NA	110**	N			NO	BSL
7440097	Potassium	52	J	120	J	mg/kg	FCSB028	11/11	NA	120	NA	NA				NO	NUT
7440224	Silver	0.51	J	0.53	J	mg/kg	FCSB009	2/11	0.18 - 0.21	0.53	NA	39	N			NO	BSL
7440622	Vanadium	3.4	J	9.6	J	mg/kg	FCSB009	11/11	NA	9.6	NA	15**	N			NO	BSL
7440666	Zinc	28	J	690	J	mg/kg	FCSB009	11/11	NA	690	NA	2,300	N			NO	BSL
1746016	2,3,7,8-TCDD (TEQ)	1	J	45		ng/kg	CLSS15	6/6	NA	45	NA	3.9	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Emmett Reed Community Center

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
120127	Anthracene	160	J	160	J	ug/kg	FCSB026	1/1	NA	160	NA	2,200,000	N			NO	BSL
56553	Benzo(a)anthracene	470		470		ug/kg	FCSB026	1/1	NA	470	NA	620	C			YES	CPAH
50328	Benzo(a)pyrene	460		460		ug/kg	FCSB026	1/1	NA	460	NA	62	C			YES	ASL, CPAH
205992	Benzo(b)fluoranthene	530		530		ug/kg	FCSB026	1/1	NA	530	NA	620	C			YES	CPAH
191242	Benzo(g,h,i)perylene	260	J	260	J	ug/kg	FCSB026	1/1	NA	260	NA	2,300,000**	N			NO	BSL
205992	Benzo(k)fluoranthene	450		450		ug/kg	FCSB026	1/1	NA	450	NA	6,200	C			YES	CPAH
218019	Chrysene	500		500		ug/kg	FCSB026	1/1	NA	500	NA	62,000	C			YES	CPAH
84662	Diethyl Phthalate	1,200		1,200		ug/kg	FCSB026	1/1	NA	1,200	NA	4,900,000	N			NO	BSL
206440	Fluoranthene	1,100		1,100		ug/kg	FCSB026	1/1	NA	1,100	NA	230,000	N			NO	BSL
193395	Indeno(1,2,3-c,d)pyrene	260	J	260	J	ug/kg	FCSB026	1/1	NA	260	NA	620	C			YES	CPAH
85018	Phenanthrene	550		550		ug/kg	FCSB026	1/1	NA	550	NA	2,000,000**	N			NO	BSL
129000	Pyrene	720		720		ug/kg	FCSB026	1/1	NA	720	NA	230,000	N			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	14	J	14	J	ug/kg	FCSB026	1/1	NA	14	NA	220	C			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.2 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Emmett Reed Community Center

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7429905	Aluminum	1,600		4,900		mg/kg	FCSB026	2/2	NA	4,900	NA	7,600 N			NO	BSL
7440360	Antimony	17	J	17	J	mg/kg	FCSB026	1/2	0.61	17	NA	3.1 N			YES	ASL
7440382	Arsenic	0.69	J	20		mg/kg	FCSB026	2/2	NA	20	NA	0.39 C			YES	ASL
7440393	Barium	19	J	1100		mg/kg	FCSB026	2/2	NA	1,100	NA	110** N			YES	ASL
7440417	Beryllium	0.28	J	0.28	J	mg/kg	FCSB026	1/2	0.07	0.28	NA	15 N			NO	BSL
7440439	Cadmium	4		4		mg/kg	FCSB026	1/2	0.11	4	NA	3.7 N			YES	ASL
7440702	Calcium	710	J	20,000		mg/kg	FCSB026	2/2	NA	20,000	NA	NA			NO	NUT
16540299	Chromium, Total	2.5		38		mg/kg	FCSB026	2/2	NA	38	NA	23 C			YES	ASL
7440484	Cobalt	4.5	J	4.5	J	mg/kg	FCSB026	1/2	0.23	4.5	NA	470 N			NO	BSL
7440508	Copper	7.3		670		mg/kg	FCSB026	2/2	NA	670	NA	110** N			YES	ASL
57125	Cyanide	0.92	J	0.92	J	mg/kg	FCSB026	1/2	0.61	0.92	NA	30** N			NO	BSL
7439896	Iron	1,800		59,000		mg/kg	FCSB026	2/2	NA	59,000	NA	2,300 N			YES	ASL
7439921	Lead	16		3,200	J	mg/kg	FCSB026	18/21	15 - 44	3,200	NA	400 N			YES	ASL
7439954	Magnesium	67	J	980	J	mg/kg	FCSB026	2/2	NA	980	NA	NA			NO	NUT
7439965	Manganese	11		820		mg/kg	FCSB026	2/2	NA	820	NA	180 N			YES	ASL
7439976	Mercury	0.038	J	1.3		mg/kg	FCSB026	2/2	NA	1.3	NA	2.3 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.2 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Emmett Reed Community Center

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440020	Nickel	0.9	J	21		mg/kg	FCSB026	2/2	NA	21	NA	110**	N			NO	BSL
7440097	Potassium	29	J	580	J	mg/kg	FCSB026	2/2	NA	580	NA	NA				NO	NUT
7440224	Silver	3.6		3.6		mg/kg	FCSB026	1/2	0.23	3.6	NA	39	N			NO	ASL
7440235	Sodium	86	J	610	J	mg/kg	FCSB026	2/2	NA	610	NA	NA				NO	NUT
7440622	Vanadium	5	J	12		mg/kg	FCSB026	2/2	NA	12	NA	15**	N			NO	BSL
7440666	Zinc	40		2,200	J	mg/kg	FCSB026	2/2	NA	2,200	NA	2,300	N			NO	BSL
1746016	2,3,7,8-TCDD (TEQ)	27		27		ng/kg	FCSB026	1/1	NA	27	NA	3.9	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes
Selection Reason:
Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
	Toluene	2	J	2	J	ug/kg	CLSS04	1/4	11	2	NA	52,000	N			NO	BSL
	2-Methylnaphthalene	99	J	99	J	ug/kg	FCSB043	1/7	340 - 370	99	NA	5,600 (6)	N			NO	BSL
	Acenaphthene	38	J	270	J	ug/kg	FCSB043	3/7	340 - 370	270	NA	370,000	N			NO	BSL
	Acenaphthylene	52	J	480		ug/kg	FCSB043	5/7	340 - 350	480	NA	1,100,000**	N			NO	BSL
120127	Anthracene	66	J	1,000		ug/kg	FCSB043	6/7	340	1,000	NA	2,200,000	N			NO	BSL
56553	Benzo(a)anthracene	160	J	3,200		ug/kg	FCSB043	7/7	NA	3,200	NA	620	C			YES	ASL
50328	Benzo(a)pyrene	110		3,000		ug/kg	FCSB043	7/7	NA	3,000	NA	62	C			YES	ASL
205992	Benzo(b and/or k)fluoranthene	270	J	1,700		ug/kg	CLSS03	4/4	NA	1,700	NA	620	C			YES	ASL
205992	Benzo(b)fluoranthene	190	J	4,100		ug/kg	FCSB043	3/3	NA	4,100	NA	620	C			YES	ASL
	Benzo(g,h,i)perylene	150	J	1,400		ug/kg	FCSB043	7/7	NA	1,400	NA	2,300,000	N			NO	BSL
205992	Benzo(k)fluoranthene	180	J	1,900		ug/kg	FCSB043	3/3	NA	1,900	NA	6,200				YES	CPAH
117817	Bis(2-ethyl hexyl)phthalate	390		1,100		ug/kg	CLSS02	3/7	340 - 370	1,100	NA	35,000	C			NO	BSL
	Carbazole	39	J	460		ug/kg	FCSB043	5/7	340 - 350	460	NA	24,000	C			NO	BSL
218019	Chrysene	200	J	3,200		ug/kg	FCSB043	7/7	NA	3,200	NA	62,000	C			YES	CPAH
53703	Dizenzo(a,h)anthracene	69	J	570		ug/kg	FCSB043	6/7	350	570	NA	62	C			YES	ASL
	Dibenzofuran	130	J	130	J	ug/kg	FCSB043	1/7	340 - 370	130	NA	29,000	N			NO	BSL
206440	Fluoranthene	120	J	10,000		ug/kg	FCSB043	7/7	NA	10,000	NA	230,000	N			NO	BSL
	Fluorene	34	J	57	J	ug/kg	CLSS03	2/7	340 - 370	57	NA	260,000	N			NO	BSL
103395	Indeno(1,2,3-cd)pyrene	130	J	1,200		ug/kg	FCSB043	7/7	NA	1,200	NA	620	C			YES	CPAH
	Naphthalene	45	J	130	J	ug/kg	FCSB043	2/7	340 - 370	130	NA	5,600	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Carcinogenic PAHs Evaluated as a Group (CPAH)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.3 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
85018	Phenanthrene	170	J	3,400		ug/kg	FCSB043	7/7	NA	3,400	NA	2,000,000**	N			NO	BSL
129000	Pyrene	292.5	J	4,600		ug/kg	FCSB043	7/7	NA	4,600	NA	230,000	N			NO	BSL
	Alpha-Chlordane	3		3		ug/kg	FCSB045	1/7	1.8 - 89	3	NA	1,600	C			NO	BSL
60571	Dieldrin	2.9	J	2.9	J	ug/kg	FCSB045	1/7	3.4 - 180	2.9	NA	30	C			NO	BSL
72208	Endrin	6.5		6.5		ug/kg	FCSB045	1/7	3.4 - 180	6.5	NA	1,800	N			NO	BSL
72559	p,p'-DDE	2.3	J	2.3	J	ug/kg	FCSB045	1/3	175 - 180	2.3	NA	1,700	C			NO	BSL
50293	p,p'-DDT	14		14		ug/kg	FCSB045	1/3	175 - 180	14	NA	1,700	C			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	87		720		ug/kg	FCSB043	4/7	50 - 110	720	NA	220	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason:
Infrequent Detection but Associated Historically (HIST)
Carcinogenic PAHs Evaluated as a Group (CPAH)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.3 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	1,200		5,300		mg/kg	FCSB043	8/8	NA	5,300	NA	7,600	N			NO	BSL
7440360	Antimony	1.1	J	910		mg/kg	CLSS04	4/8	0.54 - 3	910	NA	3.1	N			YES	ASL
7440382	Arsenic	1.2	J	20		mg/kg	FCSB043	7/8	3	20	NA	0.39	C			YES	ASL
7440393	Barium	32.5	J	550	J	mg/kg	FCSB043	8/8	NA	550	NA	110**	N			YES	ASL
7440417	Beryllium	0.073	J	0.2	J	mg/kg	FCSB043	4/8	0.20 - 0.22	0.2	NA	15	N			NO	BSL
7440439	Cadmium	0.61	J	4.9		mg/kg	FCSB043	8/8	NA	4.9	NA	3.7	N			YES	ASL
	Calcium	3,000		40,000		mg/kg	CLSS02	8/8	NA	40,000	NA	N/A				NO	NUT
18540299	Chromium	5	J	28		mg/kg	FCSB043	8/8	NA	28	NA	23	N			YES	ASL
7440484	Cobalt	0.59	J	3.5	J	mg/kg	FCSB043	8/8	NA	3.5	N/A	470	N			NO	BSL
7440508	Copper	31	J	440	J	mg/kg	FCSB043	8/8	NA	440	N/A	110**	N			YES	ASL
7439896	Iron	3,200		32,500		mg/kg	FCSB054	8/8	NA	32,500	N/A	2,300	N			YES	ASL
7439921	Lead	350		6,000		mg/kg	CLSS04	12/12	NA	6,000	N/A	400	N			YES	ASL
7439954	Magnesium	390		1,200		mg/kg	CLSS02	8/8	NA	1,200	N/A	N/A				NO	NUT
7439965	Manganese	44		310		mg/kg	FCSB043	8/8	NA	310	N/A	180	N			YES	ASL
7439976	Mercury	0.069	J	0.42	J	mg/kg	FCSB043	6/8	0.10 - 0.11	0.42	N/A	2.3	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Carcinogenic PAHs Evaluated as a Group (CPAH)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
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J = Estimated Value
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F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.3 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440020	Nickel	3	J	19		mg/kg	FCSB043	8/8	NA	19	N/A	110** N			NO	BSL
7440097	Potassium	95		610	J	mg/kg	FCSB043	8/8	NA	610	N/A	N/A			NO	NUT
7440224	Silver	0.44	J	4		mg/kg	FCSB043	7/8	0.205	4	N/A	39 N			NO	BSL
7440235	Sodium	115	J	680	J	mg/kg	FCSB043	7/8	130	680	N/A	N/A			NO	NUT
7440622	Vanadium	6.8	J	12		mg/kg	CLSS02 / FCSB043	8/8	NA	12	N/A	15** N			NO	BSL
7440666	Zinc	140	J	1,300	J	mg/kg	FCSB043	8/8	NA	1,300	N/A	2,300 N			NO	BSL
1746016	2,3,7,8-TCDD (TEQ)	2	J	41		ng/kg	CLSS10	11/11	NA	41	N/A	3.9 C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

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(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Carcinogenic PAHs Evaluated as a Group (CPAH)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
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W = Water
NF = Nonfood
F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
	Toluene	7	J	8	J	ug/kg	CLSB02	2/4	11 - 12	8	NA	52,000 N			NO	BSL
88062	2,4,6-Trichlorophenol	760	J	760	J	ug/kg	CLSB03	1/8	340 - 410	760	NA	44,000 C			NO	BSL
	2-Methylnaphthalene	160	J	160	J	ug/kg	CLSB03	1/8	340 - 410	160	NA	5,600(6) N			NO	BSL
	Acenaphthene	180	J	180	J	ug/kg	CLSB03	1/8	340 - 410	180	NA	370,000 N			NO	BSL
	Acenaphthylene	64	J	180	J	ug/kg	CLSB03	2/8	340 - 410	180	NA	1,100,000** N			NO	BSL
120127	Anthracene	55	J	720	J	ug/kg	CLSB03	3/8	350 - 410	720	NA	2,200,000 N			NO	BSL
56553	Benzo(a)anthracene	50	J	1,900		ug/kg	CLSB03	5/8	350 - 410	1,900	NA	620 C			YES	ASL
50328	Benzo(a)pyrene	40	J	2,200		ug/kg	CLSB03	5/8	350 - 410	2,200	NA	62 C			YES	ASL
205992	Benzo(b and/or k)fluoranthene	41	J	2,000	J	ug/kg	CLSB03	2/4	350 - 410	2,000	NA	620 C			YES	ASL
205992	Benzo(b)fluoranthene	220	J	480		ug/kg	FCSB042	3/4	350	480	NA	620 C			YES	CPAH
	Benzo(g,h,i)perylene	40	J	2,400		ug/kg	CLSB03	5/8	350 - 410	2,400	NA	2,300,000** N			NO	BSL
205992	Benzo(k)fluoranthene	180	J	430		ug/kg	FCSB033	3/4	350	430	NA	6,200 C			YES	CPAH
	Carbazole	41	J	310	J	ug/kg	CLSB03	2/8	350 - 410	310	NA	24,000 C			NO	BSL
218019	Chrysene	48	J	2,400		ug/kg	CLSB03	5/8	350 - 410	2,400	NA	62,000 C			YES	CPAH
53703	Dizenzo(a,h)anthracene	800		800		ug/kg	CLSB03	1/8	340 - 410	800	NA	62 C			YES	ASL
	Dibenzofuran	160	J	160	J	ug/kg	CLSB03	1/8	340 - 410	160	NA	29,000 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

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(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
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C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.4 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
84662	Diethyl Phthalate	1,600		1,600		ug/kg	FCSB042	1/8	340 - 760	1,600	NA	4,900,000	N			NO	BSL
84742	Di-n-Butyl Phthalate	49	J	760	J	ug/kg	CLSB03	2/8	350 - 410	760	NA	610,000	N			NO	BSL
206440	Fluoranthene	67	J	4,100		ug/kg	CLSB03	5/8	350 - 410	4,100	NA	230,000	N			NO	BSL
	Fluorene	210	J	210	J	ug/kg	CLSB03	1/8	350 - 410	210	NA	260,000	N			NO	BSL
77474	Hexachlorocyclopentadiene	760	J	760	J	ug/kg	CLSB03	1/8	340 - 410	760	NA	42,000	N			NO	BSL
193395	Indeno(1,2,3-c,d)pyrene	150	J	1,700		ug/kg	CLSB03	4/8	350 - 410	1,700	NA	620	C			YES	ASL
	Naphthalene	240	J	240	J	ug/kg	CLSB03	1/8	340 - 410	240	NA	5,600	N			NO	BSL
85018	Phenanthrene	100	J	2,700		ug/kg	CLSB03	4/8	350 - 410	2,700	NA	2,000,000**	N			NO	BSL
129000	Pyrene	66	J	3,900		ug/kg	CLSB03	5/8	350 - 410	3,900	NA	230,000	N			NO	BSL
	Alpha-Chlordane	4.9	J	4.9	J	ug/kg	FCSB045	1/8	1.8 - 94	4.9	NA	1,600	C			NO	BSL
	Beta BHC	1.8	J	2.1		ug/kg	FCSB033	2/4	1.8 - 94	2.1	NA	320	C			NO	BSL
60571	Dieldrin	1	J	2.7	J	ug/kg	FCSB045	2/8	3.5 - 190	2.7	NA	30	C			NO	BSL
	Endrin	1.3	J	1.3	J	ug/kg	FCSB045	1/8	3.4 - 190	1.3	NA	1,800	N			NO	BSL
	Gamma-Chlordane	12		12		ug/kg	FCSB045	1/8	1.8 - 94	12	NA	1,600	C			NO	BSL
1024573	Heptachlor Epoxide	0.28	J	0.28	J	ug/kg	FCSB045	1/8	1.8 - 94	0.28	NA	53	C			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	32	J	110	J	ug/kg	FCSB045	2/8	34 - 41	110	NA	220	C			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes

Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
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- C = Carcinogenic
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TABLE 2.4 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	160		8,000		mg/kg	FCSB042	10/10	NA	8,000	NA	7,600	N			YES	ASL
7440360	Antimony	5.3	J	12	J	mg/kg	FCSB042	4/10	0.48 - 4	12	NA	3.1	N			YES	ASL
7440382	Arsenic	5.5		46		mg/kg	FCSB054	5/10	0.44 - 1.5	46	NA	0.39	C			YES	ASL
7440393	Barium	4.7	J	740	J	mg/kg	FCSB042	10/10	NA	740	NA	110**	N			YES	ASL
7440417	Beryllium	0.12	J	0.17	J	mg/kg	FCSB042, 045	3/10	0.055 - 0.25	0.17	NA	15	N			NO	BSL
7440439	Cadmium	0 34	J	9		mg/kg	FCSB054	6/10	0.084 - 0.25	9	NA	3.7	N			YES	ASL
	Calcium	980	J	37,000	J	mg/kg	FCSB042	10/10	NA	37,000	NA	NA				NO	NUT
18540299	Chromium, Total	0.83	J	41		mg/kg	FCSB042	10/10	NA	41	NA	23	C			YES	ASL
7440484	Cobalt	0.29	J	9.2	J	mg/kg	FCSB042	8/10	0.18 - 1	9.2	NA	470	N			NO	BSL
7440508	Copper	3.9	J	1,000		mg/kg	FCSB054	10/10	NA	1,000	NA	110**	N			YES	ASL
57125	Cyanide	0.53	J	0.87	J	mg/kg	FCSB042	2/14	0.48 - 0.64	0.87	NA	30**	N			NO	BSL
7439896	Iron	140		75,000		mg/kg	FCSB042	10/10	NA	75,000	NA	2,300	N			YES	ASL
7439921	Lead	19		2,800		mg/kg	FCSB034	11/12	47	2,800	NA	400	N			YES	ASL
7439954	Magnesium	33	J	1,600		mg/kg	FCSB042	8/10	90 - 110	1,600	NA	NA				NO	NUT
7439965	Manganese	3.5		730		mg/kg	FCSB042	10/10	NA	730	NA	180	N			YES	ASL
7439976	Mercury	0 015	J	1.1	J	mg/kg	FCSB045	7/10	0.11 - 0.12	1.1	NA	2.3	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
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(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
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TABLE 2.4 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park - Emmett Reed

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440020	Nickel	1.1	J	45		mg/kg	FCSB042	7/10	0.20 - 1	45	NA	110**	N			NO	BSL
7440097	Potassium	31	J	940	J	mg/kg	FCSB042	8/10	30 - 50	940	NA	NA				NO	NUT
7440224	Silver	0.23	J	7.2		mg/kg	FCSB042	6/10	0.18 - 0.25	7.2	NA	39	N			NO	BSL
7440235	Sodium	120		1,400		mg/kg	FCSB042	6/10	47 - 230	1,400	NA	NA				NO	NUT
7440622	Vanadium	0.95	J	11		mg/kg	FCSB042	9/10	0.63	11	NA	15**	N			NO	BSL
7440666	Zinc	6.6	J	2,800	J	mg/kg	FCSB054	10/10	NA	2,800	NA	2,300	N			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
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(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Apartment Complex

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
56553	Benzo(a)anthracene	160	J	160	J	ug/kg	FCSB045	1/4	350 - 370	160	NA	620	C			YES	CPAH
50328	Benzo(a)pyrene	170	J	170	J	ug/kg	FCSB045	1/4	350 - 370	170	NA	62	C			YES	ASL
205992	Benzo(b)fluoranthene	190	J	190	J	ug/kg	FCSB045	1/4	350 - 370	190	NA	620	C			YES	CPAH
	Benzo(g,h,i)perylene	29	J	160	J	ug/kg	FCSB045	2/4	370	160	NA	2,300,000	N			NO	BSL
205992	Benzo(k)fluoranthene	180	J	180	J	ug/kg	FCSB045	1/4	350 - 370	180	NA	62,000	C			YES	CPAH
117817	Bis(2-ethyl hexyl)phthalate	120	J	120	J	ug/kg	FCSB020	1/4	120 - 370	120	NA	35,000	C			NO	BSL
218019	Chrysene	200	J	200	J	ug/kg	FCSB045	1/4	350 - 370	200	NA	62,000	C			YES	CPAH
53703	Dizenzo(a,h)anthracene	69	J	69	J	ug/kg	FCSB045	1/4	350 - 370	69	NA	62	C			YES	ASL
206440	Fluoranthene	350		350		ug/kg	FCSB045	1/4	350 - 370	350	NA	230,000	N			NO	BSL
103395	Indeno(1,2,3-cd)pyrene	130	J	130	J	ug/kg	FCSB045	1/4	350 - 370	130	NA	620	C			YES	CPAH
85018	Phenanthrene	170	J	170	J	ug/kg	FCSB045	1/4	350 - 370	170	NA	2,000,000**	N			NO	BSL
129000	Pyrene	340		340		ug/kg	FCSB045	1/4	350 - 370	340	NA	230,000	N			NO	BSL
	Alpha-Chlordane	0.73	J	3		ug/kg	FCSB045	4/4	NA	3	NA	1,600	C			NO	BSL
60571	Dieldrin	0.59	J	2.9	J	ug/kg	FCSB045	3/4	3.7	2.9	NA	30	C			NO	BSL
72208	Endrin	6.5		6.5		ug/kg	FCSB045	1/4	3.5 - 3.7	6.5	NA	1,800	N			NO	BSL
	Gamma-Chlordane	0.55	J	3.8		ug/kg	FCSB015	3/4	1.7	3.8	NA	1,600	C			NO	BSL
72559	p,p'-DDE	0.98	J	2.3	J	ug/kg	FCSB045	2/4	3.5 - 3.7	2.3	NA	1,700	C			NO	BSL
50293	p,p'-DDT	0.54	J	14		ug/kg	FCSB045	3/4	3.5	14	NA	1,700	C			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	290	J	290	J	ug/kg	FCSB045	1/4	35 - 37	290	NA	220	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason:
Infrequent Detection but Associated Historically (HIST)
Carcinogenic PAHs Evaluated as a Group (CPAH)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.5 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Apartment Complex*

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	1,100		3,000		mg/kg	FCSB020	6/6	NA	3,000	NA	7,600 N			NO	BSL
7440360	Antimony	0.59	J	1.1	J	mg/kg	FCSB045	2/6	0.48 - 0.56	1.1	NA	3.1 N			NO	BSL
7440382	Arsenic	1.2	J	1.7	J	mg/kg	FCSB015	4/6	0.55 - 1.1	1.7	NA	0.39 C			YES	ASL
7440393	Barium	15	J	75		mg/kg	FCSB045	6/6	NA	75	NA	110** N			NO	BSL
7440417	Beryllium	0.073	J	0.086	J	mg/kg	FCSB110	4/6	0.097 - 0.12	0.086	NA	15 N			NO	BSL
7440439	Cadmium	0.14	J	0.94	J	mg/kg	FCSB045	5/6	0.083	0.94	NA	3.7 N			NO	BSL
	Calcium	3,000		36,000		mg/kg	FCSB045	6/6	NA	36,000	NA	N/A			NO	NUT
18540299	Chromium, Total	2.8	J	10		mg/kg	FCSB020	6/6	NA	10	NA	23 N			NO	BSL
7440484	Cobalt	0.25	J	0.67	J	mg/kg	FCSB020	6/6	NA	0.67	N/A	470 N			NO	BSL
7440508	Copper	5.2		38		mg/kg	FCSB045	6/6	NA	38	N/A	110** N			NO	BSL
7439896	Iron	2,900	J	4,900		mg/kg	FCSB045	6/6	NA	4,900	N/A	2,300 N			YES	ASL
7439921	Lead	19		510	J	mg/kg	FCSB045	12/14	41 - 43	510	N/A	400 N			YES	ASL
7439954	Magnesium	180	J	910	J	mg/kg	FCSB045	6/6	NA	910	N/A	N/A			NO	NUT
7439965	Manganese	15		62		mg/kg	FCSB045	6/6	NA	62	N/A	180 N			NO	BSL
7439976	Mercury	0.038	J	0.098	J	mg/kg	FCSB110	4/6	0.031 - 0.035	0.098	N/A	2.3 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason:
Infrequent Detection but Associated Historically (HIST)
Carcinogenic PAHs Evaluated as a Group (CPAH)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
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COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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TABLE 2.5 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe.	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Apartment Complex*

