# Baseline Human Health Risk Assessment

# TNT Area B to Waste Water Treatment Plant No. 1 Sewer Lines
# Plum Brook Ordnance Works
# Sandusky, Ohio

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**FUDS Project No. G050H001817**
**Shaw Project No. 132457**

**December 2011**

**Final**

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## *List of Acronyms*

| | |
|---|---|
| ABS | dermal absorption factor |
| AF | soil-to-skin adherence factor |
| AP1 | Ash Pit 1 |
| bgs | below ground surface |
| BHHRA | baseline human health risk assessment |
| BSC | background screening concentration |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| CDI | chronic daily intake |
| cm/hour | centimeters per hour |
| $cm^2$ | square centimeter |
| COPC | chemical of potential concern |
| CSEM | conceptual site exposure model |
| °F | degrees Fahrenheit |
| DA | dose absorbed per unit body surface area per day |
| D&M | Dames and Moore, Inc. |
| DM | dry matter |
| DERP-FUDS | Defense Environmental Restoration Program-Formerly Used Defense Sites |
| DOE | U.S. Department of Energy |
| EPA | U.S. Environmental Protection Agency |
| EPC | exposure-point concentration |
| ET | exposure time |
| FI | fractional term |
| GAF | gastrointestinal absorption factor |
| gpm | gallons per minute |
| g | gram |
| g/kg-day | grams per kilogram of body weight per day |
| $g/m^3$ | grams per cubic meter |
| HHEM | human health evaluation manual |
| HI | hazard index |
| HQ | hazard quotient |
| ICI | International Consultants Incorporated |
| IEUBK | Integrated Exposure Uptake Biokinetic |
| ILCR | incremental lifetime cancer risk |
| IRIS | Integrated Risk Information System |

## *List of Acronyms* *(Continued)*

| | |
|---|---|
| IT | IT Corporation |
| kg | kilogram |
| kg/day | kilograms per day |
| LBA | Locomotive Building Area |
| LMS | linearized multistage |
| $K_p$ | permeability coefficient |
| $L/cm^3$ | liters per cubic centimeter |
| L/day | liters per day |
| $m^3$ | cubic meter |
| $m^3/hr$ | cubic meters per hour |
| $m^3/kg$ | cubic meters per kilogram |
| m/second | meters per second |
| MDC | maximum detected concentration |
| $\mu g/m^3$ | micrograms per cubic meter |
| $mg/cm^2$ | milligrams per square centimeter |
| $mg/cm^2$-day | milligrams per square centimeter per day |
| $mg/m^3$ | milligrams per cubic meter |
| mg/day | milligrams per day |
| mg/kg | milligrams per kilogram |
| mg/kg-day | milligrams per kilogram per day |
| µg/L | micrograms per liter |
| mg/L | milligrams per liter |
| NASA | National Aeronautics and Space Administration |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| OEPA | Ohio Environmental Protection Agency |
| PAH | polycyclic aromatic hydrocarbon |
| PBOW | Plum Brook Ordnance Works |
| PEF | particulate emission factor |
| QC | quality control |
| RBSC | risk-based screening concentration |
| RfC | reference concentration |
| RfD | reference dose |
| RI | remedial investigation |
| RME | reasonable maximum exposure |
| RSL | regional screening level |

## *List of Acronyms* *(Continued)*

| | |
|---|---|
| SF | cancer slope factor |
| Shaw | Shaw Environmental, Inc. |
| TNT | trinitrotoluene |
| TNTA | TNT Area A |
| TNTB | TNT Area B |
| TNTC | TNT Area C |
| UCL | 95th percent upper confidence limit on the arithmetic mean |
| UF | uncertainty factor |
| USACE | U.S. Army Corps of Engineers |
| VOC | volatile organic compound |
| WRS | Wilcoxon Rank Sum |
| WWTP1 | Waste Water Treatment Plant No. 1 |
| WWTP3 | Waste Water Treatment Plant No. 3 |

# *Executive Summary*

A baseline human health risk assessment (BHHRA) was conducted to evaluate risks associated with exposure to soil and groundwater along the trace of the former sewer lines that runs from TNT Area B (TNTB) to Waste Water Treatment Plant No. 1 (WWTP1) (TNTB/WWTP1 sewer lines) at the Plum Brook Ordnance Works (PBOW) in Sandusky, Ohio. The approach used in the BHHRA is consistent with methodologies described in the U.S. Environmental Protection Agency's primary risk assessment guidance documents, the site-specific work plan, and discussions and agreements between the Ohio Environmental Protection Agency, the U.S. Army Corps of Engineers Nashville and Huntington Districts, and Shaw Environmental, Inc.

***Site History/Description.*** The PBOW facility was constructed on property comprising 9,009 acres in early 1941 as a manufacturing plant for 2,4,6-trinitrotoluene (TNT), 2,4-dinitroluene, and pentolite. Production of explosives at PBOW began in December 1941 and continued until 1945. It is estimated that more than 1 billion pounds of nitroaromatic explosives were manufactured during the 4-year operating period. After plant operations ceased, the manufacturing process lines were decontaminated by the Army in late 1945. After the property was certified as decontaminated, 3,230 acres of the property were initially transferred to the Ordnance Department, then to the War Assets Administration. In 1949, PBOW was transferred to the General Services Administration. The Department of the Army reacquired the 3,230 acres in 1954 and performed cleanup efforts from the mid-1950s until 1963.

Accountability and custody for the entire portion of the former PBOW property that had been under the accountability and custody of the Department of the Army were transferred to the National Aeronautics and Space Administration (NASA) on March 15, 1963. NASA performed further decontamination efforts during 1964. NASA has operated and maintained the former PBOW property since 1963, and the facility is currently the NASA Glenn Research Center, Plum Brook Station. NASA operates the property as a space research facility in support of their John H. Glenn Research Center at Lewis Field, Cleveland, Ohio. Most of the aerospace testing facilities built in the 1960s at the site are currently on standby or inactive status.

The TNTB/WWTP1 sewer lines were located in the central portion of the PBOW facility. During PBOW manufacturing operations 1941 to 1944, WWTP1 received TNT manufacturing wastes from TNT Area A and TNT Area B through wooden waste water sewer lines for treatment. Chemical contamination that may have resulted from the TNTB/WWTP1 sewer lines are expected to be primarily nitroaromatics.

***Approach.*** The BHHRA evaluated exposure to chemicals in overburden groundwater, surface soil, and subsurface soil for cancer risks and noncancer hazards. Validated analytical data are from samples collected during 2009 and 2010, as reported in the site characterization report.

A screening for chemicals of potential concern (COPC) was used to focus the evaluation on those chemicals most likely to present a risk to potentially exposed individuals. This screening included a risk-based and, for inorganic chemicals in soil and bedrock groundwater, a background screening. This background screening protocol, which is based on PBOW Project Delivery Team agreement, differs somewhat from the current Ohio Environmental Protection Agency guidance.

Each COPC in each medium was evaluated for exposure via the relevant exposure pathways and the resultant risk and hazards were estimated. One or more COPCs were found in each TNTB/WWTP1 sewer line environmental medium. The receptors listed below were evaluated for exposure to the COPCs and their associated hazards and risks. The media evaluated for each receptor are shown in parentheses.

- Current groundskeeper (surface soil)
- Future groundskeeper (combined surface and subsurface soil [referred to as "total soil"], overburden groundwater)
- Indoor worker (surface soil, subsurface soil [air pathway only], overburden groundwater)
- Construction worker (total soil)
- On-site resident (total soil and overburden groundwater; noncancer hazards evaluated separately for the young child [ages 1 through 6 years] and adult)
- Hunter (surface soil)
- Hunter's child (surface soil [venison pathway only]).

Note that currently, the only groundskeeping activity along the TNTB/WWTP1 sewer line trace is mowing in limited areas along roads and utility right of ways which bisect the trace. However, the current groundskeeper is included because current land use does not prohibit the presence of a groundskeeper or other on-site workers. Even though hunting is not currently permitted along the TNTB/WWTP1 sewer line trace, hunting is permitted in other areas within PBOW; therefore, future use of this area for hunting is evaluated in this BHHRA. No construction is planned along

the TNTB/WWTP1 sewer line trace, but a construction worker is assumed to be potentially exposed under current or future land use. The future groundskeeper, indoor worker, and resident are evaluated for future land use.

***Results/Conclusions.*** Risks were characterized for each COPC identified in each medium for the relevant receptors. Noncancer hazards were evaluated against a target hazard index (HI) criterion of 1 and the PBOW team target incremental lifetime cancer risk (ILCR) goal of 1E-5 (i.e., 1 additional incidence of cancer per 100,000 individuals exposed). Cancer risk results are also compared to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) acceptable cancer risk range of 1E-6 to 1E-4 (i.e., a rate of 1 additional incidence of cancer per 1,000,000 to 1 in 10,000 individuals exposed), which is referred to herein as the "NCP risk management range."

The overall HI and ILCR values are summarized for each receptor in the following bullets:

- Current groundskeeper: ILCR = 6E-6; HI not calculated (no noncancer COPCs were identified; thus, adverse noncancer health effects are extremely unlikely.)
- Future groundskeeper: ILCR = 2E-6; HI = 0.04
- Future Indoor worker: ILCR = 2E-6; HI not calculated (no noncancer COPCs were identified; thus, adverse noncancer health effects are extremely unlikely.)
- Construction worker: ILCR = 8E-8; HI = 0.002
- Resident: ILCR = 5E-6; child HI = 0.2; adult HI = 0.1
- Hunter: ILCR = 4E-7; HI not calculated (no noncancer COPCs were identified; thus, adverse noncancer health effects are extremely unlikely.)
- Hunter's child: No ILCR or HI calculated (The carcinogenic COPCs are regarded as nonbioaccumulative, thus cancer risks are regarded as de minimis; no noncancer COPCs were identified, thus adverse noncancer health effects are extremely unlikely.)

***Conclusions.*** None of receptors had ILCR values that exceed either the PBOW cancer risk goal (ILCR>1E-5) or the NCP risk management range (1E-6 to 1E-4). Neither did any of the receptors have HI values that exceed the noncancer hazard criterion (HI>1). This indicates that the associated environmental media along the TNTB/WWTP1 sewer line trace are unlikely to pose an unacceptable cancer risk to any receptor and that exposure to these media is unlikely to result in adverse noncancer health effects for any human receptor. These receptor scenarios cover a wide range of human activities that are representative of reasonable maximum exposure. For

example, under current land use, the only groundskeeping activity is mowing along roads and utility right of ways. The BHHRA assumes that a groundkeeper is constantly present along the sewer line trace during the workweek over a 25-year career. Thus, the exposure scenario used in the BHHRA for this receptor, and likely for other receptors, tends to overestimate human health risks and hazards.

# 1.0 Introduction

This baseline human health risk assessment (BHHRA) evaluates potential human health risks associated with exposure to soil and groundwater associated with the trace of the former sewer lines running from TNT Area B (TNTB) to Waste Water Treatment Plant No. 1 (WWTP1) (TNTB/WWTP1 sewer lines) at the former Plum Brook Ordnance Works (PBOW), Sandusky, Erie County, Ohio. This work is being conducted for the U.S. Army Corps of Engineers (USACE) under the Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS), managed by the USACE Huntington District, and technically overseen by the USACE Nashville District.

This BHHRA is consistent with U.S. Environmental Protection Agency (EPA) guidance and with the procedures established in the BHHRA for TNT Area A (TNTA) and TNT Area C (TNTC) soil (IT Corporation [IT], 2001a), the BHHRA for groundwater at PBOW (Shaw Environmental, Inc. [Shaw], 2006) and, most specifically, the TNTB/WWTP1 sewer lines BHHRA work plan (Shaw, 2010a). The TNTB/WWTP1 sewer lines are administered under the DERP-FUDS program as part of WWTP1, which is administratively grouped with Waste Water Treatment Plant No. 3 (WWTP3) to comprise DERP-FUDS Project No. G05OH001817.

This BHHRA is Volume 2 of a three-volume remedial investigation (RI) report set for the TNTB/WWTP1 sewer lines. Volume 1 is the site characterization report (Shaw, 2011a), which details RI activities including test pit excavation results, soil and groundwater analytical results and provides recommendations prior to completion of the risk assessments. Volume 3 is a screening-level ecological risk assessment report (Shaw, 2011b).

In this BHHRA, the term “facility” refers to the entire former PBOW property, and the term “site” refers to an area within PBOW under investigation. Because of the linear shape of the area associated with the sewer lines, the associated area is referred to herein as the “sewer line trace.”

## 1.1 Facility Location and Description

PBOW is located approximately 4 miles south of Sandusky, Ohio, and 59 miles west of Cleveland (Figure 1-1). Although located primarily in Perkins and Oxford Townships, the eastern edge of the facility extends into Huron and Milan Townships. PBOW is bounded on the north by Bogart Road, on the south by Mason Road, on the west by Patten Tract Road, and on the east by U.S. Highway 250. The areas surrounding PBOW are mostly agricultural and residential. The facility is currently surrounded by a chain-link fence, and the perimeter is

regularly patrolled. Access by authorized personnel is limited to established checkpoints. Public access is restricted. Hunting is allowed by permit on portions of PBOW during the annual deer hunting season.

### *1.2 Facility History and Background*

The PBOW facility was constructed on property comprising 9,009 acres in early 1941 as a manufacturing plant for 2,4,6-trinitrotoluene (TNT), 2,4-dinitroluene, and pentolite (International Consultants Incorporated [ICI], 1995). Production of explosives at PBOW began in December 1941 and continued until 1945. It is estimated that more than 1 billion pounds of nitroaromatic explosives were manufactured during the 4-year operating period. The three explosive manufacturing areas were designated TNTA, TNTB, and TNTC. Twelve process lines were used in the manufacture of TNT: four lines at TNTA, three lines at TNTB, and five lines at TNTC.

After plant operations ceased, the manufacturing process lines were decontaminated by the Army in late 1945. During decontamination, all structures, equipment, and manufacturing debris were either removed and salvaged or removed and burned. After the property was certified as decontaminated, 3,230 acres of the property were initially transferred to the Ordnance Department, then to the War Assets Administration. In 1949, PBOW was transferred to the General Services Administration. This transfer did not include the Plum Brook Depot area, which consists of 2,800 acres. The Department of the Army reacquired the 3,230 acres in 1954. In 1955, the Army completed further decontamination of the manufacturing process lines. This effort included removal of contaminated surface and subsurface soil around the buildings and wooden and ceramic waste disposal lines containing TNT. Thousands of pounds of TNT were discovered in catch basins; this TNT was removed and burned at the burning grounds. The Army continued cleanup efforts until 1963.

Two property use agreements were entered into by the Army and the National Advisory Committee of Aeronautics, the predecessor of the National Aeronautics and Space Administration (NASA), in 1956 and 1958, respectively. Accountability and custody for the entire portion of the former PBOW property (6,030 acres) that had been under the accountability and custody of the Department of the Army were transferred to NASA on March 15, 1963. NASA performed further decontamination efforts during 1964. The NASA decontamination process included removing contaminated surface soil above the drain tiles, flumes, etc.; destruction of all buildings by fire; and removal of all soil, debris, sumps, and above-grade portions of concrete foundations. Portions of the concrete foundations located below grade were left buried, and some that had been previously slightly above grade were covered with fill material. All materials, including the soil in those areas, were flashed; the area was then rough-

graded. The decontamination process was also to have included the burning of excavated nitroaromatic-filled flumes (Dames & Moore, Inc. [D&M], 1997).

NASA has operated and maintained the former PBOW property since 1963, and the facility is currently the NASA Glenn Research Center, Plum Brook Station. NASA operates the property as a space research facility in support of their John H. Glenn Research Center at Lewis Field, Cleveland, Ohio. Most of the aerospace testing facilities built in the 1960s at the site are currently on standby or inactive status. On April 18, 1978, NASA declared approximately 2,152 acres of PBOW as excess. This excess included former buffer areas that had not been used by the Army and were thus not subject to decontamination efforts. The Perkins Township Board of Education acquired 46 acres of the excess acreage and uses this area as a bus transportation area. The General Services Administration retains ownership of the remaining excess acreage and currently has a use agreement with the Ohio National Guard for 604 acres of this land. The details of land transactions are listed in the site management plan (ICI, 1995).

### *1.3 TNTB/WWTP1 Sewer Lines Description and History*

The former WWTP1 is located in the north-central portion of PBOW, approximately 200 feet northwest of the intersection of Maintenance Road and Taylor Road (Figure 1-2). During PBOW manufacturing operations from 1941 through 1944, WWTP1 received TNT manufacturing wastes from TNTA (located east of WWTP1) and TNTB (located south-southwest of WWTP1) through wood-stave waste water sewer lines for treatment and disposal (ICI, 1995). The trace of the TNTB/WWTP1 sewer line, which formerly ran south-southwest to north-northeast, is the subject of this BHHRA.

The purpose of WWTP1 was to reduce the volume of waste water discharged from each of the manufacturing areas to the waste water ponds. WWTP1 consisted of a raw waste storage tank, caustic storage tank, neutral storage tank, an equalization tank, a condensate storage tank, an evaporator building, an incinerator, and a thick liquid storage tank. WWTP1 received a waste water slurry from the TNTA and TNTB manufacturing settling basins and neutralized the slurry through a chemical depuration process.

The waste water that was transferred via the sewer lines from TNTB and TNTA consisted of spent sulfuric acid and nitric acids and red water from the TNT purification process. Chemicals in the waste streams may have included sodium salts of sulfite, sulfate, nitrite, and nitrate; sulfonates of unwanted TNT isomers; trinitrobenzoic acid; trinitrobenzaldehyde; trinitrobenzyl alcohol; nitrotoluenes; and dinitrotoluenes (D&M, 1996).

Based on historical as-built maps (Trojan Powder Company, 1944), the sewer lines originally extended from the TNTB settling tanks to WWTP1. Historical figures show a 4-inch and a 6-inch sewer line that extend north-northeast from the TNTB settling basins (Building 187) for approximately 5,500 feet to the Raw Waste Storage Tank at WWTP1. Based on a review of a historical E.B. Badger & Sons (1962) map, a portion of the sewer lines along Shortcut Road apparently was removed (decontaminated) in November 1945. The TNTB/WWTP1 sewer lines were constructed with wood-stave pipes made of small wood slats (i.e., staves) joined together in a tongue-and-groove fashion and reinforced with steel banding. Use of wood-stave pipes was not uncommon for water and sewage conveyance during the late 1800s until the 1950s.

Review of aerial photographs indicates limited portions of the sewer line trace are still visible based on ground scarring. Site walks conducted in the spring of 2009 confirmed linear depressions in the ground surface, possibly the result of the degradation of the wooden sewer line and collapse of the overlying soil. No previous investigations concerning the TNTB/WWTP1 sewer lines have been conducted at PBOW.

The topography along the TNTB/WWTP1 sewer line trace is essentially flat throughout its approximately 5,500-foot length, with some low-lying areas and a slight sloping gradient downward toward the north. The southern portion of the sewer line trace is adjacent to Ransom Brook and crosses a tributary to the creek. Note that this portion of Ransom Brook was investigated as part of TNTB and was found not to be impacted from former U.S. Department of Defense activities (IT, 2000a).

The TNTB/WWTP1 sewer line trace intersects a variety of vegetation types, including successional woods, shrub thicket, upland old field, mowed field, and wet meadow habitat. The mowed portions are generally along road and utility areas. No vegetative stresses attributable to chemical contamination have been observed along the TNTB/WWTP1 sewer line trace.

### *1.4 Groundwater Use and Site Use*

Two groundwater aquifer systems are utilized for drinking water in the region: a carbonate aquifer to the west and a shale aquifer to the east (Shaw, 2005). PBOW is located within the transition of the two systems. Upwards of 170 private drinking water wells permitted by the Erie County Health Department are located within 4 miles of PBOW. Groundwater is not used on the PBOW facility. Permits are not required for agricultural wells. The Erie County Health Department does not permit using surface water as private drinking water. A shallow discontinuous and variably saturated groundwater system exists within the unconsolidated material atop the bedrock under much of the site.

Current use of the PBOW facility is classified as industrial for the purpose of identifying plausible human receptors and exposure pathways for evaluation in the BHHRA. D&M (1997) describes potential future uses of all or portions of the facility as follows:

- Industrial use (NASA activities and programs) may continue.
- Portions of the site may be used for recreation by hunters and fishermen.
- Portions of the site may be sold to state or local government or private individuals (no land-use restrictions were mentioned).
- Parts of the facility may be used in the future for residential or agricultural purposes.
- Parts of the facility may be used for training by the National Guard.
- Construction activities may be performed during development of any of the sites.

In summary, future site uses of property that includes the TNTB/WWTP1 sewer line trace are considered to be industrial or residential for the purpose of developing receptor and exposure scenarios. There are no current NASA activities along the sewer line trace, but because PBOW is under NASA control, the potential for NASA activities exists. Even though hunting is not currently permitted in the area of the sewer line trace, hunting is permitted in other areas within PBOW; therefore, future use of the sewer line trace for hunting is evaluated in this BHHRA. It is conservatively assumed for purposes of this BHHRA that groundwater may be developed as a source of potable water in the future. Please refer to Section 3.1.3 for a discussion of receptors and exposure scenarios.

### *1.5 Protocol for the Baseline Human Health Risk Assessment*

The BHHRA was performed in accordance with the TNTB/WWTP1 sewer line BHHRA work plan (Shaw, 2010a). The WWTP1 BHHRA work plan was developed consistent with previous PBOW BHHRAs and is based on EPA, USACE, and Ohio Environmental Protection Agency (OEPA) guidance, including, but not limited to, the following:

- Ohio Environmental Protection Agency (OEPA), 2009a***, Use of U.S. EPA's Regional Screening Levels as Screening Values in Human Health Risk Assessments***, Technical Decision Compendium, Division of Emergency and Remedial Response, August.
- Ohio Environmental Protection Agency (OEPA), 2009b***, Human Health Cumulative Carcinogenic Risk and Non-carcinogenic Hazard Goals for the DERR Remedial***

***Response Program***, Technical Decision Compendium, Division of Emergency and Remedial Response, August.

- U.S. Army Corps of Engineers (USACE), 1999, ***Risk Assessment Handbook, Volume I: Human Health Evaluation***, Engineer Manual EM 200-1-4.

- U.S. Environmental Protection Agency (EPA), 1989a, ***Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)***, Interim Final, Office of Emergency and Remedial Response, Washington, D.C., EPA/540/1-89/002.

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

- U.S. Environmental Protection Agency (EPA), 1992, ***Guidance on Risk Characterization for Risk Managers and Risk Assessors***, Memorandum from F. Henry Habicht II, Deputy Administrator, to Assistant Administrators, Regional Administrators, February.

- U.S. Environmental Protection Agency (EPA), 1997a, ***Exposure Factors Handbook***, Office of Research and Development, National Center for Environmental Assessment, Washington, D.C., EPA/600/P-95/002Fa, August.

- U.S. Environmental Protection Agency (EPA), 2002, ***Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites***, Office of Solid Waste and Emergency Response, Washington, D.C., 9355.4-24, December.

- U.S. Environmental Protection Agency (EPA), 2004a, ***Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part E - Supplemental Guidance for Dermal Risk Assessment)***, Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R-99/005, July.

