Health Consultation

Surface Soil

WEST FLORIDA SCRAP METAL

FORT WALTON BEACH, OKALOOSA COUNTY

Final Release

February 5, 2013

Prepared by:
Florida Department of Health
Division of Disease Control and Health Protection
Under Cooperative Agreement with
U. S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

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Foreword

The Florida Department of Health (DOH) evaluates the public health risk of hazardous waste sites through a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ASTDR) in Atlanta, Georgia. This is a state certified report. Florida DOH prepared this report following the same procedures and quality control as ATSDR-approved reports. This health consultation is part of an ongoing effort to evaluate health effects associated with soil contaminants related to the West Florida Scrap Metal hazardous waste site. The Florida DOH evaluates site-related public health issues through the following processes:

■ Evaluating exposure: Florida DOH scientists begin by reviewing available information about environmental conditions at the site. The first task is to find out how much contamination is present, where it is on the site, and how human exposures might occur. The Florida Department of Environmental Protection (DEP) provided the information for this assessment.

■ Evaluating health effects: If they find evidence that exposures to hazardous substances are occurring or might occur, Florida DOH scientists will determine whether that exposure could be harmful to human health. They focus this report on public health; that is, the health impact on the community as a whole, and base it on existing scientific information.

■ Developing recommendations: In this report, the Florida DOH outlines, in plain language, their conclusions regarding potential health threats posed by surface soil contaminants. They offer recommendations for reducing or eliminating human exposure to contaminants. The role of the Florida DOH in dealing with hazardous waste sites is primarily advisory. For that reason, the evaluation report will typically recommend actions for other agencies, including the US Environmental Protection Agency (EPA) and the Florida DEP. If, however, an immediate health threat exists or is imminent, Florida DOH will issue a public health advisory warning people of the danger, and will work to resolve the problem.

■ Soliciting community input: The evaluation process is interactive. The Florida DOH starts by soliciting and evaluating information from various government agencies, individuals or organizations responsible for cleaning up the site, and those living in communities near the site. They share any conclusions about the site with the groups and organizations providing the information. Once they prepare an evaluation report, the Florida DOH seeks feedback from the public.

If you have questions or comments about this report, Florida DOH encourages you to contact them.

Please write to: Division of Disease Control and Health Protection
Public Health Toxicology Section
Florida Department of Health
4052 Bald Cypress Way, Bin # A-08
Tallahassee, FL 32399-1712

Or call them at: 850-245-4401 or toll-free in Florida: 1-877-798-2772

Summary

INTRODUCTION	At the West Florida Scrap Metal hazardous waste site, the Florida Department of Health's (DOH) top priority is to ensure nearby residents have the best information to safeguard their health. The West Florida Scrap Metal site is at 1906 Hi Tech Lane, Fort Walton Beach, Florida. Between 1973 and 2000, automobile salvaging and debris disposal contaminated the site's soil and groundwater. The Florida Department of Environmental Protection (DEP) tested soil and groundwater in 2007 and 2008. In 2010, Florida DOH reviewed the results from these tests and asked for additional testing of on-site and off-site soil. Florida DOH reviews additional soil results from 2012 in this report.
CONCLUSION #1	People should not trespass on the West Florida Scrap Metal site. The site is easily accessible to people on foot or riding off-road vehicles. Some roads onto the property have gates but nearby fences are breached.
BASIS FOR DECISION #1	Physicals hazards on the site include rusty metal with sharp edges and unstable debris piles. Decomposing organic materials can be a collapsing hazard for people walking or driving onto the landfill.
NEXT STEPS #1	Florida DEP should discourage people from trespassing on the site to prevent exposures to physical hazards.
CONCLUSION #2	The levels of arsenic and polycyclic aromatic hydrocarbons (PAHs) in on-site surface soil are not likely to increase the risk of illness to trespassers.
BASIS FOR DECISION #2	Florida DOH compared the amounts of chemicals in soil people might accidentally swallow to amounts known to cause illness in human medical and animal studies. The low levels estimated are not likely to harm people's health. Increased cancer risk for trespassers is predicted to be less than one new cancer case in one million people. The levels are, however, above state screening levels for commercial, industrial, and residential use.
NEXT STEPS #2	Florida DEP is considering a state-funded cleanup of the site.

CONCLUSION #3	Incidental ingestion of small amounts of contaminated surface soil in residential areas near the West Florida Scrap Metal site is not likely to harm people's health.
BASIS FOR DECISION #3	Florida DOH compared the amounts of chemicals in residential soil sampling results that people might accidentally swallow to amounts known to cause illness in human medical and animal studies. The low levels estimated are not likely to harm people's health. Increased cancer risk for residents would be "extremely low." The off-site contaminant levels meet state standards for current uses of properties.
CONCLUSION #4	The levels of arsenic and PAHs in on-site surface soil are not likely to harm future residents.
BASIS FOR DECISION #4	Florida DOH compared the amounts of chemicals in soil people might accidentally swallow to amounts known to cause illness in human medical and animal studies. The low levels estimated are not likely to harm people's health. Increased cancer risk for future residents would be "very low." The levels are, however, above state standards for residential use.
FOR MORE INFORMATION	If you have concerns about your health or the health of your children, you should contact your health care provider. You may also call the Florida DOH toll-free at 877-798-2772 and ask for information about the West Florida Scrap Metal hazardous waste site.

Background and Statement of Issues

The purpose of this health consultation is to assess the public health threat from the West Florida Scrap Metal hazardous waste site. This report reviews soil tested by Florida Department of Environmental Protection (DEP) in January 2012. Florida DEP requested this assessment.

In their 2010 report, the Florida Department of Health (DOH) concluded that incidental ingestion of on-site surface soil by trespassers was not likely to harm health. They also found that off-site soil testing was inadequate. Arsenic, cadmium, lead, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) in on-site surface soil may have come from automobiles, paint, batteries, or pesticides. Shallow groundwater contained metals but not at levels above drinking water standards. The on-site deep well that served as a source of drinking water in the past did not contain chemicals above drinking water screening levels. Florida DOH requested additional off-site soil samples to evaluate the extent of contamination [ATSDR 2010].

Health scientists look at what chemicals are present and in what amounts. They compare those amounts to national guidelines. These guidelines are set far below known or suspected levels associated with health effects. Florida DOH uses guidelines developed to protect children. If chemicals are not present at levels high enough to harm children, they would not likely harm adults.

This assessment considers health concerns of nearby residents and explores possible associations with site-related contaminants. It requires the use of assumptions, judgments, and incomplete data. These factors contribute to uncertainty in evaluating the health threat. Assumptions and judgments in this assessment err on the side of protecting public health and may overestimate the risk.

This assessment estimates the health risk for individuals exposed to the highest measured level of contamination. It, however, does not apply equally to all nearby residents. The health risk for most nearby residents is less than the health risk estimated in this report.

Site Description

The West Florida Scrap Metal hazardous waste site is at 1906 Hi Tech Lane, on the north side of Fort Walton Beach, Okaloosa County, Florida, 32547-7049 (Figure 1). Four connected, unpaved parcels make up this 13-acre site (Photos 1 thru 4). This site is part of a larger 22.61-acre industrial complex (Figure 2). The industrial complex is bordered on the south by Hi Tech Lane, on the west by N. Beal Extended, and on the north by the City of Fort Walton Beach wastewater treatment plant. The eastern adjacent property is a vegetated with trees and adjoins the wastewater reclamation area used by the city under an agreement with Eglin Air Force Base. The Northern Pines residential subdivision is southeast and south of the industrial complex. A landscaping and hauling business and other small businesses separate the site from the Northern Pines neighborhood.

Chain link fences divide the industrial complex into several parcels, some with one or two-story metal buildings housing various currently operating businesses. The four parcels that make up the site include a former scrap facility, a gas tank waste pile, a landfill, and a fenced-area of wood waste, metal waste, and construction debris. Most of the site is sparsely vegetated. Most portions of the site are readily accessible to trespassers on foot and many parts of the site would also be accessible to persons on off-road vehicles (Figure 2).

While multiple owners, occupants, and activities have been associated with the site during the last 20 years, West Florida Scrap Metal was the common owner. As early as 1973, the owner used the site for automobile salvaging. In the early 1980s, the owner dug a 20- to 25-foot deep borrow pit in the northeast quadrant of the site. Starting in 1990, the owner began filling the borrow pit with debris. In the 1990s, the Florida DEP observed over 500 used tires, waste oil, 55-gallon drums, paint cans, auto parts, automobile batteries, and household waste on the site. The borrow pit was filled and the landfill surface currently stands 35 feet above the ground surface.

In 2000, the owner covered the landfill surface with dirt to put out a fire. Routine landfill operations ceased about this time but neighbors report that sporadic dumping persisted. In 2007, the Florida DEP observed leachate seeping from the south side of the landfill. Other than the soil cover to put out the fire, there has been no cleanup [Tetra Tech 2008]. Because there appears to be no financially viable responsible party, the Florida DEP is considering a state-funded cleanup of this site [DEP 2008a].

In 2007 and 2008, Florida DEP determined on-site soil was contaminated. They found metals (lead, arsenic, cadmium), polychlorinated biphenyls (heat-stable coolants), and chemicals linked to incomplete burning of organic materials (polycyclic aromatic hydrocarbons, PAHs) in the northwestern portion of the site where scrap metals were processed and on the landfill in the northeastern portion of the site.

In their 2010 report, Florida DOH asked Florida DEP to take additional subsurface soil samples on the site and surface soil samples off the site in areas where sediment runoff might collect. Florida DEP's consultant took additional soil samples in January 2012 [Tetra Tech 2012]. Florida DOH evaluates these additional data in this report.

To date, Florida DEP's consultant has taken these site-related samples:

Total	**2008**	**2012**	**Total**
Onsite Samples			
Surface soil	19	3	21
Subsurface soil		3	3
Shallow groundwater	9		9
Deep groundwater	1		1
Offsite Samples			
Surface soil	2	11	13
Subsurface soil	0	11	11

Florida DEP is considering this site for a state-funded site cleanup. Based on additional sampling and future site use, the Florida DEP will determine appropriate site cleanup. Florida DEP may have additional funds for site testing in 2013.

Demographics

Florida DOH examines demographic and land use data to identify sensitive populations, such as young children, the elderly, and women of childbearing age, to determine whether these sensitive populations are exposed to any potential health risks. Demographics also provide details on population mobility and residential history in a particular area. This information helps Florida DOH evaluate how long residents might have been exposed to contaminants.