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440020	Nickel	0.65	J	4.1	J	mg/kg	FCSB045	6/6	NA	4.1	N/A	110**	N			NO	BSL
7440097	Potassium	48	J	110	J	mg/kg	FCSB020,045	6/6	NA	110	N/A	N/A				NO	NUT
7440224	Silver	0.44	J	0.44	J	mg/kg	FCSB045	1/6	0.18 - 0.21	0.44	N/A	39	N			NO	BSL
7440235	Sodium	120	J	240	J	mg/kg	FCSB110	2/6	47 - 55	240	N/A	N/A				NO	NUT
7440622	Vanadium	4.1	J	6.8	J	mg/kg	FCSB045	6/6	NA	6.8	N/A	15**	N			NO	BSL
7440666	Zinc	33		270		mg/kg	FCSB045	6/6	NA	270	N/A	2,300	N			NO	BSL
1746016	2,3,7,8-TCDD (TEQ)	8	J	8	J	ng/kg	CLSS17	1/1	NA	8	N/A	3.9	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Carcinogenic PAHs Evaluated as a Group (CPAH)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
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SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
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C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food
c = Confirmed via gas chromatrography/mass spectroscopy

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Apartment Complex

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
120127	Anthracene	35	J	35	J	ug/kg	FCSB020	1/3	370 - 400	35	NA	2,200,000 N			NO	BSL
56553	Benzo(a)anthracene	140	J	190	J	ug/kg	FCSB045	2/3	400	190	NA	620 C			YES	CPAH
50328	Benzo(a)pyrene	120	J	250	J	ug/kg	FCSB045	2/3	400	250	NA	62 C			YES	ASL
205992	Benzo(b)fluoranthene	140	J	220	J	ug/kg	FCSB045	2/3	400	220	NA	620 C			YES	CPAH
	Benzo(g,h,i)perylene	100	J	220	J	ug/kg	FCSB045	2/3	400	220	NA	2,300,000** N			NO	BSL
205992	Benzo(k)fluoranthene	100	J	180	J	ug/kg	FCSB045	2/3	400	180	NA	6,200 C			YES	CPAH
	Benzyl Butyl Phthalate	85	J	85	J	ug/kg	FCSB020	1/3	370 - 400	85	NA	1,200,000 N			NO	BSL
117817	Bis(2-ethyl hexyl)phthalate	94	J	170	J	ug/kg	FCSB020	2/3	370	170	NA	35,000 C			NO	BSL
218019	Chrysene	150	J	180	J	ug/kg	FCSB045	2/3	400	180	NA	62,000 C			YES	CPAH
206440	Fluoranthene	200	J	250	J	ug/kg	FCSB020	2/3	400	250	NA	230,000 N			NO	BSL
193395	Indeno(1,2,3-c,d)pyrene	91	J	150	J	ug/kg	FCSB045	2/3	400	150	NA	620 C			YES	CPAH
85018	Phenanthrene	100	J	160	J	ug/kg	FCSB020	2/3	400	160	NA	2,000,000** N			NO	BSL
129000	Pyrene	240	J	340	J	ug/kg	FCSB045	2/3	400	340	NA	230,000 N			NO	BSL
309002	Aldrin	19		19		ug/kg	FCSB020	1/3	1.9 - 2	19	NA	29 C			NO	BSL
	Alpha-Chlordane	4.9	J	30	J	ug/kg	FCSB020	2/3	2	30	NA	1,600 C			NO	BSL
	Beta BHC	1.8	J	1.8	J	ug/kg	FCSB045	1/3	2 - 9.6	1.8	NA	320 C			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes
Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- W = Water
- NF = Nonfood
- F = Food

TABLE 2.6 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Apartment Complex

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
60571	Dieldrin	2.7	J	18	J	ug/kg	FCSB020	2/3	4	18	NA	30	C			NO	BSL
	Endrin	1.3	J	1.6	J	ug/kg	FCSB020	2/3	4	1.6	NA	1,800	N			NO	BSL
	Gamma-Chlordane	12		39	J	ug/kg	FCSB020	2/3	2	39	NA	1,600	C			NO	BSL
76448	Heptachlor	3.1	J	3.1	J	ug/kg	FCSB020	1/3	1.9 - 2	3.1	NA	110	C			NO	BSL
1024573	Heptachlor Epoxide	0.28	J	0.99	J	ug/kg	FCSB020	2/3	2	0.99	NA	53	C			NO	BSL
	p,p'-DDD	1.9	J	1.9	J	ug/kg	FCSB020	1/3	3.7 - 4	1.9	NA	1,700	C			NO	BSL
72559	p,p'-DDE	7.7	J	7.7	J	ug/kg	FCSB020	1/3	3.7 - 4	7.7	NA	1,700	C			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	110	J	110	J	ug/kg	FCSB045	1/3	40 - 190	110	NA	220	C			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
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SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
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C = Carcinogenic
N = Non-Carcinogenic
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F = Food

TABLE 2.6 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Apartment Complex

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	260		3,300		mg/kg	FCSB045	4/4	NA	3,300	NA	7,600 N			NO	BSL
7440360	Antimony	1	J	7.8	J	mg/kg	FCSB045	3/4	0.6	7.8	NA	3.1 N			YES	ASL
7440382	Arsenic	2	J	9.6		mg/kg	FCSB045	3/4	0.54	9.6	NA	0.39 C			YES	ASL
7440393	Barium	3.1	J	490		mg/kg	FCSB045	4/4	NA	490	NA	110** N			YES	ASL
7440417	Beryllium	0.15	J	0.17	J	mg/kg	FCSB045	2/4	0.059 - 0.069	0.17	NA	15 N			NO	BSL
7440439	Cadmium	0.36	J	2.9		mg/kg	FCSB045	3/4	0.1	2.9	NA	3.7 N			NO	BSL
	Calcium	79	J	40,000		mg/kg	FCSB020	4/4	NA	40,000	NA	NA			NO	NUT
16540299	Chromium, Total	9.4		18		mg/kg	FCSB045	3/4	0.68	18	NA	23 C			NO	BSL
7440484	Cobalt	0.63	J	2.3	J	mg/kg	FCSB045	3/4	0.23	2.3	NA	470 N			NO	BSL
7440508	Copper	22		350		mg/kg	FCSB045	3/4	0.87	350	NA	110** N			YES	ASL
7439896	Iron	190	J	16,000		mg/kg	FCSB045	4/4	NA	16,000	NA	2,300 N			YES	ASL
7439921	Lead	2.1	J	1,100	J	mg/kg	FCSB045	7/14	14 - 43	1,100	NA	400 N			YES	ASL
7439954	Magnesium	9.4	J	940	J	mg/kg	FCSB020	4/4	NA	940	NA	NA			NO	NUT
7439965	Manganese	62		290		mg/kg	FCSB045	3/4	0.76	290	NA	180 N			YES	ASL
7439976	Mercury	0.14	J	1.1	J	mg/kg	FCSB045	3/3	NA	1.1	NA	2.3 N			NO	BSL
7440020	Nickel	2.7	J	10		mg/kg	FCSB045	3/4	0.52	10	NA	110** N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
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(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
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SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
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J = Estimated Value
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TABLE 2.6 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Apartment Complex

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440097	Potassium	30	J	400	J	mg/kg	FCSB045	4/4	NA	400	NA	NA				NO	NUT
7440224	Silver	0.4	J	2	J	mg/kg	FCSB045	3/4	0.23	2	NA	39	N			NO	BSL
7440235	Sodium	74.5	J	380	J	mg/kg	FCSB045	3/4	59	380	NA	NA				NO	NUT
7440622	Vanadium	4.9	J	8	J	mg/kg	FCSB045	3/4	0.79	8	NA	15**	N			NO	BSL
7440666	Zinc	140	J	1,100		mg/kg	FCSB045	3/3	NA	1,100	NA	2,300	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Unnamed Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
67641	Acetone	5	J	10	J	ug/kg	FCSW002	2/2	NA	10	NA	160,000 N			NO	BSL
	2-Methylnaphthalene	44	J	44	J	ug/kg	FCSW010	1/5	340 - 5,500	44	NA	5,600 (6) N			NO	BSL
	Acenaphthene	110	J	110	J	ug/kg	FCSW010	1/5	340 - 5,500	110	NA	370,000 N			NO	BSL
	Acenaphthylene	72	J	72	J	ug/kg	FCSW010	1/5	340 - 5,500	72	NA	1,100,000** N			NO	BSL
120127	Anthracene	110	J	270	J	ug/kg	FCSW010	2/5	340 - 5,500	270	NA	2,200,000 N			NO	BSL
56553	Benzo(a)anthracene	28	J	1,100		ug/kg	FCSW010	4/5	5,500	1,100	NA	620 C			YES	ASL
50328	Benzo(a)pyrene	65	J	1,300		ug/kg	FCSW010	3/5	360 - 5,500	1,300	NA	62 C			YES	ASL
205992	Benzo(b)fluoranthene	39	J	1,200		ug/kg	FCSW010	4/5	5,500	1,200	NA	620 C			YES	ASL
	Benzo(g,h,i)perylene	33	J	1,000		ug/kg	FCSW010	4/5	5,500	1,000	NA	2,300,000** N			NO	BSL
205992	Benzo(k)fluoranthene	74	J	1,300		ug/kg	FCSW010	3/5	360 - 5,500	1,300	NA	8,200 C			YES	CPAH
	Benzyl Butyl Phthalate	110	J	110	J	ug/kg	FCSW010	1/5	340 - 5,500	110	NA	1,200,000 N			NO	BSL
117817	Bis(2-ethyl hexyl)phthalate	740		760		ug/kg	FCSW007	2/5	340 - 5,500	760	NA	35,000 C			NO	BSL
	Carbazole	65	J	250	J	ug/kg	FCSW010	2/5	340 - 5,500	250	NA	24,000 C			NO	BSL
218019	Chrysene	35	J	1,400		ug/kg	FCSW010	4/5	5,500	1,400	NA	62,000 C			NO	BSL
	Dibenzofuran	58	J	58	J	ug/kg	FCSW010	1/5	340 - 5,500	58	NA	29,000 N			NO	BSL
206440	Fluoranthene	78	J	2,500		ug/kg	FCSW010	3/5	360 - 5,500	2,500	NA	230,000 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section; as appropriate.
(5) Rationale Codes

Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- W = Water
- NF = Nonfood
- F = Food

TABLE 2.7 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Unnamed Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
	Fluorene	120	J	120	J	ug/kg	FCSW010	1/5	340 - 5,500	120	NA	260,000	N			NO	BSL
193395	Indeno(1,2,3-c,d)pyrene	270	J	630		ug/kg	FCSW010	2/5	340 - 5,500	630	NA	620	C			YES	ASL
	Naphthalene	52	J	52	J	ug/kg	FCSW010	1/5	340 - 410	52	NA	5,600	N			NO	BSL
85018	Phenanthrene	28	J	1,500		ug/kg	FCSW010	3/5	360 - 5,500	1,500	NA	2,000,000**	N			NO	BSL
129000	Pyrene	120	J	2,300		ug/kg	FCSW010	3/5	360 - 5,500	2,300	NA	230,000	N			NO	BSL
	Alpha-Chlordane	1.5	J	69		ug/kg	FCSW002	5/7	2.1 - 2.3	69	NA	1,600	C			NO	BSL
	Beta BHC	3.9		3.9		ug/kg	FCSW010	1/7	1.8 - 2.8	3.9	NA	320	C			NO	BSL
60571	Dieldrin	15		15		ug/kg	FCSW010	1/7	3.4 - 5.5	15	NA	30	C			NO	BSL
	Endrin	23	J	23	J	ug/kg	FCSW010	1/7	3.4 - 5.5	23	NA	1,800	N			NO	BSL
	Gamma-Chlordane	3		92	J	ug/kg	FCSW010	5/7	2.1 - 2.3	92	NA	1,600	C			NO	BSL
76448	Heptachlor	1.1	J	1.1	J	ug/kg	FCSW010	1/7	1.8 - 2.8	1.1	NA	110	C			NO	BSL
1024573	Heptachlor Epoxide	7.6		7.6		ug/kg	FCSW010	1/7	1.8 - 2.8	7.6	NA	53	C			NO	BSL
	p,p'-DDD	2.7	J	19	J	ug/kg	FCSW002	2/7	3.4 - 4.5	19	NA	2,400	C			NO	BSL
72559	p,p'-DDE	0.53	J	6.1	J	ug/kg	FCSW002	4/7	3.4 - 4.5	6.1	NA	1,700	C			NO	BSL
50293	p,p'-DDT	8.7	J	8.7	J	ug/kg	FCSW010	1/7	3.4 - 5.5	8.7	NA	1,700	C			NO	BSL
11096825	PCB-1260 (Aroclor 1260)	19	J	370		ug/kg	FCSW010	4/7	41 - 55	370	NA	220	C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
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C = Carcinogenic
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W = Water
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TABLE 2.7 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Unnamed Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	1,500		5,100		mg/kg	FCSW007	5/5	NA	5,100	NA	7,600	N			NO	BSL
7440360	Antimony	0.66	J	7.8	J	mg/kg	FCSW007	5/5	NA	7.8	NA	3.1	N			YES	ASL
7440382	Arsenic	1.3	J	13		mg/kg	FCSW010	5/5	NA	13	NA	0.39	C			YES	ASL
7440393	Barium	72	J	410	J	mg/kg	FCSW007	5/5	NA	410	NA	110**	N			YES	ASL
7440417	Beryllium	0.11	J	0.35	J	mg/kg	FCSW007	5/5	NA	0.35	NA	15	N			NO	BSL
7440439	Cadmium	0.78	J	7.1		mg/kg	FCSW010	5/5	NA	7.1	NA	3.7	N			YES	ASL
	Calcium	3,600	J	50,000	J	mg/kg	FCSW010	5/5	NA	50,000	NA	NA				NO	NUT
16540299	Chromium, Total	5.9	J	60	J	mg/kg	FCSW010	5/5	NA	60	NA	23	C			YES	ASL
7440484	Cobalt	0.65	J	7.3	J	mg/kg	FCSW010	5/5	NA	7.3	NA	470	N			NO	BSL
7440508	Copper	23	J	270	J	mg/kg	FCSW007	5/5	NA	270	NA	110**	N			YES	ASL
57125	Cyanide	1.3		1.5		mg/kg	FCSW008	2/5	0.52 - 0.85	1.5	NA	30**	N			NO	BSL
7439896	Iron	2,500	J	20,000	J	mg/kg	FCSW007	5/5	NA	20,000	NA	2,300	N			YES	ASL
7439921	Lead	180		1,400		mg/kg	FCSW007	5/5	NA	1,400	NA	400	N			YES	ASL
7439954	Magnesium	170	J	1,600		mg/kg	FCSW010	5/5	NA	1,600	NA	NA				NO	NUT
7439965	Manganese	11	J	120	J	mg/kg	FCSW010	5/5	NA	120	NA	180	N			NO	BSL
7439976	Mercury	0.35	J	0.35	J	mg/kg	FCSW010	1/5	0.066 - 0.43	0.35	NA	2.3	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
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TABLE 2.7 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	Unnamed Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7440020	Nickel	1.6	J	21		mg/kg	FCSW010	5/5	NA	21	NA	110** N			NO	BSL
7440097	Potassium	70	J	350	J	mg/kg	FCSW010	5/5	NA	350	NA	NA			NO	NUT
7440224	Silver	0.7	J	1.8	J	mg/kg	FCSW007	2/5	0.18 - 0.32	1.8	NA	39 N			NO	BSL
7440235	Sodium	51	J	250	J	mg/kg	FCSW010	4/5	82	250	NA	NA			NO	NUT
7440622	Vanadium	4.5	J	23		mg/kg	FCSW010	5/5	NA	23	NA	15** N			YES	ASL
7440666	Zinc	130		1,400		mg/kg	FCSW010	5/5	NA	1,400	NA	2,300 N			NO	BSL
1746016	2,3,7,8-TCDD (TEQ)	18.8		18.8		ng/kg	FCSW008	1/1	NA	18.8	NA	3.9 C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for naphthalene used.

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
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J = Estimated Value
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TABLE 2.8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	Unnamed Creek

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
67663	Chloroform	1.6	J	1.6	J	ug/L	FCSW005	1/3	10	1.6	NA	5.7 C			NO	BSL
79016	Trichloroethylene (TCE)	0.71	J	0.71	J	ug/L	FCSW005	1/3	10	0.71	NA	2.7 C			NO	BSL
56553	Benzo(a)anthracene	0.46	J	0.53	J	ug/L	FCSW006	2/10	10	0.53	NA	0.0044 C			YES	ASL
191242	Benzo(g,h,i)perylene	0.75	J	0.75	J	ug/L	FCSW006	1/10	10	0.75	NA	NE			NO	NTX
85687	Benzyl Butyl Phthalate	0.47	J	0.61	J	ug/L	FCSW006	3/10	10	0.61	NA	3,000 N			NO	BSL
	Carbazole	0.67	J	0.67	J	ug/L	FCSW008	1/10	10	0.67	NA	NE			YES	TX
218019	Chrysene	0.52	J	0.52	J	ug/L	FCSW006	1/10	10	0.52	NA	0.0044 C			YES	ASL
84662	Diethyl Phthalate	1.1	J	1.1	J	ug/L	FCSW011	1/10	10	1.1	NA	23,000 N			NO	BSL
84742	Di-n-Butyl Phthalate	0.55	J	2.6	J	ug/L	FCSW005	2/10	10	2.6	NA	360 N			NO	BSL
117840	Di-n-Octylphthalate	0.54	J	0.54	J	ug/L	FCSW008	1/10	10	0.54	NA	NE			YES	TX
206440	Fluoranthene	0.35	J	0.71	J	ug/L	FCSW006	2/10	10	0.71	NA	150 N			NO	BSL

*The Florida Surface Water Target Levels were used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) U.S. EPA National Recommended Water Quality Criteria-Correction April 1999, human health for consumption of water and organism values
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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N = Non-Carcinogenic

TABLE 2.8 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	Unnamed Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
193395	Indeno(1,2,3-c,d)pyrene	0.64	J	0.64	J	ug/L	FCSW006	1/10	10	0.64	NA	0.0044 C			YES	ASL
120000	Pyrene	0.67	J	0.67	J	ug/L	FCSW006	1/10	10	0.67	NA	18 N			NO	BSL
58899	Gamma BHC (Lindane)	0.0069	J	0.0069	J	ug/L	FCSW013	1/10	0.05	0.0069	NA	0.019 C			NO	BSL
7429905	Aluminum	0.035	J	2.6		mg/L	FCSW002	4/10	0.027 - 0.15	2.6	NA	13* N			NO	BSL
7440382	Arsenic	0.0045	J	0.0045	J	mg/L	FCSW001	1/10	0.0032 - 0.0069	0.0045	NA	0.018 C			NO	BSL
7440393	Barium	0.055	J	0.18	J	mg/L	FCSW002	10/10	NA	0.18	NA	NE N			YES	TX
	Calcium	20		150		mg/L	FCSW002	10/10	NA	150	NA	NE			NO	NUT
18540299	Chromium, Total	0.0018	J	0.0069	J	mg/L	FCSW002	4/10	0.0017	0.0069	NA	NE N			YES	TX
7440508	Copper	0.00175	J	0.014	J	mg/L	FCSW002	3/10	0.0012 - 0.0039	0.014	NA	140 N			NO	BSL
57125	Cyanide	0.0066	J	0.008	J	mg/L	FCSW011	4/10	0.005 - 0.0057	0.008	NA	700 N			NO	BSL
7439896	Iron	1.6		13		mg/L	FCSW003	9/10	0.096	13	NA	0.3 N			YES	ASL

*The Florida Surface Water Target Levels were used

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) U.S. EPA National Recommended Water Quality Criteria-Correction April 1999, human health for consumption of water and organism values
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
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SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2.8 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	Unnamed Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439921	Lead	0.014		0.053		mg/L	FCSW002	3/10	0.0015 - 0.0078	0.053	NA	15 N			NO	BSL
	Magnesium	7		19		mg/L	FCSW002/003	10/10	NA	19	NA	NE			NO	NUT
7439965	Manganese	0.031		0.25		mg/L	FCSW003	10/10	NA	0.25	NA	NE N			YES	TX
7439976	Mercury	0.000079	J	0.0001	J	mg/L	FCSW005	3/10	0.000072	0.0001	NA	0.050 N			NO	BSL
	Potassium	1.6	J	15		mg/L	FCSW003	10/10	NA	15	NA	NE			NO	NUT
	Sodium	31.5		75		mg/L	FCSW003	10/10	NA	75	NA	NE			NO	NUT
7440622	Vanadium	0.0027	J	0.01	J	mg/L	FCSW002	3/10	0.0022 - 0.0032	0.01	NA	26 N			NO	BSL
7440666	Zinc	0.007	J	0.096		mg/L	FCSW002	6/10	0.0059 - 0.013	0.096	NA	1,100 N			NO	BSL

*The Florida Surface Walor Target Levels were used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) U.S. EPA National Recommended Water Quality Criteria-Correction April 1999, human health for consumption of water and organism values
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2.9
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Surficial Aquifer

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/ TBC Value	Potential ARAR/ TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
96128	1,2-Dibromo-3-Chloropropane	0.86	J	1.4	J	ug/L	FCMW001	2/5	10	1.4	NA	0.048	C			YES	ASL
75150	Carbon Disulfide	2.3	J	2.3	J	ug/L	FCMW001	1/5	10	2.3	NA	100	N			NO	BSL
83329	Acenaphthene	0.36	J	0.36	J	ug/L	FCMW001	1/5	10	0.36	NA	37	N			NO	BSL
86748	Carbazole	0.65	J	0.65	J	ug/L	FCMW001	1/5	10	0.65	NA	3.4	C			NO	BSL
106445	Cresols, M&P	1.2	J	1.2	J	ug/L	FCMW005	1/5	10	1.2	NA	18 (6)	N			NO	BSL
53469219	PCB-1242 (Arochlor 1242)	1.4	J	1.4	J	ug/L	FCMW001	1/5	1	1.4	NA	0.034	C			YES	ASL

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

(6) Screening value for 4-methylphenol used.
4-Methylphenol = p-Cresol
3-Methylphenol = m-Cresol

Definitions:
- N/A = Not Applicable
- ND = Not Detected
- NE = Not Established
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- NF = Nonfood

TABLE 2.9 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
5TH AND CLEVELAND

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Surficial Aquifer

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
7429905	Aluminum	275		1,200		ug/L	FCMW005	2/5	0.027 - 0.13	1200	NA	3600	N			NO	BSL
7440382	Arsenic	3.5	J	3.5	J	ug/L	FCMW003	1/5	0.0032	3.5	NA	0.045	C			YES	ASL
7440393	Barium	55	J	95	J	ug/L	FCMW002	5/5	NA	95	NA	260	N			NO	BSL
	Calcium	2,600	J	140,000		ug/L	FCMW002	5/5	NA	140000	NA	NA				NO	NUT
7440484	Cobalt	1.4	J	1.6	J	ug/L	FCMW004	2/5	0.0014	1.6	NA	220	N			NO	BSL
7439896	Iron	50	J	6,600		ug/L	FCMW005	5/5	NA	6600	NA	1,100	N			YES	ASL
7439921	Lead	0.79		1.482		ug/L	FCMW002	2/5	0.44 - 0.52	1.482	NA	15	N			NO	BSL
	Magnesium	1,550	J	26,000		ug/L	FCMW003	5/5	NA	26000	NA	NA				NO	NUT
7439965	Manganese	7.35	J	56		ug/L	FCMW004	5/5	NA	56	NA	88	N			NO	BSL
	Potassium	1,400	J	63,000		ug/L	FCMW003	5/5	NA	63000	NA	NA				NO	NUT
	Sodium	17,000		90,000		ug/L	FCMW004	5/5	NA	90000	NA	NA				NO	NUT
7440622	Vanadium	6.5	J	19	J	ug/L	FCMW001	3/5	0.0022	19	NA	26	N			NO	BSL

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for 4-methylphenol used.
4-Methylphenol = p-Cresol
3-Methylphenol = m-Cresol

Definitions:
N/A = Not Applicable
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SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
NF = Nonfood

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
309002	Aldrin	1.6	J	1.6	J	ug/kg	MMPSS09	1/27	1.8 - 4	1.6	NA	29 C			NO	BSL
57749	Alpha-Chlordane /2	1.9		20	J	ug/kg	LMSB059	9/26	1.8 - 20	20	NA	1,600 C			NO	BSL
60571	Dieldrin	1.4	J	22	J	ug/kg	MPSS05	7/26	3.4 - 15	22	NA	30 C			NO	BSL
72208	Endrin	4.6		4.6		ug/kg	LMSB061	1/26	3.4 - 15	4.6	NA	1,800 N			NO	BSL
72208	Endrin Aldehyde	3.3	J	3.3	J	ug/kg	LMSB061	1/26	3.4 - 15	3.3	NA	1,800 N			NO	BSL
57749	Gamma-Chlordane	2.8		16	J	ug/kg	LMSB132	9/26	1.8 - 8	16	NA	1,600 C			NO	BSL
1024573	Heptachlor Epoxide	0.26	J	3.6	J	ug/kg	LMSB132	2/26	1.8 - 7.2	3.6	NA	53 C			NO	BSL
72548	p,p'-DDD	0.78	J	66	J	ug/kg	LMSB132	9/43	3.4 - 15	66	NA	2,400 C			NO	BSL
72559	p,p'-DDE	0.37	J	210	J	ug/kg	LMSB132	16/48	3.4 - 9.4	210	NA	1,700 C			NO	BSL
50293	p,p'-DDT	1.6	J	880		ug/kg	LMSB132	10/48	3.4 - 48	880	NA	1,700 C			NO	BSL
53469219	PCB-1242 (Arochlor 1242)	66	J	66	J	ug/kg	MPSS06	1/45	34 - 150	66	NA	220 C			NO	BSL
11097691	PCB-1254 (Arochlor 1254)	60	J	60	J	ug/kg	LMSB059	1/25	34 - 150	60	NA	220 C			NO	BSL
11096825	PCB-1260 (Arochlor 1260	52		700		ug/kg	MPSS07	12/26	34 - 50	700	NA	220 C			YES	ASL
108883	Toluene	2	J	2	J	ug/kg	MPSS11	1/13	10 - 13	2	NA	59,000 N			NO	BSL
121142	2,4-Dinitrotoluene	350	J	350	J	ug/kg	LMSB079	1/27	340 - 710	350	NA	120,000 N			NO	BSL
606202	2,6-Dinitrotoluene	520		520		ug/kg	LMSB079	1/27	340 - 710	520	NA	6,100 N			NO	BSL
101553	4-Bromophenyl Phenyl Ethe	80	J	80	J	ug/kg	LMSB079	1/27	340 - 710	80	NA	NA			NO	NUT
106478	4-Chloroaniline	52	J	59	J	ug/kg	LMSB084	2/27	340 - 710	59	NA	240,000 N			NO	BSL
120127	Anthracene	31	J	99	J	ug/kg	LMSB061	3/27	340 - 710	99	NA	2,200,000 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
56553	Benzo(a)anthracene	44	J	710		ug/kg	LMSB061	7/27	340 - 710	710	NA	620	C			YES	ASL
50328	Benzo(a)pyrene	47	J	630		ug/kg	LMSB061	10/27	50 - 710	630	NA	62	C			YES	ASL
	Benzo(b and/or k)fluoranthe	120	J	1,000	J	ug/kg	MPSS14	3/12	350 - 710	1000	NA	620	C			YES	ASL
205992	Benzo(b)fluoranthene	50	J	670		ug/kg	LMSB061	5/15	21 -450	670	NA	620	C			YES	ASL
	Benzo(g,h,i)perylene	50	J	370		ug/kg	LMSB061	6/27	30 - 710	370	NA	2,300,000**	C			NO	BSL
205992	Benzo(k)fluoranthene	45	J	570		ug/kg	LMSB061	5/15	30 - 450	570	NA	6,200	C			YES	CPAH
85687	Benzyl Butyl Phthalate	92	J	100	J	ug/kg	LMSB056	2/28	340 - 710	100	NA	1,200,000	N			NO	BSL
117817	bis(2-ethylhexyl) Phthalate	84	J	9,300		ug/kg	LMSB132	8/27	340 - 830	9300	NA	35,000	C			NO	BSL
86748	Carbazole	84	J	84	J	ug/kg	LMSB061	1/27	340 - 710	84	NA	24,000	C			NO	BSL
218019	Chrysene	55	J	560		ug/kg	MPSS14	9/27	340 - 710	560	NA	62,000	C			YES	CPAH
53703	Dibenz(a,h)anthracene	65	J	150	J	ug/kg	LMSB061	2/27	340 - 710	150	NA	62	C			YES	ASL
84662	Diethyl Phthalate	59	J	59	J	ug/kg	LMSB132	1/27	340 - 710	59	NA	4,900,000	N			NO	BSL
13113	Dimethyl Phthalate	180	J	180	J	ug/kg	LMSB079	1/27	340 - 710	180	NA	100,000,000	N			NO	BSL
84742	Di-n-butyl Phthalate	32	J	1,000		ug/kg	LMSB132	3/29	340 - 710	1000	NA	610,000	N			NO	BSL
206440	Fluoranthene	38	J	1,600		ug/kg	LMSB061	10/27	340 - 710	1600	NA	230,000	N			NO	BSL
103395	Indeno(1,2,3-c,d)pyrene	42	J	410	J	ug/kg	LMSB061	4/27	340 - 710	410	NA	620	C			YES	CPAH
78591	Isophorone	460		460		ug/kg	LMSB079	1/27	340 - 710	460	NA	510,000	C			NO	BSL
85018	Phenanthrene	28	J	490		ug/kg	LMSB132	4/27	340 - 710	490	NA	2,000,000**	N			NO	BSL
129000	Pyrene	79	J	1,000	J	ug/kg	LMSB061	9/27	340- 710	1000	NA	230,000	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
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C = Carcinogenic
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F = Food

TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
7429905	Aluminum	500		20,000		mg/kg	LMSB056	53/53	NA	20,000	NA	7,600 N			YES	ASL
7440360	Antimony	0.58	J	40	J	mg/kg	MPPSS13	33/48	0.41 - 20	40	NA	3.1 N			YES	ASL
7440382	Arsenic	0.47	J	17.5		mg/kg	LMSB051	40/52	0.42 - 0.97	17.5	NA	0.39 C			YES	ASL
7440393	Barium	4.6	J	830		mg/kg	LMSB056	52/52	NA	830	NA	110** N			YES	ASL
7440417	Beryllium	0.062	J	0.21	J	mg/kg	LMSB056	19/52	0.053 - 0.41	0.21	NA	15 N			NO	BSL
7440439	Cadmium	0.11	J	8.2	J	mg/kg	MPSS05	41/52	0.081 - 0.24	8.2	NA	3.7 N			YES	ASL
	Calcium	150	J	88,000		mg/kg	LMSB028	52/52	NA	88,000	NA	NA			NO	NUT
18540299	Chromium, Total	2.3	J	160		mg/kg	LMSB038	49/52	1 - 1.2	160	NA	23 C			YES	ASL
7440484	Cobalt	0.3	J	20		mg/kg	LMSB132	40/53	0.18 - 1	20	NA	470 N			NO	BSL
7440508	Copper	1.4	J	4,200	J	mg/kg	LMSB057	51/53	150 - 660	4,200	NA	110** N			YES	ASL
57125	Cyanide	0.92	J	5.50	J	mg/kg	LMSB051	17/47	0.49 - 1.3	5.5	NA	1.1 N			YES	BSL
7439896	Iron	430		220,000		mg/kg	LMSB132	53/53	NA	220,000	NA	2,300 N			YES	ASL
7439921	Lead	10		4,700	J	mg/kg	LMSB132	98/117	15 - 65	4,700	NA	400 N			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
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TABLE 2.1 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7439954	Magnesium	30	J	6,300		mg/kg	LMSB028	53/53	NA	6,300	NA	NA			NO	NUT
7439965	Manganese	6	J	1,600		mg/kg	LMSB135	53/53	NA	1,600	NA	180 N			YES	ASL
7439976	Mercury	0.0085	J	2.15		mg/kg	LMSB051	47/50	0.0028 - 0.31	2.15	NA	2.3 N			NO	BSL
7440020	Nickel	0.4	J	290	J	mg/kg	LMSB142	51/53	0.42 - 0.44	290	NA	110** N			YES	ASL
	Potassium	21	J	660	J	mg/kg	LMSB092	50/53	6.1 - 9.4	660	NA	NA			NO	NUT
7782492	Selenium	0.81	J	6.6	J	mg/kg	MPSS13	13/53	0.4 - 2	7	NA	39 N			NO	BSL
7440224	Silver	0.22	J	31		mg/kg	LMSB056	44/53	0.18 - 0.24	31	NA	39 N			NO	BSL
7440235	Sodium	48	J	1,500	J	mg/kg	LMSB084	36/53	45 - 60	1,500	NA	NA			NO	NUT
	Thallium	2.9	J	9.3	JN	mg/kg	MPSS04	7/53	0.53 - 1.9	9	NA	0.55 N			YES	ASL
7440622	Vanadium	1.3	J	28	J	mg/kg	LMSB091	53/53	NA	28	NA	15** N			YES	ASL
7440666	Zinc	6.0		5,900		mg/kg	LMSB135	51/53	180 - 330	5,900	NA	2,300 N			YES	ASL
1746016	2,3,7,8-TCDD (TEQ)	0.048	J	67		ng/kg	LMSB092	2/2	NA	67	NA	3.9 C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
ND = Not Detected
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COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection
309002	Aldrin	0.15	J	0.23	J	ug/kg	LMSB318	2/24	1.8 - 25	0.23	NA	29 C			NO	BSL
57749	Alpha-Chlordane /2	0.87	J	68		ug/kg	LMSB051	13/24	2 - 25	68	NA	1,600 C			NO	BSL
319846	Alpha BHC	0.28	J	9.6	J	ug/kg	LMSB313	3/24	1.8 - 25	9.6	NA	90 C			NO	BSL
319857	Beta BHC	6.7	J	6.7	J	ug/kg	LMSB313	1/24	1.8 - 25	6.7	NA	320 C			NO	BSL
	Delta BHC	2.2	J	2.2	J	ug/kg	LMSB088	1/24	1.8 - 25	2.2	NA	320 C			NO	BSL
60571	Dieldrin	0.65	J	72	J	ug/kg	MPSS05	10/24	3.4 - 48	48	NA	30 C			YES	ASL
72208	Endrin	1.1	J	9	J	ug/kg	LMSB088	3/24	3.4 - 48	9	NA	1,800 N			NO	BSL
72208	Endrin Aldehyde	0.58	J	3.6	J	ug/kg	LMSB060	3/24	3.4 - 48	3.6	NA	1,800 N			NO	BSL
58899	Gamma BHC	0.085	J	2	J	ug/kg	LMSB313	2/24	1.8 - 25	2	NA	440 C			NO	BSL
57749	Gamma-Chlordane	0.84	J	61.5		ug/kg	LMSB051	13/24	2- 25	61.5	NA	1,600 C			NO	BSL
1024573	Heptachlor Epoxide	0.57	J	2.4	J	ug/kg	LMSB051	2/24	1.8 - 25	2.4	NA	53 C			NO	BSL
72548	p,p'-DDD	2.1	J	48		ug/kg	LMSB081	12/24	3.8 - 48	48	NA	2,400 C			NO	BSL
72559	p,p'-DDE	2	J	55		ug/kg	LMSB081	11/24	3.5 - 48	55	NA	1,700 C			NO	BSL
50293	p,p'-DDT	1.2	J	472		ug/kg	LMSB132	10/24	3.5 - 48	472	NA	1,700 C			NO	BSL
53469219	PCB-1242 (Arochlor 1242)	75		75		ug/kg	MPSB05	1/24	34 - 480	75	NA	220 C			NO	BSL
12672296	PCB-1248 (Arochlor 1248)	36	J	2550	J	ug/kg	LMSB056	3/24	34 - 440	2250	NA	220 C			YES	ASL
11097691	PCB-1254 (Arochlor 1254)	460	J	2800		ug/kg	MPSB056	3/24	34 - 440	2800	NA	220 C			YES	ASL
11096825	PCB-1260 (Arochlor 1260)	35	J	210	J	ug/kg	LMSB061	6/24	34 - 480	210	NA	220 C			NO	BSL
108883	Toluene	3	J	3	J	ug/kg	MPSB04	1/4	11 - 12	3	NA	59,000 N			NO	BSL
	2-Methylnaphthalene	34	J	50	J	ug/kg	LMSB313	3/23	360 - 2200	50	NA	5,600 N			NO	BSL
106478	4-Chloroaniline	77	J	85	J	ug/kg	LMSB056	2/23	340 - 4400	85	NA	240,000 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
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TABLE 2.2 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (Contaminant Deletion or Selection
120127	Anthracene	30	J	200	J	ug/kg	LMSB079	5/23	380 - 2200	200	NA	2,200,000 N			NO	BSL
83329	Acenaphthene	73	J	200	J	ug/kg	LMSB079	2/23	340 - 2200	200	NA	370,000 N			NO	BSL
	Acenaphthylene	27	J	52	J	ug/kg	LMSB313	2/23	360 - 2200	52	NA	1,100,000** N			NO	BSL
56553	Benzo(a)anthracene	33	J	230	J	ug/kg	LMSB318	3/23	45 - 2200	230	NA	620 C			YES	CPAH
50328	Benzo(a)pyrene	64	J	650		ug/kg	LMSB318	7/19	55.5 - 500	650	NA	62 C			YES	ASL
205992	Benzo(b)fluoranthene	31	J	960		ug/kg	LMSB312	6/20	77.5 - 2200	960	NA	620 C			YES	ASL
	Benzo(g,h,i)perylene	39	J	460		ug/kg	LMSB312	6/23	120 - 220	460	NA	2,300,000** C			NO	BSL
205992	Benzo(k)fluoranthene	61	J	170	J	ug/kg	LMSB318	3/23	49 - 2200	170	NA	620 C			YES	CPAH
117817	bis(2-ethylhexyl) Phthalate	59	J	1800		ug/kg	MPSB05	12/23	340 - 560	1800	NA	35,000 C			NO	BSL
86748	Carbazole	32	J	110	J	ug/kg	LMSB079	4/23	360 - 2200	110	NA	24,000 C			NO	BSL
218019	Chrysene	26	J	890		ug/kg	LMSB079	7/23	41.5 - 2200	890	NA	62,000 C			YES	CPAH
53703	Dibenz(a,h)anthracene	120	J	120	J	ug/kg	LMSB079	1/24	340 - 2200	120	NA	62 C			YES	ASL
132649	Dibenzofuran	68	J	68	J	ug/kg	LMSB079	1/23	340 - 2200	68	NA	29,000 N			NO	BSL
84742	Di-n-butyl Phthalate	41	J	43	J	ug/kg	LMSB061	2/23	340 - 2200	43	NA	NA			NO	NUT
206440	Fluoranthene	41	J	1300		ug/kg	LMSB079	9/23	410 - 2200	1300	NA	230,000 N			NO	BSL
86737	Fluorene	59	J	130	J	ug/kg	LMSB079	4/23	360 - 2200	130	NA	260,000 N			NO	BSL
103395	Indeno(1,2,3-c,d)pyrene	93	J	430	J	ug/kg	LMSB312	7/23	38 - 2200	430	NA	620 C			YES	CPAH
91203	Naphthalene	34	J	110	J	ug/kg	LMSB079	2/23	360 - 2200	110	NA	5,600 N			NO	BSL
85018	Phenanthrene	25	J	1000		ug/kg	LMSB152	7/23	400 - 2200	1000	NA	2,000,000** N			NO	BSL
129000	Pyrene	120	J	1600	J	ug/kg	LMSB079	6/23	380 - 2200	1600	NA	230,000 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes
- Selection Reason:
  - Infrequent Detection but Associated Historically (HIST)
  - Frequent Detection (FD)
  - Toxicity Information Available (TX)
  - Above Screening Levels (ASL)
  - Carcinogenic PAHs evaluated as a group (CPAH)
- Deletion Reason:
  - Infrequent Detection (IFD)
  - Background Levels (BKG)
  - No Toxicity Information (NTX)
  - Essential Nutrient (NUT)
  - Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- ND = Not Detected
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TABLE 2.2 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429905	Aluminum	1,300		26,000		mg/kg	LMSB024	42/42	NA	26,000	NA	7,600 N			YES	ASL
7440360	Antimony	2	J	73		mg/kg	LMSB057	33/42	0.56 - 2	73	NA	3.1 N			YES	ASL
7440382	Arsenic	0.88	J	58		mg/kg	LMSB074	39/42	0.52 - 1.7	58	NA	0.39 C			YES	ASL
7440393	Barium	14	J	1400		mg/kg	LMSB091	42/42	NA	1400	NA	110** N			YES	ASL
7440417	Beryllium	0.068	J	1.4		mg/kg	LMSB132	26/41	0.067 - 0.6	1.4	NA	15 N			NO	BSL
7440439	Cadmium	0.21	J	100		mg/kg	LMSB060	40/42	0.32 - 0.22	100	NA	3.7 N			YES	ASL
	Calcium	830	J	44,000		mg/kg	MPSB04	42/42	NA	44,000	NA	NA			NO	NUT
18540299	Chromium, Total	6.1	J	370		mg/kg	LMSB036	42/42	NA	370	NA	23 C			YES	ASL
7440484	Cobalt	0.44	J	28	J	mg/kg	LMSB051	42/43	0.22 - 0.22	28	NA	470 N			NO	BSL
7440508	Copper	9.1		5,000		mg/kg	LMSB037	42/42	NA	5,000	NA	110** N			YES	ASL
57125	Cyanide	0.65	J	7.6	J	mg/kg	LMSB028	21/42	0.53 - 3.3	7.6	NA	1.1 N			YES	ASL
7439896	Iron	2,400	J	290,000	J	mg/kg	LMSB058	41/41	NA	290,000	NA	2,300 N			YES	ASL
7439921	Lead	1.4	J	4,300		mg/kg	LMSB016	126/218	10 - 56	4,300	NA	400 N			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

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(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
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TABLE 2.2 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7439954	Magnesium	140	J	3,900	J	mg/kg	LMSB152	42/42	NA	6,300	NA	NA			NO	NUT
7439965	Manganese	13		5,700	J	mg/kg	LMSB026	41/41	NA	5,700	NA	180 N			YES	ASL
7439976	Mercury	0.0097	J	5.1	J	mg/kg	LMSB088	40/42	0.05 - 0.2	5.1	NA	2.3 N			YES	ASL
7440020	Nickel	1.8	J	1800		mg/kg	LMSB079	42/42	NA	1800	NA	110** N			YES	ASL
	Potassium	47	J	1700		mg/kg	LMSB026	42/42	NA	1700	NA	NA			NO	NUT
	Selenium	0.61	J	19		mg/kg	LMSB060	12/42	0.44 - 2.9	19	NA	39 N			NO	BSL
7440224	Silver	0.27	J	23		mg/kg	LMSB059	36/42	0.21 - 1	23	NA	39 N			NO	BSL
7440235	Sodium	61	J	3700		mg/kg	LMSB026	37/42	51 - 210	3700	NA	NA			NO	NUT
	Thallium	0.78	J	12	J	mg/kg	MPSB05	8/42	0.59 - 4	12	NA	0.55 N			YES	ASL
7440622	Vanadium	3.6	J	49	J	mg/kg	LMSB017	42/42	NA	49	NA	15** N			YES	ASL
7440666	Zinc	78.0		4,100	J	mg/kg	LMSB135	41/41	NA	4100	NA	2,300 N			YES	ASL
1746016	2,3,7,8-TCDD (TEQ)	39		93		ng/kg	LMSB051	3/3	NA	93	NA	3.9 C			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

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(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes

Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
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- SQL = Sample Quantitation Limit
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TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	The Park

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
57749	Alpha-Chlordane /2	1.1	J	1.8	J	ug/kg	LMSW010	3/4	1.1-5.1	1.8	NA	1,600	C			NO	BSL
57749	Gamma-Chlordane	0.76	J	2	J	ug/kg	LMSW010	2/4	0.76-5.4	2	NA	1,600	C			NO	BSL
72559	p,p'-DDE	0.37	J	7.1	J	ug/kg	LMSW008	4/4	0.37-7.1	7.1	NA	1,700	C			NO	BSL
50293	p,p'-DDT	2.8	J	34	J	ug/kg	LMSW008	2/4	2.8-34	34	NA	1,700	C			NO	BSL
1.1E+007	PCB-1260 (Arochlor 1260)	37	J	410	J	ug/kg	LMSW008	3/4	37-410	410	NA	220	C			YES	ASL
56553	Benzo(a)anthracene	35	J	35	J	ug/kg	LMSW008	1/4	35-35	35	NA	620	C			NO	BSL
117817	bis(2-ethylhexyl) Phthalate	73	J	2800	J	ug/kg	LMSW004	4/4	73-2800	2800	NA	35,000	C			NO	BSL
218019	Chrysene	38	J	38	J	ug/kg	LMSW008	1/4	38--38	38	NA	62,000	C			NO	BSL
85018	Phenanthrene	29	J	29	J	ug/kg	LMSW008	1/4	29-29	29	NA	2,000,000**	N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

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(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
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SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
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F = Food

TABLE 2.3 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	The Park

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
7429905	Aluminum	1,400		3,300		mg/kg	LMSW008	4/4	NA	3,300	NA	7,600 N			NO	BSL
7440360	Antimony	1.2	J	18	J	mg/kg	LMSW008	4/4	NA	18	NA	3.1 N			YES	ASL
7440382	Arsenic	2.7		12		mg/kg	LMSW008	4/4	NA	12	NA	0.39 C			YES	ASL
7440393	Barium	52	J	240		mg/kg	LMSW008	4/4	NA	240	NA	110** N			YES	ASL
7440417	Beryllium	0.077	J	0.092	J	mg/kg	LMSW008	2/4	0.063-0.092	0.092	NA	15 N			NO	BSL
7440439	Cadmium	1	J	2.9	J	mg/kg	LMSW004	4/4	NA	2.9	NA	3.7 N			NO	BSL
	Calcium	2,500		12,000		mg/kg	LMSW001	4/4	NA	12,000	NA	NA			NO	NUT
18540299	Chromium, Total	38		61		mg/kg	LMSW005	4/4	NA	61	NA	23 C			YES	ASL
7440484	Cobalt	0.91	J	5.3	J	mg/kg	LMSW004	4/4	NA	5.3	NA	470 N			NO	BSL
7440508	Copper	220		500		mg/kg	LMSW005	4/4	NA	500	NA	110** N			YES	ASL
7439896	Iron	4,500		84,000		mg/kg	LMSW004	4/4	NA	84,000	NA	2,300 N			YES	ASL
7439921	Lead	91.0		600		mg/kg	LMSW008	4/4	NA	600	NA	400 N			YES	ASL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.3 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	The Park

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439954	Magnesium	180	J	670	J	mg/kg	LMSW008	4/4	NA	670	NA	NA			NO	NUT
7439965	Manganese	33	J	280	J	mg/kg	LMSW004	4/4	NA	280	NA	180 N			YES	ASL
7439976	Mercury	0.1	J	0.45	J	mg/kg	LMSW008	4/4	NA	0.45	NA	2.3 N			NO	BSL
7440020	Nickel	10		52		mg/kg	LMSW004	4/4	NA	52	NA	110** N			NO	BSL
	Potassium	100	J	180	J	mg/kg	LMSW008	4/4	NA	180	NA	NA			NO	NUT
	Selenium	1.6		1.6		mg/kg	LMSW008	1/4	0.48-0.67	1.6	NA	39 N			NO	BSL
7440224	Silver	0.93	J	3.4	J	mg/kg	LMSW008	4/4	NA	3.4	NA	39 N			NO	BSL
7440235	Sodium	300	J	300	J	mg/kg	LMSW008	1/4	54-150	300	NA	NA			NO	NUT
7440622	Vanadium	3.2	J	6.9	J	mg/kg	LMSW008	4/4	NA	6.9	NA	15** N			NO	BSL
7440666	Zinc	290	J	750	J	mg/kg	LMSW001	4/4	NA	750	NA	2,300 N			NO	BSL

**The Florida Soil Cleanup Target Level (SCTL) was used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, residential values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
ND = Not Detected
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic
W = Water
NF = Nonfood
F = Food

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	Unnamed Tributary

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value (2)	Screening Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
75092	Methylene Chloride	2.5	J	2.5	J	ug/L	LMSW009	1/4	10	2.5	NA	4.7 C			NO	BSL
56553	Benzo(a)anthracene	0.62	J	0.97	J	ug/L	LMSW007	2/11	10	0.97	NA	0 0044 C			YES	ASL
50328	Benzo(a)pyrene	0.56	J	0.95	J	ug/L	LMSW007	2/11	10	0.95	NA	0.0044 C			YES	ASL
205992	Benzo(b)fluoranthene	1.3	J	1.3	J	ug/L	LMSW007	1/11	10	1.3	NA	0.0044 C			YES	ASL
205992	Benzo(k)fluoranthene	1.3	J	1.3	J	ug/L	LMSW007	1/11	10	1.3	NA	0.0044 C			YES	ASL
85687	Benzyl Butyl Phthalate	0.69	J	0.69	J	ug/L	LMSW007	1/11	10	0.69	NA	3,000 C			NO	BSL
117817	bis(2-ethylhexyl)phthalate	1.6	J	1.6	J	ug/L	LMSW015	1/11	2.1 - 10	1.6	NA	1.8 C			NO	BSL
218019	Chrysene	0.61	J	1.1	J	ug/L	LMSW007	2/11	10	1.1	NA	0.0044 C			YES	ASL
84742	Di-n-Butyl Phthalate	0.36	J	0.36	J	ug/L	LMSW009	1/11	10	0.36	NA	2,700 N			NO	BSL
117840	Di-n-Octylphthalate	1.6	J	1.8	J	ug/L	LMSW007	2/11	10	1.8	NA	NE N			YES	TX
206440	Fluoranthene	0.73	J	0.76	J	ug/L	LMSW024	2/11	10	0.76	NA	300 N			NO	BSL

*The Florida Surface Water Target Levels were used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) U.S. EPA National Recommended Water Quality Criteria-Correction April 1999, human health for consumption of water and organism values

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for endrin used.

(7) Screening value for Pyrene was used

Definitions:
N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2.4 (Continued)
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITE
LONNIE C. MILLER

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	Unnamed Tributary

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(4) Rationale for Contaminant Deletion or Selection
7429905	Aluminum	0.28		5.85		ug/L	LMSW012	8/11	0.07 - 0.2	5.85	NA	13* N			NO	BSL
7440382	Arsenic	0.0109	J	0.03		ug/L	LMSW010	2/11	0.0032 - 0.00495	0.03	NA	0.018 C			YES	ASL
7440393	Barium	0.024	J	1.1		ug/L	LMSW010	11/11	NA	1.1	NA	NE N			YES	TX
7440439	Cadmium	0.0039	J	0.0048	J	ug/L	LMSW010	2/11	0.00071	0.0048	NA	NE N			YES	TX
	Calcium	56		170		ug/L	LMSW014	11/11	NA	170	NA	NE			NO	NUT
18540299	Chromium, Total	0.0175		0.045		ug/L	LMSW010	2/11	0.0017 - 0.00355	0.045	NA	NE C			YES	TX
7440484	Cobalt	0.0019	J	0.0019	J	ug/L	LMSW010	1/11	0.0014	0.0019	NA	NE N			YES	TX
7440508	Copper	0.0026	J	0.29		ug/L	LMSW010	4/11	0.0013 - 0.0053	0.29	NA	1,300 N			NO	BSL
57125	Cyanide	0.0057	J	0.015		ug/L	LMSW015	2/11	0.005 - 0.012	0.015	NA	700 N			NO	BSL
7439896	Iron	0.35		160		ug/L	LMSW010	11/11	NA	160	NA	300 N			NO	BSL
7439921	Lead	0.0018	J	0.3		ug/L	LMSW010	5/11	0.0015 - 0.0056	0.3	NA	0.015 N			YES	ASL
7439954	Magnesium	9		340		ug/L	LMSW013	11/11	NA	340	NA	NE N			NO	NUT
7439965	Manganese	0.110		0.70		ug/L	LMSW012	9/11	0.0074 - 0.0097	0.70	NA	50 N			NO	BSL
7439976	Mercury	0.000265		0.00044		ug/L	LMSW010	2/11	0.000072	0.00044	NA	0.050 N			NO	BSL
7440020	Nickel	0.0125	J	0.022	J	ug/L	LMSW010	2/11	0.0047	0.022	NA	610 N			NO	BSL
	Potassium	1.6	J	130		ug/L	LMSW013	11/11	NA	130	NA	NE N			NO	NUT
7440224	Silver	0.0022	J	0.0032	J	ug/L	LMSW010	2/11	0.0019	0.0032	NA	NE N			YES	TX
7440235	Sodium	11		2,700		ug/L	LMSW013	11/11	NA	2,700	NA	NE			NO	NUT
7440622	Vanadium	0.0033	J	0.024	J	ug/L	LMSW010	5/11	0.0022 - 0.004	0.024	NA	NE N			YES	TX
7440666	Zinc	0.0065	J	0.78		ug/L	LMSW010	7/11	0.0059 - 0.024	0.78	NA	9,100 N			NO	BSL

*The Florida Surface Water Target Levels were used.

(1) Minimum/maximum detected concentration.

(2) Background concentrations are not being used for this evaluation.