- U.S. Environmental Protection Agency (EPA), 2010a, ***ProUCL Version 4.1 Technical Guide***, Draft, Office of Research and Development, Technology Support Center Characterization and Monitoring Branch, Las Vegas, Nevada, EPA/600/R-07/041, May.

- U.S. Environmental Protection Agency (EPA), 2010b, ***ProUCL Version 4.1 User Guide***, Draft, Office of Research and Development, Technology Support Center Characterization and Monitoring Branch, Las Vegas, Nevada, EPA/600/R-07/038, May.

- U.S. Environmental Protection Agency (EPA), 2011a, ***ProUCL Version 4.1***, Office of Research and Development, Technology Support Center Characterization and Monitoring Branch, Las Vegas, Nevada, February, on line at http://www.epa.gov/esd/tsc/form.htm.

### *1.6 Report Organization*

The remainder of this document is organized as follows:

- ***Chapter 2.0, Data Evaluation.*** Identifies data sources, evaluates data quality, identifies chemicals of potential concern (COPC), and provides a background screening and evaluation protocol. It is noted that the background screening protocol differs from the current OEPA (2009c) guidance as explained in Section 2.4.3.

- ***Chapter 3.0, Exposure Assessment.*** Presents a conceptual site exposure model (CSEM), including contaminant sources, contaminant release mechanisms, receptors, and exposure pathways; describes exposure-point concentrations (EPC); and presents methods for calculating chemical intake and contact rates.

- ***Chapter 4.0, Toxicity Evaluation.*** Describes the potential for cancer and/or noncancer human health effects, provides an estimate of the quantitative relationship between the magnitude of dose or contact rate and the probability and/or severity of adverse effects, identifies the toxicity values that are used in the BHHRA, and describes the development of dermal toxicity values.

- ***Chapter 5.0, Risk Characterization.*** Combines the output of the exposure assessment and toxicity assessment to quantify the risk to each receptor at each site. Risks associated with exposure to all appropriate media for each site are evaluated.

- ***Chapter 6.0, Uncertainty Analysis.*** Identifies uncertainties in all phases of the BHHRA and discusses their individual effects on the risk assessment results, focusing on those issues that are most likely to have the greatest effect on risk estimates and/or risk management decisions.

- ***Chapter 7.0, Summary and Conclusions.*** Provides a brief summary of the BHHRA, including quantitative results, uncertainties, and pertinent site information. Summary and discussion is focused on those results and issues that are most directly relevant to the risk assessment conclusions for the TNTB/WWTP1 sewer lines.

- ***Chapter 8.0, References.*** Presents the references used in the preparation of this document.

# 2.0 Data Evaluation

Data evaluation consists of a description of the appropriate data sources for each environmental medium sampled for each site, a discussion of data quality, a description of the methodology used for identification of the COPCs, and a summary of the COPCs for each TNTB/WWTP1 sewer line environmental medium.

## 2.1 Data Sources

All soil and groundwater samples from which the validated analytical data used in the BHHRA were derived are presented in Table 2-1. These data include surface soil, subsurface soil, and overburden groundwater well samples during the RI (Shaw, 2011a). The sample summary table identifies each sample used in the BHHRA and the associated analytical suite. All WWTP1 sampling locations are shown on Figure 2-1.

## 2.2 Sorting the Analytical Data

Prior to initiation of BHHRA calculations, a database of chemicals present in site samples was compiled for each environmental medium. This database includes all chemicals detected, as described in the RI report (Shaw, 2011a). The surface soil and subsurface soil are considered separate media. Surface and subsurface soil data are typically combined to assess exposures under the construction worker, future groundskeeper, and residential site-use scenarios, which would likely occur after surface and subsurface soil had been excavated and/or mixed. Combined surface and subsurface soil data are termed “total soil” in the BHHRA. However, it is understood that a reference to the evaluation of exposure to total soil is actually an evaluation of exposure to both surface soil and subsurface soil. The total soil COPC list is created by combining the list of COPCs identified in surface and subsurface soil. If a chemical is either a surface soil COPC or a subsurface soil COPC (or both), then that chemical is a total soil COPC. The EPCs for total soil are typically generated from the combined data sets.

Generally, surface soil is defined as samples collected from within the interval of 0 to 1 foot below ground surface (bgs), and subsurface soil is defined as samples collected from depths greater than 1 foot bgs (Shaw, 2010a). Two general types of soil sampling were employed during the RI: test pit sampling and direct-push sampling. Sampling locations for the test pit and direct-push samples are shown on Figure 2-1.

The test pit samples were collected in July 2009 from 20 test pits excavated along the sewer line trace, perpendicular to the trace. These were analyzed for nitroaromatics only. Each test pit

sample was collected beginning at the base of the fill material to a depth of 0.5 foot to 1 foot below this material. Each of the test pit soil samples was collected at 2 to 3 feet bgs in the southern portion (at test pits TP-1 through TP-10), and the soil samples collected in the northern portion (at test pits TP-11 through TP-20) of the trace were collected at 1.5 to 2 feet bgs. Because they begin at a depth greater than 1 foot bgs, all of the test pit soil samples are regarded as surbsurface soil.

Direct-push soil samples were collected in August 2009 to augment the test pit soil results. These were analyzed for a more complete suite of chemicals, as shown in Table 2-1. One surface soil (0 to 1 foot bgs) and one subsurface soil sample were collected from each boring. The subsurface soil samples were collected from a depth of 8 to 10 feet bgs, unless refusal (i.e., competent shale) was met using the direct-push method prior to the 10-foot depth. Note that for all samples in the southern half of the sewer line trace (DP-07 through DP10, DP13, and DP14), refusal was met at depths ranging from 3.5 to 6 feet bgs. In these cases, a subsurface soil sample was collected from a 2-foot interval just above the competent shale.

### *2.3 Evaluation of Data Quality*

The quality of the analytical data was evaluated to select data for inclusion in the BHHRA. Data quality is expressed by the assignment of qualifier codes during the analytical laboratory quality control (QC) process or during third-party data evaluation. Some of the more common qualifiers and their meanings are as follows (EPA, 1989a):

- U - Chemical was analyzed for but not detected; the associated value is the sample quantitation limit.
- J - Value is estimated, usually below the reporting limit.
- N - The analysis indicates an analyte for which there is presumptive evidence to make a tentative identification.
- NJ - The analysis indicates a “tentatively identified analyte,” and the reported value represents its approximate concentration.
- UJ - The analyte was not detected above the reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - QC indicates that the data are unusable (chemical may or may not be present).

B - The concentration in the sample is not sufficiently higher than concentration in the blank, using the 5-times, 10-times (5x, 10x) rule, which states that a chemical is considered a nondetect unless its concentration exceeds 5 times the blank concentration. For common laboratory contaminants (acetone, 2-butanone [methyl ethyl ketone], methylene chloride, toluene, and the phthalate esters), the sample concentration must exceed 10 times the blank concentration to be considered a detection.

"J," "N," and "NJ" qualified data are treated in the BHHRA as detected concentrations; "R" data and "B" qualified chemical data are not used. "U" qualified data (nondetects) are treated in the BHHRA as nondetections. The use of data with other, less common qualifiers is evaluated on a case-by-case basis. Generally, data for which the identity of the chemical is unclear are not used in the BHHRA. If confidence that the chemical is present is reasonably high but the actual concentration is somewhat in question, the data generally are used in the BHHRA.

Some chemicals may be analyzed under two different analytical programs. For example, the dinitrotoluene isomers are analyzed by EPA Method 8330 for nitroaromatics and by EPA Method 8270C for semivolatile organic compounds. Risks associated with the reported values from both analyses are considered in the risk characterization (Chapter 5.0) and discussed as appropriate in the uncertainty analysis (Chapter 6.0), together with potential issues such as the relative sensitivities (i.e., differences in respective reporting limits) of the methods.

### *2.4 Identification of Chemicals of Potential Concern*

A screening process is used to identify COPCs, which are the detected chemical analytes carried through the full risk assessment process. The objectives of COPC screening are to focus the risk assessment on those chemicals that may contribute significantly to overall risk and to remove from quantification those chemicals whose contribution is clearly inconsequential. COPC screening includes a risk-based screen which also considers status as a human nutrient (Section 2.4.1), a frequency-of-detection evaluation (Section 2.4.2), and a background screen (Section 2.4.3).

#### *2.4.1 Risk-Based Screening*

In the risk-based screen, the maximum detected concentration (MDC) of a chemical in a given medium is compared to the appropriate risk-based screening concentration (RBSC) for that chemical and medium. This is performed for each chemical in each medium. The units of the MDC and RBSC are the same for each chemical in a given medium.

If the MDC of a chemical is less than or equal to its RBSC, then the chemical is not considered further in the BHHRA for this medium because it is very unlikely that chemical concentrations at or below the RBSC would contribute substantially to risk. An analyte may be identified as a COPC if its MDC exceeds its RBSC. As indicated in Section 2.4, actual status as a COPC also depends on a chemical's frequency of detection (Section 2.4.2), concentration with respect to background (Section 2.4.3), and potential status as a nutrient. Groundwater RBSCs used in the BHHRA are derived from the EPA (2011b) regional screening level (RSL) table "tap water" values, and RBSCs for soil are derived from "residential soil" RSL values. This is a change in the source of the RBSCs for PBOW BHHRA work plans begun prior to March 2009 based on discussion between USACE and OEPA (2009c), and this change is consistent with recent OEPA (2009a) guidelines. Previously, the groundwater and soil RBSCs were derived from the corresponding EPA (2004b) Region 9 preliminary remediation goals. The soil RBSCs are applied to both surface and subsurface soil.

RSL values are based on a concentration equal to either an incremental lifetime cancer risk (ILCR) of 1E-6 or a noncancer hazard quotient (HQ) of 1, the threshold at (or below) which adverse noncancer effects are regarded as unlikely to occur. For the BHHRA, the noncancer values listed in the RSL tables are multiplied by a factor of 0.1 to provide additional protection for simultaneous exposure to multiple chemicals (OEPA, 2009a; EPA, 2011c). This results in RBSC values associated with an HQ of 0.1. For cancer risk, the RSL values based on an ILCR of 1E-6 were used directly as RBSCs in the BHHRA. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) identifies acceptable exposure levels that are generally associated with concentration levels that represent an excess upper bound lifetime cancer risk to an individual of 1E-6 to 1E-4 (EPA, 1990). This range is hereinafter referred to as the "NCP risk management range." Cancer risks associated with RSL values represent the lower end of this range. The OEPA recognizes an overall cancer risk of 1E-5, which represents the logarithmic midpoint of the EPA risk management range, as a remedial goal (OEPA, 2009b). The RBSC for a chemical that elicits both cancer and noncancer health effects is selected based on either a cancer risk of 1E-6 or an HQ of 0.1, whichever associated concentration is lower.

The screening of lead in soil and groundwater is a special case. The EPA (2011d) Office of Water treatment technique action level of 15 micrograms per liter (µg/L) for lead is listed in the RSL table, and the RSL user's guide recommends this level for use as an RSL. Lead exposure and risk is evaluated separately from other chemicals using the EPA (2004c) Integrated Exposure Uptake Biokinetic (IEUBK) model. The selection of the action level as the drinking water RSL is based partly on IEUBK model. Section 5.2 of the RSL user's guide states that if the average tap water concentration exceeds 15 µg/L and the average soil concentration exceeds a value of 250

milligrams per kilogram (mg/kg), then more than the IEUBK target (EPA, 2004c) of 5 percent of the population of exposed children would exceed 10 micrograms per deciliter of lead in blood. Because an RSL of 15 µg/L sufficiently screens for a potential average concentration of 15 µg/L, the RSL of 15 µg/L is used as the RBSC. However, it is possible that the residential soil RSL of 400 mg/kg, which is selected as the soil RBSC, may not screen for an average soil concentration of 250 mg/kg within a given data set. Therefore, the following conditions were placed on the screening of lead:

1. If either the soil RBSC or groundwater RBSC is exceeded, then the IEUBK blood-lead model is run using both average soil and groundwater concentrations.

2. If the average soil concentration exceeds 250 mg/kg, then the IEUBK model is run, even if neither RBSC is exceeded, using average concentrations of lead in both soil and groundwater.

Note that for TNTB/WWTP1 total soil, the MDC for lead (17.7 mg/kg) is less than both the RBSC (400 mg/kg) and the criterion for average concentration (250 mg/kg). Lead was not detected in TNTB/WWTP1 overburden groundwater. Therefore, the IEUBK model was not run for TNTB/WWTP1 sewer line soil and groundwater.

There are no RSLs for sulfate in tap water, but the drinking water outside-of-the-mixing-zone average value of 250 milligrams per liter (mg/L) for the Lake Erie Basin is used as the RBSC. This value is the same as the secondary drinking water regulation of 250 mg/L (EPA, 2011c). Secondary drinking water regulations are nonpromulgated values, based on aesthetic characteristics, which are used as guidelines for public water systems. A health-based advisory level of 500 mg/L also exists for sulfate (EPA, 2011c).

The evaluation of essential nutrients is a special form of risk-based screening applied to certain ubiquitous elements that are generally considered to be required human nutrients. Essential nutrients such as calcium, chloride, iodine, magnesium, phosphorous, potassium, and sodium are generally considered innocuous at levels found in environmental media. No RSLs are listed for these nutrients. Should any of these chemicals be identified as site related, an exposure analysis is performed whereby a daily dose of chemical from ingestion of the medium in question is calculated. The dose is compared with levels known or expected to be safe or toxic, and/or with recommended daily allowances, depending on the availability of data.

### *2.4.2 Frequency of Detection*

When confidence that a given chemical is present is high, the data generally are used in the BHHRA. For most chemicals, their detection is presumptive evidence of their presence. As suggested by EPA (1989a), chemicals that are reported infrequently may be artifacts in the data that do not reflect the actual presence of the chemical in question. For the BHHRA, chemicals that are reported only at low concentrations in less than 5 percent of the samples from a given medium are excluded from further consideration, unless the presence of a given chemical is expected based on historical information about the site. Chemicals detected infrequently at high concentrations may identify the existence of contaminant plumes or limited "hot spots" and are retained as COPCs.

### *2.4.3 Comparison to Background*

A number of the chemicals detected in PBOW environmental media may have MDCs that exceed RBSCs but are part of normal background concentrations. Such chemicals may include inorganics and polycyclic aromatic hydrocarbons (PAH), a class of organic compounds which form from natural or anthropogenic combustion of organic matter, including fossil fuels, and are generally ubiquitous in the environment. Airborne PAHs associated with non-U.S. Department of Defense sources may be deposited on soil and leach to groundwater. Benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds, as well as PAHs, may also be associated with background concentrations due to the presence of natural petroleum-derived compounds present in the vicinity of PBOW (Section 3.1.1).

Site concentrations of inorganic chemicals in site environmental media may be compared to those of PBOW background using a two-step approach: 1) background screening and 2) statistical data set testing. This second step (Section 2.4.3.2) is initiated only in cases where the concentration used for background screening is exceeded (Section 2.4.3.1) and is performed after the risk characterization (Chapter 5.0). The results of the statistical data testing are discussed in the uncertainty analysis (Chapter 6.0). No suitable background data set exists for overburden groundwater, so no background screening or statistical comparisons to background concentrations can be made for overburden groundwater samples. However, concentrations of COPCs in overburden groundwater may be qualitatively compared to the background data in the uncertainty analysis as appropriate.

Inorganics and organics are treated similarly from a quantitative perspective. However, all organics not eliminated on the basis of RBSC exceedance (Section 2.4.1) or infrequent detection (Section 2.4.2) are carried through the risk calculation process (exposure assessment, toxicity assessment, and risk characterization). As presented in Section 2.4.3.3, organic compounds are

quantitatively eliminated as background related only through the uncertainty analysis if applicable.

#### *2.4.3.1 Background Screening of Inorganics*

Background screening is applied to each inorganic whose MDC in soil or limestone bedrock groundwater exceeds the RBSC and that cannot be characterized as an infrequently detected analyte. In background screening, the MDC is compared to the PBOW chemical-specific background screening concentration (BSC). The background data set and derivation of soil BSCs for all PBOW soil investigations are described in IT (1998) (Table 2-2), and the background data set and derivation of BSCs for PBOW bedrock groundwater are described in the 2004 groundwater report (Shaw, 2005) (Table 2-3). It is noted that the method agreed upon for the development of BSCs, as recorded in the September 11, 2002 PBOW team meeting minutes, differs from that shown in current OEPA (2004a) guidance. This PBOW team agreement, which has been used for all PBOW risk assessments to date, takes precedence over the subsequent OEPA (2004a) guidance. Summary tables of the background data sets for soil and groundwater are provided as Tables 2-2 and 2-3, respectively. The background soil samples were collected from near the property boundary, away from any potential source areas, and the background groundwater wells were installed in off-site areas upgradient of PBOW sources. Briefly, BSCs were calculated for use at PBOW based on concentrations found in these background soil and bedrock monitoring well samples. Each BSC is either the MDC or the calculated 95th percent upper tolerance limit of the background data set, whichever value is lower (IT, 1998; Shaw, 2005). The background monitoring well samples were collected using low-flow samples and were unfiltered.

The background screening consists of comparing the MDC of the site data set to the BSC. The chemical may be regarded as a COPC if its MDC exceeds the BSC for that chemical or if no BSC can be determined due to a lack of detections in the background data set. COPCs are fully evaluated in the exposure assessment, toxicity assessment, and risk characterization. An inorganic analyte is not regarded as a COPC if its MDC is equal to or less than the BSC.

#### *2.4.3.2 Statistical Data Set Testing of Inorganics*

Statistical testing is performed to compare data sets of site inorganics data against the appropriate PBOW background data sets. As described in Section 2.4.3.1, the background data set for groundwater is presented in the 2004 groundwater report (Shaw, 2005), and the background data set for soil is presented in the site investigation for the acid areas (IT, 1998). As mentioned previously, background data sets do not exist for overburden groundwater; therefore, a statistical background evaluation for COPCs in these media cannot be performed. The method for

statistical comparison of the site data sets to the background data sets, described in Appendix M of Shaw (2005), is the Wilcoxon Rank Sum (WRS) statistical test (also known as the Mann-Whitney U test). WRS testing is performed for inorganics having MDCs that exceed the respective BSCs and are identified as COPCs based on RBSC comparison (Section 2.4.1) and frequency of detection (Section 2.4.2). All COPCs are carried through the risk characterization process; thus, statistical testing results are not used to screen out any chemicals.

Site data sets are interpreted as being significantly different from PBOW background if the associated p-level is less than 0.05. WRS statistical output and box-and-whisker plots of the various inorganic COPC data sets are appended to the BHHRA for each inorganic data set evaluated against the appropriate site background data set; the WRS results are discussed as part of the uncertainties. Analytes shown by the WRS results to exceed background (or for which the WRS testing was not run) are assumed to be site related, unless a qualitative chemical-specific explanation is presented in the uncertainties analysis as to why the analyte should not be regarded as site related. The WRS is not run if the COPC was not detected in the PBOW background data set. Data sets for which the WRS results do not suggest site relatedness (i.e., site data and background data are not statistically different) are still evaluated for risks and hazards in the risk characterization (Chapter 5.0).

#### *2.4.3.3 Treatment of Organic Compounds*

As mentioned in Section 2.4.3, certain organic compounds (e.g., BTEX and PAHs) in site media may be attributable to background conditions. However, no organic compounds are summarily screened out. Instead, all detected organic compounds are carried through the risk assessment process (i.e., exposure assessment, toxicity assessment, and risk characterization) unless screened out on the basis of comparison to RBSCs (Section 2.4.1) or characterized as infrequently detected (Section 2.4.2). Background contributions of organics are discussed in the uncertainties analysis, as applicable.

### *2.5 Data Evaluation Summary*

Data summary tables are provided for the following TNTB/WWTP1 sewer line media: surface soil (Table 2-4), subsurface soil (Table 2-5), total soil (Table 2-6), and overburden groundwater (wells) (Table 2-7). These tables provide the following information for each detected chemical in each environmental medium:

- Chemical name
- Frequency of detection
- Range of detected concentrations
- Range of detection limits

- Arithmetic mean of site concentrations
- 95th percent upper confidence limit on the arithmetic mean (UCL) (for COPCs only)
- Appropriate RBSC
- Appropriate BSC
- Selection/exclusion of chemical as a COPC
- EPC (for COPCs only).

The estimation of the UCL values for COPCs is discussed in Section 3.2.1. For duplicate samples, the associated values are averaged in the data summary if both samples are detects or if both are nondetects; if only one of the duplicates is a detect, then this detected value is used in the data summary.

An analogous summary table for the overburden groundwater piezometer samples is appended (Appendix A). Note that these direct-push groundwater samples are collected for nature-and-extent purposes to determine groundwater flow direction and the placement of monitoring wells. These data are not sufficiently representative of groundwater conditions for use in risk assessment. Therefore, they are not used to identify COPCs and are not quantitatively evaluated in the BHHRA. This piezometer groundwater summary table is appended only to provide ancillary information.

The COPCs for each of the TNTB/WWTP1 sewer line media are identified as follows:

- ***Surface Soil*** – Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene

- ***Subsurface Soil*** –TNT, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene

- ***Total Soil*** –TNT, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene

- ***Overburden Groundwater*** – Manganese.

As discussed in Section 2.2, the total soil COPCs include all surface soil and subsurface soil COPCs.

# 3.0 Exposure Assessment

Exposure is the contact of a receptor with a chemical or physical agent. An exposure assessment estimates the type and magnitude of potential exposure of a receptor to COPCs found at or migrating from a site (EPA, 1989a). An exposure assessment includes the following steps:

- Characterize the physical setting.
- Identify the contaminant sources, release mechanisms, and migration pathways.
- Identify the potentially exposed receptors.
- Identify the potential exposure pathways.
- Estimate exposure concentrations.
- Estimate chemical intakes or contact rates.

The BHHRA characterizes potential exposures to COPCs in TNTB/WWTP1 sewer line environmental media as portrayed by the CSEM in Section 3.1. Note that for the TNTB/WWTP1 sewer line trace, these environmental media include soil and groundwater.

## 3.1 Conceptual Site Exposure Model

The CSEM provides the basis for identifying and evaluating the potential risks to human health in the BHHRA. The CSEM, graphically depicted on Figure 3-1, includes the receptors appropriate to all plausible site-use scenarios and the potential exposure pathways. This presentation of all possible pathways by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health and helps to ensure that potential pathways are not overlooked. The elements of a CSEM include the following:

- Source
- Source media (i.e., initially contaminated environmental media)
- Contaminant release mechanisms
- Contaminant transport pathways
- Intermediate or transport media
- Exposure media
- Receptors
- Routes of exposure.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium (e.g., ingestion or dermal contact).