Approximately 4,000 people live within one mile of the site, mostly to the southeast in the Northern Pines neighborhood. Eighty percent (80%) are white, 9% are African-American, 5% are of Hispanic origin, 4% are Asians or Pacific Islanders, and 2% are classified as other. Twenty-five percent (25%) are less than 18 years-old. Forty percent (40%) have a high school diploma or less and 60% have at least two years of college. Ninety-four percent (94%) speak only English and 70% make less than $50,000 a year [EPA 2010].

Land Use

Land use within a quarter mile of the site is a mixture of residential, agricultural, and commercial. The Northern Pines subdivision is southeast of the site. Forested US Air Force lands are to the east, south, and west. The City of Fort Walton Beach wastewater treatment plant borders the northern boundary of the site. North and east of the wastewater treatment plant is a vegetated wastewater spray field (Figures 1 and 2).

Community Health Concerns

In the past, the Florida DEP reported phone calls from a few nearby residents asking if the site is a health threat. One resident was concerned that storm water runoff from the site contaminated nearby creeks, bayous, and bays [DEP 2008b].

Florida DOH sent the findings of the Public Comment Release of this report to 400 nearby residents. Seventeen residents responded to a survey included in the findings summary. Florida DOH acknowledged these respondents with postcards, letters, emails and phone calls. They address these respondents' health concerns in Appendix 2.

Discussion

Pathway Analyses

Chemical contamination in the environment can harm your health but only if you have contact with those contaminants (exposure). Without contact or exposure, there is no

harm to health. If there is contact or exposure, how much of the contaminants you contact (concentration), how often you contact them (frequency), for how long you contact them (duration), and the danger of the contaminant (toxicity) all determine the risk of harm.

Knowing or estimating the frequency with which people could have contact with hazardous substances is essential to assessing the public health importance of these contaminants. To decide if people can contact contaminants at or near a site, Florida DOH looks at human exposure pathways. Exposure pathways have five parts. They are:

1. a source of contamination like a hazardous waste site,
2. an environmental medium like air, water, or soil that can hold or move the contamination,
3. a point where people come into contact with a contaminated medium like water at the tap or soil in the yard,
4. an exposure route like ingesting contaminated soil or water or breathing contaminated air,
5. a population who could be exposed to contamination like nearby residents.

Florida DOH rejects an exposure pathway if at least one of the five parts referenced above is missing and will not occur in the future. Exposure pathways not eliminated are either completed or potential. For completed pathways, all five pathway parts exist and exposure to a contaminant has occurred, is occurring, or will occur. For potential pathways, at least one of the five parts is missing, but could exist. Also for potential pathways, exposure to a contaminant could have occurred, could be occurring, or could occur in the future.

The health risk from dermal exposure (skin absorption) is typically less than the risk from incidental ingestion (swallowing).

Pathways Summary

For this assessment, Florida DOH evaluates the health threats from on- and off- site surface soil (Tables 1-3). People are usually only exposed to the top 3 inches of soil. Incidental soil ingestion can occur when adults do not wash their hands after being outside before eating or smoking. Children may ingest soil by putting their fingers or toys in their mouths.

Completed exposure pathways

For the site trespasser pathway, on-site waste disposal is the source of contamination. Surface soil is the environmental media and on-site is the point of exposure. Incidental ingestion is the route of exposure and site trespassers are the exposed population. Exposures could have occurred since 1973, may be occurring now, and could occur in the future (Table 1).

For nearby residents, stormwater runoff of wastes disposed of on the site is the source of contamination. Surface soil is the environmental media and off-site ditches and yards are the points of exposure. Incidental ingestion is the route of exposure. Nearby residents are the exposed population. Exposures could have occurred as early as 1973, may be occurring now, and could occur in the future (Table 1).

Potential exposure pathways

In the future, people might use the site for recreational, commercial, or residential purposes. Of the potential exposed populations, future residents would have the highest exposure. Therefore, a health risk evaluation for future residents is protective of other potential future site users.

For the future site resident pathway, on-site waste disposal would be the source of contamination. Surface soil would be the environmental media and onsite would be the point of exposure. Incidental ingestion would be the route of exposure and future site residents would be the exposed population. Exposures could occur in the future (Table 2).

Eliminated exposure pathways

Groundwater is an eliminated exposure pathway. People near the site do not use the groundwater (Table 3). They use water from public water supply wells for drinking, bathing, showering, cooking, and other household uses. The City of Fort Walton regularly tests this water. Tests include the chemical contaminants found on the site [FDOH 2010].

Environmental Data

In January 2012, consultants for the Florida DEP collected 14 surface soil samples (0-3 inches deep). Three samples were on the site and 11 were off of the site. The on-site samples were southeast and southwest of the landfill (Figure 3: SS-35, 36, and 39). The off-site samples were east, south, and southeast of the site (Figure 3: SS-37, 38, and 40-48). Florida DEP consultants had the samples analyzed for metals, semi-volatile/volatile chemicals, and pesticides (Tables 4 and 5) [Tetra Tech 2012]. For the purposes of this report, Florida DEP has adequately characterized the extent of off-site surface soil contamination.

In soil samples taken in the Northern Pines subdivision, none of the contaminants analyzed for were above state residential soil standards. Only the off-site soil sample from the forested area east of the site contained arsenic and polycyclic aromatic hydrocarbons (PAHs) above state residential Soil Target Cleanup Levels. This property is not residential however, and the levels there do meet state standards for current (commercial/ industrial) property use [DEP 2005].

Public Health Implications

Florida DOH provides site-specific public health recommendations on the basis of toxicological literature, levels of environmental contaminants, evaluation of potential exposure pathways, duration of exposure, and characteristics of the exposed population. Whether a person will be harmed depends on the type/amount of contaminant, how they are exposed, how long they are exposed, how much contaminant is absorbed, genetics, and individual lifestyles.

After identifying contaminants of concern, Florida DOH evaluates exposures by estimating daily doses for children and adults. Kamrin [1988] explains the concept of dose as follows:

> "…all chemicals, no matter what their characteristics, are toxic in large enough quantities. Thus, the amount of a chemical a person is exposed to is crucial in deciding the extent of toxicity that will occur. In attempting to place an exact number on the amount of a particular compound that is harmful, scientists recognize they must consider the size of an organism. It is unlikely, for example, that the same amount of a particular chemical that will cause toxic effects in a 1-pound rat will also cause toxicity in a 1-ton elephant.
>
> Thus instead of using the amount that is administered or to which an organism is exposed, it is more realistic to use the amount per weight of the organism. Thus, 1 ounce administered to a 1-pound rat is equivalent to 2,000 ounces to a 2,000-pound (1-ton) elephant. In each case, the amount per weight is the same; 1 ounce for each pound of animal."

This amount per weight is the *dose*. Toxicology uses dose to compare toxicity of different chemicals in different animals. They use the units of milligrams (mg) of contaminant per kilogram (kg) of body weight per day (mg/kg/day) to express doses in this assessment. A milligram is 1/1,000 of a gram; a kilogram is approximately 2 pounds.

To calculate the daily doses of each contaminant, Florida DOH uses standard and other factors needed for dose calculation [ATSDR 2005; EPA 1995]. They assume that people are exposed daily to the maximum concentration measured. They also make the health protective assumption that 100% of the ingested chemical is absorbed into the body. The percent actually absorbed into the body is likely less. The general formula for estimating a dose is:

$D = (C \times IR \times EF \times CF) / BW$

D = exposure dose (milligrams per kilogram per day or mg/kg/day)
C = contaminant concentration (milligrams per kilogram or mg/kg)
IR = intake rate of contaminated sediment (milligrams per day or mg/day)
EF = exposure factor (unitless)
CF = conversion factor (10^{-6} kilograms per milligram or kg/mg)

BW = body weight (kilograms or kg)

$$EF = F \times ED / AT$$

EF = exposure factor (unitless)
F = frequency of exposure (days/year)
ED = exposure duration (years)
AT = averaging time (days) (ED x 365 days/year for non-carcinogens; 70 years x 365 days/year for carcinogens)

Following ATSDR guidance, Florida DOH groups health effects by duration (length) of exposure. Acute exposures are those with duration of 14 days or less; intermediate exposures are those with duration of 15 – 364 days; and chronic exposures are those that occur for 365 days or more (or an equivalent period for animal exposures). ATSDR Toxicological Profiles also provide information on the environmental transport and regulatory status of contaminants.

To estimate exposure from drinking water and incidental ingestion of contaminated soil, Florida DOH uses the following standard assumptions:

1) children ages 6 months to a year incidentally ingest an average of 60 milligrams (mg) and an upper percentile of 100 mg of soil per day,
2) children ages 1 to 21 years incidentally ingest an average of 100 mg and an upper percentile of 200 mg of soil per day (about the weight of a postage stamp),
3) adults incidentally ingest an average of 50 mg and an upper percentile of 100 mg of soil per day,
4) children's average weights vary with age: (0.5 to 1 year: 9.2 kg), (1 to 2 years: 11.4 kg), (2 to 6 years: 17.4 kg), (6 to 11 years: 31.8), (11 to 21 years: 64.2 kg),
5) adults ages 21 to 65 weigh an average of 80 kg, or about 176 pounds,
6) adults ages 65 and older weigh an average of 76 kg,

Florida DOH compares estimated exposure doses to ATSDR chemical-specific minimal risk levels (MRLs). MRLs are comparison values that establish exposure levels many times lower than levels where scientists observed no effects in animals or human studies. ATSDR designed the MRL to protect the most sensitive, vulnerable individuals in a population. The MRL is an exposure level below which non-cancerous harmful effects are unlikely, even after daily exposure over a lifetime. Although ATSDR considers concentrations at or below the relevant comparison value reasonably safe, exceeding a comparison value does not imply adverse health effects are likely. If contaminant concentrations are above comparison values, Florida DOH further analyzes exposure variables (for example, duration and frequency), toxicology of the contaminants, past epidemiology studies, and the weight of evidence for health effects. Florida DOH uses chronic MRLs where possible because exposures are usually longer than a year. If chronic MRLs are not available they use intermediate length MRLs [ATSDR 2005].