(3) U.S. EPA National Recommended Water Quality Criteria-Correction April 1999, human health for consumption of water and organism values

(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

(6) Screening value for endrin used.

(7) Screening value for pyrene used.

Definitions: N/A = Not Applicable
ND = Not Detected
NE = Not Established
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
n = Presumptive evidence of material
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Surficial Aquifer

CAS Number	Chemical	(1) Minimum Concentration	Minimum Qualifier	(1) Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	(2) Background Value	(3) Screening Toxicity Value	Potential ARAR/ TBC Value	Potential ARAR/ TBC Source	COPC Flag	(4 Rationale for Contaminant Deletion or Selection
115297	Alpha endosulfan	0.013	J	0.013	J	ug/L	LMMW007	1/6	0.05	0.013	NA	22 N			NO	BSL
76131	1,1,2-Trichloro-1,2,2-Trifluoroethane	0.32	J	0.32	J	ug/L	LMMW002	1/6	10	0.32	NA	5,900 N			NO	BSL
156592	cis-1,2-Dichloroethylene	16		16		ug/L	LMMW005	1/6	10	16	NA	6.1 N			YES	ASL
75014	Vinyl Chloride	0.54	J	0.54	J	ug/L	LMMW005	1/6	10	0.54	NA	0.02 C			YES	ASL
	Cresols, M&P	75		75		ug/L	LMMW007	1/6	10	75	NA	18 N			YES	ASL
108952	Phenol	17		17		ug/L	LMMW007	1/6	10	17	NA	2,200 N			NO	BSL
7429905	Aluminum	0.75		0.75		mg/L	LMMW001	1/6	0.27	0.75	0.02	3.6 N			NO	BSL
7440393	Barium	0.017	J	0.13	J	mg/L	LMMW004	6/6	NA	0.13	0.03	0.26 N			NO	BSL
7440439	Cadmium	0.0034	J	0.0034	J	mg/L	LMMW004	1/6	0.00071	0.0034	ND	0.0018 N			YES	ASL
	Calcium	1.5	J	84		mg/L	LMMW004	6/6	NA	84	5.2	NA			NO	NUT
7440484	Cobalt	0.0028	J	0.0028	J	mg/L	LMMW004	1/6	0.0014	0.0028	ND	0.22 N			NO	BSL
7439896	Iron	0.35		1.2		mg/L	LMMW004	6/6	NA	1.2	3.9	1.1 N			NO	BKG
7439921	Lead	0.0019	J	0.0028		mg/L	LMMW005	3/6	0.0015-0.88	0.0028	8.9	0.015 N			NO	BSL
7439954	Manganese	0.05		0.16		mg/L	LMMW003	5/6	0.0052	0.16	0.013	0.088 N			YES	ASL
7439965	Magnesium	0.082		12		mg/L	LMMW04/05	6/6	NA	12	1.3	NA			NO	NUT
7440020	Nickel	0.0058	J	0.0058	J	mg/L	LMMW004	1/6	0.0047	0.0058	ND	0.073 N			NO	BSL
	Potassium	0.65	J	8.4		mg/L	LMMW004	6/6	NA	8.4	0.86	NA			NO	NUT
7440235	Sodium	4	J	47		mg/L	LMMW004	6/6	NA	47	7.4	NA			NO	NUT

(1) Minimum/maximum detected concentration.
(2) Background concentrations are not being used for this evaluation.
(3) Region 9 Preliminary Remediation Goals (PRGs) November 2000, tap water values equal to a carcinogenic risk of 10-6 or a hazard quotient of 0.1.
(4) EPA Region IV does not use comparisons to ARAR/TBC value to screen COPCs. However, potential ARAR/TBC values are presented in the remedial goal option section, as appropriate.
(5) Rationale Codes

Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)
- Carcinogenic PAHs evaluated as a group (CPAH)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- ND = Not,Detected
- NE = Not Established
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- n = Presumptive evidence of material
- C = Carcinogenic
- N = Non-Carcinogenic
- NF = Nonfood

Appendix D

Medium-Specific Exposure Point Concentration Summary
(Tables 3.1 thru 3.10 from BHHRA)

TABLE 3.1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Log Normal Data (2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	354	485	720		mg/kg	0.0485	95 % UCL	95 % UCL			
Benzo(a)pyrene	ug/kg	332	470	680		mg/kg	0.470	95 % UCL	95 % UCL			
Benzo(b)fluoranthene	ug/kg	397	NC	820		mg/kg	0.082	MAX	MAX			
Benzo(b and/or k)fluoranthene*	ug/kg	547	1,451	1,800	J	mg/kg	0.145	95 % UCL	95 % UCL			
Benzo(k)fluoranthene	ug/kg	488	NC	720		mg/kg	0.0072	MAX	MAX			
Chrysene	ug/kg	283	502	780	J	mg/kg	0.000502	95 % UCL	95 % UCL			
Indeno(1,2,3-cd)pyrene	ug/kg	133	306	340	J	mg/kg	0.0306	95 % UCL	95 % UCL			
CPAH (TEF)	ug/kg	NA	NA	NA		mg/kg	0.784	NA	NA			
PCB-1260	ug/kg	269	353	1,900		mg/kg	0.353	MAX	MAX			
2,3,7,8-TCDD (TEQ)	ng/kg	23.2	60.7	200		mg/kg	0.0000607	95 % UCL	95 % UCL			
Aluminum	mg/kg	3,812	6,073	28,000		mg/kg	6,073	95 % UCL	95 % UCL			
Antimony	mg/kg	20	19.1	36.5		mg/kg	19.1	95 % UCL	95 % UCL			
Arsenic	mg/kg	2.6	5.4	5.7		mg/kg	5.4	95 % UCL	95 % UCL			
Barium	mg/kg	119.0	355	530		mg/kg	355	95 % UCL	95 % UCL			
Cadmium	mg/kg	1.5	4.65	9.4		mg/kg	4.65	95 % UCL	95 % UCL			
Chromium (Total)	mg/kg	11.0	26	74	J	mg/kg	26	95 % UCL	95 % UCL			
Copper	mg/kg	70.4	787	1,800	J	mg/kg	787	95 % UCL	95 % UCL			
Cyanide	mg/kg	1.2	0.43	1.2		mg/kg	0.43	95 % UCL	95 % UCL			
Iron	mg/kg	9,311	28,826	78,000		mg/kg	28,826	95 % UCL	95 % UCL			
Lead	mg/kg	1,400	NC	3,500		mg/kg	1,400	Arith. Mean	Arith. Mean			
Manganese	mg/kg	116	280	720		mg/kg	280	95 % UCL	95 % UCL			
Vanadium	mg/kg	8.11	13	26		mg/kg	13	95 % UCL	95 % UCL			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.2
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Forest Street Site Proper (Area 1)

Chemical of Potential Concern	Units	Arithmetic Mean (2)	95% UCL of Log Normal Data (3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	209	NC	340	J	mg/kg	0.034	Max	Max			
Benzo(a)pyrene	ug/kg	239	NC	380	J	mg/kg	0.380	Max	Max			
Benzo(band/or k) fluoranthene*	ug/kg	447	NC	680	J	mg/kg	0.00068	Max	Max			
Chrysene	ug/kg	188	NC	340	J	mg/kg	0.00034	Max	Max			
Dibenzo(a,h)anthracene	ug/kg	40	NC	40	J	mg/kg	0.040	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	122	NC	190	J	mg/kg	0.019	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	0.474	Max	Max			
2,3,7,8-TCDD (TEQ)	ng/kg	40	N/A	81		mg/kg	0.000081	Max	Max			
Aluminum	mg/kg	663	5,724	8,700		mg/kg	5,724	Max	Max			
Antimony	mg/kg	14	269.39	77	J	mg/kg	77	Max	Max			
Arsenic	mg/kg	44	2,030.58	310	J	mg/kg	310	Max	Max			
Barium	mg/kg	252	247,815	1,500	J	mg/kg	1,500	Max	Max			
Cadmium	mg/kg	1,627	4,045,423	13,000		mg/kg	13,000	Max	Max			
Chormium (Total)	mg/kg	12	36	70	J	mg/kg	36	Max	Max			
Cobalt	mg/kg	69	1,523	530	J	mg/kg	530	Max	Max			
Copper	mg/kg	10,241	113,442,936	71,000		mg/kg	71,000	Max	Max			
Cyanide	mg/kg	0.8	0.83	1.25		mg/kg	0.83	95 % UCL	95 % UCL			
Iron	mg/kg	27,106	552,832	150,000		mg/kg	150,000	Max	Max			
Lead	mg/kg	254	NC	5,310	J	mg/kg	254	Arith. Mean	Arith. Mean			
Manganese	mg/kg	224	3,741	1,800		mg/kg	1,800	Max	Max			
Mercury	mg/kg	2	99.75	13		mg/kg	13	Max	Max			
Nickel	mg/kg	32	615	200	J	mg/kg	200	Max	Max			
Silver	mg/kg	46	18,640	180		mg/kg	180	Max	Max			
Thallium	mg/kg	6.9	5.19	7	J	mg/kg	5.19	95 % UCL	95 % UCL			
Vanadium	mg/kg	256	20,369	2,000		mg/kg	2,000	Max	Max			
Zinc	mg/kg	330	45,128	3,800		mg/kg	3,800	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	I-10/I-95 Interchange East

Chemical of Potential Concern	Units	Arithmetic Mean (2)	95% UCL of Log Normal Data (3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	710	NC	710		mg/kg	0.071	Max	Max			
Benzo(a)pyrene	ug/kg	780	NC	780		mg/kg	0.780	Max	Max			
Benzo(b) fluoranthene*	ug/kg	930	NC	930		mg/kg	0.093	Max	Max			
Benzo(k) fluoranthene*	ug/kg	840	NC	840		mg/kg	0.0084	Max	Max			
Chrysene	ug/kg	770	NC	770		mg/kg	0.00077	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	470	NC	470		mg/kg	0.047	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	1.0	Max	Max			
Arsenic	mg/kg	1.59	1.73	3.1		mg/kg	1.73	95% UCL	95% UCL			
Lead	mg/kg	320	NC	1,013		mg/kg	320	Arith. Mean	Arith. Mean			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	I-10/I-95 Interchange East

Chemical of Potential Concern	Units	Arithmetic Mean(1)	95% UCL of Log Normal Data(2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	6.8	NC	6.8		mg/kg	6.8	Max	Max			
Lead	mg/kg	140	NC	1,030		mg/kg	140	Arith. Mean	Arith. Mean			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(2) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(3) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.5
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	I-10/I-95 Interchange West

Chemical of Potential Concern	Units	Arithmetic Mean(1)	95% UCL of Log Normal Data(2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	5.7	NC	9.3		mg/kg	9.3	Max	Max			
Cyanide	mg/kg	16	NC	16		mg/kg	16	Max	Max			
Lead	mg/kg	319	NC	1,010		mg/kg	319	Arith. Mean	Arith. Mean			

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(2) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(3) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.6
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	I-10/I-95 Interchange West

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Log Normal Data (2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	7.06	NC	13		mg/kg	13	Max	Max			
Iron	mg/kg	41,900	NC	180,000		mg/kg	180,000	Max	Max			
Lead	mg/kg	384	NC	1,480		mg/kg	384	Arith. Mean	Arith. Mean			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(2) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(3) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.7
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Area North of McCoy's Creek

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Normal Data (2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	1.84	NC	3.2	J	mg/kg	3.2	Max	Max			

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration, for duplicate sample results, the average value was used in the calculation.

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

1 This column contains the arithmetic average of detected and non-detected concentrations.

2 Per EPA Region IV guidance (EPA, 1996a), the groundwater exposure point concentration should be the arithmetic average of the wells in the highly concentrated area of the plume. Therefore, the 95% UCL is not calculated for this medium.

3 Per EPA Region IV guidance (EPA, 1996a).

4 Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.7a
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Area North of McCoy's Creek

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Normal Data (2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	1.84	NC	3.2	J	mg/kg	3.2	Max	Max			
Barium	mg/kg	32.6	NC	140	J	mg/kg	140	Max	Max			
Cyanide	mg/kg	1.39	NC	2.2		mg/kg	2.2	Max	Max			
Iron	mg/kg	3645	NC	5,800	J	mg/kg	5,800	Max	Max			
Manganese	mg/kg	68.7	NC	190	J	mg/kg	190	Max	Max			

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration, for duplicate sample results, the average value was used in the calculation.

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

1 This column contains the arithmetic average of detected and non-detected concentrations.

2 Per EPA Region IV guidance (EPA, 1996a), the groundwater exposure point concentration should be the arithmetic average of the wells in the highly concentrated area of the plume. Therefore, the 95% UCL is not calculated for this medium.

3 Per EPA Region IV guidance (EPA, 1996a).

4 Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.8
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Area North of McCoy's Creek

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Log Normal Data (2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	2.15	NC	3.1		mg/kg	3.1	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(2) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(3) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.8a
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Area North of McCoy's Creek

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Log Normal Data (2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency (3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	mg/kg	2.15	NC	3.1		mg/kg	3.1	Max	Max			
Barium	mg/kg	87.5	NC	160		mg/kg	160	Max	Max			
Iron	mg/kg	4,850	NC	5,900		mg/kg	5,900	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(2) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(3) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.9
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	McCoy's Creek

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/L	1.32	NC	2	J	mg/L	0.0002	Max	Max			
Benzo(a)pyrene	ug/L	2.2	NC	2.2	J	mg/L	0.0022	Max	Max			
Benzo(b)fluoranthene	ug/L	2.2	NC	2.2	J	mg/L	0.00022	Max	Max			
Benzo(k)fluoranthene	ug/L	1.7	NC	1.7	J	mg/L	0.000017	Max	Max			
bis(2-ethylhexyl)phthalate	ug/L	6.1	NC	10	J	mg/L	0.01	Max	Max			
Chrysene	ug/L	1.37	NC	2.2	J	mg/L	0.0000022	Max	Max			
Dibenz(a,h)anthracene	ug/L	1.1	NC	1.1	J	mg/L	0.0011	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/L	1.38	NC	2.1	J	mg/L	0.00021	Max	Max			
CPAH TEF (1)	ug/L	N/A	NC	N/A	J	mg/L	0.0039	N/A	N/A			
bis(2-ethylhexyl)phthalate	ug/L	6.1	NC	10	J	mg/L	0.01	Max	Max			
Barium	mg/L	0.049	NC	0.064	J	mg/L	0.064	Max	Max			
Manganese	mg/L	0.062	NC	0.0795		mg/L	0.0795	Max	Max			
Iron	mg/L	0.04	NC	0.42		mg/L	0.42	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.10
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
FOREST STREET INCINERATOR

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Surficial Aquifer

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Barium	mg/L	0.33	NC	0.35		mg/L	0.33	Arithmetic Mean	Arithmetic Mean			
Cyanide	mg/L	0.0073	NC	0.0073		mg/L	0.0073	Arithmetic Mean	Arithmetic Mean			
Iron	mg/L	16	NC	24		mg/L	16	Arithmetic Mean	Arithmetic Mean			
Manganese	mg/L	0.53	NC	0.75		mg/L	0.53	Arithmetic Mean	Arithmetic Mean			

The plume consist of groundwater samples FSMW005, FSMW008, and FSMW014.

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Emmett Reed Community Center

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	240	NC	240	J	mg/kg	0.024	Max	Max			
Benzo(a)pyrene	ug/kg	260	NC	260	J	mg/kg	0.26	Max	Max			
Benzo(b and/or k) fluoranthene*	ug/kg	240	NC	260	J	mg/kg	0.026	Max	Max			
Chrysene	ug/kg	250	NC	250	J	mg/kg	0.00025	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	130	NC	130		mg/kg	0.013	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	0.323	N/A	N/A			
2,3,7,8-TCDD (TEQ)	ug/kg	13	NC	45	J	mg/kg	0.000045	Max	Max			
Antimony	mg/kg	1.9	1.8	3.2	J	mg/kg	1.8	95% UCL-T	95% UCL-T			
Arsenic	mg/kg	3.7	3.0	4.2		mg/kg	3.0	95% UCL-T	95% UCL-T			
Barium	mg/kg	59.6	170	370	J	mg/kg	170	95% UCL-T	95% UCL-T			
Copper	mg/kg	25	71	110	J	mg/kg	71	95% UCL-T	95% UCL-T			
Iron	mg/kg	4,191	6,956	14,000		mg/kg	6,956	95% UCL-T	95% UCL-T			
Lead	mg/kg	179	NC	950		mg/kg	179	Arith. Mean	Arith. Mean			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.2
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Medium:	Emmett Reed Community Center

Chemical of Potential Concern	Units	Arithmetic Mean(1)	95% UCL of Log Normal Data(2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	470	NC	470		mg/kg	0.047	Max	Max			
Benzo(a)pyrene	ug/kg	460	NC	460		mg/kg	0.46	Max	Max			
Benzo(b and/or k)fluoranthene*	ug/kg	490	NC	530		mg/kg	0.053	Max	Max			
Chrysene	ug/kg	500	NC	500		mg/kg	0.0005	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	260	NC	260	J	mg/kg	0.026	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	0.587	N/A	N/A			
2,3,7,8-TCDD (TEQ)	ng/kg	27	NC	27		mg/kg	0.000027	Max	Max			
Antimony	mg/kg	17	NC	17	J	mg/kg	17	Max	Max			
Arsenic	mg/kg	10	NC	20	J	mg/kg	20	Max	Max			
Barium	mg/kg	559	NC	1,100	J	mg/kg	1,100	Max	Max			
Cadmium	mg/kg	4	NC	4		mg/kg	4	Max	Max			
Chromium	mg/kg	20	NC	38		mg/kg	38	Max	Max			
Copper	mg/kg	339	NC	670		mg/kg	670	Max	Max			
Iron	mg/kg	30,400	NC	59,000		mg/kg	59,000	Max	Max			
Lead	mg/kg	235	NC	3,200		mg/kg	235	Arith. Mean	Arith. Mean			
Manganese	mg/kg	415	NC	820		mg/kg	820	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	The Park - Emmett Reed

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	864	NC	3,200		mg/kg	0.32	Max	Max			
Benzo(a)pyrene	ug/kg	668	NC	3,000		mg/kg	3.00	Max	Max			
Benzo(b and/or k)fluoranthene*	ug/kg	733	NC	1,700		mg/kg	0.17	Max	Max			
Benzo(b)fluoranthene	ug/kg	1,515	NC	4,100		mg/kg	0.41	Max	Max			
Benzo(k)fluoranthene	ug/kg	777	NC	1,900		mg/kg	0.019	Max	Max			
Chrysene	ug/kg	887	NC	3,200		mg/kg	0.0032	Max	Max			
Dibenz(a,h)anthracene	ug/kg	243	NC	570		mg/kg	0.57	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	464	NC	1,200		mg/kg	0.12	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	4.612	N/A	N/A			
PCB-1260 (Aroclor 1260)	ug/kg	379	NC	720		mg/kg	0.720	Max	Max			
2,3,7,8-TCDD (TEQ)	ng/kg	13.3	30	41		mg/kg	0.000030	95% UCL-T	95% UCL-T			
Antimony	mg/kg	232.5	NC	910		mg/kg	910	Max	Max			
Arsenic	mg/kg	9	NC	20		mg/kg	20	Max	Max			
Barium	mg/kg	152	NC	550	J	mg/kg	550	Max	Max			
Cadmium	mg/kg	1	NC	4.9		mg/kg	4.9	Max	Max			
Chromium (Total)	mg/kg	13	NC	28		mg/kg	28	Max	Max			
Copper	mg/kg	124	NC	440	J	mg/kg	440	Max	Max			
Iron	mg/kg	13,175	NC	32,500		mg/kg	32,500	Max	Max			
Lead	mg/kg	1,372	NC	6,000		mg/kg	1,372	Arith. Mean	Arith. Mean			
Manganese	mg/kg	130	NC	310		mg/kg	310	Max	Max			

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

N/A - Not Applicable

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	The Park - Emmett Reed

Chemical of Potential Concern	Units	Arithmetic Mean(1)	95% UCL of Log Normal Data(2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	610	NC	1,900		mg/kg	0.19	Max	Max			
Benzo(a)pyrene	ug/kg	678	NC	2,200		mg/kg	2.20	Max	Max			
Benzo(b and/or k)fluoranthene*	ug/kg	1021	NC	2,000	J	mg/kg	0.20	Max	Max			
Benzo(b)fluoranthene	ug/kg	337	NC	480		mg/kg	0.048	Max	Max			
Benzo(k)fluoranthene	ug/kg	343	NC	430		mg/kg	0.0043	Max	Max			
Chrysene	ug/kg	718	NC	2,400		mg/kg	0.0024	Max	Max			
Dibenz(a,h)anthracene	ug/kg	800	NC	800		mg/kg	0.80	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	590	NC	1,700		mg/kg	0.17	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	3.6147	N/A	N/A			
Aluminum	mg/kg	3,070	13,441	8,000		mg/L	8,000	Max	Max			
Antimony	mg/kg	8	28	12	J	mg/kg	12	Max	Max			
Arsenic	mg/kg	19	441	46		mg/kg	46	Max	Max			
Barium	mg/kg	238	6,862	740	J	mg/kg	740	Max	Max			
Cadmium	mg/kg	4	803	9		mg/kg	9	Max	Max			
Chromium (Total)	mg/kg	12	61	41		mg/kg	41	Max	Max			
Copper	mg/kg	330	27,122	1,000		mg/kg	1,000	Max	Max			
Iron	mg/kg	16,362	561,771	75,000		mg/kg	75,000	Max	Max			
Lead	mg/kg	909	NC	2,800		mg/kg	909	Arith. Mean	Arith. Mean			
Manganese	mg/kg	182	3,649	730		mg/kg	730	Max	Max			
Zinc	mg/kg	920	103,088	2,800	J	mg/kg	2,800	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(2) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(3) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.5
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Apartment Complex

Chemical of Potential Concern	Units	Arithmetic Mean(1)	95% UCL of Normal Data(2)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(3)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	160	NC	160	J	mg/kg	0.016	Max	Max			
Benzo(a)pyrene	ug/kg	170	NC	170	J	mg/kg	0.17	Max	Max			
Benzo(b)fluoranthene	ug/kg	190	NC	190	J	mg/kg	0.019	Max	Max			
Benzo(k)fluoranthene	ug/kg	180	NC	180	J	mg/kg	0.0018	Max	Max			
Chrysene	ug/kg	200	NC	200	J	mg/kg	0.0002	Max	Max			
Dibenz(a,h)anthracene	ug/kg	69	NC	69	J	mg/kg	0.069	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	130	NC	130	J	mg/kg	0.013	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	0.2890	N/A	N/A			
2,3,7,8-TCDD (TEQ)	ng/kg	8	NC	8		mg/kg	0.000008	Max	Max			
PCB-1260 (Aroclor 1260)	ug/kg	290	NC	290	J	mg/kg	0.290	Max	Max			
Arsenic	mg/kg	1	NC	1.7	J	mg/kg	1.7	Max	Max			
Iron	mg/kg	3,617	NC	4,900		mg/kg	4,900	Max	Max			
Lead	mg/kg	135	NC	510	J	mg/kg	135	Arith. Mean	Arith. Mean			

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration, for duplicate sample results, the average value was used in the calculation.

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

1 This column contains the arithmetic average of detected and non-detected concentrations.

2 Per EPA Region IV guidance (EPA, 1996a), the groundwater exposure point concentration should be the arithmetic average of the wells in the highly concentrated area of the plume. Therefore, the 95% UCL is not calculated for this medium.

3 Per EPA Region IV guidance (EPA, 1996a), the groundwater exposure point concentration is the arithmetic average of the wells in the highly concentrated area of the plume. The wells used in the calculation of the groundwater exposure point concentration included: BDMW001, BDMW005, BDMW009, BDMW010, and BDMW012.

4 Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.6
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Apartment Complex

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	165	NC	190	J	mg/kg	0.019	Max	Max			
Benzo(a)pyrene	ug/kg	185	NC	250	J	mg/kg	0.25	Max	Max			
Benzo(b)fluoranthene	ug/kg	180	NC	220	J	mg/kg	0.022	Max	Max			
Benzo(k)fluoranthene	ug/kg	140	NC	180	J	mg/kg	0.0018	Max	Max			
Chrysene	ug/kg	165	NC	180	J	mg/kg	0.00018	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	120	NC	150	J	mg/kg	0.015	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	0.3080	N/A	N/A			
Antimony	mg/kg	3.7	NC	7.8	J	mg/kg	7.8	Max	Max			
Arsenic	mg/kg	5	NC	9.6		mg/kg	9.6	Max	Max			
Barium	mg/kg	185	NC	490		mg/kg	490	Max	Max			
Copper	mg/kg	144	NC	350		mg/kg	350	Max	Max			
Iron	mg/kg	6,847	NC	16,000		mg/kg	16,000	Max	Max			
Lead	mg/kg	290	NC	1,100	J	mg/kg	290	Arith. Mean	Arith. Mean			
Manganese	mg/kg	145	NC	290		mg/kg	290	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.7
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

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

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	426	NC	1,100		mg/kg	0.11	Max	Max			
Benzo(a)pyrene	ug/kg	622	NC	1,300		mg/kg	1.3	Max	Max			
Benzo(b) fluoranthene	ug/kg	481	NC	1,200		mg/kg	0.12	Max	Max			
Benzo(k) fluoranthene	ug/kg	611	NC	1,300		mg/kg	0.013	Max	Max			
Chrysene	ug/kg	350	NC	1,400		mg/kg	0.0014	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/kg	450	NC	630		mg/kg	0.063	Max	Max			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	1.6	N/A	Max			
PCB-1260 (Aroclor 1260)	ug/kg	147	NC	370		mg/kg	0.37	Max	Max			
2,3,7,8-TCDD (TEQ)	ng/kg	19	NC	19		mg/kg	0.000019	Max	Max			
Antimony	mg/kg	3	NC	7.8		mg/kg	7.8	Max	Max			
Arsenic	mg/kg	5.8	NC	13		mg/kg	13	Max	Max			
Barium	mg/kg	232	NC	410		mg/kg	410	Max	Max			
Cadmium	mg/kg	3	NC	7.1		mg/kg	7.1	Max	Max			
Chromium	mg/kg	25	NC	60		mg/kg	60	Max	Max			
Copper	mg/kg	89	NC	270		mg/kg	270	Max	Max			
Iron	mg/kg	10,080	NC	20,000		mg/kg	20,000	Max	Max			
Lead	mg/kg	618	NC	1,400		mg/kg	618	Arith. Mean	Arith. Mean			
Vanadium	mg/kg	12	NC	15		mg/kg	15	Max	Max			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.8
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	Unnamed Creek

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/L	0.495	NC*	0.53	J	mg/L	0.000053	Max	Max			
Chrysene	ug/L	0.52	NC*	0.52	J	mg/L	0.00000052	Max	Max			
Indeno(1,2,3-cd)pyrene	ug/L	0.64	NC*	0.64	J	mg/L	0.000064	Max	Max			
CPAH TEF(1)	ug/L	N/A	N/A	N/A		mg/L	0.00011752	N/A	N/A			
Carbazole	ug/L	0.67	NC	0.67	J	mg/L	0.00067	Max	Max			
Di-n-Octylphthalate	ug/L	0.54	NC	0.54	J	mg/L	0.00054	Max	Max			
Barium	mg/L	0.11	0.14	0.18	J	mg/L	0.14	95% UCL	95% UCL			
Chromium	mg/L	0.0039	0.0049	0.0069	J	mg/L	0.0049	95% UCL	95% UCL			
Iron	mg/L	4	51	13		mg/L	13	Max	Max			
Manganese	mg/L	0.097	0.18	0.25		mg/L	0.18	95% UCL	95% UCL			

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

NC - Not Calculated. *The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.*

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.9
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
5TH & CLEVELAND

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Surficial Aquifer

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,2-Dibromo-3-Chloropropane	ug/L	3.1	NC	1.4	J	mg/L	0.0031	Arithmetic Mean	Arithmetic Mean			
PCB-1242 (Arochlor 1242)	ug/L	0.7	NC	1.4	J	mg/L	0.0007	Arithmetic Mean	Arithmetic Mean			
Arsenic	ug/L	2.1	NC	3.5		mg/L	0.0021	Arithmetic Mean	Arithmetic Mean			
Iron	ug/L	3,953	NC	6,600		mg/L	3.95	Arithmetic Mean	Arithmetic Mean			

The plume consist of groundwater samples FCMW01, FCMW02, FCMW03, and FCMW05.