The receptors and pathways on Figure 3-1 reflect scenarios developed from information regarding site background and history, topography, climate, and demographics as presented by

D&M (1997) and the sitewide groundwater investigation (IT, 1997). On Figure 3-1, asterisks identify exposure pathways that are complete and addressed in this BHHRA. Justification for exclusion of other pathways is provided in the Figure 3-1 footnotes, and the exclusion of other potential receptors is discussed in Section 3.1.3.8. No current or future exposure by off-site residents is evaluated. Most of the off-site residents are serviced by municipal water from surface water sources. Although there are numerous private groundwater wells in the vicinity, including eight within 1 mile of the facility boundary, none of these is used as a potable source. Based on the investigations of other PBOW sites, natural hydrocarbons and hydrogen sulfide are known to be present within the bedrock limestone, and shale formation groundwater generally provides low yields and is of low quality (Shaw [2008]); however, the groundwater underlying TNTB/WWTP1 sewer lines is not summarily excluded for consideration as a tap water source based on natural water quality parameters or general assumptions concerning yield. Therefore, given the presence of numerous off-site wells and the assumption of unrestricted future land use on site, the development of groundwater for on-site residential (or on-site worker) use as tap water is initially regarded as plausible for purposes of this BHHRA. Groundwater quality and potential use is discussed further in the uncertainty analysis (Chapter 6.0).

### *3.1.1 Physical Setting*

The topography along the TNTB/WWTP1 sewer line trace is essentially flat, with a slight sloping downward gradient to the north. Some low-lying areas are present in the vicinity of the sewer line trace. During excavation of test pits, some metal banding from the wood-stave lines was observed, but it appeared that the sewer lines had been previously removed at some unknown time after manufacturing operations ceased. As mentioned in Section 1.3, at least part of the sewer lines may have been removed in late 1945. There are currently no structures above grade.

The TNTB/WWTP1 sewer line trace intersects a variety of vegetation types, as described in Section 1.3. These include successional woodland vegetation, shrub thicket, old field, mowed field, and wet meadow vegetation.

The following subsections further describe the physical setting of the TNTB/WWTP1 sewer line trace, including the climate and meteorology of the Sandusky region (Section 3.1.1.1), and geology (Section 3.1.1.2), soil (3.1.1.3), hydrology (Section 3.1.1.4), and surface water characteristics (Section 3.1.1.5) of the area and of the TNTB/WWTP1 sewer line trace in particular. A general description of the TNTB/WWTP1 sewer line trace is provided in Section 1.3.

#### *3.1.1.1 Climate/Meteorology*

The climate in the Sandusky area is continental and strongly affected by Lake Erie. July is generally the warmest month (average high and low temperatures of 82 and 65 degrees Fahrenheit [°F], respectively), and January is generally the coldest (average high and low temperatures of 32 and 19°F, respectively) (The Weather Channel, 2004). On average, the first freezing day (low of 32°F or less) occurs in late October (average of three per month), and the last freezing day falls in early May (average of one per month) (National Oceanic and Atmospheric Administration, 1990). The average annual precipitation for Sandusky is 34.5 inches per year, with a monthly average of more than 3 inches per month falling in April through September and less than 3 inches in each of the other seven months (The Weather Channel, 2004). Precipitation is fairly evenly distributed throughout the year, with the fewest precipitation days (0.01 inch or greater) per month (10) occurring during July, August, September, and October, and the most (15) occurring in December and January (City-Data.com, 2004). The mean annual wind speed is 10.3 miles per hour (City-Data.com, 2004), with winds predominantly from the southwest (Science Applications International Corporation, 1991). Sandusky area winters are cloudy, with 33 percent sunshine during November through February, as compared with up to 65 percent sunshine during the summer months (City-Data.com, 2004).

#### *3.1.1.2 Geology*

At PBOW, three bedrock units are present beneath unconsolidated overburden: from deepest to most shallow, these are the Delaware Limestone, Olentangy Shale, and Ohio Shale. Each of these formations has been encountered in the upper 100 feet of bedrock at PBOW (Shaw, 2005). The TNTB/WWTP1 sewer line was within the overlying overburden throughout its length. At its southern extent (at the settling tanks in the TNTB area), the Ohio Shale is not present; thus, the overburden directly overlies the Olentangy Shale. As the sewer lines extended north-northeast toward WWTP1, they are within overburden that overlies the Ohio Shale. Please note that no limestone bedrock wells were installed along the TNTB/WWTP1 sewer line trace because it was determined during evaluation of the overburden groundwater samples that site-related contaminants, especially nitroaromatics, were not found in the overburden groundwater. Since no impact to overburden groundwater was indicated, it was judged that further evaluation of groundwater was unnecessary. Therefore, the geological description provided in this section is based largely on the borings from WWTP1 and nearby areas.

The shale consists of bluish-gray, soft, fossiliferous shale containing thin layers of dark, hard, fossiliferous limestone or a dark-gray to blue, very hard, siliceous, fossiliferous limestone or dolomitic mudstone. The Olentangy Shale of PBOW dips to the southeast at a slope of approximately 21 feet per mile. The uppermost formation at PBOW is the Ohio Shale and

consists of a black and thinly bedded shale with abundant carbonaceous matter. The TNTB/WWTP1 sewer lines were within the unconsolidated overburden (primarily sands, silts, and clays with some weathered shale). In the context of the subsurface geology, the trace of the TNTB/WWTP1 sewer lines began at the settling tanks in the TNTB area, which is located above the Ohio Shale geologic unit. As the lines continued north-northeast to WWTP1, they crossed over the Olentangy Shale. The combined Olentangy Shale and Ohio Shale thickness ranges from approximately 15 feet at the northern terminus near WWTP1 to more than 40 feet at the southern terminus near the TNTB settling tank area.

The Delaware Limestone is the lowermost formation screened by PBOW wells. It is characterized as a hard, dense, finely crystalline limestone and dolomite. The unit is typically buff colored, hard, and massive and usually is described as fossiliferous with pyrite crystals. In the vicinity of PBOW, quarries mine limestone from the Delaware. Traces of natural petroleum-derived hydrocarbons and hydrogen sulfide are common in area quarries (Shaw, 2005). Although no bedrock wells were installed along the TNTB/WWTP1 sewer line trace, petroleum hydrocarbons were observed at depth during the drilling of all three WWTP1 wells. WTP1-BEDGW-001 had petroleum hydrocarbon staining at 47.9 to 49.3 feet, 52.4 to 52.6 feet, and 68.8 to 80.6 feet, and hydrocarbon seeping from factures at 68.4 to 68.5 feet and 74.0 to 74.4 feet bgs (Shaw, 2011c,d). Note that WTP1-BEDGW-001 was dry and no samples could be collected from this well. Petroleum hydrocarbon staining was also observed at depth on the cores of WTP1-BEDGW-002 (51.7 to 54.3 feet bgs) and WTP1-BEDGW-003 (49.9 to 54.8 feet bgs), with hydrogen sulfide odor observed in the latter during well purging. Note that hydrogen sulfide has been observed at high concentrations in bedrock wells at nearby PBOW sites, notably in Ash Pit 1 (AP1) well AP1-BEDGW-002 and in Locomotive Building Area (LBA) monitoring well MNTA-BEDGW-001 (more than 200 parts per million) (Shaw, 2010b; 2011e). Also, in nearby AP1 well AP1-BEDGW-001 to the south (generally upgradient), approximately 1 to 2 feet of free product has been found on the surface of the water during sampling (Shaw, 2010c; 2011f). Petroleum hydrocarbons were also found at depth in four of the six bedrock wells in the nearby LBA (Shaw, 2010b; 2011d) to the west (side gradient), indicating the prevalence of petroleum contamination in the bedrock zone within this general area of PBOW. These observations provide evidence that petroleum hydrocarbons and elevated levels of hydrogen sulfide are naturally occurring in this general area of PBOW.

#### *3.1.1.3 Soils*

The overburden in Erie County is predominantly glacial till, glacial outwash, or glacial lacustrine (lake) deposits. In the vicinity of PBOW, the soil has been interpreted to be lacustrine. In many PBOW areas, the overburden also consists of highly weathered bedrock. The thickness of the

overburden ranges from less than 1 foot to more than 25 feet. Overburden is thickest on the northern portion of the PBOW facility in the vicinity of the Reactor Facility Area, where it has filled in a bedrock low (Shaw, 2005). The thickness of the overburden along the length of the TNTB/WWTP1 sewer line trace cannot be ascertained because bedrock wells were not installed, so deep boring logs are not available. However, in the WWTP1 area, which is at the northern terminus of the trace, the overburden thickness ranges from 21 to 24 feet, based on boring logs. The overburden was only 4 feet thick along the trace in the southern end.

At many PBOW sites, following closure and removal of the manufacturing structures, tanks, and equipment, a local fill sand was brought to the areas to cover the remaining concrete building foundations and demolition scars and to provide a natural landscape appearance. Fill material was encountered in each trench dug along the TNTB/WWTP1 sewer line trace. The fill material was either a fine, homogenous brown or yellowish sand, or a brown clay.

#### *3.1.1.4 Hydrology*

The two main water-bearing zones at PBOW are located in the overburden/shale unit and the limestone bedrock and are thus called the overburden/shale and bedrock water-bearing zones. The overburden and shale groundwater units show similar water levels in these two units, suggesting substantial vertical communication. Therefore, these two geologic units are combined for purposes of PBOW groundwater evaluation. Data collected during various investigations (Shaw, 2005; IT, 1997, 1999, 2001b) indicate that groundwater in the overburden is in discontinuous pockets during dry time periods. The shallow overburden generally has low yields over most of PBOW due to the high percentage of silt and clay. Groundwater flow in the limestone bedrock is primarily through fractures. The limestone bedrock water-bearing zone yields groundwater year round, although specific locations may not produce water because of limited fractures in some areas. During periods of low precipitation, only limited migration of contaminants would occur in the overburden due to less infiltration.

Regional groundwater flow in both the overburden/shale and the limestone bedrock is to the north-northeast towards Lake Erie, although local flow may vary due to local topography. The general flow direction in the overburden water-bearing zone appears to be to the north in the immediate vicinity of the TNTB/WWTP1 sewer line trace. A hydrogeological study by the U.S. Geological Survey (1992) conducted in the glacial deposits of Sandusky in 1990 reported a horizontal hydraulic conductivity of 0.046 feet per day and a vertical hydraulic conductivity of 1.2 feet per day.

Water in the limestone bedrock typically occurs in joints and along bedding planes or in solutionally enlarged openings. The conceptual model interprets that bedrock groundwater flow in the Delaware Limestone water-bearing zone is influenced by the frequency, orientation, density, and connectivity of the bedrock fractures. These fractures result in localized groundwater flow direction to the northwest in the vicinity of WWTP1, which is at the northern terminus of the TNTB/WWTP1 sewer line trace.

Based on locations and yields of domestic groundwater wells outside of the PBOW facility boundary, the Ohio Department of Natural Resources divided the bedrock groundwater in the vicinity of PBOW into three zones (D&M, 1997). It has been characterized as yielding from 100 to 500 gallons per minute (gpm) from karstic limestone approximately 100 feet below grade. Zone 2 is in the northern portion of PBOW and has yields of 15 gpm or less from limestone approximately 300 feet below grade. Zone 3 is located in the eastern and southern portion of the site in predominantly shale bedrock. In addition to being found in the shale, groundwater is located in thin sand and gravel horizons interbedded with silt and clay deposits. Most Zone 3 wells are poor yielding, many of them providing less than 3 gpm (D&M, 1997). The TNTB/WWTP1 sewer line trace is within Zone 3.

Overburden groundwater along the TNTB/WWTP1 sewer line trace was encountered at depths ranging from 5.0 feet bgs (PZ-03) to 8.2 feet bgs (PZ-06) in August 2009 (dry season) during soil boring drilling/piezometer installation. During monitoring well installation conducted in October (wet season), overburden/shale groundwater was encountered at depths of 4 feet bgs (1SLB-MW02) to 6 feet bgs (1SLB-MW01). Groundwater flow within the overburden is toward the north-northwest. Of the 14 overburden soil borings installed in August 2009, 6 were found to be dry. It is noted that three of these hit refusal, indicative of competent shale, at 3.5 to 4.5 feet bgs, and the other three encountered no water at total boring depths of 12 to 18 feet bgs. The three dry borings that hit competent shale at 3.5 to 4.5 feet are near the southern extent of the TNTB/WWTP1 sewer line trace. TNTB monitoring well MK-MW17, also located in this general area near the southern end of the trace, produces very little water. These observations indicate that very little water is present in the overburden near the southern end of the TNTB-WWTP1 sewer line trace.

Note that as discussed in Section 3.1.1.2, no limestone bedrock wells were installed along the TNTB/WWTP1 sewer line trace. Therefore, information on the bedrock unit in the vicinity of the TNTB/WWTP1 sewer line trace is based on information obtained at WWTP1, which is at the terminus of the trace. Two bedrock wells were installed at WWTP1 during the RI. Bedrock groundwater was encountered in fractures at depths of 45 feet bgs (WTP1-BEDGW-002) and

47.2 feet bgs (WTP1-BEDGW-003) during bedrock monitoring well installation in March 2009. No water-bearing fractures were encountered during bedrock drilling for WTP1-BEDGW-001, located west of WWTP1, so no well could be installed at this location. Bedrock groundwater flow underlying WWTP1 is in a northwest direction toward a bedrock groundwater trough (Shaw, 2011d).

#### *3.1.1.5 Surface Water*

Surface drainage along the TNTB/WWTP1 sewer line trace is to low-lying areas, which subsequently drain to tributaries. The tributaries in the southern part of the trace drain to Ransom Brook, and those in the northern part of the trace drain to larger tributaries that eventually drain to Plum Brook. It is noted that this area of Ransom Brook was previously evaluated as part of the TNTB RI (IT, 2000a), and the large tributaries have been evaluated as part of other evaluations (e.g., Shaw, 2010b,c; 2011c,d,e,f).

### *3.1.2 Contaminant Sources, Release Mechanisms, and Migration Pathways*

Contaminant sources, release mechanisms, and migration pathways are summarized on Figure 3-1. Briefly, TNT is made by nitrating toluene in a three-step process that uses nitric and sulfuric acids (D&M, 1997). WWTP1 received a waste water slurry via sewer lines from the TNTA and TNTB manufacturing operations waste water settling basins. This slurry was either treated and evaporated (thickened to reduce mass) or the liquid from the slurry was discharged to open waste water ponds. Contamination resulted from the inadvertent release of TNT, its precursors, contaminants and residues, and acids or sellite (sodium sulfite made from soda ash and sulfur) from the process lines or drying areas. Releases occurred to the surface soil and to subsurface soil from vertical migration. Runoff and erosion may have spread contamination over the surrounding surface soil and carried contaminants to nearby streams. Infiltration and leaching carried contaminants into the subsurface soil or groundwater.

### *3.1.3 Receptors and Exposure Pathways*

Receptors selected from all plausible groups of people to represent the upper bound on exposure to chemicals associated with the TNTB/WWTP1sewer lines are depicted on Figure 3-1 and summarized in Table 3-1. Figure 3-1 and Table 3-1 also include the pathways by which these receptors may be exposed. The exposure variable values used in the contaminant intake models are compiled in Table 3-2. The receptors evaluated in the BHHRA are listed below.

- Current groundskeeper
- Future groundskeeper
- Indoor worker (future)
- Construction worker (current/future)

- On-site resident (future)
- Hunter (future)
- Hunter's child (future).

Note that the current (Section 3.1.3.1) and future (Section 3.1.3.2) groundskeeper scenarios include different environmental media and are, thus, listed separately. The construction worker may be viable under current or future land use, but the evaluation for this receptor is exactly the same under current and future land use.

Most BHHRAs are based on a reasonable maximum exposure (RME) assumption. The intent of the RME assumption is to estimate the highest exposure level that could reasonably be expected to occur, but not necessarily the worst possible case (EPA, 1989a; 1991a). It is interpreted as reflecting the upper 90 to 95th percentile on exposure. In keeping with EPA (1989a; 1991a) guidance, variables chosen for a baseline RME scenario for ingestion rate, exposure frequency, and exposure duration are generally upper bounds. Other variables, such as body weight and exposed skin surface area, are generally central or average values. In the case of contact rates consisting of multiple components (e.g., dermal contact with soil or water, which consists of a dermal absorption factor [ABS] and soil-to-skin adherence factor [AF] for soil, and permeability coefficient [$K_p$] and exposure time [ET] for water), only one variable, ABS or $K_p$, needs to be an upper bound. The conservativeness built into the individual variables ensures that the entire estimate for contact rate is sufficiently conservative.

The averaging time for noncancer evaluation is computed as the product of the exposure duration (years) multiplied by 365 days per year. The resultant noncancer averaging time is used to estimate an average daily dose over the entire exposure period (EPA, 1989a). For cancer evaluation, the averaging time is computed as the product of 70 years, the assumed human lifetime, times 365 days/year. This cancer-based averaging time is used to estimate an average daily dose prorated over a lifetime, regardless of the frequency or duration of exposure. The methodology used in deriving the averaging time for cancer risks assumes that the risk from short-term exposure to a high dose of a given carcinogen is equivalent to long-term exposure to a correspondingly lower dose, provided that the total lifetime doses are equivalent. This approach is generally consistent with the EPA (2005) policy of carcinogen evaluation, although it introduces considerable uncertainty into the BHHRA cancer risk estimates.

A fractional term (FI) is introduced into the chemical intake equations to account for scenarios in which exposure to a potentially contaminated medium associated with the site is less than total daily exposure to that medium. For example, if the site of interest is small or has unusual

dimensions so that a groundskeeper would be unlikely to spend all (or nearly all) of his working time at the site, an FI value of less than 1 might be applied to the soil ingestion and dermal intake equations.

Receptors and the associated exposure pathways are presented in the following subsections. Please note that some of the pathways considered for the receptors (e.g., volatile organic compounds [VOC] in soil) could not be quantitatively evaluated because pertinent chemicals associated with these pathways were not identified as COPCs.

#### *3.1.3.1 Current Groundskeeper*

The groundskeeper scenario is designed to evaluate the upper bound for long-term site worker exposure to surface soil in the current site-use scenario and total soil in the future site-use scenario. It is noted that other than some mowing in portions of the sewer line trace, no groundskeeper is currently working at the site, but current land use does not prohibit a site worker from performing regular groundskeeping activities along the trace.

Exposure to surface soil is evaluated for a (potential) current groundskeeper. Total soil is typically evaluated under the future groundskeeper use scenario because hypothetical future construction may include considerable excavation of subsurface soil. This soil may be spread on the surface and regraded such that some of the soil currently in the subsurface (i.e., 1 to 10 feet bgs) will be spread as surface soil (0 to 1 foot bgs). Use of groundwater which could theoretically be developed as a source of drinking water is also evaluated for the groundskeeper in the future site-use scenario, as discussed in Section 3.1.

Direct soil exposure pathways include incidental ingestion and dermal contact. Inhalation of dust raised by lawnmowers or other equipment is also evaluated because relatively high dust concentrations may be produced within the groundskeeper's breathing zone, with little opportunity for dilution by the large volume of ambient air.

Shaw’s experience has been that surface soil that is contaminated with VOCs and that has been in place for extended periods is not a significant source of airborne VOCs, because infiltration and dissipation over time reduce residues at the surface (i.e., first few centimeters) from which volatilization would occur. However, as noted previously, the data set for surface soil may include samples taken from up to 1 foot bgs, which would include the soil zone deeper than the top few centimeters, where dissipation has not reduced VOC concentrations. In other words, the surface soil data set might indicate the presence of VOCs, although volatilization to the air is unlikely to be significant. Therefore, a surface soil-to-air volatilization model is not used in

addition to the activity-based dust emissions model to estimate airborne concentrations of VOCs. Instead, the airborne concentrations estimated by the dust emissions model are assumed to sufficiently estimate levels of VOCs that may arise from volatilization, because the dust emissions model treats the VOCs as if they were located at the surface. It is assumed that VOC emissions from subsurface soil (i.e., at depths greater than 1 foot bgs) would be attenuated by the overlying soil so that concentrations in ambient air would not be toxicologically significant. This probably did not contribute appreciably to risk, as no VOCs were identified as COPCs.

The groundskeeper is assumed to be a 70-kilogram (kg) adult who works 8 hours per day, approximately 5 days per week year-round on site for a total of 250 days/year for 25 years (EPA, 2004a). The respiratory rate for the groundskeeper is assumed to be 20 cubic meters ($m^3$) per 8-hour workday or 2.5 cubic meters per hour ($m^3$/hr) (EPA, 1991a), and the soil incidental ingestion rate is assumed to be 100 milligrams per day (mg/day) (EPA, 2002). The groundskeeper is assumed to be exposed dermally to soil. An exposed skin surface area of 3,300 square centimeters ($cm^2$) and a soil AF of 0.2 milligrams per square centimeter (mg/$cm^2$) are assumed (EPA, 2004a).

#### *3.1.3.2 Future Groundskeeper*

A future groundskeeper would be exposed to soil via the same exposure pathways as the current groundskeeper described in Section 3.1.3.1. However, the future groundskeeper scenario assumes that construction has taken place and that some of the soil currently in the subsurface has been brought to the surface during earthmoving activities. Therefore, the future groundskeeper is assumed to be exposed to a combination of surface and subsurface soil (total soil) rather than surface soil alone.

In addition, a hypothetical future groundskeeper is assumed to be exposed to groundwater, which could theoretically be developed as a source of drinking water in the future. His drinking water ingestion rate is assumed to be 1 liter per day (L/day) (EPA, 1991a). He may also experience dermal contact with groundwater used to clean equipment and to rinse dust or perspiration from his body. For this evaluation, it is assumed that the head, forearms, and hands, approximately 3,300 $cm^2$ of his body (EPA, 2004a), would be exposed intermittently for up to 1 hour/day. Because exposure is assumed to be intermittent rather than continuous, organic chemical uptake across the dermis would not reach steady state, which guides the selection of the EPA (2004a) model used to quantify this pathway (Section 3.3).

#### *3.1.3.3 Indoor Worker*

This receptor scenario was used to evaluate exposure to indoor airborne VOCs entrapped in a building. VOCs released from subsurface soil may enter a building through joints or cracks in the foundation or slab. The indoor worker is also potentially exposed to surface soil via incidental ingestion. Exposure to COPCs in surface soil via dermal contact and inhalation of airborne dust and VOCs from surface soil, although plausible, are expected to be less significant than incidental ingestion, because this receptor spends his work time indoors. Therefore, dermal contact and inhalation of dust and airborne VOCs from surface soil are not quantified separately from ingestion exposure (EPA, 2002). Under a future use scenario for this receptor, construction of a building would be necessary. This would require excavation and regrading of soil. Normally, when construction is involved (e.g., such as for the future groundskeeper or resident), total soil rather than surface soil would be evaluated for ingestion exposure. However, the chief purpose for this receptor is to evaluate exposure via vapor intrusion of contaminants from subsurface soil into indoor air. Thus, the evaluation of direct contact with subsurface soil as a component of total soil would equate to "double counting" of COPCs in subsurface soil. Also, the groundskeeper reflects a worst-case exposure for a long-term worker with respect to direct contact with both surface soil and total soil. Therefore, direct contact with surface soil for the indoor worker is included to reflect a more complete exposure scenario, but direct contact with subsurface soil is most effectively addressed from an RME perspective by the groundskeeper.

The indoor worker is assumed to be a 70-kg adult who works 8 hours/day, approximately 5 days/week year-round on the site for a total of 250 days/year for 25 years (EPA, 2002). His incidental soil ingestion rate is assumed to be 50 mg/day (EPA, 2002), and his inhalation rate is assumed to be 20 $m^3$/8-hour workday (EPA, 1991a).