For non-cancer illness, Florida DOH first estimates the health risk for children. Because children are smaller and swallow more soil than adults, their exposure is higher. Therefore, if children are not at risk, then adults are not either.

For cancer, Florida DOH quantifies the increased theoretical risk by multiplying the estimated dose by the EPA cancer potency slope factor. This is a high estimate of the increased cancer risk. The actual increased cancer risk is likely lower. Because of large uncertainties in the way scientists estimate cancer risks, the actual cancer risk may be as low as zero. If there is no cancer slope (potency) factor, Florida DOH/ATSDR cannot quantify the cancer risk.

To put the cancer risk into perspective, they use the following descriptors for the different numeric cancer risks:

1 in	10 (10^{-1})	"very high" increased risk
1 in	100 (10^{-2})	"high" increased risk
1 in	1,000 (10^{-3})	"moderate" increased risk
1 in	10,000 (10^{-4})	"low" increased risk
1 in	100,000 (10^{-5})	"very low" increased risk
1 in	1,000,000 (10^{-6})	"extremely low" increased risk

Florida DOH usually estimates the cancer risk from lifetime (78 year) exposure. Or they may estimate the cancer risk from exposure over a significant portion of the lifetime (at least 35 years). Studies of animals exposed over their entire lifetime are the basis for calculating most cancer slope factors. Usually, scientists know little about the cancer risk in animals from less than lifetime exposures. Therefore, Florida DOH also uses lifetime exposure to estimate the cancer risk in people. Estimating the cancer risk for children, or from less than 35 years exposure, may introduce significant uncertainty.

For most chemicals, scientists know too little about the combined toxic effect of multiple contaminants to assess the health risk from exposure to mixtures. The science of toxicology is only now addressing this issue. Therefore this report assesses the health threat based on exposure to individual contaminants.

Identifying Contaminants of Concern

Florida DOH compares the maximum concentrations of contaminants found at a site to ATSDR and other comparison values. Comparison values are specific for the medium contaminated (soil, water, air, etc.). They screen the environmental data using these comparison values:

- ATSDR Cancer Risk Evaluation Guide (CREGs)
- ATSDR Environmental Media Evaluation Guides (EMEGs)
- ATSDR Reference Media Evaluation Guides (RMEGs)

- Florida DEP Soil Cleanup Target Levels (SCTLs)
- EPA Maximum Contaminant Levels (MCLs)

When determining which comparison value to use, Florida DOH follows ATSDR's general hierarchy and uses professional judgment. They select for further evaluation contaminants with maximum concentrations above a comparison value. Comparison values, however, are not thresholds of toxicity. Florida DOH and ATSDR do not use them to predict health effects or to establish clean-up levels. A concentration above a comparison value does not necessarily mean harm will occur. It does indicate, however, the need for further evaluation.

Maximum contaminant concentrations below comparison values are considered safe and Florida DOH/ATSDR does not evaluate them further.

Comparing the concentrations measured in soil to ATSDR and EPA screening guidelines, Florida DOH selected arsenic and polycyclic aromatic hydrocarbons (PAHs) as contaminants of concern. Selection of these contaminants does not necessarily mean there is a public health risk. Rather, Florida DOH selected these contaminants for closer scrutiny. Because concentrations of other contaminants are below screening guidelines and not likely to cause illness, Florida DOH does not evaluate them further.

Arsenic and PAHs are above screening values in all three on-site surface soil samples. In the 11 off-site surface soil samples, arsenic is above the screening value in 5 samples and PAHs are above the screening value in 1 sample.

Arsenic

Arsenic is a naturally occurring element often found in soil. Before 2003, wood treaters used most of the arsenic produced in the US in chromated copper arsenate (CCA) to make "pressure-treated" wood [ATSDR 2007]. Arsenic found on the site may be related to the presence of pressure-treated wood in the landfill or due to its use in pesticides. Background soil values vary from 0.3-0.4 mg/kg [Chen et al. 1999].

The most common adverse health effect associated with long-term exposure to inorganic arsenic is a pattern of skin changes. These include patches of lightened or darkened skin and the appearance of small "corns" or "warts" on the palms, soles, and torso, and are often associated with changes in the blood vessels of the skin [ATSDR 2007].

ATSDR established a minimum risk level (MRL) dose of 3×10^{-4} mg/kg/day for arsenic. ATSDR based this MRL on a study of people who drank well water containing inorganic arsenic for many years. This study identified a no observable adverse health effect level (NOAEL) at a dose of 8×10^{-4} mg/kg/day. At a dose of 1.4×10^{-2} mg/kg/day, the study identified a pattern of skin changes. ATSDR derived their MRL by dividing the NOAEL by an uncertainty factor of 3 for human variability [ATSDR 2007].

The US Department of Health and Human Services, the International Agency for Research on Cancer (IARC), and the EPA have all concluded that inorganic arsenic is a known human carcinogen [ATSDR 2007]. Chronic arsenic exposures have been linked to cancers of the lung, skin (basal and squamous cell), liver, and urinary tract (bladder, kidney, prostate, ureter, and urethra) [ATSDR 2007].

Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs are a group of chemicals formed during the incomplete burning of organic materials. These include and are not limited to coal, oil, gas, wood, garbage, tobacco, and charbroiled meat. More than 100 different PAHs exist but not all have been determined to be carcinogenic.

PAHs generally occur as complex mixtures. To assess the carcinogenic toxicity of a mixture of PAHs, Florida DOH used toxicity equivalence factors with respect to benzo(a)pyrene and added these values to find a benzo(a)pyrene toxicity equivalent (BaP-TEQ) value.

In human studies, cancer associated with PAHs occurs at the points of contact; on the skin through dermal contact, in the lungs via inhalation, and in the gastrointestinal tract and the bladder following ingestion. In animal studies, tumors have also formed at locations other than those contacted (in the lung after dermal exposure). Intermediate length exposure animal studies find cancer only after relatively high doses. In mouse studies, the stomach cancer dose was 2.6 mg/kg/day while the no observable adverse effect level dose was a 1.3 mg/kg/day [ATSDR 1995, 2009].

This health consultation does not address past workers' on-site exposures. In general, Florida DOH does not evaluate sites for past worker safety as the National Institute for Occupational Safety and Health (NIOSH) performs workplace health hazard evaluations [NIOSH 2012].

In the following sections, Florida DOH discusses non-cancer health risks and estimates increases in lifetime cancer risks from life-time incidental ingestion of soil containing the highest measured levels of arsenic and PAHs.

Trespassers' exposure to contaminants in on-site surface soil

Although the site is not currently being used, there are rudimentary roads on the property. Some of these roads have gates but the fences near the gates are no longer intact, so the site could be accessible on foot or by off-road vehicles. Florida DOH is unaware of any populations that might be exposed to the site other than trespassers. To estimate a dose for trespassers, Florida DOH made the following assumptions: older children and young adults, ages 11-21 with an average body weight of 141 pounds (64.2 kilograms), visiting the site three times a week, for ten years.

Arsenic
Non-Cancer Risk – Trespassers are not likely to suffer non-cancer illness from incidental ingestion of soil with the highest measured arsenic level, 4.7 mg/kg. The estimated arsenic ingestion dose for trespassers, 3×10^{-6} mg/kg/day, is 100 times less than the ATSDR minimum risk level (MRL) of 3×10^{-4} mg/kg/day (Table 6).

Cancer Risk – The estimated increased lifetime cancer risk for trespassers ingesting on-site surface soils with the highest level of arsenic (4.7 mg/kg) is 6×10^{-7} (Table 6). This is an extremely low predicted increased risk of 6 cases in 10 million people.

PAHs (expressed as benzo[a]pyrene toxicity equivalence or BaP-TEQ)
Non-Cancer Risk – Trespassers are not likely to suffer non-cancer illness from incidental ingestion of soils contaminated with PAHs. The highest concentrations of acenaphthene, anthracene, fluoranthene, fluorene, naphthalene, and pyrene were below their non-cancer screening values and thus are not likely to cause non-cancer illness.

Cancer Risk –The estimated increased lifetime cancer risk for trespassers ingesting on-site surface soil with the highest level of BaP-TEQ (0.2 mg/kg) is 1×10^{-7} (Table 6). This is an extremely low predicted increased risk of 1 case in 10 million people.

Although our evaluations for trespassers do not predict adverse health effects, arsenic and BaP-TEQ levels in on-site surface soil are above state standards for commercial, industrial, and residential use. In their earlier Health Consultation [ATSDR 2010], Florida DOH also identified cadmium, lead, and polychlorinated biphenyls (PCBs) above state soil standards in samples taken in the metal recycling portion of the site. Florida DEP will use these standards, in conjunction with planned land use, and <u>all</u> of the available site assessment data to determine cleanup levels for the site.

<u>Nearby residents' exposures to contaminants in off-site surface soil</u>

Arsenic
Non-Cancer Risk – Nearby residents would not likely suffer non-cancer illness from incidental ingestion of soil with the highest measured arsenic level, 5.79 mg/kg. The highest estimated arsenic dose, 1×10^{-4} mg/kg/day, is less than the ATSDR MRL of 3×10^{-4} mg/kg/day (Table 7).

Cancer Risk – The estimated increased lifetime cancer risk for nearby residents ingesting off-site surface soil with the highest level of arsenic (5.79 mg/kg) is $1\text{-}2 \times 10^{-5}$ (Table 7). This is a very low predicted increased risk of 1 to 2 cases in 100,000 people, depending on whether an average or upper percentile residential incidental soil ingestion amount is used.

The highest off-site arsenic level was measured in a soil sample from Eglin Air Force property that is currently forested. Assumptions made for residential exposure are not likely to be met at this location. This value, 5.79 mg/kg, is well below the state standard for arsenic in soil on commercial or industrial properties: 12 mg/kg. Arsenic levels in all

the other off-site surface soil samples are below the state standard for residential use, 2.1 mg/kg.

PAHs (expressed as benzo[a]pyrene toxicity equivalence or BaP-TEQ)
Non Cancer Risk – Nearby residents are not likely to suffer non-cancer illnesses from incidental ingestion of soil with the highest-measured levels of PAHs. The highest concentrations of acenaphthene, anthracene, fluoranthene, fluorene, naphthalene, and pyrene were below their non-cancer screening values and thus are not likely to cause non-cancer illness.