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Scenario Timeframe:	Current/Future
Medium:	Surface Soil/Sediment
Exposure Medium:	Surface Soil/Sediment
Exposure Point:	Lonnie C. Miller Park

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	200	234	710		mg/kg	0.0234	95% UCL-T	95% UCL-T			
Benzo(a)pyrene	ug/kg	172	247	630		mg/kg	0.247	95% UCL-T	95% UCL-T			
Benzo(b and/or k) fluoranthene*	ug/kg	423	361	1,000	J	mg/kg	0.0361	95% UCL-T	95% UCL-T			
Benzo(b)fluoranthene	ug/kg	199	427	670		mg/kg	0.0427	95% UCL-T	95% UCL-T			
Benzo(k)fluoranthene	ug/kg	235	411	570		mg/kg	0.00411	95% UCL-T	95% UCL-T			
Dibenz(a,h)anthracene	ug/kg	108	209	150	J	mg/kg	0.15	MAX	MAX			
Indeno (1,2,3-c,d) pyrene	ug/kg	181	2,982	410		mg/kg	0.041	MAX	MAX			
Chrysene	ug/kg	216	2943	560		mg/kg	0.00056	MAX	MAX			
CPAH TEF	ug/kg	NA	NA	NA		mg/kg	0.544	NA	NA			
PCB-1260 (Arochlor 1260)	ug/kg	243	193	700		mg/kg	0.193	95% UCL-T	95% UCL-T			
2,3,7,8-TCDD (TEQ)	ng/kg	67	NC	67		mg/kg	0.000067	MAX	MAX			
Aluminum	mg/kg	4,961	7,081	20,000		mg/kg	7081	95% UCL-T	95% UCL-T			
Antimony	mg/kg	15	37	40	J	mg/kg	37	95% UCL-T	95% UCL-T			
Arsenic	mg/kg	12	30	17.5		mg/kg	17.5	MAX	MAX			
Barium	mg/kg	204	443	830		mg/kg	443	95% UCL-T	95% UCL-T			
Cadmium	mg/kg	4	15	8.2	J	mg/kg	8.2	MAX	MAX			
Chromium, Total	mg/kg	36	111	160		mg/kg	111	95% UCL-T	95% UCL-T			
Copper	mg/kg	646	3,993	4,200	J	mg/kg	3,993	MAX	MAX			
Cyanide	mg/kg	1.6	1.8	5.5	J	mg/kg	1.8	95% UCL-T	95% UCL-T			
Iron	mg/kg	53,788	200,365	220,000		mg/kg	200,365	MAX	MAX			
Lead	mg/kg	620	NC	4,700	J	mg/kg	620	Arith Mean	Arith Mean			
Manganese	mg/kg	398	1,466	1,600		mg/kg	1,466	95% UCL-T	95% UCL-T			
Nickel	mg/kg	47	202	290	J	mg/kg	202	95% UCL-T	95% UCL-T			
Thallium	mg/kg	3.7	1.6	9.3		mg/kg	1.6	95% UCL-T	95% UCL-T			
Vanadium	mg/kg	8.5	11	28	J	mg/kg	11	95% UCL-T	95% UCL-T			
Zinc	mg/kg	1,051	5,248	5,900		mg/kg	5,248	95% UCL-T	95% UCL-T			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.2
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Subsurface Soil
Exposure Medium:	Subsurface Soil
Exposure Point:	Lonnie C. Miller Park

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/kg	106	344	230	J	mg/kg	0.023	MAX	MAX			
Benzo(a)pyrene	ug/kg	392	397	650		mg/kg	0.397	95% UCL-T	95% UCL-T			
Benzo(b)fluoranthene	ug/kg	469	352	960		mg/kg	0.0352	95% UCL-T	95% UCL-T			
Benzo(k)fluoranthene	ug/kg	93	435	170	J	mg/kg	0.0017	MAX	MAX			
Chrysene	ug/kg	459	4,287	890		mg/kg	0.00089	MAX	MAX			
Dibenz(a,h)anthracene	ug/kg	120	248	120	J	mg/kg	0.12	MAX	MAX			
Indeno (1,2,3-c,d) pyrene	ug/kg	239	409	430	J	mg/kg	0.0409	95% UCL-T	95% UCL-T			
CPAH TEF(1)	ug/kg	N/A	N/A	N/A		mg/kg	0.62	N/A	N/A			
Dieldrin	ug/kg	13	6	72	J	mg/kg	0.006	95% UCL-T	95% UCL-T			
PCB-1248(Aroclor 1248)	ug/kg	1,007	130	2,550	J	mg/kg	0.13	95% UCL-T	95% UCL-T			
PCB-1254(Aroclor 1254)	ug/kg	1,405	737	2,800		mg/kg	0.737	95% UCL-T	95% UCL-T			
2,3,7,8-TCDD (TEQ)	ng/kg	70	NC	93	J	mg/kg	0.000093	MAX	MAX			
Aluminum	mg/kg	8,763	6,961	26000		mg/kg	6,961	95% UCL-T	95% UCL-T			
Antimony	mg/kg	22	61	73		mg/kg	61	95% UCL-T	95% UCL-T			
Arsenic	mg/kg	26	77	58		mg/kg	58	MAX	MAX			
Barium	mg/kg	416	492	1,400		mg/kg	492	95% UCL-T	95% UCL-T			
Cadmium	mg/kg	8.16	18	100		mg/kg	18	95% UCL-T	95% UCL-T			
Chromium (Total)	mg/kg	72	143	370		mg/kg	143	95% UCL-T	95% UCL-T			
Copper	mg/kg	1,045	5,258	5,000		mg/kg	5,000	MAX	MAX			
Cyanide	mg/kg	1.1	2.0	7.6	J	mg/kg	2.0	95% UCL-T	95% UCL-T			
Iron	mg/kg	106,725	758,140	290,000	J	mg/kg	290,000	MAX	MAX			
Lead	mg/kg	810	NC	4,300		mg/kg	810	Arith. Mean	Arith. Mean			
Manganese	mg/kg	910	5,000	5,700	J	mg/kg	5,000	95% UCL-T	95% UCL-T			
Mercury	mg/kg	0.688	308,191	5	J	mg/kg	5	MAX	MAX			
Nickel	mg/kg	118	344	1,800		mg/kg	344	95% UCL-T	95% UCL-T			
Thallium	mg/kg	4.7	1.61	12	J	mg/kg	1.61	95% UCL-T	95% UCL-T			
Vanadium	mg/kg	13	16	49	J	mg/kg	16	95% UCL-T	95% UCL-T			
Zinc	mg/kg	1,649	3678	4,100	J	mg/kg	3678	95% UCL-T	95% UCL-T			

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

N/A - Not Applicable

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

TABLE 3.3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	Unnamed Tributary

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)anthracene	ug/L	0.53	6.29	4.1	J	mg/L	0.00041	MAX	MAX			
Benzo(a)Pyrene	ug/L	1.11	6.89	2.4	J	mg/L	0.0024	MAX	MAX			
Benzo(b)fluoranthene	ug/L	1.72	6.03	3.2	J	mg/L	0.00032	MAX	MAX			
Benzo(k)fluoranthene	ug/L	2.4	5.45	3.4	J	mg/L	0.000034	MAX	MAX			
Chrysene	ug/L	2.27	6.31	5.1	J	mg/L	0.0000051	MAX	MAX			
Dibenzo(a,h)anthracene	ug/L	1.3	5.52	1.3	J	mg/L	0.0013	MAX	MAX			
Indeno(1,2,3-cd)pyrene	ug/L	1.7	5.37	1.7	J	mg/L	0.00017	MAX	MAX			
CPAH TEF(1)	ug/L	NA	NA	NA	NA	mg/L	0.0046	NA	NA			
Di-n-octylphthalate	ug/L	1.27	5.59	1.8	J	mg/L	0.0018	MAX	MAX			
Arsenic	mg/L	0.012	0.004	0.03		mg/L	0.004	95% UCL-T	95% UCL-T			
Barium	mg/L	0.19	0.34	1.1		mg/L	0.34	95% UCL-T	95% UCL-T			
Cadmium	mg/L	0.0044	0.001	0.0048	J	mg/L	0.001	95% UCL-T	95% UCL-T			
Chromium	mg/L	0.017	0.005	0.045		mg/L	0.005	95% UCL-T	95% UCL-T			
Cobalt	mg/L	0.0019	0.001	0.0019	J	mg/L	0.001	95% UCL-T	95% UCL-T			
Lead	mg/L	0.047	0.053	0.3		mg/L	0.053	95% UCL-T	95% UCL-T			
Silver	mg/L	0.0027	0.001	0.0032	J	mg/L	0.001	95% UCL-T	95% UCL-T			
Vanadium	mg/L	0.0099	0.006	0.024	J	mg/L	0.006	95% UCL-T	95% UCL-T			

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

*The laboratory reported the compound as benzo(b and/or k)fluoranthene; therefore, the highest TEF was used (i.e., benzo(b)fluoranthene).

TABLE 3.4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
JACKSONVILLE ASH SITES
LONNIE C. MILLER

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater
Exposure Point:	Surficial Aquifer

Chemical of Potential Concern	Units	Arithmetic Mean(2)	95% UCL of Log Normal Data(3)	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency(4)		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,2-Dichloroethylene	ug/L	16	NC	16		mg/L	0.016	Arith. Mean	Arith. Mean			
Cresol M & P	ug/L	75	NC	75		mg/L	0.075	Arith. Mean	Arith. Mean			
Vinly Chloride	ug/L	0.54	NC	0.54	J	mg/L	0.00054	Arith. Mean	Arith. Mean			
Cadmium	mg/L	0.0034	NC	0.0034	J	mg/L	0.0034	Arith. Mean	Arith. Mean			
Iron	mg/L	1.01	NC	1.2		mg/L	1.01	Arith. Mean	Arith. Mean			
Manganese	mg/L	0.12	NC	0.16		mg/L	0.12	Arith. Mean	Arith. Mean			

The plume consist of groundwater samples LMMW003, LMMW004, LMMW005, and LMMW007.

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

NC - Not Calculated. The 95% UCL was not calculated because the data set contained less than 10 samples; therefore, the maximum detected concentration will be used as the EPC.

(1) As an interim procedure, Region IV has adopted a toxicity equivalency factor (TEF) methodology for carcinogenic PAHs based on each compound's relative potency to the potency of benzo(a)pyrene (BAP). The following TEFs were used to convert the concentration of each PAH compound to an equivalent concentration of BAP: Benzo(a)anthracene (0.1), Benzo(a)pyrene (1), Benzo(b)fluoranthene (0.1), Benzo(k)fluoranthene (0.01), Chrysene (0.001), Dibenz(a,h)anthracene (1), and Indeno(1,2,3-cd)pyrene (0.1).

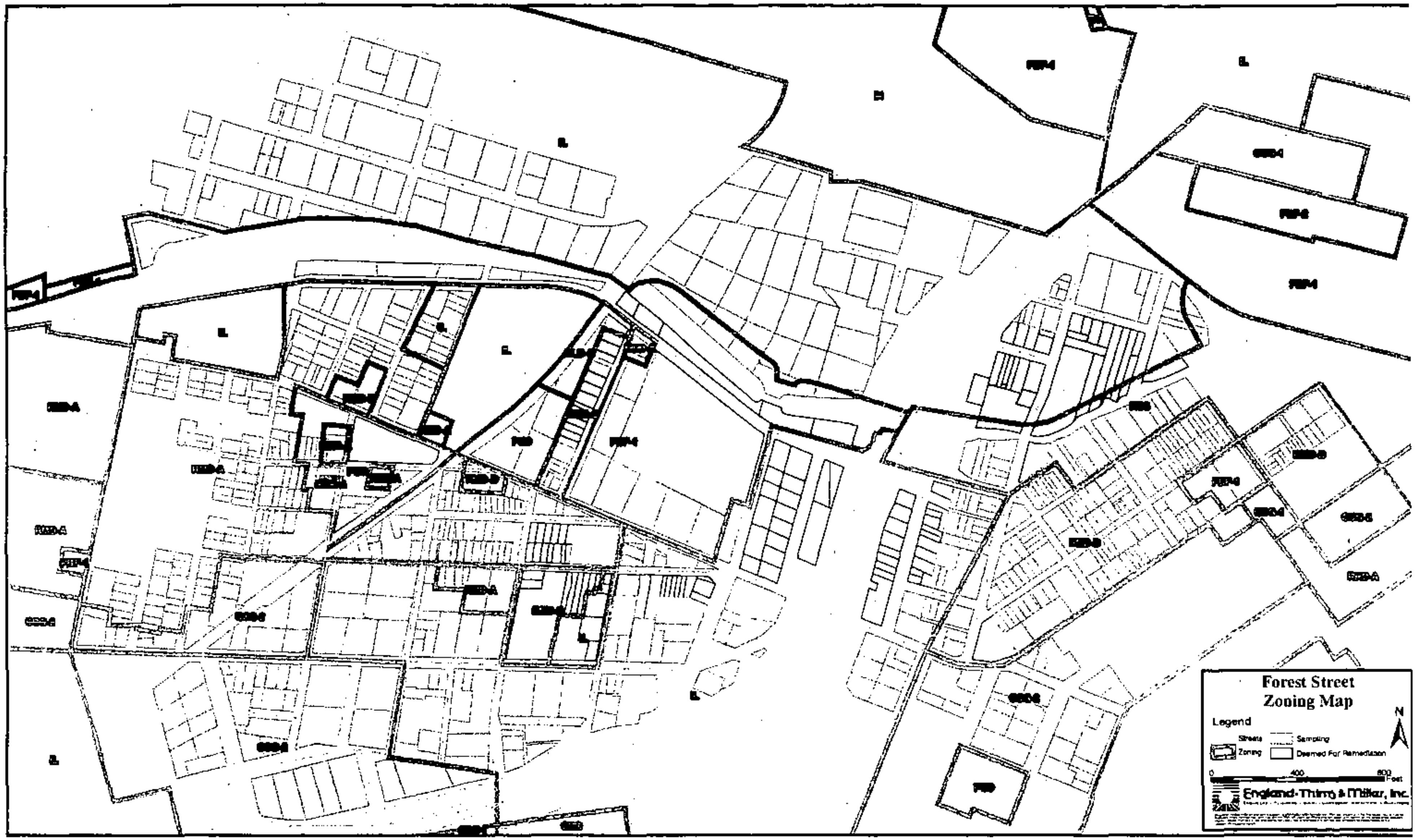
(2) Per EPA Region IV guidance (EPA, 1996a), this column contains the arithmetic average of detected concentrations only.

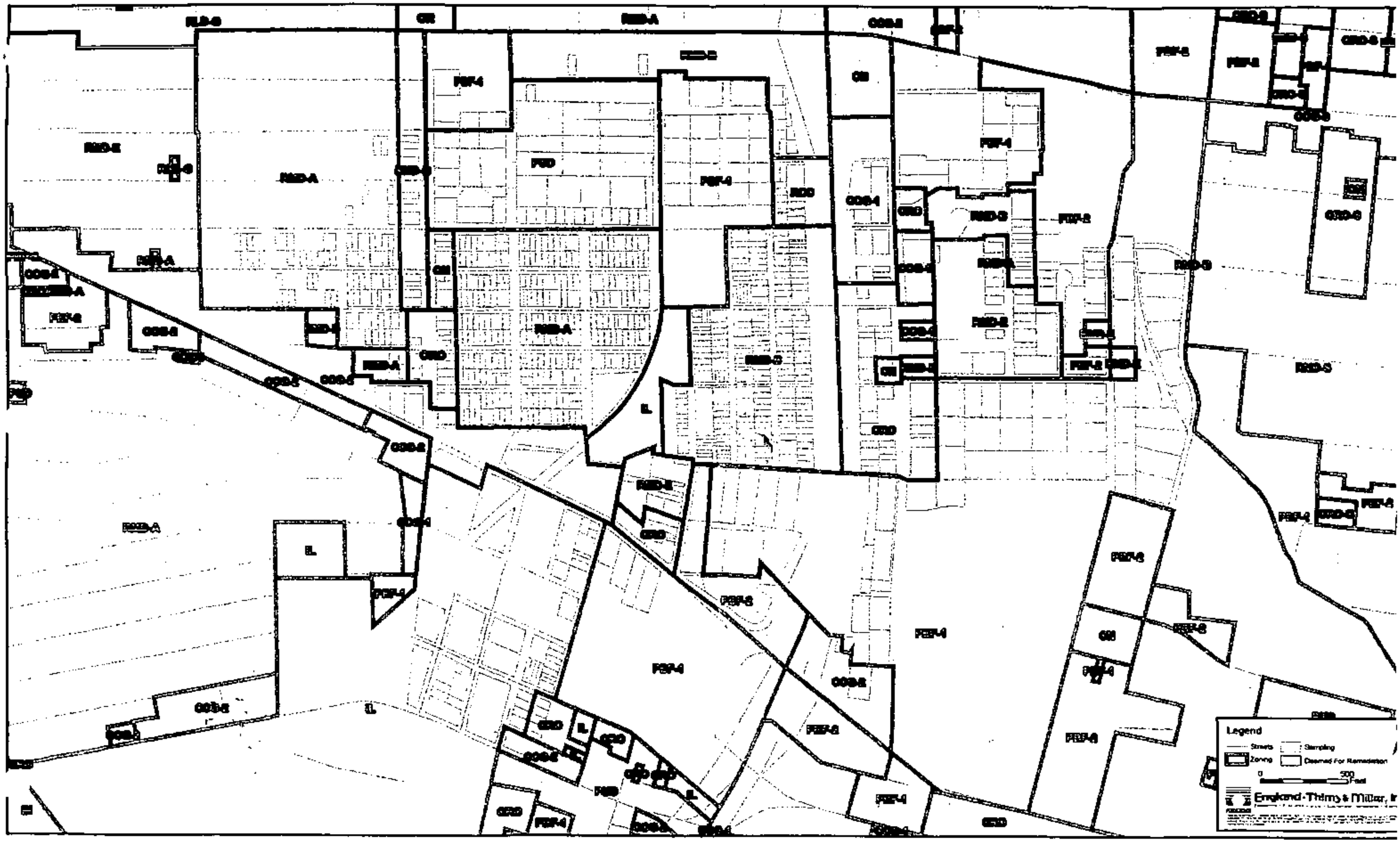
(3) Per EPA Region IV guidance (EPA, 1996a), it was assumed that the sampling data are log normally distributed.

(4) Per EPA Region IV guidance (EPA, 1996a), the central tendency evaluation will be presented in the risk characterization uncertainty section. Further, a central tendency evaluation will only be performed for scenarios, media, and chemicals of concern.

Appendix E

Zoning Maps, Land Use Ordinance and North Riverside Neighborhood Action Plan


Forest Street
Zoning Map
Legend
Streets
Sampling
Zoning
Deemed For Remediation
N
0
400
800
Feet
England-Thims & Miller, Inc.


Legend
Streets
Sampling
Zoning
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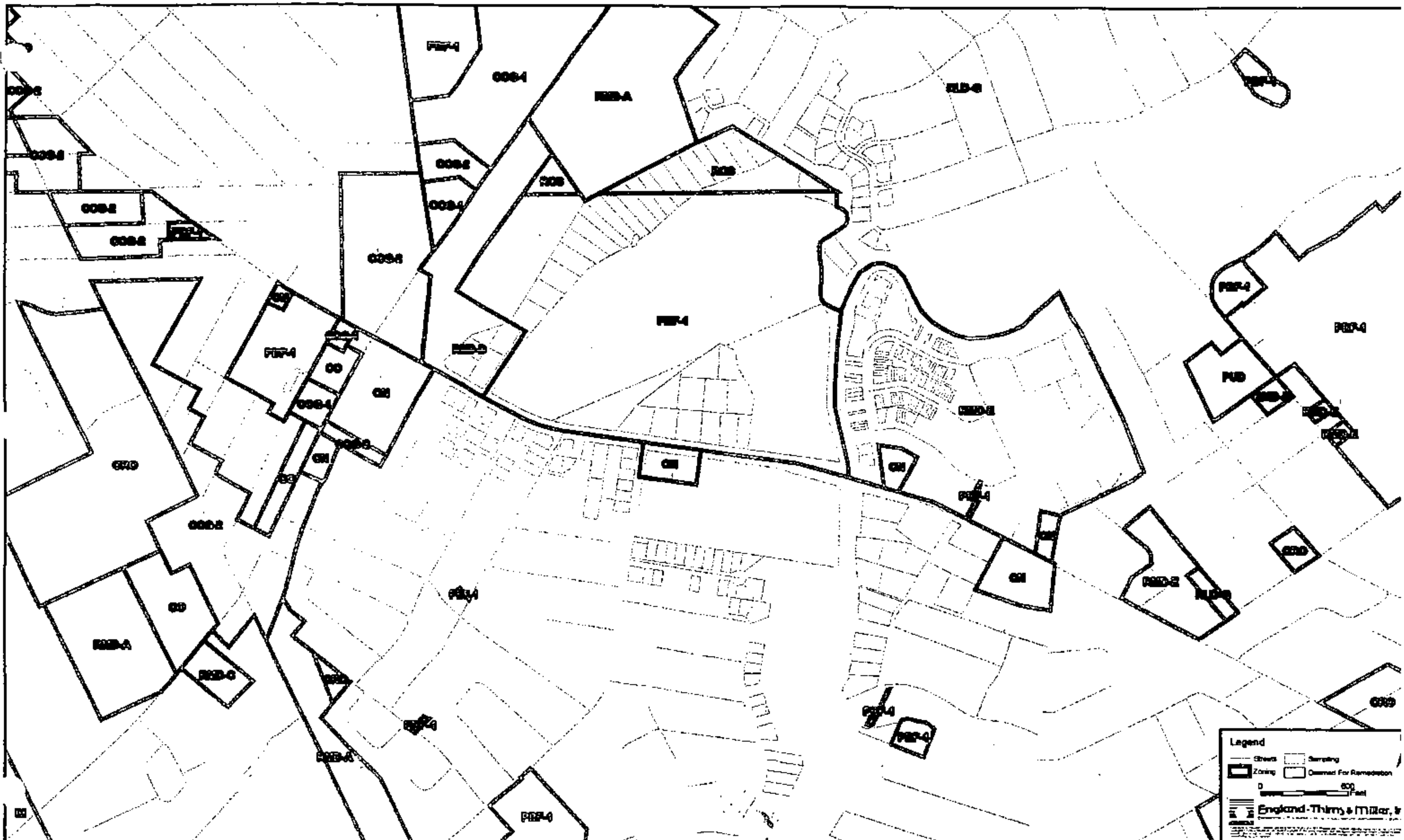
Feet



Legend
Streets
Sampling
Zoning
Deemed For Remediation
0
600
Feet
England-Thims & Miller, Inc

Enacted 8/12/03

Introduced by Council Members Fullwood and Brown:

ORDINANCE 2003-892-E

AN ORDINANCE APPROVING AND ADOPTING THE NORTH RIVERSIDE NEIGHBORHOOD ACTION PLAN, DATED MARCH 2003, AND THE RECOMMENDATIONS CONTAINED THEREIN; ESTABLISHING THE NORTH RIVERSIDE NEIGHBORHOOD STUDY AREA, GENERALLY BOUNDED BY INTERSTATE 10 TO THE SOUTH, INTERSTATE 95 TO THE EAST, MCDUFF AVENUE TO THE WEST AND BEAVER STREET TO THE NORTH, AS DEFINED AND SHOWN ON THE STUDY MAPS ("STUDY AREA"); REQUIRING THAT ALL DEVELOPMENT AND REDEVELOPMENT WITHIN THE STUDY AREA MUST BE CONSISTENT AND COMPATIBLE WITH THE STUDY RECOMMENDATIONS; DELEGATING TO THE PLANNING AND DEVELOPMENT DEPARTMENT THE AUTHORITY TO INTERPRET THE STUDY AND TO REVIEW ALL PROPOSED DEVELOPMENT AND REDEVELOPMENT WITHIN THE STUDY AREA TO ENSURE CONSISTENCY AND COMPATIBILITY WITH THE STUDY RECOMMENDATIONS; PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Mayor's Growth Management Task Force recommended that efforts be undertaken to restore and revitalize older neighborhoods; and

WHEREAS, in August 2001, District Council Member Fullwood and the Planning and Development Department determined that a neighborhood action plan was needed to guide development and redevelopment within the North Riverside neighborhood and initiated the planning process by creating a Citizens Planning Team consisting of representatives from the North Riverside Community Development Corporation and area business owners; and

WHEREAS, District Council Member Fullwood, with the assistance of the Planning and Development Department, began the planning process with the strong support and leadership from the community; and

WHEREAS, a planning team managed by the Planning and Development Department Comprehensive Planning Division worked with the Citizens Planning Team to examine the following major issues critical to the revitalization of the North Riverside Study Area: (1) infill housing and rehabilitation; (2) land use and zoning; (3) economic development; (4) infrastructure; (5) crime; (6) environmental issues; and (7) parks and recreation; and

WHEREAS, the Planning and Development Department and staff from the Department of Neighborhoods, with the assistance of APD, Inc., the planning consultant, held a number of public forums and meetings to obtain the views of the community residents and business owners of the North Riverside area to ensure that public participation was an essential component of the plan; and

WHEREAS, during the planning process the following "visions" were created:

(a) There should be a historic preservation and conservation emphasis in rehabilitation efforts;

(b) There should be rehabilitation and infill housing efforts;

(c) McDuff Avenue and Edison Avenue are the hubs of commercial activity for the surrounding neighborhoods;

(d) The existing industrial section should continue as a central location of light industrial and manufacturing in the core city; and

(e) Future industrial development should be targeted for the area east of Osceola Street; and

WHEREAS, after extensive public participation and subsequent review and revision by the Planning and Development Department planning team and the Citizens Planning Team, the North Riverside Neighborhood Action Plan was developed; now, therefore

BE IT ORDAINED by the Council of the City of Jacksonville:

Section 1. Approval and Adoption of North Riverside Neighborhood Action Plan. The North Riverside Neighborhood Action Plan dated March 2003 is hereby approved and adopted as the neighborhood plan guiding all development and redevelopment within the boundaries of the North Riverside Neighborhood as established in the Plan and generally bounded by Interstate 95 on the east, Interstate 10 on the South, McDuff Avenue on the west and Beaver Street on the north. A copy of the North Riverside Neighborhood Action Plan is on file in the Division of Legislative Services.