A future indoor worker is assumed to be exposed to groundwater, which could theoretically be developed as a source of drinking water (Section 3.1). His drinking water ingestion rate is assumed to be 1 L/day (EPA, 1991a). Some indoor worker positions may require relatively frequent dermal contact with groundwater as well, e.g., a food preparer/cafeteria worker who would wash his hands, produce, equipment, etc. For this evaluation, it is assumed that the head, forearms, and hands, approximately 3,300 $cm^2$ of his body (EPA, 2004a), would be exposed intermittently for up to 1 hour per day. Because exposure is assumed to be intermittent rather than continuous, organic chemical uptake across the dermis would not reach steady state, which guides the selection of the EPA (2004a) model used to quantify this pathway (Section 3.3.4).

#### *3.1.3.4 Construction Worker*

The construction worker scenario is used to evaluate short-term exposure to surface and subsurface soil (total soil) in either the current or future land-use scenario. Construction projects are expected to be infrequent. It is assumed that the construction worker participates in only one construction project along the sewer line trace. Note that no construction projects are anticipated in this area, but this property is currently under NASA control and a construction project may be possible under current land use. Relevant exposure pathways include incidental ingestion and dermal contact, inhalation of dust raised by operating construction equipment, and inhalation of airborne VOCs released from subsurface soil during excavation and grading. Exposure to groundwater by the construction worker is also possible; however, if on-site groundwater were developed as a tap water source, other potential future groundwater receptors such as the groundskeeper would have longer and/or more frequent groundwater exposure. Therefore, groundwater exposure is not evaluated for the construction worker.

The construction worker is assumed to be a 70-kg adult who works 8 hours/day, approximately 5 days/week. This represents an annual exposure frequency rate of about 250 days per year, which is the same as described for the groundskeeper (Section 3.1.3.1) and indoor worker (Section 3.1.3.3). Construction projects involving soil exposure are assumed to last 6 months. The respiratory rate for the construction worker is assumed to be 20 $m^3$/8-hour workday (2.5 $m^3$/hr) (EPA, 1991a). A soil ingestion rate of 330 mg/day is assumed for the construction worker (EPA, 2002). A dermal soil AF for the construction worker of 0.3 mg/$cm^2$ and an exposed body surface area of 3,300 $cm^2$, which represents the head, hands, and forearms, are assumed (EPA, 2002; 2004a).

#### *3.1.3.5 On-Site Resident*

The on-site residential scenario is used to evaluate the upper bound for long-term exposure to site soil and groundwater under the future land-use scenario. Residential land use is plausible because property surrounding the PBOW facility includes rural residential use. This type of land use is also consistent with assumed future land use of other PBOW sites such as TNTA and TNTC (IT, 2001a).

The on-site residential scenario is evaluated assuming a 30-year residential exposure scenario, considering exposure to a resident as a young child (6-year duration, ages 1 through 6 years) through the adult portion of life spent at this residence (24-year duration) (EPA, 1991a). Noncancer hazard estimates are derived separately for the child and adult life stages. Cancer risk is estimated as the sum of the risks calculated for the adult (24 years) and the child (6 years) (EPA, 2002; 2011c).

The resident is assumed to be exposed directly to total soil, because residential development would involve excavation and regrading, which would mix surface and subsurface soil. Relevant pathways for total soil exposure include incidental ingestion, dermal contact, and inhalation of dust and VOCs. Evaluation of VOCs from total soil is addressed during evaluation of airborne dust, as described for the groundskeeper. For evaluating inhalation of airborne dust, it is assumed that 80 percent of the soil surface is covered with pavement or vegetation. Inhalation of VOCs released from subsurface soil entrapped in indoor air is also evaluated. The resident is also assumed to be exposed to VOCs that have been released from subsurface soil through cracks in the building foundation to indoor air. It is noted that because some of the subsurface soil is expected to be brought to the surface in the future, using only subsurface soil data will conservatively result in some double counting of exposure to any VOC COPCs that may be present in the subsurface soil. This can be addressed in the uncertainty analysis in cases where the subsurface soil-to-indoor air pathway significantly affects risk and hazard estimates. This pathway did not contribute appreciably to risk along the TNTB/WWTP1 sewer line trace, as no VOCs were identified as COPCs in subsurface soil.

For the purpose of the BHHRA, it was assumed that, under future residential land use, the overburden water unit will be developed as a source of potable water (Section 3.1). The resident is assumed to use groundwater underlying the site as the sole source of household tap water. Exposure to COPCs in groundwater would occur via ingestion, dermal contact during bathing/washing, and inhalation of VOCs released to the air during household use of tap water associated with multiple household uses.

The adult resident is assumed to be a 70-kg person with an incidental soil ingestion rate of 100 mg/day and an inhalation rate of 20 cubic meters per day ($m^3$/day) or 0.83 $m^3$/hr (EPA, 1991a). A body surface area of 5,700 $cm^2$, representing the hands, forearms, head, and lower legs, is assumed to be available for dermal exposure to soil (EPA, 2004a). A soil AF of 0.07 mg/$cm^2$ is used as the default RME value for the adult resident (EPA, 2004a). The adult resident is assumed to be exposed for 350 days/year for 24 years (EPA, 1991a; 2002).

The child resident is assumed to be a 1- through 6-year-old child with an average body weight of 15 kg, a soil ingestion rate of 200 mg/day, and an average inhalation rate of 10 $m^3$/day or 0.417 $m^3$/hr (EPA, 2004d). An average body surface area of 2,800 $cm^2$ throughout the 6-year childhood exposure period, representing the head, hands, forearms, lower legs, and feet, is assumed for dermal contact with soil (EPA, 2004a). A soil AF of 0.2 mg/$cm^2$ is used as the default RME

value for the child resident (EPA, 2004a). The child resident is assumed to be exposed for 350 days/year for 6 years (EPA, 1991a; 2002).

With respect to groundwater exposure, it is assumed that an adult resident ingests 2 L/day of tap water (EPA, 1991a) and that the young child drinks 1 L/day (EPA, 2011c). The total body surface areas of the adult and of the young child resident are assumed to be exposed to tap water while bathing/showering. The total surface area for an adult is assumed to be 20,000 $cm^2$ and the total surface area for the young child is assumed to be 6,600 $cm^2$ (EPA, 1997a). Both the child and adult resident are assumed to be dermally exposed to COPCs in groundwater while bathing/showering. The child is assumed to bathe for 20 minutes per day (0.33 hour/day) (EPA, 1997a), and the adult is assumed to shower for 12 minutes per day (0.2 hour/day) (EPA, 1997a). Inhalation rates of 0.833 $m^3$/hr for the adult (EPA, 1991a) and 0.416 $m^3$/hr for the child (EPA, 2004d) are used. Because EPA (1997a) lists a 90th percentile for time spent in a residence as over 23 hours per day, it is conservatively assumed that the resident spends 24 hours per day in the house.

#### *3.1.3.6 Hunter*

This scenario is created to evaluate the potential for contaminants in soil to affect food chain pathways. The TNTB/WWTP1 sewer line trace property provides habitat for deer and other wildlife. Even though hunting is not currently permitted in this area, deer hunting is permitted in other areas within PBOW; therefore, future use of the TNTB/WWTP1 sewer line trace for hunting is evaluated in this BHHRA.

Many kinds of game animals may be hunted and consumed (e.g., squirrel, pheasant and other upland birds, turkey, deer); however, the deer is the species most likely to contribute meaningfully to the diet. Therefore, this evaluation is limited to a deer hunter. Potential exposure pathways include incidental surface soil ingestion, dermal contact with surface soil, and ingestion of venison from deer that browse plants growing on contaminated surface soil, all of which are evaluated quantitatively. Inhalation of airborne dust from wind currents is a potentially complete exposure pathway; however, vegetation reduces dust emissions to insignificant levels (EPA, 1996), and it is assumed that the deer hunter would spend virtually all of his time on vegetated rather than bare soil. Therefore, it is assumed that inhalation exposure would contribute much less than incidental ingestion, and the inhalation exposure pathway is not quantified separately from ingestion.

The deer hunter is assumed to be a 70-kg adult who harvests deer and consumes venison over a 30-year period. It is assumed that he spends 14 days per year hunting on PBOW. His incidental

soil ingestion rate is assumed to be 100 mg/day (EPA, 1991a). Hunting at PBOW occurs in the fall and winter. Given the temperate climate of northern Ohio during hunting season, a hunter would dress appropriately, with typically only the hands and head exposed, at most. The default industrial RME exposed skin surface area of 3,300 $cm^2$, which represents the hands, forearms, and head (EPA, 2004a), is conservatively assumed for the hunter. The default industrial RME soil AF of 0.2 $mg/cm^2$ (EPA, 2004a) is also assumed.

Data regarding the rate of venison ingestion were not located; therefore, a hypothetical scenario is adapted from the assumptions applied to a similar site in West Virginia (IT, 2000b) and subsequently applied to TNTA and TNTC (IT, 2001a). A highly conservative but plausible scenario consists of a hunter who kills one deer from along the TNTB/WWTP1 property each year. It is assumed that the hunter eats 10 pounds (4.5 kg) of venison per year (Sharp, 1995). This consumption rate corresponds to 0.013 kilograms per day (kg/day) (0.186 grams per kilogram of body weight per day [g/kg-day]) of venison for each of the 350 days per year (EPA, 1991a) that the hunter spends at his residence.

#### *3.1.3.7 Hunter's Child*

It is likely that a successful hunter, described in Section 3.1.3.6, would share his venison with the rest of the family, which may include small children. Small children, however, would be unlikely to accompany the hunter afield. Therefore, the direct exposure pathways evaluated for the hunter (i.e., incidental ingestion and dermal contact with soil) are not evaluated for the small child.

Data regarding the rate of venison ingestion by small children were not located. However, if it is assumed that venison may replace beef in the diet, the differences in beef consumption between adults and children can be used to estimate a venison ingestion rate for children. EPA (1997a) provides per capita beef intake data for <1- to 5-year-old children ranging from 0.941 to 1.46 g/kg-day (time-weighted average of 1.296 g/kg-day). EPA (1997a) provides per capita beef intake data for 12- to 70-plus-year-old adults ranging from 0.568 to 0.83 g/kg-day (time-weighted average of 0.727 g/kg-day). From these data, it can be estimated that the rate of beef consumption for small children, expressed on a body weight basis, is approximately 1.8 times that of an adult. Therefore, a venison ingestion rate of 0.335 g/kg-day is estimated for a young child from the venison ingestion rate of 0.186 g/kg-day for the adult. Assuming that the child is 1 through 6 years old with an average body weight of 15 kg (EPA, 1991a; 2002), the child's venison ingestion rate may be expressed as 0.005 kg/day.

#### 3.1.3.8 Other Receptors Not Considered

Another plausible receptor group is delivery personnel. These receptors, however, would be less intensively exposed to soil than the groundskeeper; therefore, their exposures are not evaluated. The TNTB/WWTP1 sewer line trace could become part of the area used for National Guard training activities. National Guard trainees, however, may be less exposed to any of the potentially contaminated media than the receptors identified previously. Because they would likely not represent an upper bound for nonresidential exposure, these receptors are not evaluated. As discussed in Section 3.1, off-site use of groundwater is not evaluated because nearby residents use municipal water from surface water sources as a potable source, and potential on-site users would be exposed to higher concentrations of contaminants in groundwater. Also, because the overburden groundwater is spatially discontinuous, it is understood that lateral migration within the overburden unit to off-site locations does not occur.

## 3.2 Quantification of Exposure-Point Concentrations

The EPC is an estimate of the concentration of a COPC in a given medium to which a receptor may be exposed over the duration of the exposure. An EPC may be based on chemical concentrations in media that have been directly measured using laboratory analysis, or it may be derived based on environmental medium-to-medium transport modeling. The EPCs of COPCs in soil and groundwater are derived based on measured analytical data. Concentrations of COPCs in air and venison are not measured (and in some cases cannot reasonably be measured) but are based on models that use the EPCs of COPCs in the appropriate directly measured media (i.e., soil and groundwater) as input values.

Section 3.2.1 describes the approaches used to derive EPCs for direct exposure to soil and groundwater based on analytical measurements from samples of these media. Models to derive EPCs for the air are described in Sections 3.2.2.1 and 3.2.2.2, and the model used to derive venison EPCs is described in Section 3.2.2.4.

### 3.2.1 Soil and Groundwater Concentrations

Exposure to an environmental medium is generally assumed to be random, and the EPC should be the arithmetic average encountered over the duration of exposure (EPA, 1989a). Therefore, the population mean concentration, if known, would be the ideal value selected as the EPC. The sample mean is an obvious estimate of the population mean. However, uncertainties exist as to how well the sample mean represents the population mean. Therefore, EPA (1989a) has recommended the inclusion of a UCL for RME evaluation as a conservative estimate of the true mean exposure concentration.

The EPA (2010a,b; 2011a) ProUCL (Version 4.1) software was used to estimate UCLs for the data sets of all environmental media represented by at least five samples. If the data set consists of fewer than five data points, the MDC was selected as the EPC. Analytical data from field duplicates are averaged with originals to yield one result for use in the statistical manipulations (Section 2.5). The method detection limit is used as the ProUCL input concentration for nondetects. Nondetect sample results with aberrantly high detection limits due to matrix interferences or other sample-specific causes are included in the initial ProUCL calculations. This is a conservative approach, as EPA (1989a) recommends that nondetect results with aberrantly high detection limits be removed from the data set so that calculation of the UCL is not unduly skewed by a nondetect. Because the current version of ProUCL (EPA, 2011a) includes mathematical manipulations under the default "with NDs" mode that are more robust than earlier versions, single elevated detection limits are less likely to skew the UCL estimates than in the past. If it is observed during the risk characterization that an elevated nondetect value skews a UCL estimate such that this value substantially affects the result of the risk estimate, the ProUCL model is rerun without the elevated nondetect value and the risks are recalculated. If this recalculation is performed on a data set, data eliminated for the recalculation are identified in the risk characterization and discussed in the uncertainty analysis. The re-evaluation of elevated nondetects was not performed in the TNTB/WWTP1 sewer lines BHHRA.

ProUCL generates a variety of UCL estimates for each data set. The ProUCL output for each COPC is included in Appendix B. Generally, the results of one or two (sometimes more) of the UCL estimates are recommended. This recommendation is based on a variety of factors, including the distribution (i.e., normal, lognormal, gamma, or not discernable) that provides the best fit, number of nondetects, size of the data set, and skewness. If the recommended value(s) under the default mode equal or exceed the MDC, ProUCL is rerun using the full data set mode, under the assumption that the COPC is present in nondetects at the method detection limit. Occasionally, ProUCL recommends the 97.5 or 99 percent upper confidence limit on the arithmetic mean estimated by the Chebyshev method. In these cases, the UCL estimated by the Chebyshev method (95th percent) is selected as the EPC because this is more consistent with the intent of the RME paradigm as defined by EPA (1989a; 1991a).

The UCL generated by the ProUCL protocol described in the preceding paragraphs or the MDC, whichever is smaller, is selected as the EPC and is understood to represent a conservative estimate of average for use in the risk assessment or in various transport models used to estimate EPCs. Note that EPA (1989a) guidance states that an estimate of average rather than the MDC should be used to represent the EPC under chronic exposure and that use of the maximum is typically not reasonable. Therefore, data sets which use the MDC as the EPC are generally

biased high. Unusually high detected values are included in the calculation of the UCL concentration. Inclusion of these high values increases the statistical variability and the overall conservativeness of the risk estimate.

ProUCL is a software tool that provides estimates of the UCL using a variety of mathematical approaches. As mentioned, its output includes one or more recommendations. Depending on the data set, some of the estimates generated by the various calculation methods included in ProUCL may vary by an order of magnitude. ProUCL and the decision tree on which its recommendations are based have been developed using multitudes of simulated data sets with a variety of distributions and other characteristics. There are uncertainties as to how well this decision tree derives a recommended UCL for a given data set. This uncertainty tends to increase with variability and skewness and where a large number of the samples are nondetects. For example, with respect to distribution testing, ProUCL bases the determination of distribution type only on the detected samples. The true concentrations of the nondetected values are unknown, and this lack of information can affect the distribution determination and consequently affect the ProUCL recommendation. The general uncertainties associated with the EPC values and the use of ProUCL are discussed in the uncertainty analysis (Chapter 6.0). Specific uncertainties associated with the EPC values of specific data sets may be discussed in the uncertainty analysis as appropriate.

### *3.2.2 Exposure-Point Concentrations in Air*

The models shown in the following subsections for estimating COPC concentrations in air include only those relevant and used specifically for TNTB/WWTP1 sewer line COPCs and media.

#### *3.2.2.1 COPC Concentrations from Dust*

Inhalation exposure to particulate (dust) emissions from soils for the groundskeeper and construction worker evaluations arises from activities that raise dust. Therefore, the most appropriate approach for estimating chemical concentrations in ambient air is the use an activity-based dust loading equation (U.S. Department of Energy [DOE], 1989):

$$C_a = (D)(C_s)(CF_1) \qquad \text{Eq. 3.1}$$

where:

$C_a$ = contaminant concentration in air (milligrams per cubic meter [mg/m$^3$], calculated)

D = dust loading factor (grams [g] of soil/m$^3$ of air)

$C_s$ = contaminant concentration in soil (mg/kg)
$CF_1$ = conversion factor (1E-3 kg per g).

Plausible values for D include 2E-4 grams per cubic meter (g/m$^3$) for agricultural activity (DOE, 1989), 6E-4 g/m$^3$ for construction work (DOE, 1983), and 1E-4 g/m$^3$ for other activity (National Council on Radiation Protection and Measurements, 1984). The value for D of 1E-4 g/m$^3$ for other activity is used for the groundskeeper. It is assumed that construction activities requiring intensive contact with soil, for which D = 6E-4 g/m$^3$ is appropriate, may last for one-half of a construction period. The remaining one-half of the time is more realistically characterized by D = 1E-4 g/m$^3$. Therefore, a time-weighted average dust loading factor for construction work of 3.5E-4 g/m$^3$ is estimated for the construction worker.

Airborne concentrations of VOCs estimated by the dust loading model are assumed to sufficiently estimate levels of VOCs that may arise from volatilization, because the dust loading model treats the VOCs as if they were located at the ground surface.

The resident is more likely to be exposed to dust arising from wind erosion than from dust-raising activities on the site. EPA (1996) derived a model for estimating a dust particulate emission factor (PEF) based on an "unlimited reservoir" model and the assumption that the source area is square:

Eq. 3.2

$$PEF = Q/C \times \frac{3600}{0.036 \times (1 - V) \times (U_m / U_t)^3 \times F(x)}$$

where:

PEF = particulate emission factor (cubic meters per kilogram [m$^3$/kg], calculated)
Q/C = inverse of the mean concentration at center of square source (55.99 grams per square meter-second per kg/m$^3$, site-specific value from Table 3 in EPA [1996] [Zone 7, Cleveland, 5-acre site])
3600 = seconds/hour
V = fraction of surface covered with vegetation (0.8, unitless, assumed)
$U_m$ = mean annual wind speed (default, 4.60 meters per second [m/second] equals mean annual wind speed of 10.3 miles per hour [Section 3.1.1])
$U_t$ = equivalent threshold value of wind speed at 7 meters (default, 11.32 m/second)
F(x) = function dependent on $U_m/U_t$ (default, 0.194).

The concentration of a COPC in air is calculated as follows:

Eq. 3.3

$$C_a = \frac{C_s}{PEF}$$

where:

$C_a$ = contaminant concentration in air (mg/m$^3$, calculated)
$C_s$ = contaminant concentration in soil (mg/kg)
PEF = particulate emission factor (m$^3$/kg).

Airborne concentrations of VOCs estimated by the wind erosion model are assumed to sufficiently estimate levels of VOCs that may arise from volatilization, because the wind erosion model treats the VOCs as if they were located at the ground surface.

#### *3.2.2.2 Concentrations in Household Air from Groundwater Use*

The inhalation of VOCs released from groundwater, which is assumed to be used as tap water, is evaluated for the on-site residential scenario. Chemicals that have a Henry's Law value exceeding 1E-5 atmospheres/m$^3$-mole and a molecular weight less than 200 g/mole are considered to be VOCs and are subject to evaluation via this pathway; Henry's Law values and molecular weights are presented in Table 3-3. Other groundwater contaminants are considered on a case-by-case basis for their potential contribution to risk via the inhalation pathway based on the degree of departure from the Henry's Law and molecular weight criteria, groundwater concentration, and toxicity.

The simple whole-house tap water-to-air model described in Part B of the EPA (1991b) human health evaluation manual (HHEM) was used to evaluate the tap water-to-air pathway. This model was selected based on correspondence between OEPA (2004b) and USACE. Part B of the HHEM recommends a volatilization constant of 0.0005 for the total concentrations of all VOCs detected in groundwater; the conversion is characterized by the following equation:

Eq. 3.4

$$C_a = C_{gw} \times K_{wa} \times 1{,}000 \, {}^{L}\!/_{m^3}$$

where:

$C_a$ = modeled concentration in air (mg/m$^3$)
$C_{gw}$ = groundwater EPC (mg/L)
$K_{wa}$ = tap water-to-air volatilization constant (0.0005 [unitless] [EPA, 1991b])

Implicit in the HHEM Part B application of this model are the following assumptions: 1) A family of four uses the groundwater as the sole source of household tap water, 2) the volume of

the house is 150 $m^3$, 3) the daily groundwater use is 720 L/day, 4) 50 percent of VOCs in tap water volatilize to household air, and 5) the air exchange rate of the house is 0.25 volumes per hour (EPA, 1991b).

#### *3.2.2.3 Concentrations of VOCs in Groundwater: Resident Dermal Uptake*

Volatilization of VOCs from household water reduces the remaining concentration available for dermal contact. As mentioned in Section 3.2.2.2, the HHEM Part B whole-house tap water-to-air model assumes that 50 percent of the VOC concentrations are released to household air. Thus, the concentrations of VOCs remaining in the water after volatilization occurs are calculated by difference as follows:

Eq. 3.5

$$C_d = C_{gw} \times (1 - F_v)$$

where:

$C_d$ = concentration of VOC in household water available for dermal exposure (mg/L, calculated)
$C_{gw}$ = concentration of VOC in groundwater (mg/L)
$F_v$ = fraction of VOCs volatilized to air, (0.5 unitless).

Only the concentration remaining in tap water after volatilization ($C_d$), as applicable, is assumed to be available for contact with the skin during bathing/showering.

#### *3.2.2.4 Exposure-Point Concentrations of COPCs in Venison*

The hunter is assumed to harvest and consume game and share it with family members, including small children. The game is assumed to be venison, because the white-tailed deer is the species hunted most widely and most likely to provide a regular contribution to the diet. Data to reliably estimate contaminant concentrations in venison do not exist, but the following simplifying assumptions permit estimates sufficient for a BHHRA.

- Deer are small ruminants and, as such, are not unlike cattle; thus, it is reasonable to assume they may have similar physiological processes that could yield similar biotransfer factors. Unlike beef, however, deer meat does not undergo marbling with fat, and deer fat is quite unpalatable and is likely to be trimmed rather than consumed. Therefore, the biotransfer factors for edible venison are derived by adjusting biotransfer factors for beef to account for differences in the fat content of table-ready beef (cooked choice retail cuts trimmed to 0 inches of fat: average 14.4 percent fat) and venison (cooked boneless muscle meats: average 2.9 percent fat) (Nutrient Database, 1997).