Cancer Risk – The estimated increased lifetime cancer risk for nearby residents ingesting off-site surface soil with the highest level of BaP-TEQ (0.3 mg/kg) is 3-6 $x10^{-6}$ (Table 8). This is an extremely low predicted increased risk of 3 to 6 cases in 1 million people, depending on whether an average or upper percentile residential incidental soil ingestion amount is used.

The highest off-site BaP-TEQ level was measured in a soil sample from Eglin Air Force property that is currently forested. Assumptions made for residential exposures are not likely to be met at this location. This value, 0.3 mg/kg, is well below the state standard for BaP-TEQ in soil on commercial or industrial properties, 0.7 mg/kg. BaP-TEQ levels in all the other off-site surface soil samples are below the state standard for residential use, 0.1 mg/kg.

Future on-site residents' exposures to surface soil

Arsenic
Non-Cancer Risk – Future on-site residents would not likely suffer non-cancer illness from incidental ingestion of arsenic at the highest measured level, 4.7 mg/kg. The estimated incidental ingestion arsenic dose, 8 $x10^{-5}$ mg/kg/day is less than the ATSDR MRL of 3 $x10^{-4}$ mg/kg/day (Table 9).

Cancer Risk – The estimated increased lifetime cancer risk for future residents ingesting on-site surface soil with the highest level of arsenic (4.7 mg/kg) is from 2 x 10^{-5} to 9 $x10^{-6}$ (Table 9). This is a very low to extremely low predicted increased cancer risk of from 2 cases in 100,000 people to 9 cases in 1 million people, depending on whether an average or upper percentile residential incidental soil ingestion amount is used.

PAHs (expressed as benzo[a]pyrene toxicity equivalence or BaP-TEQ)
Non Cancer Risk – Future on-site residents are not likely to suffer non-cancer illness from incidental ingestion of soil with the highest-measured levels of PAHs. The highest concentrations of acenaphthene, anthracene, fluoranthene, fluorene, naphthalene, and pyrene were below their non-cancer screening values and thus are not likely to cause non-cancer illnesses.

Cancer Risk – The estimated increased lifetime cancer risk for future on-site residents ingesting on-site surface soil with the highest level of BaP-TEQ (0.5 mg/kg) is from 1

$x10^{-5}$ to 5 $x10^{-6}$ (Table 10). This is a very low to extremely low predicted increased cancer risk of between 1 case in 100,000 people to 5 cases in 1 million people, depending on whether an average or upper percentile residential incidental soil ingestion amount is used.

The highest arsenic and BaP-TEQ concentrations in on-site soil are, however, above state standards for residential use. Florida DEP will use the soil target cleanup levels, in conjunction with planned land use, to determine cleanup levels for the site.

Child Health Considerations

In communities faced with air, water, or soil contamination, the many physical differences between children and adults demand special attention. Children could be at greater risk than are adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than adults; this means they breathe dust, soil and vapors close to the ground. A child's lower body weight and higher intake rate results in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body system of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus, adults need as much information as possible to make informed decisions regarding their children's health.

This assessment takes into account the special vulnerabilities of children. It specifically assesses the health risk for children playing in the soil on and near the site. Florida DOH found that children and adults exposed to arsenic and PAHs via ingestion of soil are unlikely to suffer non-cancer health effects from these exposures (Tables 7-10).

Community Health Concerns Evaluation

The following section addresses health concerns Florida DOH was aware of when preparing the Public Comment release of this report. Florida DOH shared the findings of the Public Comment release of this report in December 2012 in a mail-out to over 400 local residents. They list and address the responses they received in December 2012 and January 2012 that concerned health and exposure pathways in Appendix 2.

1. The Florida DEP reported phone calls from a few nearby residents asking if the site is a health threat [DEP 2008a].

   Florida DOH's assessment of the available data does not indicate the site is a threat for people living near the site. Trespassers on the site could be harmed, however, by sharp metal or they could fall on unstable ground.

Abandoned landfills may be a physical hazard (Photos 2-4). Physical hazards include slumping of the landfill cover and protruding edges of buried items. Plants and other buried organic materials may decompose and cause collapse hazards if people should walk on or ride off-road vehicles on the landfill. Rusty equipment and piles of debris could cause slips, falls, and cuts.

2. One resident is concerned that storm water runoff from the site is contaminating nearby creeks, bayous, and bays [DEP 2008a].

   Off-site surface soil testing does not indicate widespread stormwater runoff from this site.

Conclusions

1. People should not trespass on the West Florida Scrap Metal site because of physical hazards. Physical hazards include rusty metal with sharp edges and unstable debris piles. Decomposing organic materials can be a slumping or collapsing hazard for people walking or driving on the landfill.

2. The levels of arsenic and PAHs in on-site surface soil are not likely to increase the risk of non-cancer illness in trespassers. The estimated increased cancer risk for trespassers based on these samples is less than one in a million. The levels of these and other chemicals are, however, above state standards for commercial, industrial, and residential use.

3. Incidental ingestion of small amounts of contaminated surface soil in the Northern Pines subdivision and other areas near the site is not likely to increase the risk of non-cancer illness. The estimated increased cancer risk for lifetime exposure to off-site surface soil is "extremely low." The measured contaminant levels meet state standards for current use.

4. The levels of arsenic and PAHs in on-site surface soil are not likely to increase the risk of non-cancer illness in future residents. Future on-site residents accidentally swallowing small amounts of this soil would be at a "very low" estimated increased lifetime cancer risk. These levels are, however, above state standards for residential use.

Recommendations

1. Florida DEP should discourage people from trespassing on the site to prevent exposures to physical hazards.

2. Soil on the site should be cleaned up to meet applicable state standards for planned site use.

Public Health Action Plan

Actions Undertaken

1. On July 21, 2009, Florida DOH and Okaloosa County Health Department staff visited the site.

2. In a draft 2010 health consultation report, Florida DOH assessed the public health threat at and near the site.

3. In July 2010, Florida DOH mailed a community update to persons living within a ½ mile of the site telling about the site and requesting comment on the draft health consultation report. They addressed these comments in the final report.

4. On December 6, 2012, Florida DOH published a draft version of this health consultation and released it for public comment. They addressed the comments they received in the final report.

5. On December 14, 2012, Florida DOH mailed a community update to about 400 addresses within ½ mile of the site to notify residents of the availability of this report and to solicit public comments. The update included a survey form to provide comments to return to the agency. Seventeen residents responded. Florida DOH addresses the concerns the community has about health and exposure pathways in Appendix 2.

Actions Underway

The Florida DOH is working with the DEP to inform nearby residents of the physical hazards from trespassing on the site.

Actions Planned

1. The Florida DOH will distribute this final report to the Okaloosa County Health Department, nearby residents, and Florida DEP.

3. Florida DOH will review additional environmental data if they become available.

REPORT PREPARATION

The Florida Department of Health (DOH) prepared this Health Consultation for the West Florida Scrap Metal Site under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with the approved agency methods, policies, and procedures existing at its publication. Florida DOH completed an editorial review.

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Appendices

Appendix 1: Tables and Figures

Table 1. Completed Human Exposure Pathways at the West Florida Scrap Metal Hazardous Waste Site

COMPLETED PATHWAY NAME	COMPLETED EXPOSURE PATHWAY ELEMENTS					TIME
	SOURCE	ENVIRON-MENTAL MEDIA	POINT OF EXPOSURE	ROUTE OF EXPOSURE	EXPOSED POPULA-TION	
On-site surface soil	On-site waste disposal	Surface soil	On-site	Incidental ingestion (swallowing)	Site trespassers	Past (since 1973), present, and future
Off-site surface soil	On-site waste disposal carried off site by stormwater run-off	Surface soil	Off-site ditches	Incidental ingestion	Nearby residents	Past (since 1973), present, and future

Table 2. Potential Human Exposure Pathways at the West Florida Scrap Metal Hazardous Waste Site

POTENTIAL PATHWAY NAME	POTENTIAL EXPOSURE PATHWAY ELEMENTS					TIME
	SOURCE	ENVIRON-MENTAL MEDIA	POINT OF EXPOSURE	ROUTE OF EXPOSURE	POTENTIALLY EXPOSED POPULATION	
On-site surface soil	On-site waste disposal	Surface soil	On-site	Incidental ingestion	Future on-site residents	Future

Table 3. Eliminated Human Exposure Pathways at the West Florida Scrap Metal Hazardous Waste Site

POTENTIAL PATHWAY NAME	ELIMINATED EXPOSURE PATHWAY ELEMENTS					TIME
	SOURCE	ENVIRONMENTAL MEDIA	POINT OF EXPOSURE	ROUTE OF EXPOSURE	EXPOSED POPULATION	
Off-site groundwater	On-site waste disposal	Groundwater	None	----	None	----

Table 4. Contaminants of Concern in Surface Soil (0-3 inches deep) on the West Florida Scrap Metal Hazardous Waste Site

Contaminants	Concentration Range (mg/kg)	Screening Guideline* (mg/kg)	Source of Screening Guideline	# Above Screening Guideline/Total #
Arsenic	1.11-4.7	0.5	ATSDR CREG	3/3
BaP – TEQ	0.2-0.2	0.1	ATSDR CREG	3/3

BaP – TEQ = benzo(a)pyrene toxicity equivalence
CREG = ATSDR cancer risk evaluation guide for 10^{-6} excess cancer risk
BDL = below detection limit
mg/kg = milligrams per kilogram
* Screening guidelines only used to select chemicals for further scrutiny, not to the judge the risk of illness.
Source of data: Tetra Tech 2012

Table 5. Contaminants of Concern in Surface Soil (0-3 inches deep) near the West Florida Scrap Metal Hazardous Waste Site

Contaminants	Concentration Range (mg/kg)	Screening Guideline* (mg/kg)	Source of Screening Guideline	# Above Screening Guideline/Total #
Arsenic	BDL – 5.79	0.5	ATSDR CREG	5/11
BaP – TEQ	BDL – 0.3	0.1	ATSDR CREG	1/11

BaP – TEQ = benzo(a)pyrene toxicity equivalence
CREG = ATSDR cancer risk evaluation guide for 10^{-6} excess cancer risk
BDL = below detection limit
mg/kg = milligrams per kilogram
* Screening guidelines only used to select chemicals for further scrutiny, not to the judge the risk of illness.
Source of data: Tetra Tech 2012

Table 6. Estimated Central Tendency Doses for Site Trespassers Exposed to the Highest Level of Arsenic and PAHs Measured January 2012 in On-site Surface Soil (0-3 Inches Deep)

Age Group (years)	Body Weight (kg)	Highest Concentration (mg/kg)	Estimated Ingestion Dose (mg/kg/day) Central Tendency	ATSDR MRL / EPA RfD (mg/kg/day)	Oral Cancer Slope Factor (per mg/kg/day)	Estimated Increased Lifetime Cancer Risk Central Tendency (unitless)
11 to <21	64.2	Arsenic 4.7	3×10^{-6}	0.3×10^{-3} — 3×10^{-4}	1.5	6×10^{-7}
11 to <21	64.2	PAHs 0.2	1×10^{-7}	none	7.3	1×10^{-7}

mg/kg = milligrams per kilogram
mg/kg/day = milligrams per kilogram per day
ATSDR MRL = Agency for Toxic Substances and Disease Registry's Minimal Risk Level. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. This MRL is for chronic exposures, meaning those lasting longer than one year.
EPA RfD = US Environmental Protection Agency's Reference Dose. The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cell death. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious non-cancer effects during a lifetime.