Section 2. All Development and Redevelopment in the North Riverside Neighborhood Study Area Compatible and Consistent with The North Riverside Neighborhood Action Plan. All development and redevelopment within the North Riverside Study Area, including, but not limited to, all public works projects and streetscape improvements, partnerships with the City that require funding and all projects requiring permits, shall be compatible and consistent with the plan recommendations contained in the North Riverside Neighborhood Action Plan.

Section 3. Delegation of Authority to Interpret the North Riverside Neighborhood Action Plan and Approve Development and Redevelopment Projects to the Planning and Development Department. The Council hereby delegates the responsibility and authority to interpret the North Riverside Neighborhood Action Plan and to review and approve the development and redevelopment projects as described in Section 2 of this ordinance to ensure consistency and compatibility with the plan to the Director of the Planning and Development Department.

Section 4. Continued Involvement of the City Staff, Citizens, Representatives of Community Development Corporation and Businesses. Because the residents of the area, the Community Development Corporation, the Citizens Planning Team, and businesses have been invaluable in determining the future of their neighborhood and because their continued involvement is essential to ensure the success of this Neighborhood Action Plan, the Council hereby urges and requests that the City staff continue to encourage and support the process of active involvement of all of these parties in the implementation of the Neighborhood Action Plan.

Section 5. Effective Date. This ordinance shall become effective upon signature by the Mayor or upon becoming effective without the Mayor's signature.

Form Approved:

/s/ Theresa M. Rooney

Office of General Counsel

Legislation Prepared By: Theresa M. Rooney

4/28/05 thk G:\shared\Legis.cc\Matchett\ord adopt plan -text north riv.doc

prepared by

APD, Inc.

City of Jacksonville Planning & Development Department

March 2003

North Riverside Neighborhood Action Plan

... a comprehensive plan for revitalization.

North Riverside Neighborhood Action Plan

John Delaney
Mayor
City of Jacksonville

Reggie Fullwood
Council Member, District 9

Jeannie Fewell
Director

Prepared by
APD, Inc.
The Planning & Development Department

March, 2003

Acknowledgments

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Councilman Reggie Fullwood, District 9

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Lillie Ware
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Bob Smith
Michael Corrigan, Jr
John Falconetti
Bob Gay
Vince and Diane Kerr
Richard Speir
Tracy Jackson
Bill Reed
David Jones
Bill Rowe
Ed Gray
Libby Wilson
Jeff Simms
Patrick Hayle
Henry Freeman
Pete Amont
Albert Harris
Jerry West
Brian Chamberlain
Chuck Boldt Sr.
Chuck Boldt Jr.
Michael Bryant
Kevin Davis
Janet Dodd
Kelli Wells
Pastor Elwyn Jenkins

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Section 1
Executive Summary

The North Riverside Neighborhood Action Plan...

- Serves as the overall development guide for the community;
- Provides the City with a guide for future development & redevelopment; and
- Reflects the concerns & ideas of the community residents.

The North Riverside Neighborhood is an urban core neighborhood that is presently in a state of decline. However, the community has a range of assets, such as its proximity to downtown, the presence of a strong community organization, and vibrant business community that can serve as an impetus for revitalization of the area. The North Riverside Neighborhood Action Plan identifies and builds on the assets within the community in its recommended strategies for redevelopment through an analysis of existing conditions as well as input from residents, business owners, and other community stakeholders. The Neighborhood Action Plan incorporates all of these components in order to provide a comprehensive plan of action for revitalization.

The residents, business leaders, and other stakeholders have cooperated in the creation of this neighborhood action plan since the initiation of the planning process, providing valuable insight and guidance. The first community meeting provided survey results that outlined the focus of the Plan. Two workshops were held with the North Riverside Community Development Corporation to define a "vision" for the community. Workshops were also held with area business leaders to discuss issues and potential strategies.

The North Riverside Neighborhood Action Plan focuses on issues and concerns outlined by residents through a Strength Weaknesses Opportunities and Threats (SWOT) survey and subsequent community meetings. Residents and business leaders generally outlined similar concerns when surveyed. Based on the input provided, the neighborhood action plan strategies focus on the following:

- Housing
- Infrastructure
- Economic Development

Major recommendations include...

- Housing strategy that uses a targeted approach;
- Development of a Town Center project; and
- Creation of an urban industrial park.

Plan Organization

The North Riverside Neighborhood Action Plan is composed of sections that include a neighborhood profile that provides a review and analysis of existing conditions as well as the following:

- A Citizen vision component which outlines the results of the Strength Weaknesses Opportunities-Threats (SWOT) Survey and highlights the involvement of neighborhood stakeholders;
- A housing strategy that promotes using a targeted approach to housing rehabilitation and development;
- An economic development strategy that promotes the designation of a Community Redevelopment Area and the creation of an urban industrial park;
- An infrastructure component that recommends the coordination of sidewalk, curb and gutter improvements with housing improvements throughout the neighborhood;
- A description of the zoning districts within the study area and review of zoning issues;
- A summary of conclusions and recommendations; and
- An implementation and evaluation component that outlines a series of action steps needed to guide the first phase of implementation. The evaluation component provides a means for gauging the successes and accomplishments of the plan through indicators and quantitative measures.

This neighborhood action plan is the direct result of the collaborative efforts of the City of Jacksonville and the North Riverside Community Development Corporation. Each revitalization strategy contained in this Plan was approved by the residents and area business leaders and reflects the vision of the North Riverside Community.

Section 2
Neighborhood Profile

North Riverside is historically a...

- Working class community;
- Community built as the result of the employment opportunities from the railroad;
- Community built along a grid pattern without any amenities such as parks or other public uses.
- Community with frame vernacular, bungalow, and shotgun homes.

Introduction

The North Riverside Study Area is an urban core neighborhood located near the Downtown Business District (see Map 1). This neighborhood is historically racially diverse; however, the neighborhood has shifted to a predominately African-American population. North Riverside developed as a residential neighborhood that was an extension of the Riverside area, but has been inundated with industrial and commercial uses since the construction of Interstate-95. This report analyzes the results of the windshield survey, which was designed to inventory the existing land uses and building conditions in the area. Additionally, an inventory of the existing zoning districts is also provided.

Historical Background

The North Riverside Study Area is part of a community commonly referred to as "North Riverside." The neighborhood is comprised of historically significant modest homes associated with the working class. Much of the development is the result of employment opportunities that were near the area, and a drainage and bulkhead project for McCoys Creek that created a significant amount of land. While a historical survey has not been conducted for the area, the historical development of the community, as well as the area's architecture, indicate that the community could have a wealth of historical resources.

With Jacksonville's rapid growth during the first quarter of the twentieth century, residential construction began to spread out in all directions from the Downtown area, as well as from established neighborhoods such as LaVilla, Brooklyn, Riverside, Springfield, Hansontown, Sugar Hill, East Jacksonville, and Oakland. This period saw the development of several new neighborhoods including Murray Hill, Ortega, Avondale, St. Johns Park, Lakeshore, Lackawanna, North Riverside, Woodstock, Barnett's Addition (Durkeeville area), New Springfield, Brentwood, Norwood, Riverview,

Wrightville A.M.E. Church on Edison Ave.

Neighborhoods near North Riverside:

- Riverside/Avondale Historic District
- Murray Hill
- Brooklyn
- New Town
- College Park

Panama Park, Phoenix Park, Arlington, San Marco, and other neighborhoods that constituted the old City of South Jacksonville. Much of the new residential development to the north and west was influenced by new employment opportunities created with the construction of a major railroad repair facility off McDuff Avenue and Warrington Avenue by the Seaboard Coast Line Railroad. A 1909 plat describes this facility as the "Seaboard Air Lineshops and Terminals" employing about 1,000 men."

The residential development of the area north of Riverside and south of McCoy's Creek began during this period with the platting of several new subdivisions. B.H. Gandy filed the first recorded new subdivision in the area following the Great Fire of 1901 in 1905. Brinkley H. Gandy had resided on a large parcel fronting the Highway (Edison Avenue) which was an important thoroughfare connecting Downtown Jacksonville with rural southwest Duval County and Clay County via the Black Creek Road (Lennox Avenue). In that same year, William C. Fehranback filed the plat for the first of his two subdivisions in the area. During this period, Fehranback resided in the area at 634 Smith Street.

The Woodhaven Subdivision was filed in 1908 by Jacksonville real estate investors, O. Pierre Havens and Frank E. Wood. Between 1912 and 1917, H.B. Frazee, who was not listed as living in Jacksonville during the period, filed several new subdivisions or replats. All of the plats in the area show the traditional straight grid street pattern, with no indication of land dedicated for parks or other amenities. Alleys generally run mid-block. There is no indication of any uniform setbacks or other restrictions imposed by the developers, or of the elaborate infrastructure built by the developers of Riverside.

Most of the new subdivisions were bounded on the south by the railroad and the Highway (Edison Avenue) and by McCoy's Creek on the north. Although many of the street names are still used such as Forest Street, Calvin Street, and Lewis Street, others have changed such Webster Avenue, Delmar Street, Cherry Avenue (Belfort Street), Woodland Street, Park Street, 2nd Avenue, and the Highway (Edison Avenue). Interestingly, North Riverside was racially diverse for the first three decades of the 20th century, with the white population residing largely west of Broward Street. The African American population tended to be concentrated more to the east and north connecting with other predominately black neighborhoods such as Campbell's Addition to West Jacksonville, West Lewisville, Brooklyn, and Campbell's Hill.

Unpaved road in Mixontown.

According to the 1913 Sanborn Map many of the parcels in the area known today as North Riverside were occupied predominately by residential structures. This early development of the area is also reflected in the 1980 Census, which listed nearly fifty (50) percent of the housing units in Census Tract 26 as being constructed before 1940. Historic surveys in other parts of the Urban Core of Jacksonville have indicated that the percent of pre-1940 housing units is usually higher than indicated by the census. According to the Property Appraiser's database, 461 of the 1328 parcels in the North Riverside Study Area have buildings built before or in 1952.

The area including North Riverside has not been systematically surveyed for the presence of historic resources. However, several significant buildings in the area have been recorded by the Planning and Development Department. Founded in 1874, the Wrightsville A.M.E. Church (True Church of the Risen Christ) at 2297 Edison Avenue was constructed before 1913. Another early church was the Wesley Memorial Methodist Church at 401 Stockton Street that was constructed in 1908 and expanded in 1948. It is now the Greater Bethany Baptist Church. The 1922 sanctuary of the New St. James A.M.E. Church at 2128 Forest Street was just recently demolished.

The straightening and bulk heading the McCoy's Creek channel in 1930 created:

- 29 additional acres of land
- seven bridges, some of historical significance.

A significant drainage basin in the old core area of Jacksonville, McCoy's Creek was originally a sluggish, meandering swampy creek with a reputation for serious flooding and the production of stagnant pools where mosquitoes bred. To remedy this situation, the City of Jacksonville contracted with the Walter J. Bryson Company in 1928 to complete a major reworking of the creek. Completed by 1930, this $660,000, three mile drainage project included straightening and bulkheading the creek channel, gaining 29 acres of land by filling the adjacent swamps, and the construction of seven bridges including the ones crossing Myrtle Avenue, Stockton Street, and Kings Street. These bridges may also have historic significance.

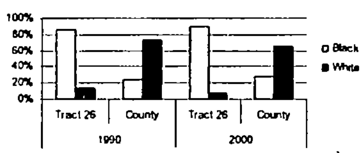
Demographics

The Study Area is located entirely within Census Tract 26, and contains most of this census tract's residential areas. Census data were obtained and analyzed to determine socioeconomic trends in the Study Area for the past twenty years. The data reveal that this neighborhood has been in a state of decline for many years.

Social Characteristics

The Study Area population is predominantly African-American, representing ninety (90) percent of the population in 2000. This has changed somewhat

North Riverside Racial Composition: 1990 & 2000



since 1980, when seventy-five (75) percent of the Study Area's population described itself as African-American (See Table 1). Analysis of poverty indicators such as median age, income, and educational attainment indicates a neighborhood in decline. Median age in the Study Area has increased since 1980, though it is still much lower than Duval County as a whole. While median income in the county increased substantially between 1980 and 1990, median income in the Study Area declined. Additionally, the proportion of adults aged 25 and over who have completed high school and college is significantly lower in the Study Area than in Duval County.

Educational attainment is one of the few social indicators that improved from 1980 to 1990, with the percent of adults aged 25 and over who have completed high school increasing from twenty-eight (28) percent to forty-two (42) percent. The percent of college graduates in the Study Area remained constant from 1980 to 1990 at two and one-half (2.5) percent.[i]

Table 1

Social Characteristics of North Riverside Study Area, 1980-2000

	1980 Census Tract 26	1980 Duval County	1990 Census Tract 26	1990 Duval County	2000 Census Tract 26	2000 Duval County	1990-2000 Percent Change Census Tract 26	1990-2000 Percent Change Duval County	1980-2000 Percent Change Census Tract 26	1980-2000 Percent Change Duval County
Total Population	5,559	571,003	4,648	672,971	4,475	778,879	-3.7%	15.7%	-19.5%	36.4%
Median Age	24.3	29	27.9	31.4	27.9	34.1	0.0%	8.6%	14.8%	17.6%
Average Household Size	3.12	2.81	3.05	2.54	3.03	2.51	-0.7%	-1.2%	-2.9%	-10.7%
Race										
Black	76%	25%	86%	24%	90%	28%	5.0%	16.0%	18.5%	11.3%
White	24%	74%	13%	73%	8%	66%	-41.4%	-9.9%	-67.4%	-11.1%
Other	0%	1%	0%	3%	2%	6%	243.2%	112.4%	628.2%	537.2%
Percent Female Householder, No husband present	41.2%	20.0%	50.3%	20.0%	59.6%	23.5%	18.5%	17.5%	44.7%	17.5%
Educational Attainment of Persons Aged 25 and Over										
Percent High School Graduates	27.5%	67.0%	42.1%	77.0%	53.0%	83.0%	25.9%	7.8%	92.7%	23.9%
Percent Bachelor's Degree or Higher	3.0%	14.0%	3.0%	18.0%	5.0%	22.0%	66.7%	22.2%	66.7%	57.1%
Percent of Persons Aged 16 and Over in the Labor Force	54.5%	63.0%	53.6%	70.0%	52.0%	67.0%	-3.0%	-4.3%	-4.6%	6.3%
Percent of Civilian Labor Force Unemployed	13.5%	5.6%	12.0%	6.0%	14.0%	5.0%	16.7%	-16.7%	3.7%	-13.8%
Median Income										
Adjusted to 1999$	$18,596	$34,283	$18,089	$45,086	$19,637	$40,703	8.6%	-9.7%	5.6%	18.7%
Percent of Persons Below Poverty Level	42.4%	16.0%	40.5%	13.0%	43.0%	12.0%	6.2%	-7.7%	1.4%	-25.0%

Source: U.S. Bureau of the Census

*Family Type by presence of own children: This category identifies households with dependent children

**2000 data not yet available for all indicators

The proportion of persons in the Study Area living below the federally defined poverty level in 1990 was forty-one (41) percent, more than three times the rate of poverty in the county as a whole. The percent of unemployed persons in the Study Area in 1990 was twelve (12) percent, twice that of Duval County, while the median income[ii] of the Study Area was less than half that of Duval County.

The presence of female-headed households is an important indicator of socioeconomic stability in a neighborhood. From 1980 to 2000, the Study Area experienced a forty-five (45) percent increase in the percent of female-headed households. This is nearly three times the rate of increase for Duval County.

Populations with high proportions of dependent persons, typically persons under 18 and over 65, are associated with higher rates of poverty since these results in a smaller work force. In 2000, nearly one-third of the Study Area population was under 15, compared with twenty-two (22) percent of the population in Duval County (see Table 2).

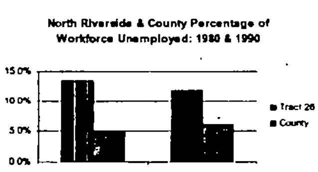
Table 2

Age Distribution, 1980-2000

	1980		1990		2000		Percent Change 1980 - 2000	
Age	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County
0-14	29.6%	23.0%	30.7%	22.0%	31.2%	22.1%	5.6%	-4.0%
15-24	21.6%	19.0%	15.4%	15.0%	15.7%	13.8%	-27.5%	-27.2%
25-44	19.9%	28.0%	26.4%	33.0%	26.5%	32.4%	33.0%	15.7%
45-64	18.5%	19.0%	15.5%	17.0%	16.6%	21.2%	-10.4%	11.5%
65+	10.4%	10.0%	12.0%	14.0%	9.4%	10.5%	-9.7%	5.0%

Source: U.S. Bureau of the Census

Employment



Occupations of Study Area residents are concentrated in Technical, Sales and Administrative Support, and Service occupations. More than half of the Study Area work force is employed in these categories (See Table 3). However, the work force in Duval County as a whole is concentrated in Technical, Sales, and Administrative Support, and Managerial and Professional Specialty positions. This indicates that Study Area residents tend to be employed in lower-paying occupations than residents countywide.

Table 3

Occupations & Selected Industries, 1980-2000

	1980		1990		2000		1980-2000 Percent Change	
	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County
Employed Persons Aged 16 and Over	1,742	241,222	1,422	314,432	1,326	367,065	-23.9%	52.2%
As a % of Persons Aged 16 and Over								
Managerial & Professional Specialty	7.0%	23.0%	9.9%	25.0%	10.0%	31.7%	43.2%	37.9%
Technical, Sales & Admin. Support	17.2%	35.0%	28.1%	37.0%	32.5%	32.3%	89.4%	-7.9%
Service	23.8%	13.0%	25.2%	13.0%	24.3%	14.1%	2.2%	8.8%
Farming, Forestry, & Fishing	3.4%	1.0%	2.1%	1.0%	0.0%	0.3%	-100.0%	-72.9%
Precision Production, Craft & Repair	12.1%	12.0%	12.4%	11.0%	8.7%	9.6%	-28.1%	-20.4%
Operators, Fabricators, & Laborers	36.6%	15.0%	22.2%	12.0%	24.5%	12 1%	-33.1%	-19.5%

Source: U.S. Bureau of the Census

***Data have not yet been released for 2000.*

Work Commute

Workers in the Study Area spend slightly more time commuting than workers countywide (See Table 4). The most common mode of transportation in the Study Area and the county is the private vehicle; however, Study Area residents are four times more likely to rely on public transportation as their primary mode of transportation to work.

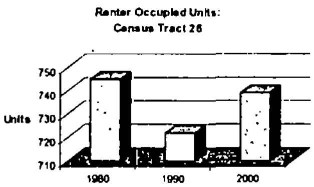
Table 4

Journey to Work & Commuting Time

	1980		1990		2000		1980-2000 Percent Change	
	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County
Workers 16 Years and Over	1,684	250,332	1,375	333,152	1,269	374,292	-24.6%	49.5%
Mode of Travel to Work								
Private Vehicle	75.0%	87.0%	76.1%	90.0%	80.0%	93.0%	6.7%	6.9%
Public Transportation	12.0%	5.0%	11.6%	3.0%	11.0%	2.0%	-8.3%	-60.0%
Other Means or Work at Home	13.0%	7.0%	12.3%	8.0%	9.0%	5.0%	-30.8%	-28.6%

Source: U.S. Bureau of the Census

**Data have not yet been released for 2000.*



Population and Housing

The Study Area experienced a fourteen (14) percent decrease in the number of housing units and a twenty (20) percent decrease in population between 1980 and 2000 (See Table 5). This is contrary to Duval County, which experienced a forty-five (45) percent increase in housing units and a thirty-six (36) percent increase in population during the same time period. The Study Area has also experienced a seventeen (17) percent increase in vacant housing units since 1980. The decrease in total housing units and increase in the proportion of vacant units is indicative of deteriorating housing stock, demolition of housing and population loss in the neighborhood.

The proportion of owner-occupied housing units in the Study Area decreased twenty-nine (29) percent between 1980 and 2000 (refer to Table 5). Duval County, in contrast, experienced a forty-seven (47) percent increase in the proportion of owner-occupied housing units. The declining rate of owner-occupants and the increasing number of vacant units are indicative of a neighborhood that is shifting to a renter population and likely has a sizeable number of properties owned by absentee landlords.

Table 5

Housing Characteristics, 1980-2000

	1980		1990		2000		1990-2000 Percent Change		1980-2000 Percent Change	
	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County	Census Tract 26	Duval County
Total Housing Units	1,971	227,077	1,787	284,673	1,700	329,778	-4.9%	15.8%	-13.7%	45.2%
Occupied Units	1,765	208,351	1,499	257,245	1,459	303,747	-2.7%	18.1%	-17.3%	45.8%
Vacant Units	206	18,726	288	27,428	241	26,031	-16.3%	-5 1%	17.0%	39.0%
Owner-Occupied Units	1,020	130,176	777	159,444	720	191,734	-7.3%	20.3%	-29.4%	47.3%
Percent of occupied units	57.8%	63.0%	51.8%	62.0%	49.3%	58.1%	-4.8%	-6.2%	-14.7%	-7.7%
Renter-Occupied Units	745	78,175	722	97.801	739	112,013	2.4%	14.5%	-0.8%	43.3%
Median Value of Owner-Occupied Units Adjusted to 1999$	$33,507	$73,899	$34,944	$85,747	NA	NA	NA	NA	NA	NA

Source: U.S. Bureau of the Census
***2000 data not yet available for all indicators*

Data Limitations

There is one limitation to the data. The geographic area for which data is available is slightly larger than the Study Area. Despite this limitation, the data available are useful for assessing demographic and housing trends.

Existing Uses & Conditions

This section analyzes the results of the windshield survey, which was designed to inventory the existing land uses and building conditions in the area. Each parcel in the Study Area is assigned a land use and each residential and commercial use is assigned a condition. These results are presented in the following analysis, and the data is also displayed in Maps 1 and 2.

Typical bungalow home

An example of the more ornate architecture

Over half of the parcels contain a residential use (57%), while nearly a quarter of the parcels are vacant (24%) (see Table 5). Additionally, there is a significant amount of commercial uses, which are concentrated around McDuff Avenue and Stockton Street. Most of the vacant properties are concentrated in the western portion of the Study Area, known as Mixontown. This area has enormous areas of vacant land, sometimes including an entire block. High concentrations of vacant land provide significant development opportunities for the future.

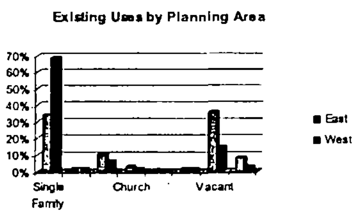
Table 6

North Riverside Existing Uses

Single Family	52%
Multi-Family	2%
Commercial	14%
Church	2%
Public	1%
Parking	2%
Vacant	23%
Industrial	5%

Source: *Windshield Survey, 2001, Asset Property Disposition, Inc.*

While the number of industrially related parcels is small (only 5%), industrial users typically require larger parcels so the land area is greater than what Table 1 indicates. Most of the industrial uses are along Edison Avenue and surrounding the railroad near McCoy's Creek Boulevard. Industrial uses in this area have created significant land use issues in terms of incompatibility. There are numerous residences directly adjacent to, and sometimes enveloped by, industrial uses, particularly near Edison Avenue and in the Mixon Town area. This presents environmental issues, as well, since there



are some heavy industrial uses with noxious odors warning signs across the street from residential uses.

Churches are quite common throughout the Study Area, with some being historically significant. Most of the churches are located along major roadways, such as Edison Avenue or McDuff; although there are some churches located sporadically throughout the residential community. These are typically churches that have converted a single-family or commercial structure into a church.

Condemned Property

Public owned property, such as parks and schools are very few, with the Forest Park Head Start Center as the only public property within the Study Area. There are no recreational opportunities within the Study Area.

Multi-family housing is extremely rare, which is surprising for declining neighborhoods. However, multi-family housing is not the only housing available to renters. Many of the single-family homes in the area have "for rent" signs on them.

Table 7

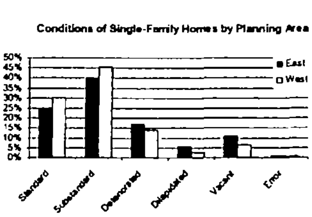
North Riverside Existing Conditions

	Standard	Substandard	Deteriorated	Dilapidated	Vacant	Error	Total
Single-Family	267	395	117	30	55	6	870
Mult-Family	8	13	2	1	3	0	27
Commercial	78	85	33	4	32	1	233
Total	353	493	152	35	90	7	1130

Source: Asset Property Disposition, Inc 2001

Industrial Uses

Conditions were assessed for all residential and commercial structures (see Table 7). Most of the structures in the Study Area are in below standard condition. Since multi-family structures represent a very small percentage of the overall land uses, this analysis and the actual Neighborhood Action Plan will focus on the single-family homes and commercial structures.



Substandard conditions are the most common category, representing approximately 45% of the structures surveyed. However, there is a significant portion of vacant and abandoned buildings. Approximately 20% of the single-family homes are vacant, and about 8% of the commercial buildings are vacant. A visual survey indicates that the structures in the deteriorated and vacant categories are concentrated near industrial uses or in the Mixontown area and analysis of the parcel data confirms this. The east planning area, or Mixon Town, has significantly more vacant lots than the west planning area, and significantly less single-family homes. The east planning area has many large industrial businesses. The east planning area also has a more deteriorated housing stock, with a larger percentage of deteriorated, dilapidated, and vacant single-family homes than the west planning area. The northern area is predominately industrial in land use, with the exception of a large public housing complex, Hollybrook Homes (see Map 1).