- Deer are expected to browse a much larger area than that encompassed within the TNTB/WWTP1 sewer line trace; therefore, the fraction of total browse consumed from is the trace is expected to be relatively small.

- Indirect food chain pathways may be significant for some metals and for those semivolatile organic compounds that persist in the environment and have the tendency to bioaccumulate. VOCs are generally mobile in the environment and labile in biological systems and do not tend to bioaccumulate.

To reflect the assumptions previously noted, venison biotransfer factors are estimated by multiplying beef biotransfer factors by 2.9/14.4 (or 0.20), and by a fraction, $FI_r$. This fraction reflects the areal portion of the site compared to a deer's home range area. These assumptions are captured in the following equation:

Eq. 3.6

$$B_v = 0.20(B_b)(FI_r)$$

where:

| | | |
|---|---|---|
| $B_v$ | = | biotransfer factor for venison (unitless, calculated) |
| 0.20 | = | factor to reflect differences in fat content between beef and venison (0.20, unitless, see above) |
| $FI_r$ | = | areal portion of site compared to a deer's home range (0.03, unitless, see below) |
| $B_b$ | = | biotransfer factor for beef. |

Values for $B_b$ for metals are provided in the toxicity profiles (Appendix C). Toxicity profiles are prepared for each of the COPCs. The toxicity profiles briefly describe the uses of the chemical, its physical properties, behavior in environmental media, biotransfer capability, and toxicity values.

The TNTB/WWTP1 sewer line trace represents a relatively small area in comparison to the home range of a white-tailed deer. The total acreage of the TNTB/WWTP1 sewer line trace, assuming a trace width of 20 feet and a length of 5,500 feet, is approximately 2.5 acres. The home range of the white-tailed deer is between 150 and 1,280 acres (Sample and Suter, 1994). Even if the low end of this range (150 acres) is assumed for deer in northern Ohio, the area represented by the TNTB/WWTP1 sewer line trace is approximately 2 percent of this land area. Although the use of an $FI_r$ value equal to 0.02 or lower is justified, an $FI_r$ value of 0.03 is used in the BHHRA to be consistent with other small sites evaluated at PBOW.

Deer are assumed to be exposed to contaminants by ingesting browse growing on contaminated soil. It is estimated that deer consume approximately 1.74 kg of browse per day (Sample, et al.,

1996), which is approximately 50 percent dry matter (DM), or 0.87 kg browse DM per day (Mautz, et al., 1976). The contaminant concentration in browse is estimated from the following equation, which was originally developed for estimating the contaminant concentration in forage to which cattle may be exposed (EPA, 1994):

Eq. 3.7

$$C_p = (CF)(C_s)(B_p)$$

where:

| | | |
|---|---|---|
| $C_p$ | = | concentration of contaminant in (plant) forage DM (mg/kg, calculated) |
| CF | = | conversion factor to adjust for soil containing 20 percent moisture (1.25, unitless). |
| $C_s$ | = | concentration of contaminant in soil (mg/kg) |
| $B_p$ | = | soil-to-forage biotransfer factor (mg of chemical per kg of dry plant/mg of chemical per kg of dry soil). |

Values for $B_p$ are taken from the toxicity profiles in Appendix C. $B_p$ values for the vegetative parts of plants, rather than the reproductive parts of plants, are selected, as possible, because deer browse year-round, and the vegetative parts are more available for the greater part of the year.

The concentration of a COPC in venison can be estimated from the following equation (adapted from EPA [1994]):

Eq. 3.8

$$C_v = (Q_p)(C_p)(B_v)$$

where:

| | | |
|---|---|---|
| $C_v$ | = | contaminant concentration in venison (mg/kg, calculated) |
| $Q_p$ | = | browse ingestion rate (0.87 kg DM/day) |
| $C_p$ | = | contaminant concentration in browse DM (mg/kg) |
| $B_v$ | = | biotransfer factor for venison (days/kg). |

### *3.3 Quantification of Chemical Intake*

This section describes the models used to quantify doses or intakes of the COPCs by the exposure pathways identified above. Models were taken or modified from EPA (1989a) unless otherwise indicated.

#### *3.3.1 Inhalation of COPCs in Air*

The inhaled dose of a COPC in air (for the groundskeeper, construction worker, on-site resident: inhalation of dust and VOCs in ambient air from surface or total soil; for the construction

worker: inhalation of VOCs in ambient air from subsurface soil; for the indoor worker and on-site resident: inhalation of VOCs in indoor air from subsurface soil) is estimated as follows:

Eq. 3.9

$$I_a = \frac{(C_a)(FI_a)(IR_a)(EF)(ED)}{(BW)(AT)}$$

where:

| | | |
|---|---|---|
| $I_a$ | = | inhaled dose of COPC (milligrams per kilograms per day [mg/kg-day], calculated) |
| $C_a$ | = | concentration of COPC in air (mg/m$^3$) |
| $FI_a$ | = | fraction of exposure attributed to site media (unitless) |
| $IR_a$ | = | inhalation rate (m$^3$/day) |
| EF | = | exposure frequency (days/year) |
| ED | = | exposure duration (years) |
| BW | = | body weight (kg) |
| AT | = | averaging time (days). |

### *3.3.2 Incidental Ingestion of COPCs in Soil*

The ingested dose of a COPC in soil (groundskeeper, construction worker, resident, indoor worker, hunter) is estimated from the following equation:

Eq. 3.10

$$I = \frac{(C)(FI)(IR)(EF)(ED)(CF)}{(BW)(AT)}$$

where:

| | | |
|---|---|---|
| I | = | $I_s$ for soil = ingested dose of COPC (mg/kg-day, calculated) |
| C | = | $C_s$ for soil = concentration of COPC (mg/kg) |
| FI | = | $FI_s$ for soil = fraction of exposure attributed to site medium (unitless) |
| IR | = | $IR_s$ for soil = ingestion rate of medium (mg/day) |
| EF | = | exposure frequency (days/year) |
| ED | = | exposure duration (years) |
| CF | = | conversion factor (1E-6 kg/mg) |
| BW | = | body weight (kg) |
| AT | = | averaging time (days). |

### *3.3.3 Incidental Ingestion of COPCs in Water*

The ingested dose of a COPC in groundwater (future groundskeeper, resident) is estimated from the following equation:

$$I_w = \frac{(C_w)(IR_w)(FI_w)(EF_w)(ED_w)}{(BW)(AT)} \qquad \text{Eq. 3.11}$$

where:

$I_w$ = ingested dose of COPC in water (mg/kg-day, calculated)
$C_w$ = concentration of COPC in water (mg/L)
$IR_w$ = water ingestion rate (L/day)
$FI_w$ = fraction of exposure attributed to site water (unitless)
$EF_w$ = fraction of exposure attributed to site water exposure frequency (days/year)
$ED_w$ = exposure duration (years)
BW = body weight (kg)
AT = averaging time (days).

### *3.3.4 Dermal Contact with COPCs in Soil or Water*

Unlike the methodologies for estimating inhaled or ingested doses of a COPC, which quantify the dose presented to the barrier membrane (the pulmonary or gastrointestinal mucosa, respectively), dermal dose is estimated as the dose that crosses the skin and is systemically absorbed. For this reason, dermal toxicity values are also based on absorbed dose. The absorbed dose of a COPC is estimated from the following equation (EPA, 2004a):

Eq. 3.12

$$DAD = \frac{(DA)(SA)(EF)(ED)}{(BW)(AT)}$$

where:

DAD = average dermally absorbed dose of COPC (mg/kg-day, calculated)
DA = dose absorbed per unit body surface area per day (milligrams per square centimeter per day [mg/cm$^2$-day])
SA = $SA_s$ for soil, $S_{gw}$ for groundwater,
= surface area of the skin exposed (cm$^2$)
EF = exposure frequency (days/year)
ED = exposure duration (years)
BW = body weight (kg)
AT = averaging time (days).

Dose absorbed per unit body surface area per day (DA) is calculated differently for dermal uptake from soil and from water. Dermal uptake of constituents from soil (groundskeeper, construction worker, on-site resident, hunter) assumes that absorption is a function of the fraction

of a dermally applied dose that is absorbed. DA is calculated from the following equation (EPA, 2004a):

Eq. 3.13

$$DA = (C_s)(FI_s)(CF)(AF)(ABS)$$

where:

| | | |
|---|---|---|
| DA | = | dose absorbed per unit body surface area per day (mg/cm$^2$-day, calculated) |
| C | = | $C_s$ for soil = concentration of COPC in medium (mg/kg) |
| FI | = | $FI_s$ for soil = fraction of exposure attributed to site medium (unitless) |
| CF | = | conversion factor (1E-6 kg/mg) |
| AF | = | $AF_s$ for soil = soil-to-skin adherence factor (mg/cm$^2$-day) |
| ABS | = | absorption fraction (unitless, chemical-specific). |

ABS values are provided in the toxicity profiles for each COPC (Appendix C).

Quantification of dermal uptake of constituents from groundwater (future groundskeeper, resident) depends on a $K_p$, which describes the rate of movement of a constituent from water across the dermal barrier to the systemic circulation (EPA, 2004a). The equation for dermal uptake of chemicals from water is the same as the equation for dermal uptake of chemicals from soil (Eq. 3.12). DA is calculated differently for inorganic and organic chemicals in water. For inorganic chemicals, DA is calculated from the following equation:

Eq. 3.14

$$DA = (C_w)(FI)(K_p)(ET_w)(CF)$$

where:

| | | |
|---|---|---|
| DA | = | dose absorbed per unit body surface area per day (mg/cm$^2$-day, calculated) |
| $C_w$ | = | concentration of COPC in water (mg/L) |
| $K_p$ | = | permeability coefficient (centimeters per hour [cm/hour]) |
| $ET_w$ | = | time of exposure (hours/day) |
| CF | = | conversion factor (1E-3 liters per cubic centimeter [L/cm$^3$]). |

$K_p$ for organic chemicals varies by several orders of magnitude and is highly dependent on lipophilicity, expressed as a function of the octanol/water partition coefficient (EPA, 2004a). Because the stratum corneum (the outer skin layer) is rich in lipid content, it may act as a sink, initially reducing the transport of chemical to the systemic circulation. With continued exposure and the attainment of steady-state conditions, the rate of dermal uptake increases. Therefore, different equations are used to estimate DA, depending on whether the ET is less than or greater

than the estimated time to reach steady state. Non-steady-state exposures occur when either the ET is relatively brief (e.g., showering, for most chemicals) or when intermittent exposure occurs throughout the day (e.g., washing of hands). For exposure scenarios under which steady state is not reached for a given organic chemical ($\tau$> ET, see below), the following equation is used to calculate DA (EPA, 2004a):

Eq. 3.15

$$DA = 2(FA)(K_p)(C_w)(CF)\sqrt{\left(\frac{6\tau(ET_w)}{\pi}\right)}$$

where:

| | | |
|---|---|---|
| DA | = | dose absorbed per unit body surface area per day (mg/cm$^2$-day, calculated) |
| $C_w$ | = | $C_{gw}$ for groundwater, = concentration of COPC in water (mg/L) |
| FA | = | fraction absorbed from the water (unitless) |
| $K_p$ | = | permeability coefficient (cm/hour) |
| CF | = | conversion factor (1E-3 L/cm$^3$) |
| $\tau$ | = | time for concentration of contaminant in stratum corneum to reach steady state per event (hours) |
| $ET_w$ | = | time of contact (hour(s)/day). |

In cases where steady state is reached ($\tau$<ET), such as where the duration of a bath exceeds the time to reach steady state for a given organic compound, the following equation is used to calculate DA (EPA, 2004a):

Eq. 3.16

$$DA = (FA)(K_p)(C_w)(CF)\left[\frac{ET_w}{1+B} + 2\tau\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$$

where:

| | | |
|---|---|---|
| DA | = | dose absorbed per unit body surface area per day (mg/cm$^2$-day, calculated) |
| $C_w$ | = | concentration of COPC in water (mg/L) |
| FA | = | fraction absorbed from the water (unitless) |
| $K_p$ | = | permeability coefficient (cm/hour) |
| CF | = | conversion factor (1E-3 L/cm$^3$) |
| $\tau$ | = | time for concentration of contaminant in stratum corneum to reach steady state per event (hours) |
| $ET_w$ | = | time of contact (hour[s]/day) |
| B | = | Ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (unitless). |

Assuming one exposure event/day allows expressing ET as hour(s)/day, which preserves the dimensional integrity of the equation.

When available, values for $K_p$ and $\tau$ are taken from EPA (2004a). For organics that have no $K_p$ values listed, the values are calculated using the following equation (EPA, 2004a):

Eq. 3.17

$$\text{Log}(K_p) = -2.80 + 0.66(\log K_{ow}) - 0.0056(MW)$$

where:

| | | |
|---|---|---|
| $K_p$ | = | permeability coefficient (cm/hour, calculated) |
| log $K_{ow}$ | = | log of the octanol/water partition coefficient (unitless) |
| MW | = | molecular weight. |

Where values for $\tau$ are not available, they were calculated using the following equation (EPA, 2004a).

Eq. 3.18

$$\tau = 0.105 \times 10^{(0.0056 \times MW)}$$

where:

| | | |
|---|---|---|
| $\tau$ | = | time for concentration of contaminant in stratum corneum to reach steady state (hours, calculated) |
| MW | = | molecular weight. |

Values of $K_p$ and $\tau$ used in the BHHRA are summarized in Table 3-3 and documented in Appendix C.

### *3.3.5 Consumption of Venison*

Consumption of venison by the hunter or the hunter's child is evaluated by the following equation:

Eq. 3.19

$$I_v = \frac{(C_v)(IR_v)(EF)(ED)}{(BW)(AT)}$$

where:

| | | |
|---|---|---|
| $I_v$ | = | ingested dose of COPC in venison (mg/kg-day, calculated) |
| Cv | = | concentration of COPC in venison (mg/kg) |
| IRv | = | venison ingestion rate (kg/day) |
| EF | = | exposure frequency (days/year) |

ED = exposure duration (years)
BW = body weight (kg)
AT = averaging time (days).

# 4.0 Toxicity Evaluation

Toxicity is defined as the ability of a chemical to induce adverse effects in biological systems. The purpose of the toxicity assessment is two-fold:

- Identify the cancer and noncancer effects that may arise from exposure of humans to the COPC (hazard assessment).
- Provide an estimate of the quantitative relationship between the magnitude and duration of exposure and the probability or severity of adverse effects (dose-response assessment).

The latter is accomplished by the derivation of cancer and noncancer toxicity values, as described in the following sections.

## 4.1 Evaluation of Carcinogenicity

A few chemicals are known, and many more are suspected, to be human carcinogens. The evaluation of the potential carcinogenicity of a chemical includes both a qualitative and a quantitative aspect (EPA, 2005). The qualitative aspect is a weight-of-evidence evaluation of the likelihood that a chemical might induce cancer in humans. EPA (2005) recognizes five weight-of-evidence group classifications for carcinogenicity. Formerly, EPA (1986) used a letter-based system to describe the weight of evidence for carcinogenicity. Reference to this former system is included because many of the carcinogenicity assessments listed on the Integrated Risk Information System (IRIS) use the former letter-based system (EPA, 2011e). The five EPA weight-of-evidence classifications are as follows:

- ***Carcinogenic to Humans*** (corresponds to the former Group A – Human Carcinogen)
- ***Likely to be Carcinogenic to Humans*** (includes both the former Group B1 and Group B2 – Probable Human Carcinogens)
- ***Suggestive Evidence of Carcinogenic Potential*** (corresponds to the former Group C – Possible Human Carcinogen)
- ***Inadequate Information to Assess Carcinogenic Potential*** (corresponds to the former Group D – Not Classifiable as to Human Carcinogenicity)
- ***Not Likely to be Carcinogenic to Humans*** (corresponds to the former Group E – Evidence of Noncarcinogenicity to Humans).

The toxicity value for carcinogenicity, called a cancer slope factor (SF), is an estimate of potency. SFs are developed only for chemicals in the first three groups and only if the data are sufficient. The SFs are statistically derived from the dose-response curve from the best human or animal study or studies of the chemical. Although human data are often considered to be more reliable than animal data because there is no need to extrapolate the results obtained in one species to another, most human studies have one or more of the following limitations:

- The duration of exposure is usually considerably less than lifetime.
- The concentration or dose of chemical to which the humans were exposed can be approximated only crudely, usually from historical data.
- Concurrent exposure to other chemicals frequently confounds interpretation.
- Data regarding other factors (tobacco, alcohol, illicit or medicinal drug use, nutritional factors and dietary habits, heredity) are usually insufficient to eliminate or quantify confounding effects on the results.
- Most epidemiologic studies are occupational investigations of workers, which may not accurately reflect the range of sensitivities of the general population.
- Most epidemiologic studies lack the statistical power (i.e., sample size) to detect a low, but chemical-related increased incidence of tumors.

Most potency estimates are derived from animal data, which present different limitations:

- It is necessary to extrapolate from results in animals to predict results in humans, usually by estimating an equivalent human dose from the animal dose.
- The range of sensitivities arising from genotypic and phenotypic diversity in the human population is not reflected in the animal models ordinarily used in cancer studies.
- Usually, very high doses of chemical are used, which may alter normal biology, creating a physiologically artificial state and introducing substantial uncertainty regarding the extrapolation to the low-dose range expected with environmental exposure.
- Individual studies vary in quality (e.g., duration of exposure, group size, scope of evaluation, adequacy of control groups, appropriateness of dose range, absence of concurrent disease, sufficient long-term survival to detect tumors with long induction or latency periods).

The SF is usually expressed as "extra risk" per unit dose, that is, the additional risk above background in a population corrected for background incidence, and it is expressed as risk per

mg/kg-day, shown mathematically as $(mg/kg\text{-}day)^{-1}$. To be appropriately conservative, the SF is usually the 95 percent upper bound on the slope of the dose-response curve extrapolated from high (experimental) doses to the low-dose range expected in environmental exposure scenarios. EPA (2005) assumes that there are no thresholds for carcinogenic expression; therefore, any exposure represents some quantifiable risk, however miniscule it may be.

The oral SF is usually derived directly from the experimental dose data, because oral dose is usually expressed as mg/kg-day. When the test chemical was administered in the diet or drinking water, oral dose first must be estimated from data for the concentration of the test chemical in the food or water, food or water intake data, and body weight data.

IRIS (EPA, 2011e) expresses inhalation cancer potency as a unit risk based on concentration, or risk per microgram of chemical per $m^3$ of ambient air, shown mathematically as (micrograms per cubic meter [$\mu g/m^3$])$^{-1}$. Because cancer risk characterization requires an SF expressed as risk per mg/kg-day, the unit risk must be converted to the mathematical equivalent of an inhalation cancer SF, or risk per unit dose as $(mg/kg\text{-}day)^{-1}$. Because the inhalation unit risk is based on continuous lifetime exposure of an adult human (assumed to inhale 20 $m^3$ of air per day and to weigh 70 kg), the mathematical conversion consists of multiplying the unit risk (per $\mu g/m^3$) by 70 kg and by 1,000 µg/mg, and dividing the result by 20 $m^3$ per day.

### *4.2 Evaluation of Noncarcinogenic Effects*

Many chemicals, whether or not associated with carcinogenicity, are associated with adverse noncarcinogenic effects. The evaluation of noncancer effects (EPA, 1989b) involves the following:

- Qualitative identification of the adverse effect(s) associated with the chemical; these may differ depending on the duration (acute or chronic) or route (oral or inhalation) of exposure.
- Identification of the critical effect for each duration of exposure (i.e., the first adverse effect that occurs as dose is increased).
- Estimation of the threshold dose for the critical effect for each duration of exposure.
- Development of an uncertainty factor (UF); i.e., quantification of the uncertainty associated with interspecies extrapolation, intraspecies variation in sensitivity, severity of the critical effect, slope of the dose-response curve, and deficiencies in the database, in regard to developing a reference dose (RfD) for human exposure.
- Identification of the target organ(s) for the critical effect for each route of exposure.

These information points are used to derive an exposure route- and duration-specific toxicity value called an RfD, expressed as mg/kg-day, which is considered to be the dose for humans, with uncertainty of an order of magnitude or greater, at which adverse effects are not expected to occur. Mathematically, it is estimated as the ratio of the threshold dose to the UF. For purposes of risk assessment, chronic exposure is typically defined as equal to or greater than 7 years, i.e., at least 10 percent of expected life span; subchronic exposure is typically defined as 2 weeks to 7 years. However, professional judgment may be used where exposure durations approach 10 percent of the expected life span. Also, exposure during a critical stage of development, such as a portion of early childhood, may be treated as chronic even if the anticipated exposure duration is considerably less than 10 percent of the expected life span.

IRIS (EPA, 2011e) expresses the inhalation noncancer reference value as a reference concentration (RfC) in units of $mg/m^3$. Because noncancer hazard characterization requires a reference value expressed as mg/kg-day, the RfC must be converted to an inhalation RfD. Because the inhalation RfC is based on continuous exposure of an adult human (assumed to inhale 20 $m^3$ of air per day and to weigh 70 kg), the mathematical conversion consists of multiplying the RfC ($mg/m^3$) by 20 $m^3$/day and dividing the result by 70 kg.

RfD and RfC values are derived for both chronic and subchronic exposure. Under the assumption of monotonicity (incidence, intensity, or severity of effects can increase, but cannot decrease, with increasing magnitude or duration of exposure), a chronic RfD may be considered sufficiently protective for subchronic exposure, but a subchronic RfD may not be protective for chronic exposure. Currently, subchronic RfD values exist for few chemicals. Subchronic RfD values can be derived from chronic RfD values as follows:

- If the UF applied in the derivation of the chronic RfD (or RfC) does not provide for expansion from subchronic to chronic exposure (e.g., if the chronic RfD was derived from a chronic study), the chronic RfD is adopted as being sufficiently protective for subchronic exposure.

- If the UF applied in the derivation of the chronic RfD (or RfC) contains a component to expand from subchronic to chronic exposure, the subchronic RfD is derived by multiplying the chronic RfD by the factor used to expand from subchronic to chronic exposure (e.g., if a factor of 10 was used to expand from subchronic to chronic exposure, the subchronic RfD would be 10 times larger than the chronic RfD).

Only chronic RfDs and RfCs are used in the risk characterization of this BHHRA.

### *4.3 Dermal Toxicity Values*

Dermal RfDs and SFs are derived from the corresponding oral values, provided there is no evidence to suggest that dermal exposure induces exposure route-specific effects that are not appropriately modeled by oral exposure data. In the derivation of a dermal RfD, the oral RfD is multiplied by the gastrointestinal absorption factor (GAF), expressed as a decimal fraction. The resulting dermal RfD, therefore, is based on absorbed dose. The RfD based on absorbed dose is the appropriate value with which to compare a dermal dose, because dermal doses are expressed as absorbed doses rather than exposure doses. The dermal SF is derived by dividing the oral SF by the GAF. The oral SF is divided, rather than multiplied, by the GAF because the SF is expressed as a reciprocal dose.

### *4.4 Target Organ Toxicity*

As a matter of science policy, EPA assumes dose and effect to be additive for noncarcinogenic effects (EPA, 1989a). This assumption provides the justification for adding the HQ or hazard index (HI) values in the risk characterization for noncancer effects (Section 5.2) resulting from exposure to multiple chemicals, pathways, or media. However, EPA (1989a) acknowledges that adding all HQ or HI values may overestimate hazard, because the assumption of additivity is probably appropriate only for those chemicals that exert their toxicity by the same mechanism.