Table 7. Estimated Upper Percentile and Average Doses for Nearby Residents Exposed to the Highest Level of Arsenic in Off-site Surface Soil (0-3 inches deep)

Age Group (years)	Body Weight (kg)	Highest Concentration (mg/kg)	Estimated Ingestion Dose (mg/kg/day)		ATSDR MRL / EPA RfD (mg/kg/day)	Oral Cancer Slope Factor (per mg/kg/day)	Estimated Increased Lifetime Cancer Risk (unitless)	
			Upper Percentile	Average			Upper Percentile	Average
0.5 to <1	9.2	5.79	6×10^{-5}	4×10^{-5}	0.3×10^{-3} — 3×10^{-4}	1.5	6×10^{-7}	4×10^{-7}
1 to <2	11.4		1×10^{-4}	5×10^{-5}			2×10^{-6}	1×10^{-6}
2 to <6	17.4		7×10^{-5}	3×10^{-5}			5×10^{-6}	3×10^{-6}
6 to <11	31.8		4×10^{-5}	2×10^{-5}			4×10^{-6}	2×10^{-6}
11 to <16	56.8		2×10^{-5}	1×10^{-5}			2×10^{-6}	1×10^{-6}
16 to<21	71.6		2×10^{-5}	8×10^{-6}			2×10^{-6}	8×10^{-7}
21 to <65	80		7×10^{-6}	4×10^{-6}			6×10^{-6}	3×10^{-6}
65+	76		8×10^{-6}	4×10^{-6}			2×10^{-6}	1×10^{-6}
					Lifetime Cancer Risk		**2×10^{-5}**	**1×10^{-5}**

mg/kg = milligrams per kilogram
mg/kg/day = milligrams per kilogram per day
ATSDR MRL = Agency for Toxic Substances and Disease Registry's Minimal Risk Level. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. This MRL is for chronic exposures, meaning those lasting longer than one year.
EPA RfD = US Environmental Protection Agency's Reference Dose. The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cell death. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious non-cancer effects during a lifetime.

Table 8. Estimated Upper Percentile and Average Doses for Nearby Residents Exposed to the Highest Level of Polycyclic Aromatic Hydrocarbons in Off-site Surface Soil (0-3 inches deep)

Age Group (years)	Body Weight (kg)	Exposure Point Concentration (mg/kg)	Estimated Ingestion Dose (mg/kg/day)		ATSDR MRL / EPA RfD (mg/kg/day)	Oral Cancer Slope Factor (per mg/kg/day)	Estimated Increased Lifetime Cancer Risk (unitless)	
			Upper Percentile	Average			Upper Percentile	Average
0.5 to <1	9.2	0.3	3×10^{-6}	2×10^{-6}	none	7.3	2×10^{-7}	9×10^{-8}
1 to <2	11.4		5×10^{-6}	3×10^{-6}			5×10^{-7}	3×10^{-7}
2 to <6	17.4		3×10^{-6}	2×10^{-6}			1×10^{-6}	7×10^{-7}
6 to <11	31.8		2×10^{-6}	1×10^{-6}			9×10^{-7}	4×10^{-7}
11 to <16	56.8		1×10^{-6}	1×10^{-6}			5×10^{-7}	3×10^{-7}
16 to<21	71.6		1×10^{-6}	4×10^{-7}			4×10^{-7}	2×10^{-7}
21 to <65	80		4×10^{-7}	2×10^{-7}			2×10^{-6}	8×10^{-7}
65+	76		4×10^{-7}	2×10^{-7}			5×10^{-7}	2×10^{-7}
					Lifetime Cancer Risk		**6×10^{-6}**	**3×10^{-6}**

mg/kg = milligrams per kilogram mg/kg/day = milligrams per kilogram per day
ATSDR MRL = Agency for Toxic Substances and Disease Registry's Minimal Risk Level. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. This MRL is for chronic exposures, meaning those lasting longer than one year.
EPA RfD = US Environmental Protection Agency's Reference Dose. The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cell death. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious non-cancer effects during a lifetime.

Table 9. Estimated Upper Percentile and Average Doses for Future On-Site Residents Exposed to the Highest Level of Arsenic in On-site Surface Soil (0-3")

Age Group (years)	Body Weight (kg)	Highest Concentration (mg/kg)	Estimated Ingestion Dose (mg/kg/day)		ATSDR MRL / EPA RfD (mg/kg/day)	Oral Cancer Slope Factor (per mg/kg/day)	Estimated Increased Lifetime Cancer Risk (unitless)	
			Upper Percentile	Average			Upper Percentile	Average
0.5 to <1	9.2	4.7	5×10^{-5}	3×10^{-5}	0.3×10^{-3} — 3×10^{-4}	1.5	5×10^{-7}	3×10^{-7}
1 to <2	11.4		8×10^{-5}	4×10^{-5}			2×10^{-6}	8×10^{-7}
2 to <6	17.4		5×10^{-5}	3×10^{-5}			4×10^{-6}	2×10^{-6}
6 to <11	31.8		3×10^{-5}	2×10^{-5}			3×10^{-6}	1×10^{-6}
11 to <16	56.8		2×10^{-5}	2×10^{-5}			2×10^{-6}	8×10^{-7}
16 to<21	71.6		1×10^{-5}	8×10^{-6}			1×10^{-6}	6×10^{-7}
21 to <65	80		6×10^{-6}	3×10^{-6}			5×10^{-6}	3×10^{-6}
65+	76		6×10^{-6}	3×10^{-7}			2×10^{-6}	8×10^{-7}
						Lifetime Cancer Risk	**2×10^{-5}**	**9×10^{-6}**

mg/kg = milligrams per kilogram
mg/kg/day = milligrams per kilogram per day
ATSDR MRL = Agency for Toxic Substances and Disease Registry's Minimal Risk Level. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. This MRL is for chronic exposures, meaning those lasting longer than one year.
EPA RfD = US Environmental Protection Agency's Reference Dose. The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cell death. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious non-cancer effects during a lifetime.

Table 10. Estimated Upper Percentile and Average Doses for Future On-Site Residents Exposed to the Highest Level of Polycyclic Aromatic Hydrocarbons in On-site Surface Soil (0-3inches deep)

Age Group (years)	Body Weight (kg)	Highest Surface Soil Concentration (mg/kg)	Estimated Ingestion Dose (mg/kg/day)		ATSDR MRL / EPA RfD (mg/kg/day)	Oral Cancer Slope Factor (per mg/kg/day)	Estimated Increased Lifetime Cancer Risk (unitless)	
			Upper Percentile	Average			Upper Percentile	Average
0.5 to <1	9.2	0.5	5×10^{-6}	3×10^{-6}	none	7.3	3×10^{-7}	2×10^{-7}
1 to <2	11.4		9×10^{-6}	4×10^{-6}			8×10^{-7}	4×10^{-7}
2 to <6	17.4		6×10^{-6}	3×10^{-6}			2×10^{-6}	1×10^{-6}
6 to <11	31.8		3×10^{-6}	2×10^{-6}			2×10^{-7}	7×10^{-7}
11 to <16	56.8		2×10^{-6}	1×10^{-6}			8×10^{-7}	4×10^{-7}
16 to<21	71.6		1×10^{-6}	1×10^{-6}			6×10^{-7}	3×10^{-7}
21 to <65	80		1×10^{-6}	3×10^{-7}			2×10^{-6}	1×10^{-6}
65+	76		1×10^{-6}	3×10^{-7}			8×10^{-7}	4×10^{-7}
						Lifetime Cancer Risk	**1×10^{-5}**	**5×10^{-6}**

mg/kg = milligrams per kilogram
mg/kg/day = milligrams per kilogram per day
ATSDR MRL = Agency for Toxic Substances and Disease Registry's Minimal Risk Level. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. This MRL is for chronic exposures, meaning those lasting longer than one year.
EPA RfD = US Environmental Protection Agency's Reference Dose. The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cell death. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious non-cancer effects during a lifetime.