The existing uses in this neighborhood present four major issues:

- Adjacent incompatible uses;
- Large rental community in single-family homes;
- Large tracks of vacant land within the Mixontown portion, which suggest more of a redevelopment strategy rather than a revitalization and rehabilitation strategy; and
- The northern planning area provides the community with a strong business nucleus that could be capitalized on as a financing strategy.

Recent & Proposed Development

There are numerous projects that will influence the future strategies for the revitalization of the North Riverside Neighborhood. These projects/developments are described below:

Head Start Center located on Superfund Site

The Forest Street Superfund Site

This site is a federally designated superfund site. The site was historically a City incinerator, and has produced ash contamination that covers the east planning area of the Study Area, as well as McCoys Creek. A Head Start Center is currently occupying the actual ash site on Forest Street. The Solid Waste and Resource Management Department is currently working with the Environmental Protection Agency (EPA) to test the area and then recommend remediation. However, remediation is not expected to occur for another two years, and building permits must undergo review by the EPA.

The I-95/I-10 Interchange

This interchange will occur along the eastern boundary of the Study Area, and will provide ramps to Forest Street and Edison Avenue. This interchange is currently under construction, and will substantially increase access into the area.

McDuff Avenue Improvements

McDuff Avenue has an average 15,000 trips per day, and has a mix of residential, commercial, and public uses. The roadway infrastructure is

Issues:

- Poor housing conditions;
- Significant loss of homes, with only Habijax homes as new development;
- Mixon Town area is a contaminated ash site;
- High amount of renters, but low amount of multi-family;
- Infrastructure improvements are planned for McDuff Avenue; and
- Many incompatible uses throughout the neighborhood.

aging, and the buildings are in a state of decline. The proposed improvements will occur from Roosevelt Boulevard to Beaver Street, and will include roadway repaving, curb and gutter, and turn lanes. The Request for Proposals has been advertised and the project currently has a construction completion date of 2005. The program budget is $11 million.

Retention Ponds

Three retention ponds are currently under consideration for the McCoy's Creek Boulevard area. These ponds are intended to relieve some of the flooding that is currently taking place near the Cherokee Street and McCoy's Creek Boulevard intersection. These ponds are also addressed in Section 6 of this Plan.

Habitat for Humanity

Habitat for Humanity, or Habijax, is currently the only housing developer constructing homes in the North Riverside Study Area. Habijax has developed approximately 39 homes in the area to date.

Conclusions

The following conclusions can be deducted from the demographic and survey information provided above:

- Housing conditions are in poor condition, with the worst conditions concentrated in the eastern portion of the Study Area, commonly referred to as "Mixon Town." This area is located east of Osceola Street in the North Riverside Neighborhood.
- Habijax homes, located throughout the Study Area, represent the only new residential construction. The homes, while an improvement over vacant lots, will likely impact the neighborhood's ability to attract higher income residents;
- There is a high amount of renters located throughout the Study Area, and since there are not many multi-family units, the majority of renters are residing in single-family homes owned by investors. Given the overall housing conditions of the neighborhood, the investor-owners are likely to be absentee owners using property managers to oversee the properties.

- The North Riverside Neighborhood will be experiencing a great deal of infrastructure improvements along McDuff Avenue and with the construction of the I-95 and I-10 interchange. These improvements can either provide a catalyst towards redevelopment or further divide the North Riverside area from the Downtown area.

- The EPA Superfund Site greatly hinders any development west of Osceola, particularly residential development.

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[i] Data from the 2000 Census for economic indicators are not yet available.
[ii] Median income data were adjusted to 1999$ using the Consumer Price Index.

Section 3
Community Participation

The North Riverside Community Development Corporation...

- Provided the Consulting Team with the primary source of resident participation;
- Administered a SWOT survey to the residents;
- Made the Plan a part of the agenda for their regular meetings; and
- Organized business leader workshops for the Plan.

Introduction

Engaging residents, businesses and other stakeholders is vital to any successful neighborhood revitalization effort. Meaningful citizen participation within neighborhood planning initiatives builds partnerships between local government and resident groups and serves as a mechanism for stakeholder empowerment. The residents, business leaders, and other stakeholders have cooperated in the creation of this neighborhood action plan since the initiation of the planning process, providing valuable insight and guidance. The first community meeting provided survey results that outlined the focus of the Plan. Two sessions were also held to define the "visions" of the North Riverside Community Development Corporation. Additional workshops were held with area business leaders. This section outlines the results of the initial strengths and weaknesses survey along with the visions of the community association and results from the business leaders' survey.

Community Meeting Survey

The Planning Team hosted an introductory North Riverside Community meeting on September 19, 2001, to inform residents about the neighborhood revitalization initiative and to gather input from members of the North Riverside Community Development Corporation, the resident group advising the Planning Team during the neighborhood planning process. The Planning Team used surveys and visioning sessions to gain input from the residents and other stakeholders of North Riverside. The Planning Team administered a Strengths-Weaknesses-Opportunities-Threats (SWOT) survey to residents who attended this session. The purpose of the SWOT survey was to assess the community's assets and constraints from the resident's perspective. The results of the SWOT survey provided the Planning initial data regarding the needs of the community. The following is an analysis and summary of the SWOT survey results.

Playground that floods, making it unusable

Strengths

The most frequently cited strength of North Riverside was the strong community organization, the North Riverside Community Development Corporation, which operates within the neighborhood. North Riverside's location, particularly its proximity to downtown and I-10 was also noted as a major strength.

More than half of the strengths that were cited for the area were primarily associated with social capital, including strong businesses, churches, a new health center and police substation. These answers indicate a strong sense of community and resident cohesion.

Weaknesses

Drugs and prostitution were two of the most frequently cited weaknesses of North Riverside. Other issues included the lack of a community center, abandoned cars, older houses that need repair, and the blocking of streets by rail cars.

McCoys Creek flooding and contamination was a major concern for the residents. The flooding is particularly serious in the McDuff Street and Stockton Street area of the neighborhood near the northern portion of the Study Area, and residents reporting stalled vehicles in the roadways and standing water in their yards. Contamination is also a major issue, particularly with the Forest Street Superfund ash site.

Crime is a major concern for the residents of North Riverside. The residents are particularly concerned about the small commercial corner stores in the neighborhood because they "are just areas for drug dealers to hang out" and do not sell neighborhood commercial goods.

Opportunities

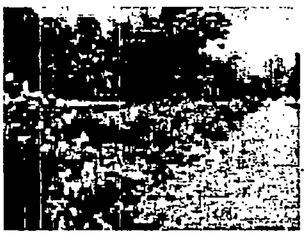
Residents cited the strong business community in the area, areas for housing and street improvements, a playground, and the health center as the major neighborhood opportunities. The business community is comprised of primarily industrial and light manufacturing businesses. Neighbors also noted the opportunity for housing improvements in the area.

Threats

The threats that residents cited mirror the weaknesses with the Forrest Park Superfund site being the most common. The redevelopment of the site and the areas surrounding the site is a significant concern of the community.

Most of the other threats residents cited were crime related, with prostitution and drugs frequently listed.

Visioning Sessions



McCoyrs Creek

Two workshops were held to define a vision for the future of the North Riverside Neighborhood. In these sessions, residents were given the opportunity to further discuss their concerns and offer their suggestions for the determination of redevelopment strategies for the area. The visioning exercise enabled the residents to geographically show the Planning Team the issues affecting the community and the areas that they would like to see redeveloped. The first session was held on November 19, 2001, at Gateway Community Services Center. Participants at this session discussed issues they felt were important. The following issues were discussed:

- McCoys Creek and Forest Street Superfund site
- Lack of a Community Center

Another neighborhood visioning session was held on December 3, 2001. Members of the North Riverside Community Development Corporation were presented data the Planning Team collected.

The neighbors discussed their concerns and desires for future development. Discussion revolved around issues such as the development of a community center, improvement of homes in the neighborhood, as well as future developmental impacts such as the I-10/ I-95 interchange and land contamination. Residents listed the following as issues that should be considered for revitalization strategy development:

- Continue streetscape improvements on Edison Ave & Forrest when the Interstate work is done;
- Smaller Stores – (Dollar Store);
- Co-locate the Park and Community Center/ Head Center; with the historic school in the area as a possible site;
- Suggestions for playground – tennis courts, basketball courts, skating, dirt bike track, and a pavilion with concrete tables and chairs;
- Concerns about McCoys Creek related to the cleanup (ash removal), cost, and redevelopment of the site. Creek flooding was also raised as a concern;
- Substandard housing stock- residents expressed interest in ways to improve the housing stock;

Crystal Street

- Possible renter to ownership opportunities for residents in the rental homes;
- The houses on Crystal Street were noted as preferred housing styles;
- Inadequate street lighting;
- Need for improved code enforcement; and
- There is a need to attract people to the neighborhood after work hours– the neighborhood becomes a "ghost town" after 6:00pm.

Business Leaders' Workshop

A workshop was held with representatives from area businesses on December 13, 2001. The purpose of the workshop was to inform the business community about the neighborhood planning process occurring in the neighborhood and to encourage their involvement. The business enterprises play a major role in the economic development of North Riverside through the employment of area residents. Neighborhood concerns were discussed and their perspectives were recorded through the distribution of a business leader's survey.

The results of the Business Leaders Survey reveal that most of the businesses are located along Edison Avenue and Stockton Street. The area businesses are typically manufacturing, wholesale/ retail, mechanical repair, and contracting operations. Half of the respondents indicated that their businesses employ between 50-99 persons, with most employees working in skilled and semi-skilled positions. Most respondents reported that some of their employees live in the North Riverside neighborhood. When asked about the most important assets of the area where their business is located, business leaders cited location, particularly access to I-95 and I-10, as a major asset of the area. Overall, respondents indicated a belief that new businesses would be interested in moving into the North Riverside Area. They named the following as factors that may attract new businesses to the neighborhood:

- Location
- Affordability
- Close Proximity of Suppliers
- Good business environment

The business leaders also reported problems within the area where their businesses are located. Respondents named the following as concerns:

Business Leaders and Community Residents BOTH agreed on similar issues regarding the community....

- Contamination
- Crime
- Infrastructure
- Housing
- Need for Jobs & Economic Development

- Poor infrastructure- electrical and drainage
- Flooding
- Crime- drugs and prostitution
- Lack of security (police presence)
- Contamination- McCoy's Creek

Respondents indicated the following as projects they would like to see completed in the area surrounding their business:

- Elimination of Flooding
- Crime Reduction
- Clean up of McCoys Creek
- Infrastructure Improvements- lighting and drainage
- Improvement of older homes
- Streetscape

Conclusions

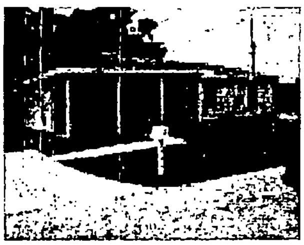
Residents and business leaders generally outlined similar concerns when surveyed. Based on the input they provided, the neighborhood action plan strategies should address the following:

- Housing
- Infrastructure
- Economic Development

The community also expressed concerns about environmental issues, particularly the contamination of McCoys Creek. The clean up of McCoys Creek is an issue that is currently being addressed through formal processes outlined by the Environmental Protection Agency and may require additional action before cleanup can begin.

Residents and business leaders also cited crime as an issue. The criminal activity in the neighborhood may be linked to the vacant and abandoned structures in the area. Addressing housing and infrastructure needs and improvements combined with increasing employment opportunities may have an indirect impact on the crime rates in the area.

Section 4
Housing Strategy

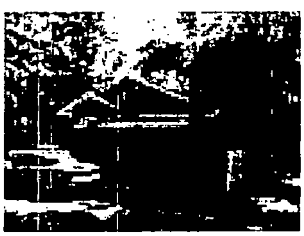


Home developed by Habiiax

Introduction

North Riverside developed as a residential neighborhood that was an extension of the Riverside area, but has been inundated with industrial and commercial uses since the construction of Interstate-95. Many of the homes are frame vernacular or bungalow, with some shotgun homes as well. These homes were built for the workers of the surrounding industrial areas. Currently, the housing stock, although strong, is in a state of decline. This section outlines the housing strategy for the area. The housing strategy takes a prioritized targeted approach to rehabilitation of vacant and abandoned homes in the area.

Overall Housing Strategy



Existing home

The North Riverside community has experienced significant loss of its housing stock along with an increase in vacant units. These factors, coupled with a large percentage of lower income residents, demonstrate the need for an affordable housing strategy in the North Riverside Neighborhood. The residents of North Riverside are dedicated to neighborhood revitalization and desire to maintain and improve the residential character of the community; therefore the housing stock is a valued resource. The rehabilitation of the housing units will serve as a stabilizing tool that will decrease neighborhood decline, attract new residents to the area, and build on the strengths of the neighborhood.

The City should consider providing incentives such as financial and technical assistance to developers interested in rehabilitation of concentration on housing rehabilitation in North Riverside because there are few vacant parcels available for new construction, and a substantial amount of substandard or dilapidated structures. Habijax is a non-profit developer in the area that is concentrating on new construction within the neighborhood. The residential areas of the Study Area contain a housing stock that requires some repairs and rehabilitation therefore, the proposed housing strategy places an emphasis on:

Existing home

- Acquisition and rehabilitation of vacant single-family homes;
- Rehabilitation of owner occupied single family homes; and
- Providing homeownership opportunities to renters.

Housing Opportunity District & Demonstration Block Strategy

Using a prioritized target approach to affordable housing rehabilitation and development would create a larger impact for the neighborhood. The proposed target area, Housing Opportunity District, was selected based upon the evaluation of the existing conditions of the neighborhood. Demonstration Blocks were selected using the following criteria:

- Proximity to Mc Duff and Edison Avenues
- High % of vacant lots
- High % of vacant and abandoned homes
- High % of substandard or dilapidated homes
- Infrastructure needs (i.e. curb and gutter)

The proposed Housing Opportunity District (HOD) is bounded by McCoys Creek Boulevard to the north, Edison Avenue to the south, Nixon Street to the East and Mc Duff Avenue to the West (See maps 3 and 4). The HOD contains 447 parcels. The HOD is primarily single-family uses, with the exception of Edison Avenue and McDuff Avenue and contains 75 parcels of developable vacant land. The HOD also contains a substantial amount of substandard housing (see tables below).

Table 8

Parcels by Use in the North Riverside Housing Opportunity District

Multi-family	Vacant	Single Family	Church	Commercial	Parking	Public Buildings	Total
9	75	324	8	27	3	1	**447**

Table 9

Housing Conditions and Tenure in the North Riverside Housing Opportunity District

	Standard	Substandard	Deteriorated	Dilapidated	Vacant/Boarded	Total
Multi-family	3	4	1	0	1	**9**
Single Family	68	156	65	12	23	**324**

Rendering of streetscape

Rendering of a renovated home

The proposed Housing Opportunity Demonstration Block (HODB), which would launch the rehabilitation program in the North Riverside area, is bound by Dignan Street to the north, Edison Avenue to the south, Cherokee Street to the east and Mc Duff Avenue to the west (see Figures 1-4 for existing conditions). The HODB is recommended for the area because it can build on the momentum of other initiatives such as the Town Center concept being proposed for the McDuff Corridor and the industrial expansion proposed for the area east of Osceola Street (see map 5). Additionally, the area is located away known contaminated sites in the eastern portion of the neighborhood.

It is also recommended that infrastructure improvements be completed through the Housing Opportunity District. Much of the North Riverside neighborhood lacks curb and gutter, adequate lighting, and landscaping. Infrastructure improvements would improve the quality of the neighborhood, and would increase the likelihood of attracting new residents to the area. Figure 6 displays a plan view of the HODB improvements and Figures 7 and 8 display a street perspective of the how the area would look after construction is complete.

In addition to the housing component, the HODB also contains a small corner store. This store should also be restored to provide a viable commercial business to the community (see figure 9).

Acquisition and Rehabilitation

Approximately 20 percent of all single-family homes in the Study Area are vacant and abandoned. The vacant and abandoned structures pose problems for the residents of the neighborhood. In addition to the visual blight of the area with litter and other debris, the abandoned structures typically become havens for criminal activity such as prostitution and drug use. Renovation of the vacant and abandoned homes creates opportunities of homeownership. The newly renovated properties would also preserve the housing stock. The table below reflects a cost estimates for the proposed acquisition and rehabilitation program.

The cost of renovation of a vacant single-family property is approximately \$87,950. The renovation costs are based upon the square footage of a home. Single-family houses are approximately 880 square feet on average. Renovations usually involve making additions to the homes, thereby increasing the square footage to approximately 1200 square feet. The

Table 10
Project Cost Using Proposed Acquisition & Rehabilitation Model, 2003 Dollars

	Average Per Unit	Entire HOD 23 Units	HODB 3 Units
Acquisition Costs	$18,250	$419,750	$54,750
Hard Construction Costs	$51,600	$1,186,800	$154,800
Soft Construction Costs	$18,000	$414,000	$54,000
Total Construction Costs	$87,950	$2,022,850	$263,850
Appraised Value	$70,000	$1,610,000	$210,000
Estimated Developer Gap	$17,950	$412,850	$53,850

Habijax home

appraised value is assumed to be slightly less than a newly constructed home, which is typically $80,000. The estimated developer gap is approximately $17,950, which would have to be subsidized. The number of units for each Housing Opportunity District (HOD) and Housing Opportunity Demonstration Block (HODB) is based on the actual number of vacant and abandoned properties, with twenty-three (23) and three (3) respectively.

The North Riverside neighborhood also contains a large proportion substandard and deteriorated owner-occupied homes that could also benefit from rehabilitation. The cost assumes a maximum of $35,000 per unit. The estimates are based on the number of substandard, deteriorated, and dilapidated units in the HOD, two hundred thirty three (233) and HODB with forty-nine (49). The estimates for owner occupied rehabilitation are reflected in Table 11 below.

Fifty-one percent of the residents in North Riverside are currently renting their homes.

Table 11
Project Cost Using Occupied Rehabilitation Model

	Maximum Cost Per Unit	Entire HOD 233 Units	HODB 49 Units
Rehabilitation Costs	$35,000	$8,115,000	$2,065,000

Lease to Purchase Program

Approximately fifty-one (51) percent of the occupied housing units of census tract 26 are occupied by renters. The declining rate of owner occupants coupled with the increasing number of vacant units reflects the likelihood of properties being owned by absentee landlords. Such properties are poorly maintained and rapidly deteriorating. The vacant structures tend to become havens for criminal activity.

Providing increased homeownership opportunities is a way to improve the North Riverside Community as a whole because it promotes investment within the community. Homeowners are often considered vested stakeholders, because of their commitment to their property. Therefore, it is recommended that the City implement a Lease to Purchase Program.

The proposed Lease to Purchase Program offered by Freddie Mac can provide the following:

- An opportunity for renters to become homeowners; homeownership can serve as a stabilizing factor for communities, because the owners invest in the community through the maintenance and upkeep of their property;
- Protection for lenders from foreclosure; and
- A mechanism to address relocation that may occur as a result of industrial expansion. The program can provide residents the opportunity to locate to an improved home within the neighborhood for residents that would not qualify for a conventional mortgage.

Through the lease to purchase program, prospective homebuyers, called lease purchasers, select a home and a local non-profit corporation buys the home on their behalf. The non-profit serves as the initial owner, mortgagor and property manager for the lease period, which is approximately three years. At the beginning of the lease, the lease-purchaser pays an administrative fee to the non-profit (typically one percent) and the first month's lease payment.

During the lease period, the agency works with the lease purchaser to ensure they are ready to assume the loan at the end of the lease period. This assistance includes participation in a homebuyer education and financial and debt management counseling.

After demonstrating the ability to make timely lease payments to the agency, the lease-purchaser buys the home by assuming the unpaid principal balance of the mortgage. The down payment may be granted from the agency at assumption, providing a no-down-payment mortgage. The lease purchaser also takes advantage of the equity build up that occurs during the lease period.

The Lease to Purchase program functions using a six-step process that includes:

- Selection of a non-profit public agency to administer the program
- Identification and selection of a master loan servicer
- Obtaining the required credit enhancements and insurance
- Prequalification
- Homebuyer education
- Mortgage assumption at end of leasing period

A complete description of the process and program criteria is located in Appendix A.

Program Benefits

The Lease to Purchase Program offered by Freddie Mac provides the following benefits:

- Individuals or families with adequate income to support a mortgage payment can move into a home of their choice immediately rather than wait until cash or credit issues are resolved;

- No down payment from the participating household is required, either at the time the individual or family moves in or at the time the loan is assumed. The down payment may be granted from the agency;

- Equity will accrue for the participating household from the inception of the lease period;

- Individuals or families can establish credit or restore a blemished credit record during the lease-purchase period;

- Provides financial benefit of low-cost Freddie Mac conventional mortgage financing to lease purchasers who might have faced more costly financing choices if they were purchasing the home outright;

- Local housing agencies can sponsor a new approach to mortgage finance which does not require local or federal housing subsidies (e.g. HOME or CDBG);

- Lenders are able to retain customers who would not normally qualify for a loan due to impaired credit or insufficient cash; and

- Homebuilders and real-estate professionals can access a larger pool of prospective clients.

Housing Strategy to include...

- Occupied Rehab
- Rahab & Sale of Vacant & Abandoned Homes
- Lease to Purchase Program

A Lease to Purchase Program will help curb any displacement that could occur due to community revitalization. While property values will not likely rise to cause displacement, the rental population could be forced to leave as property owners begin renovations or begin selling their properties. A Lease to Purchase Program will enable eligible renters to take ownership in the neighborhood and contribute to its stability.

Recommendations

- The City should consider providing incentives such as financial and technical assistance to developers interested in rehabilitation of vacant single-family homes in the area.

- The targeted approach of the Housing Opportunity District strategy should be considered for housing rehabilitation in the neighborhood. Targeting revitalization efforts to a specified area will warrant a larger impact on North Riverside because the rehabilitation of the homes would be concentrated and coordinated.

- It is also recommended that infrastructure improvements be coordinated with the development of the Housing Opportunity District. Much of the North Riverside neighborhood lacks curb and gutter, adequate lighting and landscaping. Coordinating infrastructure improvements with housing redevelopment would greatly improve the quality of life for the residents of the area.

- The City should consider implementing a lease to purchase program as a means to promote increased homeownership opportunities within the neighborhood. The program can also serve as mechanism to address relocation that may occur as a result of industrial expansion.

Section 5
Economic Development

Introduction

The Business Leader's workshop held on December 13, 2001 yielded important information regarding the assets and constraints of the North Riverside Neighborhood in terms of business development. There are numerous successful businesses in the area, primarily heavy commercial and light industrial related businesses, and the North Riverside Community Development Corporation has developed a strong working relationship with the businesses. Given that the business community is strong and willing to work with the neighborhood towards revitalization, this Plan is using this asset as a catalyst for economic development. This Section outlines the strategy that will be used to develop more business opportunities, infrastructure funding, and job creation for the local residents.

Creating an Urban Industrial Park

Large tracts of vacant land

An expanded urban industrial park is recommended for the area east of Osceola Street (see Maps 6 & 8). This area has a mixture of industrial and residential uses, as well as a substantial amount of vacant land. Historically, residential development in this area occurred near the industrial businesses, and occupied by those employed by the businesses. These residential structures are very simple, with frame vernacular or shotgun homes as the dominant style. Currently, the housing stock is deteriorating, with this area having more deteriorated, dilapidated, and vacant housing than the west planning area.

There are numerous land use conflicts throughout this area, with many residential properties located directly adjacent (some within two feet) to industrial uses. Visits to these sites by the Planning Team confirmed that residents of these homes are often subjected to loud, continuous noise from the adjacent businesses, as well as noxious odors from industrial chemicals. Large trucks are frequently parked along the roadways in front of residential homes, essentially forcing residents to view a truck for hours at a time. Given the deteriorating condition of the residential properties and the impacts of the industrial businesses, the quality of life in this area is diminishing rapidly.

The Forest Street Superfund...

- Essentially will hinder any residential development until clean-up is complete
- Creates a perception of contamination that will hinder housing sales

In addition to the deteriorating quality of life for residents and the availability of vacant land, there are other important factors that will impact industrial expansion:

- **The Forest Street Superfund Site** is an ash site that is currently being used as a Head Start Center. The impacts of the site extend throughout the entire east planning area. The Solid Waste and Resource Management Department is currently working with the Environmental Protection Agency (EPA) to test the area and then recommend remediation. However, remediation is not expected to occur for another two years, and building permits for the area must undergo review by the EPA. Currently, the only residential developer in the North Riverside neighborhood is Habijax, and they are unwilling to develop in this area, regardless of approval from EPA. Therefore, residential development in this area is not likely until a full remediation is completed.

- **The I-10/I-95 Interchange** is currently under construction. This interchange will bring both interstates access to the east planning area. The interchange will provide exits to both Forest Street and Edison Avenue, and will substantially improve truck access for industrial businesses.

- **Relocation** will be sensitive issue, since most residents in the area are renters. Renters typically do not have much protection when forced to move by private acquisition, and many of the rental properties in this area are very inexpensive so residents might encounter difficulty in locating similarly priced housing elsewhere. However, if the City is involved in the property acquisition, renters will be protected with rental subsidies for five years under the Federal Relocation Act. The City will also be able to direct the residents to other options, such as lease to purchase programs.

- **The Brownfields Program** will be a major tool for redevelopment in this area, largely until the sites are completely remediated. Developers will be reluctant to come into the area, but might consider the area if cleanup funds were available. Focusing funds towards redevelopment for industrially related projects would allow the North Riverside are to be a participant in the City's Brownfields Project.

- **Enterprise and Empowerment Zones** provide significant tax incentives to businesses that locate within the boundaries. The North Riverside Neighborhood is within both boundaries, and new businesses that locate in the area or existing businesses that expand in the area will be eligible for

A CRA Designation would allow the City to...

- Assemble Land for private development
- Use Tax Increment Financing for infrastructure improvements

tax incentives. Many of these incentives are attached to hiring requirements that would benefit the existing residents.

Industrial expansion for this area is strongly supported by the members of the North Riverside Community Development Corporation. However, there are many residents currently residing in the proposed expansion area. The housing strategy outlined in Section Four should focus on relocating residents to the residential portion of the Study Area.

Additionally, many of the businesses currently employ residents of the Study Area. However, there are also some businesses that actually schedule work hours so their employees can leave the area before evening hours due to the perceptions of the area being unsafe, and do not hire within the neighborhood. Therefore, the City has the opportunity to tie development incentives to employment opportunities for the existing residents.