Mechanisms of toxicity data sufficient for predicting additivity with a high level of confidence are available for very few chemicals. In the absence of such data, EPA (1989a) assumes that chemicals that act on the same target organ may do so by the same mechanism of toxicity; that is, the target organ serves as a surrogate for mechanism of toxicity. When total HI for all media for a receptor exceeds 1 due to the contributions of several chemicals, it is appropriate to segregate the chemicals by route of exposure and mechanism of toxicity (i.e., target organ) and estimate separate HI values for each target organ.

As a practical matter, because human environmental exposures are likely to involve near- or sub-threshold doses, the target organ chosen for a given chemical is the one associated with the critical effect. If more than one organ is affected by a given chemical at the threshold, then all affected target organs are selected for this chemical. The target organ is also selected on the basis of duration of exposure (i.e., the target organ for chronic or subchronic exposure to low or moderate doses is selected rather than the target organ for acute exposure to high doses) and route of exposure. Because dermal RfD values are derived from oral RfD values, the oral target organ is adopted as the dermal target organ. For some chemicals, no target organ is identified. This occurs when no adverse effects are observed or when adverse effects such as reduced

longevity or growth rate are not accompanied by recognized organ- or system-specific functional or morphologic alteration.

### *4.5 Sources of Toxicity Information Used in the Risk Assessment*

Toxicity values were selected for use in the BHHRA based on EPA Office of Solid Waste and Emergency Response Directive 9285.7-53 (EPA, 2003), which prescribes the following hierarchy:

- **Tier 1** values: IRIS (EPA, 2011e) database.
- **Tier 2** values: These are EPA's provisional peer-reviewed toxicity values. The provisional peer-reviewed toxicity values are developed by the Office of Research and Development, the National Center for Environmental Assessment, and the Superfund Health Risk Technical Support Center on a chemical-specific basis when requested by the Superfund program.
- **Tier 3** values: These are other toxicity values from additional EPA and non-EPA sources of toxicity information. As stated in the EPA Office of Solid Waste and Emergency Response directive, "priority should be given to those sources of information that are the most current, the basis for which is transparent and publicly available, and which have been peer reviewed." Two common examples of Tier 3 values are EPA's Health Effects Assessment Summary Tables (EPA, 1997b) and the California Environmental Protection Agency (2011) Office of Environmental Health Hazard Assessment Toxicity Criteria Database.

The Environmental Council of the States-U.S. Department of Defense (2007) has issued a toxicity value hierarchy that basically supports the EPA (2003) hierarchy presented previously but places higher emphasis on the necessity for external peer review.

GAFs used to derive dermal RfD values and SFs from the corresponding oral toxicity values are obtained from the following sources, in order of hierarchy:

- Oral absorption efficiency data compiled by the National Center for Environmental Assessment for the Superfund Health Risk Technical Support Center of EPA, such as listed in EPA (2004a)
- Federal agency reviews of the empirical data, such as Agency for Toxic Substances and Disease Registry toxicological profiles and various EPA criteria documents
- Other published reviews of the empirical data
- The primary literature.

GAFs obtained from reviews are compared to empirical (especially more recent) data, when possible, and are evaluated for suitability for use in deriving dermal toxicity values from oral toxicity values. Some of the GAF values are also listed in the RSL Web site support tables (EPA, 2011f). The suitability of the GAF increases when the following similarities are present in the oral pharmacokinetic study from which the GAF is derived and in the key toxicity study from which the oral toxicity value is derived:

- The same strain, sex, age, and species of test animal were used.
- The same chemical form (e.g., the same salt or complex of an inorganic element or organic compound) was used.
- The same mode of administration (e.g., diet, drinking water, or gavage vehicle) was used.
- Similar dose rates were used.

Individual COPC-specific toxicity profiles, including sources of the toxicity and GAF values, are included in Appendix C for all of the COPCs evaluated in the BHHRA. Summary toxicity information sufficient to support the risk calculations, including toxicity values, GAFs, and target organs are provided in Table 4-1.

# 5.0 Risk Characterization

Risk characterization is the process of applying numerical methods and professional judgment to determine the potential for adverse human health effects to result from the presence of site-specific contaminants. This is done by combining the intake rates estimated during the exposure assessment with the appropriate toxicity information identified during the toxicity assessment. Noncancer hazards and cancer risks are characterized separately, including COPCs that induce both types of effects.

Quantitative expressions are calculated during risk characterization that describe the probability of developing cancer (i.e., ILCRs), or the nonprobabilistic comparison of estimated dose with an RfD for noncancer effects (i.e., HQs and HIs). Quantitative estimates are developed for individual chemicals, exposure pathways, and exposure media for each receptor. These quantitative risk characterization expressions, in combination with qualitative information, are used to guide risk management decisions. Risk characterization, as described in this section, is applied only to COPCs.

Generally, the risk characterization follows the methodology prescribed by EPA (1989a), as modified by more recent information and guidance. EPA methods are appropriately designed to be health protective and tend to overestimate rather than underestimate risk. The risk results, however, may be overly conservative, because risk characterization involves multiplication of the conservative assumptions built into the estimation of the EPCs, exposure (intake) estimates, and toxicity dose-response assessments.

## 5.1 Cancer Risk

The risk from exposure to potential chemical carcinogens is estimated as the probability of an individual developing cancer over a lifetime and is called the ILCR. In the low-dose range, which would be expected for most environmental exposures, cancer risk is estimated from the following linear equation (EPA, 1989a):

Eq. 5.1

$$ILCR = (CDI)\,(SF)$$

where:

ILCR = incremental lifetime cancer risk, a unitless expression of the probability of developing cancer, adjusted for background incidence, calculated

CDI = chronic daily intake, averaged over 70 years (mg/kg-day)
SF = cancer slope factor (risk per mg/kg-day).

The chronic daily intake (CDI) term in Equation 5.1 is equivalent to the "I" or "DAD" terms (intake or dose) in Equations 3.9 through 3.12 and 3.19 when these equations are evaluated for cancer intakes.

The use of Equation 5.1 assumes that chemical carcinogenesis does not exhibit a threshold and that the dose-response relationship is linear in the low-dose range. Because this equation could generate theoretical cancer risks greater than 1 for high-dose levels, it is considered to be inaccurate at cancer risks greater than 1E-2. In these cases, cancer risk is estimated by the following one-hit model (EPA, 1989a):

Eq. 5.2

$$ILCR = 1 - e^{-(CDI)(SF)}$$

where:

ILCR = incremental lifetime cancer risk, a unitless expression of the probability of developing cancer, adjusted for background incidence, calculated
$-e^{(CDI)(SF)}$ = the exponential of the negative of the risk calculated using Equation 5.1.

Because none of the COPCs had an ILCR greater than 1E-2 using Equation 5.1, it was not necessary to use Equation 5.2 for any of the TNTB/WWTP1 sewer line COPCs. As a matter of policy, EPA (1986) considers the carcinogenic potency of simultaneous exposure to low doses of carcinogenic chemicals to be additive, regardless of the chemicals' mechanisms of toxicity or sites of action (organs of the body). Cancer risk arising from exposure to multiple chemicals in a given exposure medium and pathway is estimated from the following equation (EPA, 1989a):

Eq. 5.3

$$ILCR_p = ILCR_{(chem\,1)} + ILCR_{(chem\,2)} + \ldots ILCR_{(chem\,i)}$$

where:

$ILCR_p$ = total pathway risk of cancer incidence, calculated
$ILCR_{(chem\ i)}$ = individual chemical cancer risk for the pathway.

The sum of the ILCRs summed across pathways is the total ILCR as shown in the following equation:

Eq. 5.4

$$Total\ ILCR = ILCR_{(p\,1)} + ILCR_{(p\,2)} + \ldots ILCR_{(p\,i)}$$

where:

| | | |
|---|---|---|
| Total ILCR | = | total incremental lifetime cancer risk across all pathways |
| $ILCR_{pi}$ | = | incremental lifetime cancer risks associate with pathway "*i*." |

The total ILCR represents all additional cancer risks posed to a given receptor by contact with contaminants in site environmental media.

Total ILCRs in the range of 1E-6 to 1E-4 are regarded as acceptable (EPA, 1990); as mentioned in Section 2.4.1, this range is referred to as the "NCP risk management range." Risks less than this range are regarded as negligible. A target cancer risk goal of 1E-5 is used by OEPA and was selected by the PBOW Project Delivery Team as a basis to consider remedial action. Use of this 1E-5 goal represents a departure from the Army's practice of generally using a cancer risk exceeding a value of 1E-4 (the upper end of the NCP risk management range) to trigger remedial action considerations.

### *5.2 Noncancer Effects of Chemicals*

The hazards associated with noncancer effects of chemicals are evaluated by comparing an exposure level or intake with an RfD. The HQ, defined as the ratio of intake to RfD, is estimated as follows (EPA, 1989a):

Eq. 5.5

$$HQ = I \,/\, RfD$$

where:

| | | |
|---|---|---|
| HQ | = | hazard quotient (unitless, calculated) |
| I | = | intake of chemical averaged over subchronic or chronic exposure period (mg/kg-day) |
| RfD | = | reference dose (mg/kg-day). |

The "I" term in Equation 5.5 is equivalent to the "I" or "DAD" terms (intake or dose) in Equations 3.9 through 3.12 and 3.19 when these equations are evaluated for noncancer intakes.

Chemical noncancer hazards are evaluated using chronic RfD values. This approach is different from the probabilistic approach used to evaluate cancer risks. An HQ of 0.01 does not imply a 1-in-100 chance of an adverse effect, but indicates only that the estimated intake is 100 times lower than the RfD. An HQ of unity indicates that the estimated intake equals the RfD. If the HQ is greater than unity, there may be concern for potential adverse health effects.

In the case of simultaneous exposure of a receptor to multiple chemicals, or to a given chemical by multiple pathways, an HI is calculated as the sum of the HQs by the following equation:

Eq. 5.6

$$HI = HQ_1 + HQ_2 + \ldots HQ_i$$

where:

HI = hazard index (unitless, calculated)
$HQ_i$ = hazard quotient for the $i^{th}$ chemical, or for the $i^{th}$ pathway.

A total HI is calculated as the sum of all HI values, including all media and all COPCs, for a given receptor. Calculating a total HI as the sum of HQ values is based on the assumption that the potential for noncancer effects is additive. EPA (1989a), however, acknowledges that the assumption of additivity is probably appropriate only for chemicals that induce adverse effects by the same mechanism (Section 4.4). Therefore, if the total HI for a receptor exceeds 1, individual HI values may be calculated for each target organ.

A total target organ HI is calculated by summing the HI values (associated by target organ[s]), across exposure pathways as follows:

Eq. 5.7

$$Total\ Target\ Organ\ HI_a = HI_{p1-a} + HI_{p2-a} + \ldots HI_{pi-a}$$

where:

Total target organ $HI_a$ = total hazard index for target organ "*a*" (unitless, calculated)
$HI_{pi-a}$ = hazard index for target organ "*a*" via pathway "*i*."

HI values of 1 or less indicate that adverse noncancer health effects associated with that target organ of any individual under the exposure assumptions for that receptor are unlikely. If the total target organ HI exceeds a value of 1, then adverse noncancer health effects concerning that target organ and receptor cannot be regarded as unlikely.

### *5.3 Risk Characterization Results*

Cancer and noncancer risk characterization results were evaluated for each receptor and each environmental medium using the methods described in Sections 5.1 and 5.2. The following subsections describe the risk characterization results for each receptor evaluated for exposure at the TNTB/WWTP1 sewer line trace. Risk summary tables are shown for each receptor as referenced. The detailed quantitative evaluation tables that include the exposure equations presented in Chapter 3.0, and the risk characterization equations presented in Chapter 5.0 are

provided in Appendix D. Analytical results used as input in the BHHRA are included in Appendix E.

### *5.3.1 Current Groundkeeper*

The ILCR for the current groundskeeper (Table 5-1) exposed to surface soil both through direct contact and via inhalation of suspended particulates is estimated as 6E-6. This is within the 1E-6 to 1E-4 NCP risk management range and is less than the PBOW cancer risk goal of 1E-5.

No total HI was calculated for the current groundskeeper (Table 5-1) because none of the COPCs found in relevant media are known to have adverse noncancer effects. This indicates that adverse noncancer effects are highly unlikely for the current groundskeeper.

### *5.3.2 Future Groundskeeper*

The exposure assumptions for the future groundskeeper differ from those of the current groundskeeper (Section 5.3.1) in that the future groundskeeper is assumed to be exposed to total soil rather than surface soil, and the future groundkeeper is also assumed to be exposed to groundwater via direct contact (ingestion and dermal exposure) (Table 5-1). Groundwater exposure assumes hypothetical use of the overburden unit underlying the sewer line trace as a potable source. Although both overburden monitoring wells had adequate yield for low-flow sampling technique during both the wet and dry seasons, it is unlikely that this unit could provide adequate yield for potable use. This unlikelihood is based on a lack of water along much of the sewer line trace (note that 6 of 13 borings were dry), especially in the southern portion of the trace, as well as observations that overburden groundwater underlying WWTP1 (Shaw, 2011c,d) and AP1 (Shaw, 2010c; 2011f), which are near the northern portion of the trace, would not provide adequate yield for potable use.

The total ILCR for the future groundskeeper, assuming hypothetical use of overburden groundwater, is 2E-6 (Table 5-1). This value is within the NCP risk management range and is less than the PBOW target cancer risk goal of 1E-5. All of this value is associated with exposure to contaminants in soil, virtually 100 percent of which is associated with exposure to PAHs.

The total HI for the future groundskeeper, assuming hypothetical use of overburden groundwater, is 0.04 (Table 5-1). This is less than the target HI criterion of 1, indicating that noncancer health effects are regarded as unlikely to occur under this scenario. Approximately 98 percent of this value is associated with exposure to manganese in groundwater. Note that manganese is a naturally occurring constituent in groundwater and that, as discussed above, the

groundwater yield from this unit along the sewer line trace would likely be insufficient for use as a private potable supply.

### 5.3.3 Indoor Worker

The exposure assumptions for the future indoor worker include direct contact with surface soil, inhalation of volatiles from subsurface soil, and direct exposure to groundwater via direct contact (ingestion and dermal exposure) (Table 5-1). Groundwater exposure assumes hypothetical use of the overburden unit underlying the sewer line trace as a potable source. As discussed in Section 5.3.2, it is unlikely that the overburden unit underlying the trace would provide adequate yield for potable use.

The total ILCR for the future indoor worker, assuming hypothetical use of overburden groundwater, is 2E-6 (Table 5-1). This value is within the NCP risk management range and is less than the PBOW target cancer risk criterion of 1E-5. All of this value is associated with exposure to total soil, and virtually 100 percent of this value is associated with PAHs.

The total HI for the indoor worker is 0.04, assuming hypothetical use of overburden groundwater (Table 5-1). This is less than the target HI criterion of 1, indicating that noncancer health effects are regarded as unlikely to occur under this scenario. One hundred percent of this value is associated with exposure to manganese in groundwater. Note that manganese is a naturally occurring constituent in groundwater and that, as discussed in Section 5.3.2, groundwater yield from this unit at this location would likely be insufficient for use as a private potable supply.

### 5.3.4 Construction Worker

The construction worker is assumed to be exposed to total soil through direct contact and via inhalation of suspended particulates. The ILCR for the TNTB/WWTP1 sewer line trace construction worker (Table 5-1) is estimated as 8E-8. This is less than both the 1E-6 to 1E-4 NCP risk management range and the PBOW cancer risk goal of 1E-5.

The total HI for the construction worker (Table 5-1) is 0.002. This is less than the target HI value of 1. Therefore, noncancer health effects are regarded as unlikely to occur.

### 5.3.5 Resident

The exposure assumptions for the resident include direct contact with total soil, inhalation of particulates from total soil, inhalation of volatiles from subsurface soil, and direct exposure with groundwater via direct contact (ingestion and dermal exposure). Groundwater exposure assumes hypothetical use of the overburden unit underlying the sewer line trace as a potable source. As

discussed in Section 5.3.2, it is unlikely that the overburden unit underlying the trace would provide adequate yield for potable use. The ILCR for the resident was calculated assuming exposure during a combined 30-year child/adult exposure duration, whereas separate noncancer HI values were calculated for the young child and adult life stages (Section 3.1.3.5). The results of each are described below.

The total ILCR for the future resident, assuming overburden groundwater exposure, is 5E-6 (Table 5-1). This value is within the NCP risk management range and is less than the PBOW target cancer risk goal. The entire ILCR value is associated with exposure to soil, as no carcinogenic COPCs were identified for groundwater. Virtually 100 percent of the ILCR is associated with exposure to PAHs in soil.

The total HI for the child resident, assuming overburden groundwater exposure, is 0.2 (Table 5-1). This is less than the target HI value of 1, which indicates that noncancer health effects are unlikely to occur. Virtually all of this value is associated with manganese in groundwater. As discussed in Section 6.2.8, the manganese concentrations found in overburden groundwater are unlikely to be related to former site activities.

The total HI for the adult resident, assuming overburden groundwater exposure, is 0.1 (Table 5-1). This is less than the target HI value of 1, which indicates that noncancer health effects are regarded as unlikely to occur. As described for the child resident, virtually all of this HI is associated with exposure to manganese in overburden groundwater.

### *5.3.6 Adult Hunter*

The ILCR for the adult hunter (Table 5-1) exposed to surface soil both through direct contact and via the ingestion of venison is estimated as 4E-7. This is less than the 1E-6 to 1E-4 NCP risk management range and less than the PBOW cancer risk goal of 1E-5. An HI was not calculated for the hunter because none of the soil COPCs are known to have adverse noncancer effects. This indicates that the receptor would be highly unlikely to incur any adverse human health effects.

### *5.3.7 Hunter's Child*

An ILCR could not be calculated for a hunter's child exposed to venison from the site because none of the COPCs are regarded as bioaccumulative in animal tissue. Therefore, the cancer risks associated with this receptor are regarded as de minimis.

An HI was not calculated for the hunter's child because none of the soil COPCs are known to have adverse noncancer effects. This indicates that the receptor would be highly unlikely to incur any adverse human health effects associated with soil COPCs.

# 6.0 Uncertainty Analysis

The primary objective of the BHHRA is to characterize and quantify potential human health risks. However, these risks are estimated using incomplete and imperfect information that introduces uncertainties at various stages of the risk assessment process. Uncertainties associated with earlier stages of the risk assessment become magnified when they are linked with other uncertainties in the latter stages. Reliance on a simplified numerical presentation of dose rate and risk without consideration of uncertainties, limitations, and assumptions inherent in their derivation can be misleading. For example, the calculated ILCR for a given scenario "A" may be 1E-5 (meets the PBOW risk goal) and that of scenario "B" may be 5E-5 (exceeds the PBOW risk goal). However, if the uncertainties associated with scenario "B," for instance, span orders of magnitude and the ILCR is regarded as biased high, it is not unlikely that scenario "A" actually presents a higher risk of developing cancer.

The chief goal of this analysis is to evaluate uncertainties and present them in context of their potential impact on the interpretation of the risk assessment results and the types of environmental management decisions that may be based on these results. The uncertainty analysis does not exhaustively describe all potential uncertainties but presents those that have the largest implications for the interpretation of the risk assessment results. This analysis also summarizes the types and, as applicable, the magnitude of the uncertainties at each stage of the risk assessment. Although the discussion in the following sections includes generic uncertainties that are common to the state of human health risk assessment practice overall (e.g., additivity of health effects in the risk characterization), the uncertainty analysis focuses on the sets of uncertainties that are specific to the TNTB/WWTP1 sewer line trace.

## 6.1 Types of Uncertainty

Uncertainties in risk assessment are categorized into two general types: 1) variability inherent in the (true) heterogeneity of the data set, measurement precision, and measurement accuracy; and 2) uncertainty that arises from data gaps. Estimates of the degree of variability tend to decrease as the sample size increases. This is because larger data sets are less impacted by individual samples/measurements and typically allow for greater accuracy. Uncertainty that arises from data gaps is addressed by applying models and assumptions. Models are applied because they represent a level of understanding to address certain exposure parameters that are impractical or impossible to measure (e.g., COPC concentrations in air that would result from groundwater use that has not yet occurred—or may never occur—at a site). Assumptions represent an educated estimate to address information that is not available (e.g., additivity of carcinogens).

### 6.2 Sources of Uncertainty

The discussion in the following subsections provides an overview of uncertainty, with a focus on those sources that are most likely to affect interpretation of the risk assessment results.

#### 6.2.1 Sample Selection

Soil samples were collected from along the former TNTB/WWTP1 sewer line trace, in which TNT production wastes were carried. Samples were collected at various depths, ranging from surface to 10 feet bgs. The samples from 20 test pit locations, in particular, were collected just below the area of disturbed soil which is interpreted, based on visual observation, as the area where the sewer lines had been. These locations immediately below the sewer line (depths ranging from 1.5 to 3 feet bgs) were expected to have the highest concentrations of nitroaromatics if leakage occurred. The locations for well installation were selected from areas adjacent to the former TNTB/WWTP1 sewer lines, which are the areas expected to have the highest concentrations of contaminants in groundwater if the sewer lines had been a source of contamination.

#### 6.2.2 Exposure-Point Concentration Estimates

Uncertainty is introduced in the statistical approach used to calculate the EPCs. As stated in the HHEM (EPA, 1989a), the average concentration of the site should be used as the concentration term. Generally, a UCL is used to account for the uncertainty of using a sample data set to estimate the true population mean concentration for the site. ProUCL Version 4.1 software (EPA, 2011a) was used to calculate the EPCs for those media with five or more samples. However, as is readily observed by reviewing the ProUCL output (Appendix B), the calculation of the UCL can vary with methodology. It is unclear whether the UCL value of a specific EPC would result in an underestimate or overestimate of the true population mean. However, the general use of a UCL on all the data sets, even given the uncertainty as to whether a given method provides full coverage at 95 percent confidence, would result in general overestimation of the population mean and associated risks. Therefore, as intended by the guidance (EPA, 1989a), this practice of using the UCL as the EPC (note that the MDC is used as the EPC if the UCL exceeds the MDC) introduces bias that tends to overestimate the population mean and the resultant risk values.

TNTB/WWTP1 sewer line groundwater data sets have fewer than five samples. Thus, the MDC was used as the EPC for these data sets. Use of the MDC likely introduces a high bias to the risk values.

### *6.2.3 Land-Use Assumptions/Receptor Selection*

The current groundskeeper is intended to represent an on-site worker under the current land use as NASA-controlled property. Because there is currently no identified NASA activity other than mowing along portions of the trace, the use of this receptor likely overestimates risks and hazards to a current site worker. The assumed future use of the hunter and the hunter's child are reasonable, as other areas within PBOW may currently be legally hunted by permit.

Unrestricted land use, including residential use, is a reasonable assumption for the future use of property along the TNTB/WWTP1 sewer line trace, given the rural residential use of property adjacent to the PBOW facility. The assumption that the overburden groundwater will be used as a potable water source in the future is regarded as implausible for reasons described in Section 6.2.4.