Figure 1. Location of West Florida Scrap Metal Site in Okaloosa County

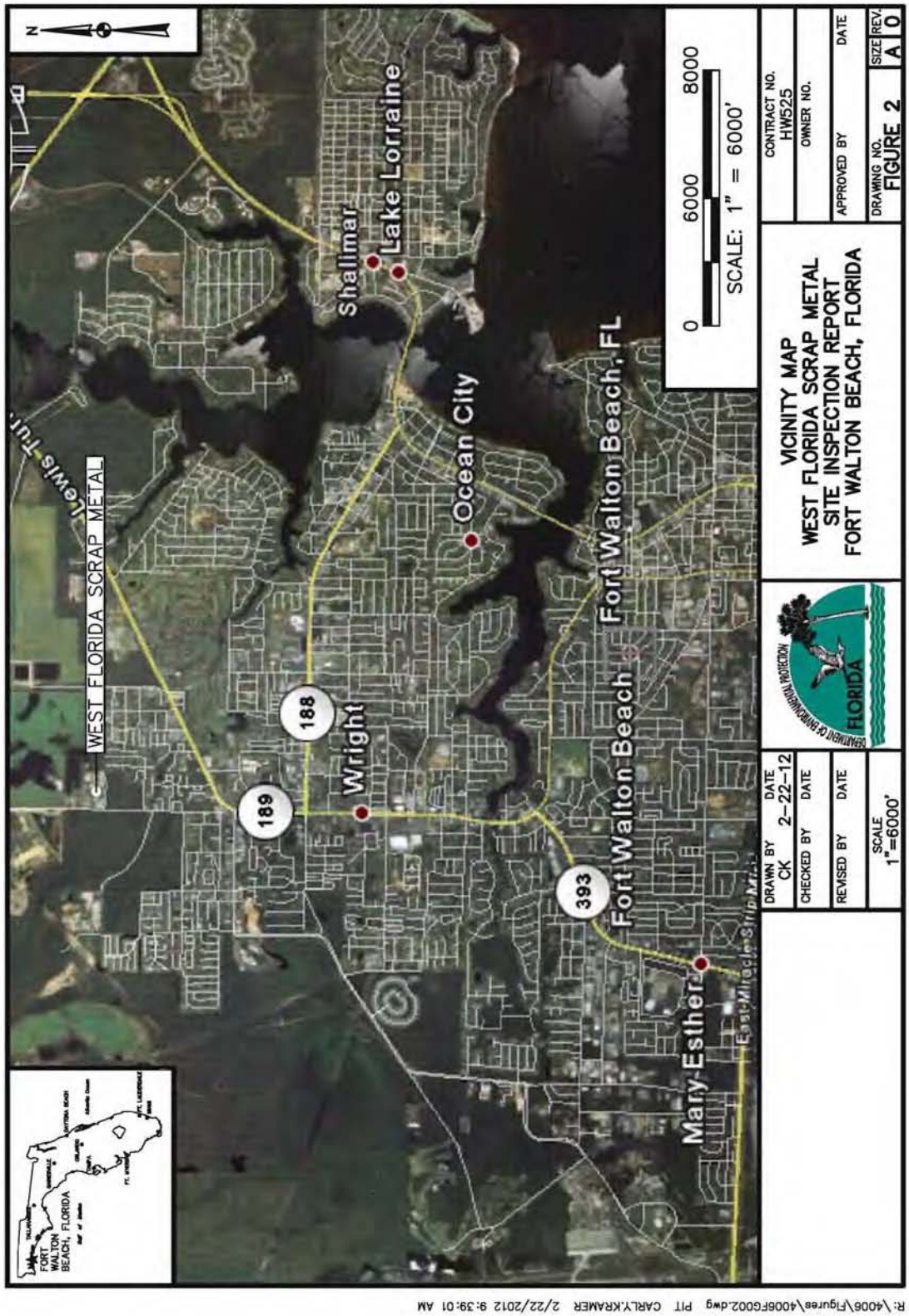


Figure 2. West Florida Scrap Metal Site (former scrap facility, waste piles, and landfill)

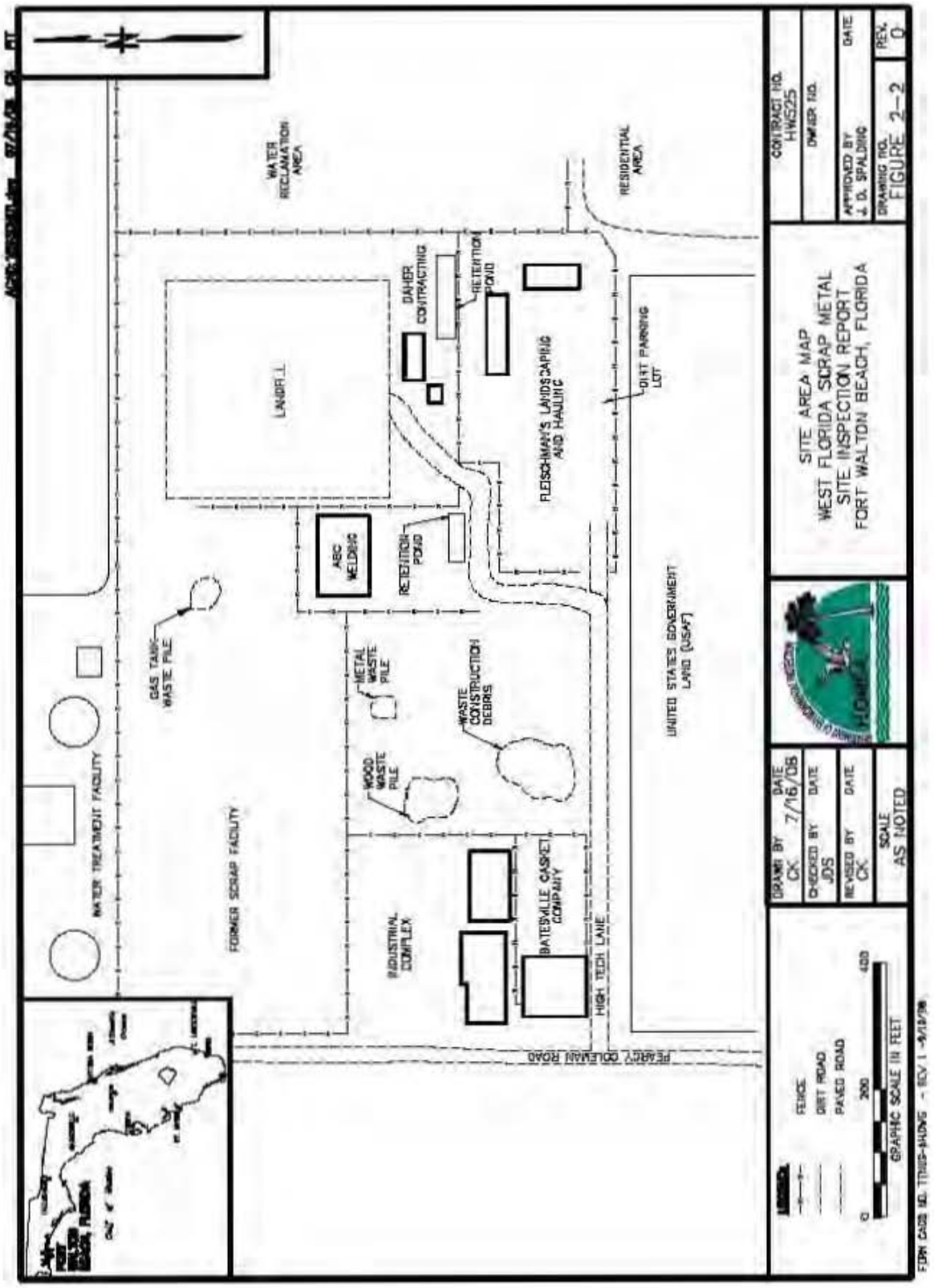


Figure 3. West Florida Scrap Metal Site 2008 and 2012 Surface Soil Sample Locations

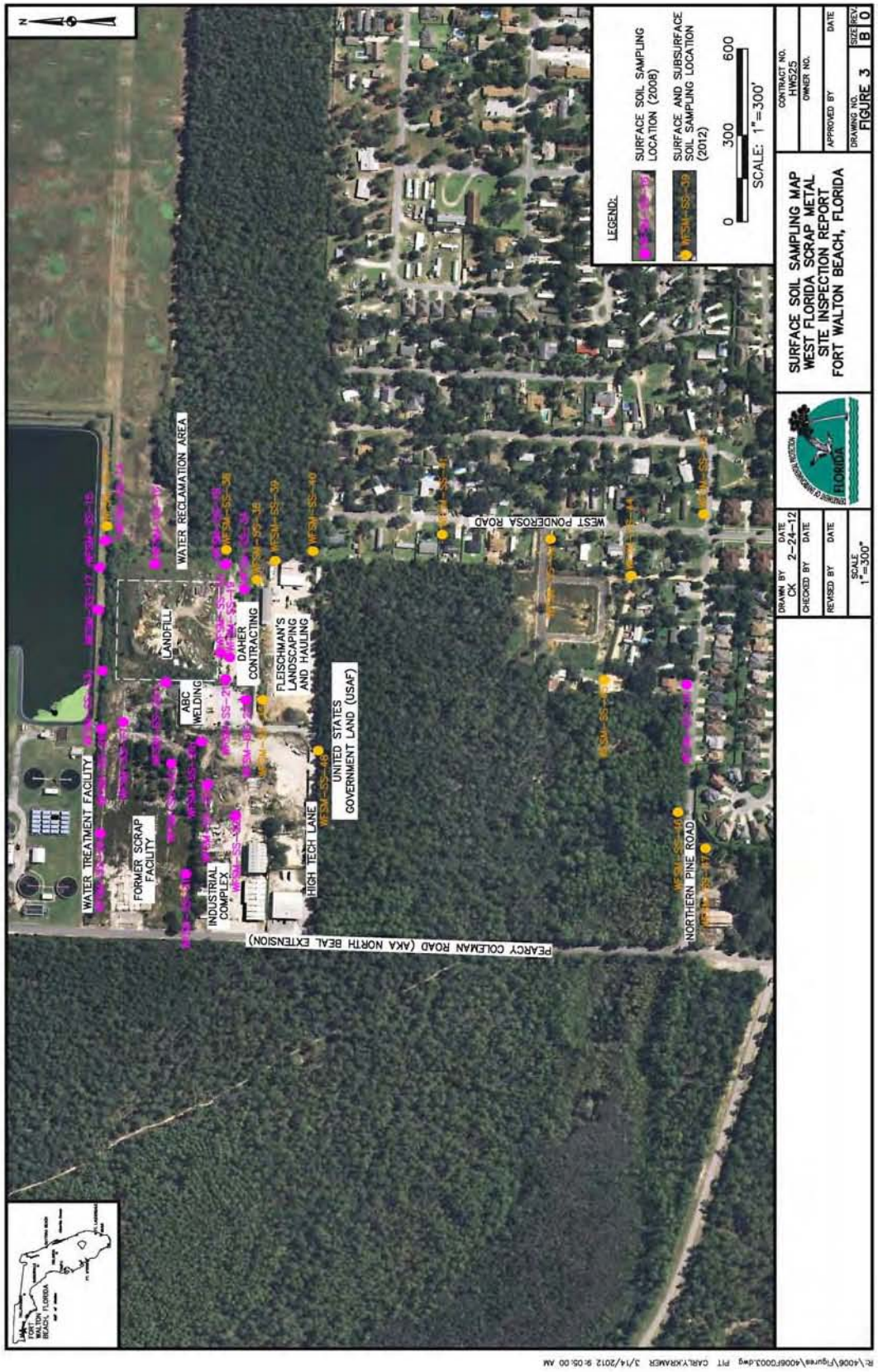


Photo 1. Two Mobile Homes in the Northwest Corner of the West Florida Scrap Metal Site. View from North Beal Extended Facing East. (FDOH 2002).