Creating a Community Redevelopment Area

A Determination of Necessity Study is recommended for the proposed Urban Industrial Park Area (refer to Map 8) as pursuant to Chapter 163 of the Florida Statutes. This Study is a prerequisite for the establishment of a community redevelopment area (CRA). A CRA would allow the City to assemble property through the right of eminent domain and turn that property over to a private entity for redevelopment. This strategy is recommended for the portion of the Study Area that is east of Osceola Street for the purpose of industrial expansion.

There are some residential properties scattered throughout the proposed urban industrial park, with many vacant parcels that appear to have been platted for residential use or were at one time residential use. Therefore, since many of these parcels are small in size for industrial use, property assemblage will be a major task in the redevelopment of this area. Eminent Domain will be a necessary tool of land assembly.

A Determination of Necessity Study analyzes the current conditions of the proposed areas using established criteria outlined in Chapter 163, FS. The criteria include such conditions as multiple land owners, blighted and unsafe building conditions, and a general lack of infrastructure. Given the current conditions of the proposed area for the Urban Industrial Park, the Determination of Necessity Study would be a promising beginning towards the establishment of a Community Redevelopment Area.

Creating a Business Improvement District

Much of the industrial area is seriously deficient in infrastructure. Many business owners stated that the lack of infrastructure and the aging existing infrastructure are significant impediments to the daily operations of their companies. The proposed urban industrial park will need large-scale infrastructure improvements, and the creation of a Business Improvement District (BID) could be a financing strategy for these improvements.

A BID would allow the existing and new businesses to use the City's tax process to assess themselves an additional tax that would be managed and allocated for projects by those who pay the assessment. The BID would act as a funding strategy for the CRA. Since this strategy requires obtaining support from property owners, and the area business owners have been active participants in the revitalization of the community, it is likely that the BID would be a viable funding strategy for the CRA.

Recommendations

- The City should consider creating an urban industrial park that would include the existing industrial sector, as well as all property east of Osceola Street.

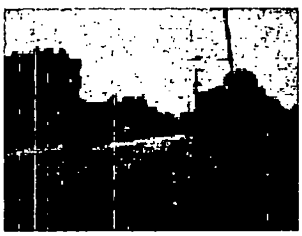
- The City should consider creating a Community Redevelopment Area (CRA) and a Business Improvement District (BID) for the urban industrial park to fund infrastructure projects and to allow the City to obtain the right of eminent domain for the purpose of assembling property for industrial use.

- The City should use financial incentives to encourage business owners to hire from within the neighborhood.

- The City should link the proposed housing strategy in Section Four of this Plan with a focus of relocating the existing residents within the proposed urban industrial park should displacement occur.

Section 6
Infrastructure

McDuff Avenue:



Introduction

North Riverside is an urban core neighborhood with significantly aged and deteriorated infrastructure. Neighborhood residents and business leaders cited poor lighting and drainage as major neighborhood issues in a survey of area strengths and weaknesses. McCoys Creek flooding and contamination were major concerns for the residents. The flooding is particularly serious in the McDuff Street and Stockton Street area of the neighborhood near the northern portion of the Study Area, and residents have reported stalled vehicles in the roadways and standing water in their yards. The North Riverside community also lacks sidewalks, curb and gutter, as well as speed limit signs along McDuff Avenue.

The North Riverside neighborhood has a significant amount of commercial uses concentrated around McDuff Avenue and Stockton Street. The neighborhood also contains industrially zoned areas that house many area businesses. A windshield survey of area conditions for residential and commercial structures revealed most of the structures in the Study Area are in below standard condition and there is a significant portion of vacant and abandoned buildings. Approximately 20% of the single-family homes and about 8% of the commercial buildings are vacant. Deteriorated and vacant categories are concentrated near industrial uses or in the Mixontown area.

When assessing all of the infrastructure needs the following conditions are found:

- Poor drainage
- Poor lighting
- Lack of curb and gutter
- Lack of sidewalks
- Lack of speed limit signs along Mc Duff

Each of these infrastructure issues is critical in shaping the character and quality of the neighborhood, as each contributes to the safety and well being

Town Center Initiative Phases:

- Phase I: Community Planning
- Phase II: Design & Engineering
- Phase III: Construction

of area residents. Therefore, making improvements to the aging infrastructure will greatly impact the neighborhood. The Town Center Initiative would be a useful tool to aid in the revitalization of North Riverside because the area has a significant commercial area located on a major thoroughfare with significantly aged and deteriorated infrastructure.

Neighborhood Corridors

North Riverside has two major neighborhood corridors: McDuff Avenue, with primarily commercial uses, and Edison Avenue, with a mix of residential, commercial, and light industrial uses. Both Corridors provide entrances to the community, and each has a variety of historically and architecturally significant buildings (see Figure 10). The intersection of these corridors, in particular, is the most visible area, and the redevelopment of the intersection could provide a much-needed catalyst toward the revitalization of the McDuff Avenue business district (see Figure 11).

It is recommended that the redevelopment of the McDuff Avenue and Edison Avenue intersection integrate the renovation of the existing buildings and the new construction of architecturally compatible buildings. The use of awnings along the McDuff Avenue corridor would bring the scale of the street (a busy two lane collector road) to a neighborhood level while adding color to the district.

The revitalization of the Edison Avenue corridor should concentrate on preserving the mix of land uses, while improving the aesthetic look of the area (see Figures 12 and 13). Streetscape improvements should include landscaping, brick pavers at intersections, and historic lighting to supplement the existing lighting. McDuff Avenue is discussed below.

Neighborhood Park

The City is currently planning the construction of two retention ponds north of McCoys Creek Boulevard on the east and west side of Smith Street. These ponds are intended to reduce the flooding of McCoys Creek. A third pond is also planned for the park area that is located between Cherokee and Sunshine Streets (see Figure 13). This pond will encompass the majority of the park, including the existing tennis courts. It is recommended that any pond improvements to the existing park area include park amenities, such as a gazebo, lighting, landscaping, and a walking trail. This would enable the community to use the pond as a park amenity and provide the community with a focal point for revitalization.

Town Center Initiative

The City of Jacksonville has a neighborhood revitalization grant program known as the Town Center Initiative. The Town Center Initiative aims to revitalize older neighborhoods by providing planning, design and infrastructure improvements to public spaces along key business areas and corridors. The goals of the initiative are to:

- Enhance both the visual appeal and physical infrastructure in older neighborhoods' commercial areas and corridors;
- Feature community visioning and planning;
- Encourage public/private partnerships;
- Leverage public dollars by coordination with the Better Jacksonville improvements in the areas; and
- Encourage renewal of old commercial areas which in turn will aid and serve the residential uses.

The Town Center Initiative is a three-phased program that includes the development of a vision plan, design and engineering work, followed by implementation. The first phase of the grant program provides for a vision plan. Several activities can be conducted during the visioning phase. Activities include:

McDuff Avenue

- Defining geographic area for improvements
- Defining building guidelines, landscaping plans and considerations
- Developing renderings of the proposed improvements
- Providing estimated costs (initial estimates)
- Connecting the vision plan with other planning initiatives and funding
- Defining a schedule for implementation
- Identifying key participants that will be involved in the implantation and defining the roles and contributions of each

The second component involves the design and engineering work needed to develop a construction bid package designed to implement the vision plan. The implementation phase includes the completion of the infrastructure improvements.

Eligibility
Neighborhood organizations, civic and business associations are eligible to apply for the grants available through the Town Center Initiative. Neighborhood organizations and civic organizations must have a person responsible for managing funds, as well as a bank account and tax identification. Business associations must be recognized as a registered business by the City. Additionally, the organizations must be incorporated in order to apply.

Commercial areas of neighborhoods as well as highway corridors containing commercial areas that are 30 years or older and experiencing decline are eligible for grants offered through the Town Center Initiative. Highway corridors must be classified as a collector or higher roadway.

Proposed Town Center Area
The proposed location for the Town Center is along McDuff Avenue from Fitzgerald Street to Interstate 10. McDuff Avenue satisfies the following Town Center program requirements:

- It is an aging commercial corridor that is older than 30 years;
- It is a two-lane collector road that is an entrance into the community;
- The area has an existing business community; and
- The area is declining, and has substantial impacts on the North Riverside community.

McDuff Avenue has the following issues that would impact its redevelopment:

- The street is an entrance to the community, and is also a major access road to I-10;
- The street has existing businesses that are involved in the community;
- The street has many historically significant buildings;
- There is a homeless shelter along the Corridor; and
- The area is in close proximity to the Riverside/Avondale Historic District.

The Town Center Initiative would give this area a considerable boost in the revitalization of the area. The McDuff corridor also borders the Housing Opportunity District (HOD) and could build upon the momentum of proposed housing improvements within the area. Combining the efforts to the Town Center Initiative and the targeted rehabilitation and development housing strategy would provide for coordinated revitalization of the neighborhood because housing, commercial, and infrastructure improvements could be addressed simultaneously.

Recommendations

- Use the Town Center Initiative as a tool to improve the infrastructure and commercial structures along McDuff Avenue; and
- Streetscape and other infrastructure improvements should be combined with housing improvements outlined in the Housing Opportunity District (HOD) strategy to promote a comprehensive revitalization strategy that would warrant a larger impact upon the community.
- Edison Avenue improvements should preserve the mix of uses, while improving the aesthetic quality of the area.
- Pond improvements on the existing park and tennis courts should include some park amenities, such as a gazebo and walking trail that would connect to the other two ponds that will be constructed to reduce the flooding problem affecting McCoys Creek Boulevard.

Section 7
Zoning

Industrial uses surrounding a home

Introduction

There are a variety of zoning districts within North Riverside, including single-family residential, commercial, and industrial districts. Residential districts are located throughout the study area, while industrial districts are concentrated east of Stockton Street adjacent to Interstates 10 and 95, and commercial districts are concentrated along major roadways in the study area (Map 7).

Issues

The key zoning issues in the Study Area are as follows:

- Incompatible adjacent zoning districts and related land uses;
- A lack of transitional zoning districts between incompatible uses; and
- Areas with non-conforming uses.

The most common example of incompatible zoning districts and lacking transitional zoning districts is the proliferation of residential districts adjacent to industrial or intense commercial districts. This is frequently seen in the areas east of Stockton Street where single-family homes are often next door to or directly across the street from businesses with outside storage of heavy equipment or other nuisance uses. A transitional zoning district with intermediate intensity of uses is commonly used to provide a buffer between incompatible uses. Landscaping or opaque fencing is another buffering option where there is not sufficient space for a transitional zoning district.

Prior to the construction of the interstate highway system, the Study Area was dominated by residential uses. Since the highways' construction, light industrial and intense commercial uses have developed along Interstates 10 and 95. In many cases, these uses have developed alongside single-family homes. These areas have since been converted from residential to industrial zoning districts, resulting in many areas of non-conforming uses. The most striking example of this phenomenon is in the south-central section of the

Non-conforming use: Grocery in RMD-A

study area where the W.W. Gay facility has completely surrounded a cluster of single-family homes.

Table 12 **Zoning Districts Present Within the North Riverside Study Area**

Residential	
RLD-G	Single-family homes, foster care homes, family day care meeting performance standards, community residential homes of six or fewer residents meeting performance standards, essential services, churches, golf courses, parks, country clubs, and home occupations meeting performance standards.
RMD-A	Single-family homes, elderly housing, foster homes, family day care meeting performance standards, community residential homes of six or fewer residents meeting performance standards set forth in Part 4, essential services, churches, golf courses, parks, country clubs, and home occupations meeting performance standards set forth in Part 4, churches, golf courses, and parks.
RMD-D	Multiple-family dwellings, elderly housing, family day care, foster homes, community residential homes of six or fewer residents meeting performance standards, essential services, churches, golf courses, parks, country clubs, and home occupations meeting performance standards set forth in Part 4.

Commercial	
CO	Medical & dental offices, professional & business offices, facilities for the production of eyeglasses, hearing aids and other medical devices in conjunction with a service being rendered at the location, and essential services.
CCG-1	Retail outlets of all kinds & service establishments of all kinds, recreational facilities, offices, hotels, & banks. Adult entertainment, bottle clubs, and rescue missions by exception.
CCG-2	Retail outlets of all kinds, including pawnshops. Service establishments of all kinds, recreational facilities, offices, hotels, hospitals, & wholesaling. Adult entertainment, bottle clubs, and rescue missions by exception.
Public Buildings	
PBF-1	All government uses. Essential services and solid waste management facilities by exception.
Industrial	
IBP-2	Medical & dental offices, hospitals, professional & business offices, warehousing, wholesaling, distribution, light manufacturing, research & medical laboratories, radio & television broadcasting, vocational & technical schools, essential services, and off-street parking lots.
IL	Industrial uses, including wholesaling, warehousing and storage, light manufacturing, printing, offices, service establishments, medical clinics, storage yards, and retail sales of heavy machinery.

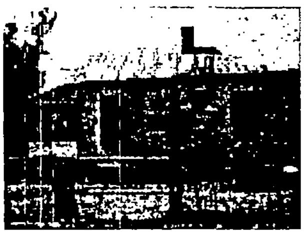
There are numerous land use issues that are directly related to the zoning districts assigned to the Study Area. Additionally, many times the conditions of residential property are related to the amount of industrial property surrounding the area. Incompatible land uses and non-conforming uses have a significant effect on the health of the community.

Most of the rezoning for the Edison Avenue Study Area will be associated with a strategy recommendation.

Recommendations

- The CRA will need to be rezoned to accommodate industrial expansion, particularly in areas where there are residential zoning districts that will need to be rezoned to Industrial Light. Additionally, there is also an area adjacent to the residential area located west of Osceola Street (bounded by Osceola to the west, Lewis Street to the south, the railroad tracks to the east, and Forest Street to the north) that would need to have some type of transitional zoning district. This area should be zoned CCG-2 and used for flex-space warehouses that would be less intensive than traditional industrial uses. It is also recommended that an area be reserved for a natural buffer between the residential and the industrial uses.

- The Town Center Initiative is designed to encourage the revitalization of aging urban corridors and that the corridors become a central location for neighborhood commercial needs. The current zoning along McDuff Avenue is CCG-2, which is the most intensive commercial district category. The uses along the Corridor are representative of the zoning district, with car repair shops and gas stations. These uses do not satisfy the daily shopping of residents. Therefore, a less intensive zoning district category is recommended: CCG-1. The boundaries for this district should be Roosevelt Boulevard to the south and Fitzgerald Street to the north, and all properties abutting the Corridor to the east and the west. The district should encompass some Edison Avenue from McDuff Avenue to Cherokee Street and all properties abutting Edison Avenue from the north and south.



Section 8
Summary of Recommendations

The following is a listing of the recommendations outlined within the Neighborhood Action Plan:

- The City should consider providing incentives such as financial and technical assistance to developers interested in rehabilitation of vacant single-family homes in the area.

- The target approached Housing Opportunity District strategy should be considered for housing rehabilitation in the neighborhood. Targeting revitalization efforts to a specified area will warrant a larger impact on North Riverside because the rehabilitation of the homes would be concentrated and coordinated.

- It is also recommended that infrastructure improvements also be coordinated with the development of the Housing Opportunity District. Much of the North Riverside neighborhood lacks curb and gutter, adequate lighting and landscaping. Coordinating infrastructure improvements with housing redevelopment would greatly improve the quality of life for the residents of the area.

- Use the Town Center initiative as a tool to improve the infrastructure and commercial structures along Mc Duff Avenue.

- Streetscape and other infrastructure improvements should be combined with housing improvements outlined in the Housing Opportunity District (HOD) strategy to promote a comprehensive revitalization strategy that would warrant a larger impact upon the community.

- The City should consider creating an urban industrial park that would include the existing industrial sector, as well as property east of Osceola Street.

- The City should consider creating a Community Redevelopment Area (CRA) for the urban industrial park to fund infrastructure projects and to allow the City to obtain the right of eminent domain for the purpose of assembling property for industrial use.

- The City should use financial incentives, such as those contained within the Enterprise and Empowerment Zone Programs to encourage business owners to hire from within the neighborhood.

- The City should link the proposed housing strategy in Section Four of this Plan with a focus of relocating the existing residents within the proposed urban industrial park should displacement occur.

- The City should consider sponsoring an Area-Wide Environmental Site Assessment (ESA) for the North Riverside Area through the Brownfields Program. An Area-wide assessment within North Riverside would be appropriate to help promote the identification and redevelopment of abandoned and underutilized commercial and industrial sites in the area, thereby increasing opportunities for business growth.

- The CRA will need to be rezoned to accommodate industrial expansion, particularly in the sections where there are residential zoning districts that will need to be rezoned to Industrial Light. Additionally, there is also an area adjacent to the residential area that is located west of Osceola Street (bounded by Osceola to the west, Lewis Street to the south, the railroad tracks to the east, and Forest Street to the north) that would need to have some type of transitional zoning district. It is recommended that this district be CCG-2, and the use be a flex-space warehouse area that would be less intensive than industrial use. It is also recommended that an area be reserved for a natural buffer between the residential and the industrial uses.

- The Town Center program is designed to encourage the revitalization of aging urban corridors and that the corridors become a central location for neighborhood commercial needs. The current zoning along McDuff Avenue is CCG-2, which is the most intensive commercial district category. The uses along the Corridor are representative of the zoning district, with car repair shops and gas

stations. These uses do not satisfy the daily shopping of residents. Therefore, a less intensive zoning district category is recommended: Commercial Neighborhood. The boundaries for this district should be Roosevelt Boulevard to the south and Fitzgerald Street to the north, and all properties abutting the Corridor to the east and the west. The district should encompass some Edison Avenue from McDuff Avenue to Cherokee Street and all properties abutting Edison Avenue from the north and south.

Section 9
Evaluation & Implementation

Implementation:

- Beginning with the Housing Opportuntiy Demonstration Block will be a project that will create a visible impact.
- Creating the Community Redevelopment Area will enable the City to begin land acquisition.

Implementation Schedule

The North Riverside Neighborhood Action Plan is designed to provide action steps and recommendations that would spur projects and revitalization initiatives. This Plan outlines recommendations that could provide tangible and visible improvements to the residents, businesses and other stakeholders within the community. The implementation of these recommendations would ultimately foster positive change within the community by addressing North Riverside's needs and opportunities comprehensively.

It should be noted that the recommendations summarized in Section Eight are interconnected. Some recommendations provide the framework that will be necessary for the implementation of other recommendations. It is strongly recommended that each recommendation be considered equally in the overall revitalization strategy for North Riverside and implementation of the Neighborhood Action Plan.

Implementation Start Up

There are several projects to complete in North Riverside. It is important, however to begin with a project that will create a visible initial impact on the community. The initial project can serve as the catalyst for revitalization of the area. Section four outlines a housing strategy that takes a targeted approach to housing and redevelopment by starting in an initial Housing Opportunity Demonstration Block. Housing improvements would then be phased to encompass the larger target area. Recommended improvements include rehabilitation of both occupied and abandoned structures as well as constructing new homes that are compatible with the homes in the area.

Economic development, particularly business expansion and employment opportunities are critical to attracting new residents and enterprises to North

Riverside. The regulatory changes for the proposed Community Redevelopment Area (CRA) will be a necessary first step in providing the financing and other mechanisms needed for improvements.

The following is a work plan for the first phase of implementation:

Task	Description	Responsible Body
1.0	**Implement Regulatory Framework**	
	Prepare Draft legislation	PDD
	Review by General Council	General Council
1.1	**Adoption of Plan**	Council District Member/ General Council
	Hold zoning workshops with residents/businesses	PDD
	Preparation of ordinance	
	Review by	
1.2	**Adoption of necessary zoning changes**	PDD
1.3	**Begin Creation of North Riverside CRA**	PDD, JEDC
	Meeting with community groups	
	Public notice per statutory requirements	
	Determination of slum and blight report	
	Determination of slum and blight adoption by ordinance	
	Public notice per statutory requirements	
	Creation of a community redevelopment agency or appointed governing body	
	Creation of a community redevelopment plan	
	Public notice per statutory requirements	
	Adoption of the community redevelopment plan	
2.0	**Physical Development**	
2.1	**Residential Development**	PDD
	Identify candidates for housing rehabilitation	
	Identify dilapidated structures	
	Identify lots for acquisition	
	Create a financial model for acquisition/rehab/new construction	
	Identify non profit developers	
2.2	**Infrastructure Improvements**	
	Identification of areas lacking curb, gutter and other infrastructure needs	
	Prioritization of improvements- coordinate with housing improvements and other initiatives	
3.0	**Acquisition of Funding**	
	Identification of funding sources- federal, state, local, private investment	

The initial phases of implementation establish the basis for economic development and residential improvement. The ability to attract new businesses and residents is critical to marketing North Riverside as a neighborhood of choice. The ability to attract people to the neighborhood will depend on the success of these projects. The City has the opportunity to build on the partnerships established in the neighborhood planning process and make the Neighborhood Action Plan implementation a resident-led initiative.

Evaluation

The North Riverside Neighborhood Action Plan describes redevelopment opportunities that build on the assets of the community and outlines specific strategies to aid in revitalization efforts. The evaluation component provides a means for gauging the successes and accomplishments of the overall revitalization initiative for North Riverside Neighborhood quantitatively.

The following matrix provides indicators and evaluation measures for the major strategies and programs described in the neighborhood action plan.

Table 13 **Primary Performance Indicators and Evaluation Measures**

Program/Strategy	Indicator	Measure	Data Source
Housing Rehabilitation	Rehabilitated Homes	# of applicants with building permits	Housing Services
Reduce dilapidated structures	Acquisition of Vacant and abandoned structures in disrepair	# of demolitions within target area	Neighborhoods
New Construction	Newly Constructed Homes	# of Homes Built & Sold	Housing Services
Increase Homeownership	Home ownership rates	# of Homestead Exemptions	Property Appraiser's Data Base
CRA	Property Values	% increase in property values	Property Appraiser's Database
Urban Industrial Park	New Businesses	# of occupational licenses; # of permits	
Infrastructure	Infrastructure Improvement Projects	# of Road/Lighting/ and Sidewalk Improvement	Public Works

The strategies within action plans are intended to spark overall neighborhood improvement in areas such as neighborhood appearance and crime reduction, which result indirectly from revitalization efforts (Table 14).

Table 14 **Secondary Performance Indicators and Performance Measures**

Category	Indicator	Measure	Data Source
Safety	Crime	Crime Rates/ Resident Perception of Safety	Duval County Sheriffs Office
Neighborhood Appearance	Litter & Trash	# of Cleanups/ Resident Perception of Safety	Non profit Organizations/ Resident Survey

It is recommended that the Neighborhood Action Plan be evaluated after a two-year period to assess its implementation and program accomplishments, followed by subsequent evaluations. Periodic assessment and evaluation of the programs and strategies that develop as a result of the neighborhood action plan will allow the City and neighborhood stakeholders to modify efforts based on the programs accomplishments. The evaluation could potentially aid in securing and or leveraging additional funding to continue improvements.

North Riverside Neighborhood Action Plan
Supporting Comprehensive Plan Objectives and Policies

Housing Element

<u>Objective 1.11</u> The City will develop and implement a plan of action by which the City will continue to focus on the Northwest Jacksonville Area by addressing infrastructure and other deficiencies, thereby attracting growth and development opportunities, and making it a more attractive place to live and work.

Policy 1.11.1 The Planning and Development Department will continue to synthesize all planning documents resulting from this comprehensive planning process to assure that they are all consistent with the needs of the Northwest Jacksonville Area.

Policy 1.11.2 The City will focus its revitalization efforts in the Northwest Jacksonville Area based upon this comprehensive plan, and other reports documenting the service deficiencies in the Northwest Jacksonville Area. These efforts will address street, drainage, and utilities, a variety of quality affordable housing, social services, job training, employment opportunities, and mass transportation to facilitate access to other educational and employment opportunities in the City.

Future Land Use Element

Policy 1.1.21 To help and ensure a more balanced population distribution and utilization of public resources, the City will focus greater efforts on revitalizing existing communities and developments in the Urban Core, Southwest, North, and Northwest Planning Districts through such measures as the Mayor's Intensive Care Neighborhoods program, allocation of Community Development Block Grants and the use of economic incentives through JEDC.

Policy 1.1.22 The City will encourage new development to locate in the Urban Core, Southwest, North, and Northwest planning districts through such measures as economic incentives, greater marketing assistance, etc.

Policy 1.1.23 The City will encourage the use of such smart growth practices as:

- Interconnectivity of transportation modes and recreation and open space areas;
- A range of densities and types of residential developments;
- Mixed use development which encourages internal capture of trips;
- Use of the urban and suburban area boundaries as urban growth boundaries;
- Revitalization of older areas and the downtown, and
- Purchase of land through the Preservation Project to remove it from development and preserve it as open space, recreation or conservation use.

Objective 2.2 By 1999, develop a comprehensive urban revitalization strategy for the City's blighted areas, and those areas threatened by blight, which will address maintenance, improvement or replacement of existing structures, permit the transition of run-down or grossly under-utilized commercial properties to alternate uses, and support the re-emergence of diverse urban neighborhoods in proximity to the City's CBD.

Policy 2.2.1 Prepare through the Planning and Development Department a detailed and up-to-date inventory of the use and condition of all structures, as well as existing development patterns, in identified redevelopment areas and target neighborhoods.

Policy 2.2.4 Maintain existing stable neighborhoods through coordinated rehabilitation and conservation action by the Housing Safety Division and Planning and Development Department. Protect residential areas from encroachment by incompatible land uses through proper zoning, and from through or heavy traffic by use of buffers and other mitigating measures.

Policy 2.2.5 Develop incentive mechanisms to be used by the Neighborhoods and Planning and Development Departments to encourage redevelopment of physically or economically depressed areas. Use extension of public utilities and other capital improvement projects, and joint public-private projects, as catalysts to revitalize these areas.

Policy 2.2.7 Develop and implement through the Planning and Development Department urban design guidelines for redevelopment areas identified in the Housing Element.

Policy 2.2.8 Encourage the redevelopment and revitalization of run-down and/or under-utilized commercial areas through a combination of regulatory techniques, incentives and land use planning. Adopt redevelopment and revitalization strategies and incentives for private reinvestment in under-utilized residential and/or commercial areas where adequate infrastructure to support redevelopment exists.

Policy 2.2.9 Develop and implement through the Planning and Development Department urban design criteria that will address the interface of incompatible land uses (e.g., commercial and residential) and provide mitigation techniques to guide the redevelopment of uses affected by road widenings.

APD Inc.
City of Jacksonville Planning & Development Department
North Riverside Community Development Corporation