### *6.2.4 Groundwater Use*

The overburden groundwater is of low yield regionally, and the overburden groundwater is regionally and seasonally discontinuous throughout much of PBOW (Shaw, 2006). This discontinuity also appears to be true along the TNTB/WWTP1 sewer line trace. Of the 10 piezometers planned for installation along the sewer line trace, only 6 were installed and only 4 produced water. Further, one of these four piezometers, TNTB-SL-PZ01, did not recharge upon purging with a peristaltic pump until the next day. Two of the piezometers, TNTB-SL-PZ04 and TNT-SL-PZ05, did not produce any water. Piezometers were not installed in four planned locations, borings DP-07 through DP-10, because these borings were dry and the depth to competent shale was 6 feet or less (Shaw, 2011a).

In summary, use of the overburden groundwater as a potable source along the TNTB/WWTP1 sewer line trace is regarded as implausible for the following reasons: 1) Both bedrock and overburden groundwater yield water volumes that are clearly inadequate as a potable source; 2) bedrock groundwater from nearby sites has naturally occurring petroleum and hydrogen sulfide constituents that make the water unsuitable for potable or industrial use; 3) this poor bedrock groundwater quality is associated with the presence of hydrogen sulfide off-gassing, a concern with respect to nuisance odors and potential health issues; 4) no residential wells in the area have been identified as potable; and 5) municipal water is available in the area. Note that even though TNTB/WWTP1 bedrock limestone groundwater was not investigated and thus was not evaluated in the BHHRA, the presence of poor quality groundwater at nearby PBOW sites (WWTP1, AP1, and the LBA) in the deeper unit would likely result in no private wells being installed to which the overburden groundwater may otherwise contribute yield.

### *6.2.5 Exposure Assumption Values*

The exposure assumption values used in the exposure assessment (Table 3-1) are selected to represent either an upper bound (e.g., 95th percentile) or mid-range value, depending on the particular parameter. Mathematically combining these terms in exposure equations is generally thought to result in decidedly conservative exposure estimations (Cogliano, 1997; Burmaster and Harris, 1993). In general, this conservativeness is associated with the state of risk assessment practice, which attempts to focus on the upper end of exposure possibilities rather than more realistic levels of exposure, and not on assumptions made specifically for the TNTB/WWTP1 sewer line.

Note that an FI term of 1 was used for all receptors exposed to TNTB/WWTP1 sewer line trace soil. Use of this FI value effectively assumes that 100 percent of all soil to which a receptor is exposed is along the TNTB/WWTP1 sewer line trace. Because of the linear nature of the sewer lines and the likelihood that any associated contamination would likely be within 10 feet of the original sewer line location, it is doubtful that the percent exposure of any on-site receptor to soil would approach 100 percent. Therefore, use of the FI term value of 1 adds a conservative bias for all receptors.

### *6.2.6 Toxicity Assessment*

Uncertainties associated with the toxicity assessment include those regarding development of the health effects criteria values, the classification of potential carcinogenicity, the extrapolation of exposure route-specific toxicity values to other routes of exposure, and the extrapolation of toxic effects observed in animal studies to potential adverse effects in humans. A general summary of these uncertainties is provided in the following paragraphs.

The development of health effects criteria for noncancer effects involves considerable professional judgment. An uncertainty factor of up to 10 may be applied to a toxicologically identified benchmark dose or concentration to address the unknown regarding each of the following (EPA, 1989b): lowest-observed-adverse-effects level to no-observed-adverse-effects level, subchronic-to-chronic extrapolation, route-to-route extrapolation, and species-to-species extrapolation. A “modifying factor” of 10 or less is likewise applied in the development of RfDs and RfCs, using professional judgment. This modifying factor is intended to address gaps in the database and the steepness of the dose-response curve. In practice, the overall UF, derived by multiplying the individual uncertainty factors by the modifying factor, associated with RfD and RfC values may span up to four orders of magnitude.

The EPA weight-of-evidence classification system for carcinogens is used to examine and classify chemical agents with respect to their carcinogenic potential. Most EPA potential carcinogens are classified based on animal data, without sufficient human data to support a causal association (i.e., former Group B2; refer to Section 4.1). Also, the linearized multistage (LMS) mathematical model was used to extrapolate values from relatively high-dose rodent studies to relatively low-dose human exposures in the development of SFs for these compounds. This application of the LMS model is the subject of much controversy. Thus, the LMS approach used to develop SFs, combined with other assumptions, tends to overestimate potential risks.

Overall, the toxicity values, assuming similar effects between humans and test species, tend to result in overestimates of noncancer hazards or cancer risks. However, it is possible that a given chemical can elicit a toxic response in humans that is not observed in the laboratory species studied or that humans may be more sensitive to a given chemical. In this instance, it is possible for the use of the toxicity values to result in underestimates of risks/hazards.

### *6.2.7 Risk Characterization*

It is assumed that the effects of simultaneous exposures to multiple carcinogens at a site are additive. Likewise, it is assumed that noncancer effects of contaminants are additive if they have a similar mechanism of toxicity. In risk assessment practice, it is assumed that the effects of chemicals that affect the same target organ are additive unless chemical-specific information would indicate otherwise. However, chemicals in combination may act additively, synergistically, or antagonistically or may not influence one another at all. Therefore, depending on the interactive effects (if any), the risk characterization approach to multiple contaminants may lead to either underestimates or overestimates of potential risk/hazard.

### *6.2.8 Evaluation of Selected COPCs for Site Relatedness*

The only COPC identified in soil or groundwater that is potentially related to background is manganese in overburden groundwater. As described in Section 2.4.3, a comparison of naturally occurring metals is performed in two steps. The first is a comparison to BSCs; a chemical whose MDC does not exceed the BSC is assumed to be related to background and thus eliminated from further evaluation. The second step is performed for selected metals (and certain organic compounds) during the risk characterization step, after exposure calculations are performed which include the potential background-related contributions as part of the overall ILCR and HI results. This step involves a statistical comparison of the site data set to the background data set for a given COPC.

Because there is no suitable background data set for overburden groundwater, neither of these steps can be performed for manganese in groundwater. However, it is noted that the mean and maximum manganese concentrations in the TNTB/WWTP1 sewer line overburden groundwater (47.9 and 163 µg/L, respectively) are less than those of the background limestone bedrock groundwater data set (81.2 and 688 µg/L, respectively). A comparison of these concentrations, as well as the observation that manganese concentrations were not elevated in soil and that manganese was not part of the TNT manufacturing waste stream, suggests that manganese in the overburden groundwater is likely associated with background conditions.

# 7.0 Summary and Conclusions

## 7.1 Summary

The BHHRA was conducted to evaluate cancer risk and noncancer hazards associated with TNTB/WWTP1 sewer line surface soil, subsurface soil, and overburden groundwater. A risk-based screening approach was used to identify COPCs and focus the risk assessment on those chemicals detected in media along the TNTB/WWTP1 sewer line trace that may contribute appreciably to risk or hazard. The sampled media were screened against the respective RBSCs, and inorganics in bedrock groundwater and soil were also screened against BSCs. COPCs for the various media were identified based on this screening. Exposure and risk/hazard associated with the COPCs were evaluated using the following receptors (media evaluated in parentheses):

- Current groundskeeper (surface soil)
- Future groundskeeper (total soil, overburden groundwater)
- Future indoor worker (surface soil, subsurface soil [inhalation pathway only], groundwater)
- Current/future construction worker (total soil)
- Future resident (total soil and overburden groundwater; noncancer hazards are evaluated separately for the young child [ages 1 through 6 years] and adult)
- Future adult hunter (surface soil, including venison pathway)
- Future hunter's child (surface soil [venison pathway only]).

The overall HI and ILCR values are summarized for these receptors in the following bullets:

- Current groundskeeper: ILCR = 6E-6; HI not calculated (No noncancer COPCs were identified; thus, adverse noncancer health effects are extremely unlikely.)
- Future groundskeeper: ILCR = 2E-6; HI = 0.04
- Future indoor worker: ILCR = 2E-6; HI not calculated (No noncancer COPCs were identified; thus, adverse noncancer health effects are extremely unlikely.)
- Construction worker: ILCR = 8E-8; HI = 0.002
- Resident: ILCR = 5E-6; child HI = 0.2; adult HI = 0.1
- Hunter: ILCR = 4E-7; HI Not calculated (No noncancer COPCs were identified; thus, adverse noncancer health effects are extremely unlikely)

- Hunter's child: ILCR and HI not calculated (The carcinogenic COPCs are regarded as nonbioaccumulative, thus cancer risks are regarded as de minimis; no noncancer COPCs were identified, and thus, adverse noncancer health effects are extremely unlikely.).

### *7.2 Conclusions*

None of receptors had ILCR values that exceed either the PBOW cancer risk goal (ILCR≥1E-5) or the NCP risk management range (1E-6 to 1E-4). Neither did any of the receptor have HI values that exceed the noncancer hazard criterion (HI>1). This indicates that the associated environmental media along the TNTB/WWTP1 sewer line trace are unlikely to pose an unacceptable cancer risk to any receptor and that exposure to these media is unlikely to result in adverse noncancer health effects for any human receptor. These receptor scenarios cover a wide range of human activities that are representative of RME. For example, under current land use, the only groundskeeping activity is mowing along roads and utility right of ways. The BHHRA assumes that a groundkeeper is constantly present along the sewer line trace during the workweek over a 25-year career. Thus, the exposure scenario used in the BHHRA for this receptor, and likely for other receptors, tends to overestimate human health risks and hazards.

# 8.0 References


Burmaster, D.E., and R.H. Harris, 1993, "The Magnitude of Compounding Conservatisms in Superfund Risk Assessment," ***Risk Analysis, 13(2): 131-134***.

California Environmental Protection Agency, 2011, ***Toxicity Criteria Database***, Office of Environmental Health Hazard Assessment, Sacramento, California, http://www.oehha.ca.gov/risk/ChemicalDB/index.asp.

City-Data.com, 2004, on-line data search for Sandusky, Ohio, performed November 11, 2004, http://www.city-data.com/city/Sandusky-South-Ohio.html.

Cogliano, V.J., 1997, "Plausible Upper Bounds: Are Their Sums Plausible?" ***Risk Analysis***, 17(1): 77-84.

Dames and Moore, Inc. (D&M), 1997, ***TNT Areas Site Investigation Final Report for Plum Brook Ordnance Works, Plum Brook Station/NASA, Sandusky, Ohio***, prepared for U.S. Army Corps of Engineers, Nashville District/Huntington District, April.

Dames and Moore, Inc. (D&M), 1996, ***Red Water Ponds Focused Remedial Investigation, Draft Report, Plum Brook Ordnance Works, Sandusky, Ohio***, May.

E.B. Badger & Sons, Co., 1962, ***Marking Of Area Containing Contaminated Soil,*** Drawing No. P1-22598, 5, April.

Environmental Council of States-U.S. Department of Defense, 2007, ***Identification and Selection of Toxicity Values/Criteria for CERCLA and Hazardous Waste Site Risk Assessments in the Absence of IRIS Values,*** ECO-DOD Sustainability Work Group, Emerging Contaminants Task Group, Risk Assessment Provisional Values Subgroup Issue Paper, 23 April.

International Consultants Incorporated (ICI), 1995, ***Site Management Plan, Plum Brook Ordnance Works, Sandusky, Ohio, Part B, Areas of Concern***, September.

IT Corporation (IT), 2001a, ***TNT Areas A and C Remedial Investigation, Volume II – Human Health Risk Assessment, Final, Former Plum Book Ordnance Works, Sandusky, Ohio,*** November.

IT Corporation (IT), 2001b, ***TNT Areas A and C Remedial Investigation, Volume I – Report of Findings, Final, Former Plum Book Ordnance Works, Sandusky, Ohio,*** November.

IT Corporation (IT), 2000a, ***TNT Area B Remedial Investigation, Volume II – Baseline Human Health Risk Assessment; Volume III – Ecological Risk Assessment, Former Plum Book Ordnance Works, Sandusky, Ohio,*** August.

IT Corporation (IT), 2000b, ***Draft Baseline Human Health Risk Assessment Work Plan for the Former TNT Manufacturing Area, West Virginia Ordnance Works, Mason Count, West Virginia***, January.

IT Corporation (IT), 1999, ***Final - Summary Report, Site-Wide Groundwater Monitoring (1997-1998), Former Plum Brook Ordnance Works, Sandusky, Ohio,*** June.

IT Corporation (IT), 1998, ***Site Investigation of the Acid Areas, Former Plum Brook Ordnance Works, Sandusky, Ohio***, August.

IT Corporation (IT), 1997, ***Site-Wide Groundwater Investigation, Former Plum Brook Ordnance Works, Sandusky, Ohio***, September.

Mautz, W.W., H. Silver, and J.B. Holter, 1976, "Digestibility and Related Nutritional Data for Seven Northern Deer Browse Species," ***Journal of Wildlife Management***, 40(4): 630-638.

National Council on Radiation Protection and Measurements, 1984, ***Radiological Assessment: Predicting the Transport, Bioaccumulation, and Uptake by Man of Radionuclides Released to the Environment***, NCRP Report No. 76.

National Oceanic and Atmospheric Administration, 1990, ***Comparative Climatic Data for the United States through 1989***, National Climatic Data Center, Asheville, North Carolina.

Nutrient Database, 1997, Data compiled from U.S. Department of Agriculture releases, and published nutrient information from 71 chain references, on line, http://www.nutribase.com.

Ohio Environmental Protection Agency (OEPA), 2009a***, Use of U.S. EPA's Regional Screening Levels as Screening Values in Human Health Risk Assessments***, Technical Decision Compendium, Division of Emergency and Remedial Response, August.

Ohio Environmental Protection Agency (OEPA), 2009b***, Human Health Cumulative Carcinogenic Risk and Non-carcinogenic Hazard Goals for the DERR Remedial Response Program***, Technical Decision Compendium, Division of Emergency and Remedial Response, August.

Ohio Environmental Protection Agency (OEPA), 2009c, Email Correspondence from B. Buthker, OEPA Risk Assessor, to L. Long, USACE Risk Assessor, March 18.

Ohio Environmental Protection Agency (OEPA), 2004a, ***Subject: Background Calculation Methodology***, Division of Emergency and Remedial Response, June 30.

Ohio Environmental Protection Agency (OEPA), 2004b, e-mail correspondence from L. Moore (OEPA Risk Assessor) to L. Long (USACE Risk Assessor), December 15.

Sample, B.E. and Suter II, G.W., 1994, ***Estimating Exposure of Terrestrial Wildlife Contaminants***, Environmental Sciences Division, Oak Ridge National Laboratory, ES/ER/TM-125.

Sample, B.E., D.M. Opresko, and G.W. Suter II, 1996, ***Toxicological Benchmarks for Wildlife: 1996 Revision***, prepared for the U.S. Department of Energy by Health Sciences Research Division, Oak Ridge National Laboratory.

Science Applications International Corporation, 1991, ***Plum Brook Station Preliminary Assessment,*** June.

Sharp, G., 1995, Personal Communication: Telephone conversation between P. Goetchius, IT Corporation, and Gary Sharp, Wildlife Biologist, West Virginia Division of Natural Resources, Point Pleasant, West Virginia, 17 February.

Shaw Environmental, Inc. (Shaw), 2011a, ***TNT Area B to Waste Water Treatment Plant No. 1, Site Characterization Report,*** Final, Plum Brook Ordnance Works, Sandusky, Ohio, October.

Shaw Environmental, Inc. (Shaw), 2011b, ***Screening Level Ecological Risk Assessment, TNT Area B to Waste Water Treatment Plant No. 1,*** Draft, Plum Brook Ordnance Works, Sandusky, Ohio, September.

Shaw Environmental, Inc. (Shaw), 2011c, ***Waste Water Treatment Plant 1, Baseline Human Health Risk Assessment,*** Draft, Plum Brook Ordnance Works, Sandusky, Ohio, June.

Shaw Environmental, Inc. (Shaw), 2011d, ***Waste Water Treatment Plant 1, Site Characterization Report,*** Final, Plum Brook Ordnance Works, Sandusky, Ohio, April.

Shaw Environmental, Inc. (Shaw), 2011e, ***Baseline Human Health Risk Assessment, Locomotive Building Area,*** Final, Plum Brook Ordnance Works, Sandusky, Ohio, September.

Shaw Environmental, Inc. (Shaw), 2011f, ***Baseline Human Health Risk Assessment, Ash Pit 1,*** Final, Plum Brook Ordnance Works, Sandusky, Ohio, July.

Shaw Environmental, Inc. (Shaw), 2010a, ***Work Plans, Baseline Human Health Risk Assessment and Screening Level Ecological Risk Assessment, TNTA Area A and TNT Area B to Waste Water Treatment Plant 1 Sewer Lines, Final, Plum Brook Ordnance Works, Sandusky, Ohio***, February.

Shaw Environmental, Inc. (Shaw), 2010b, ***Locomotive Building Area (Garage Maintenance Area), Site Characterization Report,*** Final, Plum Brook Ordnance Works, Sandusky, Ohio, September.

Shaw Environmental, Inc. (Shaw), 2010c, ***Ash Pit 1 and Ash Pit 3, Site Characterization Report,*** Final, Plum Brook Ordnance Works, Sandusky, Ohio, November.

Shaw Environmental, Inc. (Shaw), 2008, ***Feasibility Study for Groundwater, TNT and Red Water Pond Areas, Final,*** *Former Plum Brook Ordnance Works, Sandusky, Ohio*, December.

Shaw Environmental, Inc. (Shaw), 2006, ***Baseline Human Health Risk Assessment of Groundwater, Former Plum Brook Ordnance Works, Sandusky, Ohio***, September.

Shaw Environmental, Inc. (Shaw), 2005, ***2004 Groundwater Data Summary and Evaluation Report, Final, Former Plum Brook Ordnance Works, Sandusky, Ohio***, April.

The Weather Channel, 2004, on-line data search for weather averages and records for Sandusky, Ohio, performed November 11, 2004, http://www.weather.com.

Trojan Powder Company, 1944, ***Proposed New Elevation for Existing 4 In. Round Wood Flume Pipe Line, T.N.T. Area "A" to Disposal Plant,*** Drawing No. 1670-T-505-4, January 28.

U.S. Army Corps of Engineers (USACE), 1999, ***Risk Assessment Handbook, Volume I: Human Health Evaluation***, Engineer Manual EM 200-1-4.

U.S. Department of Energy (DOE), 1989, ***A Manual for Implementing Residual Radioactive Material Guidelines***, Argonne National Laboratory, Argonne, Illinois, ANL/ES-160, DOE/CH/8901.

U.S. Department of Energy (DOE), 1983, ***Pathway Analysis and Radiation Dose Estimates for Radioactive Residues at Formerly Utilized MED/AEC Sites***, U.S. Dept. of Energy, Oak Ridge Operations Office, Oak Ridge, Tennessee, DOE ORO-832.

U.S. Environmental Protection Agency (EPA), 2011a, ***ProUCL Version 4.1***, Office of Research and Development, Technology Support Center Characterization and Monitoring Branch, Las Vegas, Nevada, February, on line at http://www.epa.gov/esd/tsc/form.htm.

U.S. Environmental Protection Agency (EPA), 2011b, ***Regional Screening Level Table***, June, on line at www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm.

U.S. Environmental Protection Agency (EPA), 2011c, ***Regional Screening Level Table, User's Guide (June 2011)***, on line at www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/usersguide.htm.

U.S. Environmental Protection Agency (EPA), 2011d, ***Drinking Water Contaminants***, online at http://water.epa.gov/drink/contaminants/index.cfm#List

U.S. Environmental Protection Agency (EPA), 2011e, ***Integrated Risk Information System (IRIS)***, National Center for Environmental Assessment, Cincinnati, Ohio, on line.

U.S. Environmental Protection Agency (EPA), 2011f, ***Regional Screening Level Residential Soil Supporting Table***, June, on line at www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

U.S. Environmental Protection Agency (EPA), 2010a, ***ProUCL Version 4.1 Technical Guide***, Draft, Office of Research and Development, Technology Support Center Characterization and Monitoring Branch, Las Vegas, Nevada, EPA/600/R-07/041, May.

U.S. Environmental Protection Agency (EPA), 2010b, ***ProUCL Version 4.1 User Guide***, Draft, Office of Research and Development, Technology Support Center Characterization and Monitoring Branch, Las Vegas, Nevada, EPA/600/R-07/038, May.

U.S. Environmental Protection Agency (EPA), 2005, ***Guidelines for Carcinogen Risk Assessment***, Risk Assessment Forum, Washington, D.C., March, EPA/630/P-03/001B.

U.S. Environmental Protection Agency (EPA), 2004a, ***Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part E - Supplemental Guidance for Dermal Risk Assessment)***, Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R-99/005, July.

U.S. Environmental Protection Agency (EPA), 2004b, ***Region 9 Preliminary Remediation Goals (PRG) Table***, San Francisco, California, October.

U.S. Environmental Protection Agency (EPA), 2004c, ***User's Guide for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) Windows 32-bit Version,*** Lead and IEUBK Technical Review Workgroup, Washington, D.C., May http://www.epa.gov/superfund/programs/lead/products.htm.

U.S. Environmental Protection Agency (EPA), 2004d, ***User's Guide and Background Technical Document for Region 9 Preliminary Remediation Goals (PRG) Table***, Region 9, San Francisco, California, October, <http://www.epa.gov/region09/waste/sfund /prg/files/04usersguide.pdf>.

U.S. Environmental Protection Agency (EPA), 2003, ***Human Health Toxicity Values in Superfund Risk Assessments***, Office of Solid Waste and Emergency Response, Washington, D.C., OSWER Directive 9285.7-53, December.

U.S. Environmental Protection Agency (EPA), 2002, ***Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites***, Office of Solid Waste and Emergency Response, Washington, D.C., 9355.4-24, December.

U.S. Environmental Protection Agency (EPA), 1997a, ***Exposure Factors Handbook***, Office of Research and Development, National Center for Environmental Assessment, Washington, D.C., EPA/600/P-95/002Fa, August.

U.S. Environmental Protection Agency (EPA), 1997b, ***Health Effects Assessment Summary Tables, FY 1997 Update***, Office of Solid Waste and Emergency Response, 9200.6-303 (97-1), EPA-540-R-97-036, NTIS No. PB97-921199.

U.S. Environmental Protection Agency (EPA), 1996, ***Soil Screening Guidance: Technical Background Document***, Office of Solid Waste and Emergency Response, EPA/540/R-95/128, NTIS No. PB96-963502.

U.S. Environmental Protection Agency (EPA), 1994, ***Exposure Assessment Guidance for RCRA Hazardous Waste Combustion Facilities,*** Office of Solid Waste and Emergency Response, Draft, April, EPA530-R-94-021, including Errata, "Guidance for Performing Screening Level Risk Analyses at Combustion Facilities Burning Hazardous Wastes," October, and "Modification of Screening Guidance Fate and Transport Equations, November.

U.S. Environmental Protection Agency (EPA), 1992, ***Guidance on Risk Characterization for Risk Managers and Risk Assessors,*** Memorandum from F. Henry Habicht II, Deputy Administrator, to Assistant Administrators, Regional Administrators, February.

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

U.S. Environmental Protection Agency (EPA), 1991b, ***Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals***, Interim, Office of Emergency and Remedial Response, December, EPA/540/R-92/003.

U.S. Environmental Protection Agency (EPA), 1990, "National Oil and Hazardous Substances Pollution Contingency Plan," ***Federal Register*** 55(46): 8666-8865.