Photo 2. Discarded equipment at the rear of the West Florida Scrap Metal landfill, facing south (Tetra Tech 2008).

Photo 3. Discarded equipment at the rear of the West Florida Scrap Metal landfill, facing south (Tetra Tech 2008).

Photo 4. View of the West Florida Scrap Metal site from High Tech Lane facing north (FDOH 2002).

Appendix 2: Public Comment and Response

On December 14, 2012, Florida DOH mailed the following summary sheet and survey to 400 residences near the West Florida Scrap Metal site. Four residents requested an electronic copy of the public comment version of this health consultation report.

Fact Sheet for Nearby Residents

December 2012

West Florida Scrap Hazardous Waste Site

Florida Department of Health Announces: Draft Health Report on Soil Test Results from a Former Landfill and Auto Salvaging Business Now Available for Public Comment

About the Health Agencies

The Florida Department of Health (DOH), the Okaloosa County Health Department (CHD), and the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) work jointly to serve the public. We respond with public health actions when needed and we provide trusted health knowledge about toxic chemicals at hazardous waste sites. If we find a health threat is occurring or is likely to happen, we notify the affected community immediately.

About the West Florida Scrap Metal Site

The West Florida Scrap Metal hazardous waste site is at 1906 Hi Tech Lane, on the north side of Fort Walton Beach. Four connected, unpaved parcels make up this 13-acre site which is part of an industrial complex. The site includes a former scrap facility, a gas tank waste pile, a landfill, and a fenced-area of construction debris and wood/metal waste. Most of the site has little vegetation. Trespassers can get onto the site on foot or with off-road vehicles. Most of the nearest homes are part of the Northern Pines subdivision.

Over the past 20 years, a number of businesses owned the site commonly known as West Florida Scrap Metal. As early as 1973, the owners used the site for automobile salvaging. In the early 1980s, the owner dug a 20-25-foot deep borrow pit in the northeast quadrant of the site. Beginning in 1990, they began filling the pit with debris. In the 1990s, the Florida Department of Environmental Protection (DEP) noted more than 500 used tires, waste oil, 55-gallon drums, paint cans, household waste, and auto parts, including batteries, on the site. The borrow pit was filled, so the landfill surface now stands 35 feet above the ground surface.

In 2000, the owner covered the landfill surface with dirt to put out a fire. Routine use of the site as a landfill ceased about this time; however, neighbors report that dumping continued. In 2007, the Florida DEP found liquid seeping from the south side of the landfill. There has been no cleanup yet, but the Florida DEP is considering a state-funded cleanup.

In 2007 and 2008, Florida DEP found contaminants in on-site soil, including metals (lead, arsenic, cadmium), polychlorinated biphenyls (PCBs, which are heat-stable coolants), and chemicals linked to incomplete burning of organic materials (polycyclic aromatic hydrocarbons or PAHs).

In a 2010 report, Florida DOH asked Florida DEP to take additional on- and off-site soil samples, which was completed in January 2012. Florida DOH is now asking for public review and comment on this draft report. In the final report, DOH will address any new health concerns.

Florida DOH requests your comments on the draft health report by Jan. 25, 2013.

Learn how to get a copy of the draft on the other side of this fact sheet.

Draft Report Findings

Florida DOH concludes the following:

1. People should not trespass on the site because of physical hazards including rusty metal with sharp edges and unstable debris piles.
2. The levels of arsenic and PAHs in on-site surface soil are not likely to increase the risk of non-cancer illness in trespassers. The estimated increased cancer risk for trespassers based on these samples is extremely low. However, the levels of these and other chemicals are above state standards for commercial, industrial, and residential use.
3. The levels of chemicals found in surface soil in the Northern Pines subdivision and other areas near the site are not likely to increase the risk of non-cancer illness. The estimated increased cancer risk for lifetime exposure to off-site surface soil is "extremely low." The contaminant levels meet state standards for current use.
4. The levels of arsenic and PAHs in on-site surface soil are not likely to increase the risk of non-cancer illness in future residents. Future on-site residents accidentally swallowing small amounts of this soil would be at a "very low" estimated increased lifetime cancer risk. These levels are, however, above state standards for residential use as were levels of lead, cadmium and polychlorinated biphenyls measured in earlier tests. If the land use of the site is changed to residential, the soil cleanup needs to meet those standards.

Draft Report Advice

Florida DOH recommends:

1. Florida DEP should discourage people from trespassing on the site to prevent exposures to physical hazards.
2. Florida DEP should clean up the oil on the site to meet state standards for planned site use.

Future Health Actions

- DOH will address any comments on this draft in the final report.
- DOH will consider assessing additional environmental data as they become available.
- DEP will provide oversight of cleanup of the site.
- DEP will develop a cleanup plan and will obtain input from people living nearby.

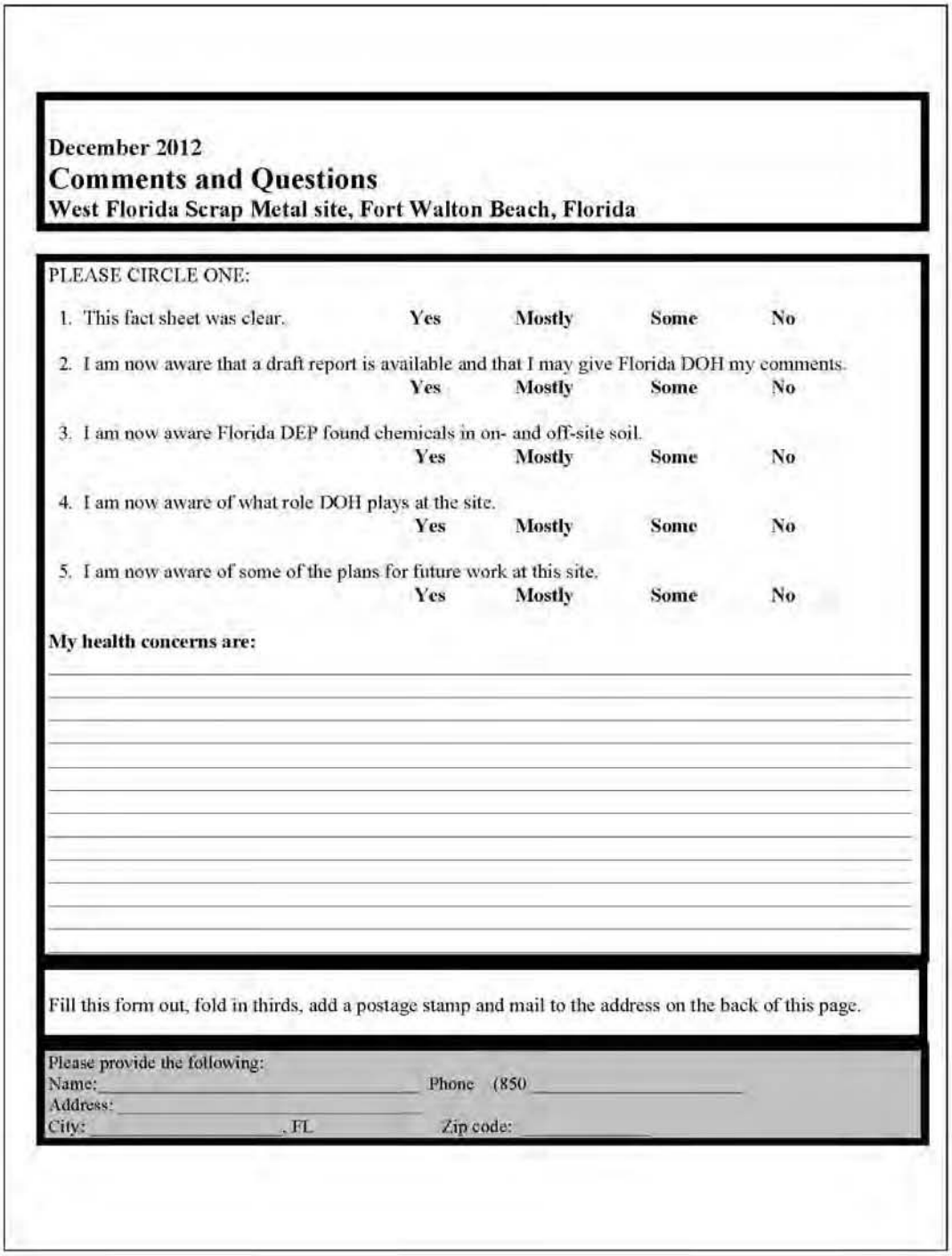
We need your comments by Jan. 25, 2013!
Visit the DOH website at:
http://www.doh.state.fl.us/environment/medicine/superfund/pha.htm
to see the West Florida Scrap Metal public comment report listed under draft documents
Or call us toll-free at (877) 798-2772
Email phtoxicology@doh.state.fl.us to request a copy

For More Details

About the health report: Call Connie Garrett, Florida DOH, toll-free (877) 798-2772 or via email: Connie_Garrett@doh.state.fl.us.
About cleanup of the site: Call Nancy Murchison, Florida DEP, (850) 245-8927 or via email: Nancy.Murchison@dep.state.fl.us.

FLORIDA DEPARTMENT OF HEALTH

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY



December 2012

Comments and Questions

West Florida Scrap Metal site, Fort Walton Beach, Florida

PLEASE CIRCLE ONE:

1. This fact sheet was clear. **Yes** **Mostly** **Some** **No**
2. I am now aware that a draft report is available and that I may give Florida DOH my comments. **Yes** **Mostly** **Some** **No**
3. I am now aware Florida DEP found chemicals in on- and off-site soil. **Yes** **Mostly** **Some** **No**
4. I am now aware of what role DOH plays at the site. **Yes** **Mostly** **Some** **No**
5. I am now aware of some of the plans for future work at this site. **Yes** **Mostly** **Some** **No**

My health concerns are:

Fill this form out, fold in thirds, add a postage stamp and mail to the address on the back of this page.

Please provide the following:
Name:_____ Phone (850 _____
Address:_____
City:_____, FL Zip code:_____

Nine people commented that they understood the fact sheet and added no health concern comments, six responded with questions or health concerns in writing, one phoned, and another sent an email. Florida DOH acknowledged all the respondents with a post card, letter, phone call, or return email. They summarize their responses in the following section.

Concern: Three respondents were concerned with health; one with lung cancer and an undiagnosed illness; the other two wondered how the site would affect peoples' health.

Response: Florida DOH's greatest concern is that people may trespass on the site and be injured. Trespassers could be cut by sharp pieces of rusty metal or be hurt by walking on unstable debris piles. In addition, rotting debris can slump or collapse if people walk or drive on the landfill.

Trespassers could also be exposed to metals and other chemicals. Florida DOH looked at contaminants in surface soil but did not find non-cancer health effects were likely. Testing of soil in the nearby residential area did not show chemical levels expected to have health effects.

Concern: Four respondents asked about groundwater contamination either directly, or indirectly in pointing out that most nearby resident use irrigation wells on their yards.

Response: Florida DOH addressed groundwater contamination in an earlier health consultation report [ATSDR 2010]: http://doh.state.fl.us/Environment/medicine/SUPERFUND/westflscrapmetal052110.zip . They concluded that groundwater testing has been inadequate to determine the horizontal and vertical extent of groundwater contamination. DEP tested 9 monitoring wells and 1 supply well in 2008. Tests found traces of 4 semi-volatile organic compounds, 5 volatile organic compounds, and 1 pesticide. None of the detected chemicals were present above primary (health based) drinking water standards. Florida DEP plans to further investigate site groundwater quality.

Florida DEP also found aluminum, iron, and manganese above secondary (non-health based) drinking water standards. One metal or combinations of these metals were present above secondary drinking water standards in nine of the 10 wells tested. Secondary drinking water standards are non-enforceable guidelines for contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water.

Municipal water is available to homes and businesses near the West Florida Scrap Metal site. Florida DOH does not have records of any nearby private drinking water wells.

If you obtain your drinking water from a well on your property near the site, you should contact the Okaloosa County Health Department and inquire about having your well tested for metals and volatile organic compounds (VOCs). The Okaloosa County Health Department contact is Dana Grissom. Her phone number is 850-689-7859 x 1110.

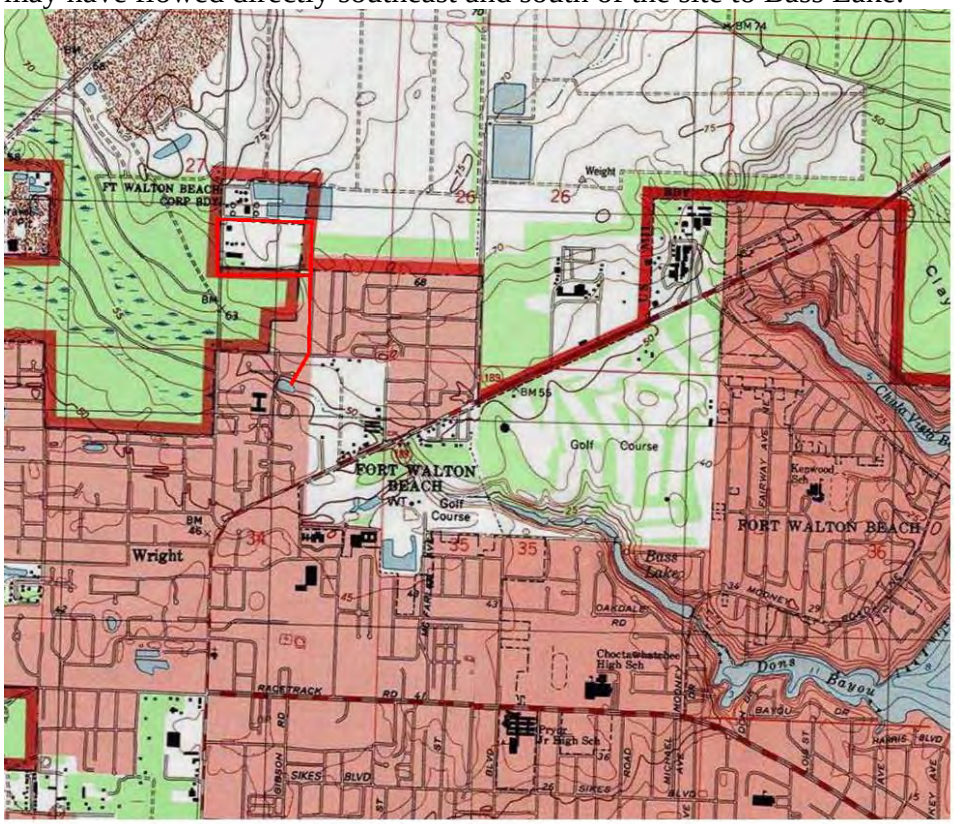
Although the limited testing found on-site groundwater met drinking water standards, Florida DOH generally recommends people should not drink water from shallow wells like irrigation wells. This is due to the potential for shallow wells to be contaminated by bacteria from the land surface.

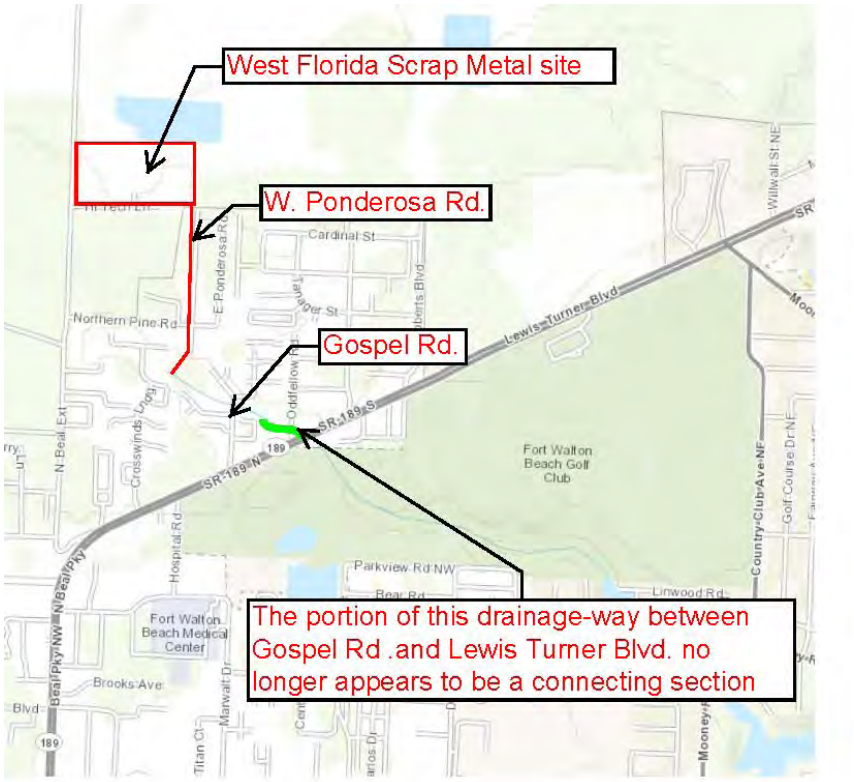
Concern: One respondent asked “Should I consume fruits, nuts, or vegetables produced on my property?”

Response: The available soil testing does not show elevated contamination in residential areas near the site. Figure 3 of this report is a map showing the 2008 and 2012 surface soil sample locations.

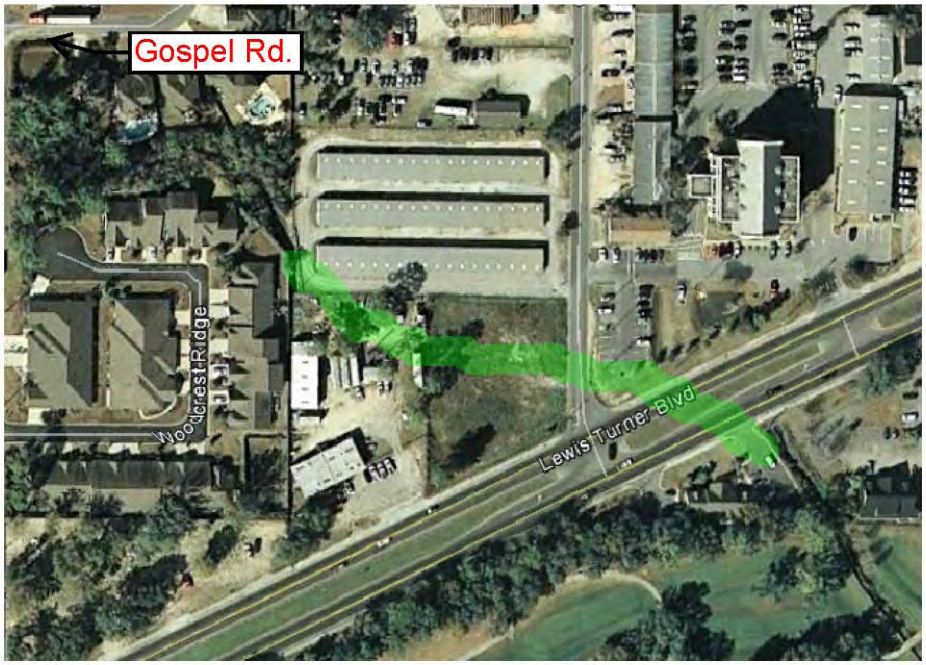
Concern: One respondent asked about the direction of drainage from the site.

Response: The following US Geological Survey Topographic map shows land surface elevations. The brown lines depict equal elevation or topography. These lines differ in elevation by 10 feet on this map. Rain falling on the land surface will move in a perpendicular direction from one topographic line to the next. Marshes (green with plant symbols) and surface water bodies (blue) are present southwest and southeast of the site. The nearest named water body is Bass Lake. Before the roads were built, surface water may have flowed directly southeast and south of the site to Bass Lake.





Currently, surface water runoff from the site would likely flow south into ditches along West Ponderosa Road and into a pond south of the site between Mistral Lane and Crosswinds Landing. This pond is not shown on the map above, but it is shown on the previous topo sheet and is visible on Google Earth on satellite photography. A creek flows from the pond to the southeast and ends north of Lewis Turner Blvd.



Google Earth imagery (taken2/21/2007) shows this section.