U.S. Environmental Protection Agency (EPA), 1989a, ***Risk Assessment Guidance for Superfund***, ***Volume I, Human Health Evaluation Manual (Part A)***, Interim Final, Office of Emergency and Remedial Response, Washington, D.C., EPA/540/1-89/002.

U.S. Environmental Protection Agency (EPA), 1989b, ***General Quantitative Risk Assessment Guidelines for Noncancer Health Effects***, prepared by the Office of Health and Environmental Assessment, Cincinnati, Ohio, for the Risk Assessment Forum, ECAO-CIN-538.

U.S. Environmental Protection Agency (EPA), 1986, "Guidelines for Carcinogen Risk Assessment," ***Federal Register***, 51(185): 33992-34003.

U.S. Geological Survey, 1992, ***Hydraulic Properties of Three Types of Glacial Deposits in Ohio***, Water-Resources Investigation Report 92-4135.

# TABLES

## Table 2-1

## Summary of Samples for the Risk Evaluation of TNTB/ WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Location | Sample Number | Sample Purpose | Sample Date | Depth (ft) | Analyses |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| **Surface Soil** | | | | | |
| TNTB-SL-DP01 | DP0100 | REG | 20-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP01 | DP0101 | FD | 20-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP02 | DP0104 | REG | 20-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP03 | DP0106 | REG | 21-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP04 | DP0108 | REG | 24-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP05 | DP0110 | REG | 24-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP06 | DP0112 | REG | 24-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP06 | DP0113 | FD | 24-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP07 | DP0116 | REG | 24-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP08 | DP0118 | REG | 25-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP09 | DP0120 | REG | 25-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP10 | DP0122 | REG | 25-Aug-09 | 0 - 1 | Exp, Gen Chem, Metals, PCB, SVOC |
| **Subsurface Soil** | | | | | |
| TNTB-SL-DP01 | DP0103 | REG | 20-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP02 | DP0105 | REG | 20-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP03 | DP0107 | REG | 21-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP04 | DP0109 | REG | 24-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP05 | DP0111 | REG | 24-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP06 | DP0115 | REG | 24-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP07 | DP0117 | REG | 24-Aug-09 | 4 - 6 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP08 | DP0119 | REG | 25-Aug-09 | 2 - 4 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP09 | DP0121 | REG | 25-Aug-09 | 2 - 4 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP10 | DP0123 | REG | 25-Aug-09 | 2 - 3.5 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP11 | DP0124 | REG | 20-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP12 | DP0125 | REG | 20-Aug-09 | 8 - 10 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP13 | DP0126 | REG | 25-Aug-09 | 2 - 3.5 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP14 | DP0127 | REG | 25-Aug-09 | 2 - 3.5 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-DP14 | DP0130 | FD | 25-Aug-09 | 2 - 3.5 | Exp, Gen Chem, Metals, PCB, SVOC |
| TNTB-SL-TP01 | SL0085 | REG | 28-Jul-09 | 2 - 3 | Exp |

## Table 2-1

## Summary of Samples for the Risk Evaluation of TNTB/ WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Location | Sample Number | Sample Purpose | Sample Date | Depth (ft) | Analyses |
|---|---|---|---|---|---|
| TNTB-SL-TP02 | SL0086 | REG | 28-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP03 | SL0087 | REG | 28-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP04 | SL0088 | REG | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP05 | SL0089 | REG | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP06 | SL0090 | REG | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP07 | SL0091 | REG | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP07 | SL0092 | FD | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP08 | SL0094 | REG | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP09 | SL0095 | REG | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP10 | SL0096 | REG | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP10 | SL0097 | FD | 29-Jul-09 | 2 - 3 | Exp |
| TNTB-SL-TP11 | SL0099 | REG | 29-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP12 | SL0100 | REG | 29-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP13 | SL0101 | REG | 29-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP14 | SL0102 | REG | 29-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP15 | SL0103 | REG | 30-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP16 | SL0104 | REG | 30-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP17 | SL0105 | REG | 30-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP18 | SL0106 | REG | 30-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP19 | SL0107 | REG | 30-Jul-09 | 1.5 - 2 | Exp |
| TNTB-SL-TP20 | SL0108 | REG | 30-Jul-09 | 1.5 - 2 | Exp |

## Table 2-1

## Summary of Samples for the Risk Evaluation of TNTB/ WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Location | Sample Number | Sample Purpose | Sample Date | Depth (ft) | Analyses |
|---|---|---|---|---|---|
| **Groundwater Samples** | | | | | |
| **Overburden Well Samples** | | | | | |
| 1SLB-MW01 | SL3100 | REG | 18-Nov-09 | NA | Gen Chem, Exp, Field Tests, Metals (f & uf), SVOC, VOC |
| 1SLB-MW01 | SL3102 | REG | 4-May-10 | NA | Gen Chem, Exp, Metals (f & uf), SVOC, VOC |
| 1SLB-MW02 | SL3101 | REG | 17-Nov-09 | NA | Gen Chem, Exp, Field Tests, Metals (f & uf), SVOC, VOC |
| 1SLB-MW02 | SL3103 | REG | 4-May-10 | NA | Gen Chem, Exp, Metals (f & uf), SVOC, VOC |
| **Piezometer [a]** | | | | | |
| TNTB-SL-PZ01 | PZ0100 | REG | 25-Aug-09 | NA | Exp, Field Tests |
| TNTB-SL-PZ02 | PZ0101 | REG | 25-Aug-09 | NA | Exp, Field Tests |
| TNTB-SL-PZ03 | PZ0102 | REG | 25-Aug-09 | NA | Exp, Field Tests |
| TNTB-SL-PZ03 | PZ0103 | FD | 25-Aug-09 | NA | Exp |
| TNTB-SL-PZ06 | PZ0107 | REG | 26-Aug-09 | NA | Exp, Field Tests |

[a] These samples are summarized and screened, but no exposure calculations are presented (see Appendix A).

ft bgs - Feet below ground surface.
FD - Field duplicate; averaged with the regular sample at the same location to create one result.
REG - regular sample
f & uf - Metals analysis performed on filtered and unfiltered samples, respectively.
Exp - Explosives
Gen Chem - General Chemistry
Metals - Metals analysis performed on unfiltered samples unless otherwise noted.
PCB - Polychlorinated biphenyls
SVOC - Semivolatile organic compounds
VOC - Volatile organic compounds.

## Table 2-2

## Background Screening Concentrations of Inorganics in Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works
## Sandusky, Ohio

| Chemical Name (mg/kg) | Frequency of Detection | Range of Detected Concentrations | Range of Reporting Limits | Statistical Distribution | Arithmetic Mean | 95% UTL [a] | Background Screening Criterion [b] |
|---|---|---|---|---|---|---|---|
| Aluminum | 12 / 12 | 3520 - 15500 | NA | L | 8.43E+03 | 2.69E+04 | 15500 |
| Antimony | 9 / 25 | 5.9 - 9.3 | 5.4 - 74 | NP | 4.68E+00 | NA | 9.30 |
| Arsenic | 23 / 26 | 2.1 - 36.5 | 1.2 - 3.7 | L | 1.08E+01 | 7.10E+01 | 36.5 |
| Barium | 9 / 12 | 35.6 - 826 | 23.2 - 24.7 | L | 1.16E+02 | 1.30E+03 | 826 |
| Beryllium | 6 / 25 | 0.57 - 1 | 0.57 - 1.2 | L | 5.65E-01 | 1.17E+00 | 1.00 |
| Cadmium | 0 / 25 | NA | 0.57 1.2 | L | 4.49E-01 | NA | NA |
| Calcium | 12 / 12 | 735 - 52300 | NA | L | 1.13E+04 | 2.18E+05 | 52300 |
| Chromium | 25 / 26 | 4.4 - 29 | 12.3 - 12.3 | NP | 1.34E+01 | NA | 29.0 |
| Cobalt | 9 / 12 | 9.6 - 116 | 5.8 - 6.2 | L | 2.26E+01 | 2.48E+02 | 116 |
| Copper | 23 / 26 | 2.3 - 56.2 | 2.2 - 2.9 | L | 1.70E+01 | 1.47E+02 | 56.2 |
| Iron | 12 / 12 | 5880 - 234000 | NA | L | 4.01E+04 | 3.58E+05 | 234000 |
| Lead | 26 / 26 | 1.9 - 48.6 | NA | L | 1.28E+01 | 5.13E+01 | 48.6 |
| Magnesium | 12 / 12 | 629 - 10400 | NA | L | 3.26E+03 | 3.08E+04 | 10400 |
| Manganese | 26 / 26 | 21 - 13300 | NA | L | 7.29E+02 | 3.51E+03 | 3506 |
| Mercury | 2 / 26 | 0.085 - 0.085 | 0.037 - 0.3 | L | 9.06E-02 | 5.60E-01 | 0.085 |
| Nickel | 26 / 26 | 5.4 - 55.1 | NA | L | 2.28E+01 | 7.79E+01 | 55.1 |
| Potassium | 11 / 12 | 579 - 3390 | 617 - 617 | L | 1.24E+03 | 6.08E+03 | 3390 |
| Selenium | 5 / 25 | 0.61 - 2 | 0.57 - 4.9 | NP | 1.55E+00 | NA | 2.00 |
| Silver | 2 / 26 | 1.1 - 11.1 | 1.1 - 1.3 | NP | 1.00E+00 | NA | 11.1 |
| Sodium | 0 / 12 | NA | 566 - 663 | L | 3.03E+02 | NA | NA |
| Thallium | 2 / 25 | 1.2 - 1.3 | 1.1 - 6.1 | NP | 1.91E+00 | NA | 1.30 |
| Vanadium | 11 / 12 | 9 - 40.9 | 61.7 - 61.7 | L | 2.48E+01 | 8.31E+01 | 40.9 |
| Zinc | 26 / 26 | 6.6 - 655 | NA | L | 7.30E+01 | 3.22E+02 | 322 |

L - Lognormal.
mg/kg - Milligrams per kilogram.
NA - Not applicable; not available.
NP - Nonparametric.

[a] 95% UTL - 95% upper tolerance limit calculated as described in Shaw (2005).

[b] The maximum detected concentration is used as the background screening criterion for nonparametric data sets; for normal or lognormal data sets, the 95% UTL or the maximum detected concentration, whichever is less, is used.

Note: Detection limits from sample 6990 were deleted when calculating results for antimony, beryllium, cadmium, selenium, and thallium. The detection limits were elevated by dilution factors which greatly exceed any detected concentration and would bias results unrealistically high.

Source: Shaw Environmental, Inc. (Shaw), 2005, 2004 Data Summary and Evaluation Report, Final, Plum Brook Ordnance Works, Sandusky, Ohio, April.

## Table 2-3

## Background Screening Concentrations of Inorganics in Groundwater TNTB/WWTP1 Sewer Lines Former Plum Brook Ordnance Works, Sandusky, Ohio

| Chemical | Detection Frequency | Percent hits | Range of Values, µg/L: Detected Concentrations Minimum | Detected Concentrations Maximum | Reporting Limits Minimum | Reporting Limits Maximum | Mean µg/L | Standard Deviation | UTL [a] µg/L | BSC [b] µg/L |
|---|---|---|---|---|---|---|---|---|---|---|
| **Metals - Unfiltered** | | | | | | | | | | |
| Aluminum | 11 / 13 | 85 | 3.15E+01 | 3.09E+02 | 2.00E+02 | 2.00E+02 | 1.05E+02 | 6.98E+01 | 4.17E+02 | 309 |
| Arsenic | 4 / 26 | 15 | 3.30E+00 | 7.40E+00 | 1.00E+01 | 1.00E+01 | 4.99E+00 | 6.56E-01 | 7.92E+00 | 7.4 |
| Barium | 28 / 28 | 100 | 2.58E+01 | 1.18E+04 | 2.00E+02 | 2.00E+03 | 1.73E+03 | 3.77E+03 | 1.86E+04 | 11800 |
| Calcium | 28 / 28 | 100 | 1.74E+04 | 3.16E+05 | 5.00E+03 | 5.00E+03 | 1.38E+05 | 8.31E+04 | 5.09E+05 | 316000 |
| Cobalt | 6 / 27 | 22 | 1.00E+00 | 1.21E+01 | 5.00E+01 | 5.00E+01 | 2.05E+01 | 8.75E+00 | 5.96E+01 | 12.1 |
| Copper | 2 / 28 | 7 | 3.30E+00 | 1.98E+01 | 2.50E+01 | 2.50E+01 | 1.24E+01 | 2.26E+00 | 2.25E+01 | 19.8 |
| Iron | 24 / 27 | 89 | 3.82E+01 | 1.55E+03 | 1.00E+02 | 1.00E+02 | 4.15E+02 | 4.87E+02 | 2.59E+03 | 1550 |
| Magnesium | 28 / 28 | 100 | 7.28E+03 | 2.17E+05 | 5.00E+03 | 5.00E+03 | 7.17E+04 | 5.85E+04 | 3.33E+05 | 217000 |
| Manganese | 28 / 28 | 100 | 3.60E+00 | 6.88E+02 | 1.50E+01 | 1.50E+01 | 8.12E+01 | 1.24E+02 | 6.36E+02 | 636 |
| Nickel | 4 / 27 | 15 | 4.80E+00 | 8.60E+00 | 4.00E+01 | 4.00E+01 | 1.81E+01 | 4.67E+00 | 3.90E+01 | 8.6 |
| Potassium | 28 / 28 | 100 | 2.53E+03 | 1.16E+05 | 5.00E+03 | 5.00E+04 | 2.70E+04 | 3.06E+04 | 1.64E+05 | 116000 |
| Sodium | 28 / 28 | 100 | 1.33E+04 | 1.39E+06 | 5.00E+03 | 5.00E+04 | 3.55E+05 | 4.36E+05 | 2.30E+06 | 1390000 |
| Zinc | 14 / 19 | 74 | 8.30E-01 | 5.07E+02 | 2.00E+01 | 2.00E+01 | 5.55E+01 | 1.23E+02 | 6.06E+02 | 507 |

[a] The UTL (upper tolerance limit) is calculated as described in Shaw (2005).

[b] The BSC (background screening concentration) is the calculated UTL or the maximum detected concentration, whichever is less.

µg/L - Micrograms per liter.

BTEX - Benzene, toluene, ethylbenzene, and xylenes.

Source: Shaw Environmental, Inc. (Shaw), 2005, 2004 Data Summary and Evaluation Report, Final, Plum Brook Ordnance Works, Sandusky, Ohio, April.

## Table 2-4

### Statistical Summary and Selection of Chemicals of Potential Concern in Surface Soil
### TNTB/WWTP1 Sewer Lines
### Plum Brook Ordnance Works, Sandusky, Ohio



| Chemical | Detection Frequency | Percent Detection | Range of Values, mg/kg: Detected Concentrations Minimum | VQ | Maximum | VQ | Method Detection Limits Minimum | Maximum | Mean mg/kg | BSC [a] mg/kg | RBSC [b] mg/kg | COPC? [c,d] | 95% UCL [e] mg/kg | EPC [f] mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganics** | | | | | | | | | | | | | | |
| Aluminum | 10 / 10 | 100 | 3.26E+03 | J | 8.19E+03 | J | 5.40E-01 | 2.40E+00 | 5.40E+03 | 1.55E+04 | 7.70E+03 | N (b) | | --- |
| Antimony | 4 / 10 | 40 | 2.70E-01 | J | 4.50E-01 | UJ/J | 2.20E-01 | 1.00E+00 | 3.69E-01 | 9.30E+00 | 3.10E+00 | N (b) | | --- |
| Arsenic | 10 / 10 | 100 | 2.30E+00 | J | 7.90E+00 | J | 1.80E-01 | 8.00E-01 | 4.12E+00 | 3.65E+01 | 3.90E-01 | N (b) | | --- |
| Barium | 10 / 10 | 100 | 1.11E+01 | J | 3.90E+01 | J | 2.50E-01 | 1.10E+00 | 2.42E+01 | 8.26E+02 | 1.50E+03 | N (b) | | --- |
| Beryllium | 10 / 10 | 100 | 2.95E-01 | | 6.80E-01 | | 4.90E-02 | 2.20E-01 | 4.25E-01 | 1.00E+00 | 1.60E+01 | N (b) | | --- |
| Cadmium | 4 / 10 | 40 | 1.10E-01 | J | 1.85E-01 | J/J | 4.90E-02 | 2.65E-01 | 1.33E-01 | NA | 7.00E+00 | N (a) | | --- |
| Calcium | 10 / 10 | 100 | 2.58E+02 | | 2.21E+04 | J/J | 4.90E+00 | 2.20E+01 | 3.72E+03 | 5.23E+04 | Nutrient | N (c) | | --- |
| Chromium | 10 / 10 | 100 | 4.40E+00 | J | 1.10E+01 | J | 7.90E-02 | 3.60E-01 | 7.96E+00 | 2.90E+01 | 2.90E-01 | N (b) | | --- |
| Cobalt | 10 / 10 | 100 | 2.25E+00 | J/J | 6.00E+00 | J | 4.10E-02 | 1.80E-01 | 4.31E+00 | 1.16E+02 | 2.30E+00 | N (b) | | --- |
| Copper | 10 / 10 | 100 | 4.20E+00 | J/J | 3.05E+01 | J | 1.00E-01 | 4.70E-01 | 1.10E+01 | 5.62E+01 | 3.10E+02 | N (b) | | --- |
| Iron | 10 / 10 | 100 | 7.47E+03 | J/J | 1.85E+04 | J | 1.10E+00 | 5.10E+00 | 1.14E+04 | 2.34E+05 | 5.50E+03 | N (b) | | --- |
| Lead | 10 / 10 | 100 | 4.30E+00 | J | 1.33E+01 | J | 9.80E-02 | 4.50E-01 | 8.75E+00 | 4.86E+01 | 4.00E+02 | N (b) | | --- |
| Magnesium | 10 / 10 | 100 | 5.33E+02 | J | 3.02E+03 | J/J | 4.90E+00 | 2.20E+01 | 9.96E+02 | 1.04E+04 | Nutrient | N (c) | | --- |
| Manganese | 10 / 10 | 100 | 2.41E+01 | J | 6.73E+02 | J | 2.50E-02 | 1.30E-01 | 1.72E+02 | 3.51E+03 | 1.80E+02 | N (b) | | --- |
| Mercury | 10 / 10 | 100 | 1.80E-02 | J | 5.00E-02 | J | 1.10E-02 | 1.50E-02 | 3.36E-02 | 8.50E-02 | 2.30E+00 | N (b) | | --- |
| Nickel | 10 / 10 | 100 | 5.05E+00 | | 1.74E+01 | J | 1.10E-01 | 5.10E-01 | 1.09E+01 | 5.51E+01 | 1.50E+02 | N (b) | | --- |
| Potassium | 10 / 10 | 100 | 2.25E+02 | J | 5.49E+02 | J | 4.90E+00 | 2.20E+01 | 3.86E+02 | 3.39E+03 | Nutrient | N (c) | | --- |
| Selenium | 8 / 10 | 80 | 2.55E-01 | UJ/J | 6.80E-01 | J | 1.50E-01 | 6.90E-01 | 4.46E-01 | 2.00E+00 | 3.90E+01 | N (b) | | --- |
| Sodium | 2 / 10 | 20 | 1.51E+02 | J/J | 1.55E+02 | J | 2.50E+01 | 1.10E+02 | 6.07E+01 | NA | Nutrient | N (c) | | --- |
| Thallium | 1 / 10 | 10 | 2.40E-01 | J | 2.40E-01 | J | 1.80E-01 | 3.80E+00 | 1.29E+00 | 1.30E+00 | 7.80E-02 | N (b) | | --- |
| Vanadium | 10 / 10 | 100 | 7.80E+00 | J | 2.42E+01 | J | 3.20E-02 | 1.50E-01 | 1.64E+01 | 4.09E+01 | 3.90E+01 | N (b) | | --- |
| Zinc | 10 / 10 | 100 | 1.41E+01 | J | 6.09E+01 | J/J | 1.90E-01 | 8.50E-01 | 2.94E+01 | 3.22E+02 | 2.30E+03 | N (b) | | --- |
| **Polychlorinated biphenyls (PCB)** | | | | | | | | | | | | | | |
| Aroclor 1260 | 1 / 10 | 10 | 1.94E-02 | J/U | 1.94E-02 | J/U | 9.00E-03 | 1.00E-02 | 1.05E-02 | | 2.20E-01 | N (a) | | --- |
| **Explosives** | | | | | | | | | | | | | | |
| Amino-2,6-dinitrotoluene, 4- | 2 / 10 | 20 | 2.00E-01 | | 2.24E-01 | | 4.00E-02 | 4.80E-02 | 7.62E-02 | | 1.50E+01 | N (a) | | --- |
| Amino-4,6-dinitrotoluene, 2- | 2 / 10 | 20 | 2.22E-01 | | 3.29E-01 | | 8.70E-02 | 1.00E-01 | 1.28E-01 | | 1.50E+01 | N (a) | | --- |
| Dinitrotoluene, 2,4- exp | 1 / 10 | 10 | 5.17E-02 | J | 5.17E-02 | J | 4.80E-02 | 5.70E-02 | 5.05E-02 | | 7.10E-01 | N (a) | | --- |
| Trinitrotoluene, 2,4,6- | 2 / 10 | 20 | 1.79E-01 | | 9.08E-01 | | 4.00E-02 | 4.80E-02 | 1.43E-01 | | 3.60E+00 | N (a) | | --- |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Acenaphthene | 1 / 10 | 10 | 7.85E-02 | J/U | 7.85E-02 | J/U | 3.60E-02 | 4.20E-02 | 4.22E-02 | | 3.40E+02 | N (a) | | --- |
| Acenaphthylene | 1 / 10 | 10 | 5.77E-01 | J/J | 5.77E-01 | J/J | 3.60E-02 | 4.20E-02 | 9.20E-02 | | 3.40E+02 | N (a) | | --- |
| Anthracene | 1 / 10 | 10 | 7.14E-01 | J/J | 7.14E-01 | J/J | 3.60E-02 | 4.20E-02 | 1.06E-01 | | 1.70E+03 | N (a) | | --- |
| Benzo(a)anthracene | 2 / 10 | 20 | 4.72E-02 | J/J | 1.62E+00 | J/J | 3.60E-02 | 4.20E-02 | 1.97E-01 | | 1.50E-01 | Y | 1.12E+00 * | 1.12E+00 |
| Benzo(a)pyrene | 2 / 10 | 20 | 4.76E-02 | J/J | 1.37E+00 | J/J | 3.60E-02 | 4.20E-02 | 1.73E-01 | | 1.50E-02 | Y | 9.55E-01 * | 9.55E-01 |
| Benzo(b)fluoranthene | 3 / 10 | 30 | 5.28E-02 | J | 1.95E+00 | J/J | 3.60E-02 | 4.20E-02 | 2.33E-01 | | 1.50E-01 | Y | 1.20E+00 * | 1.20E+00 |
| Benzo(ghi)perylene | 1 / 10 | 10 | 6.49E-01 | J/J | 6.49E-01 | J/J | 3.60E-02 | 4.20E-02 | 9.92E-02 | | 1.70E+02 g | N (a) | | --- |
| Benzo(k)fluoranthene | 1 / 10 | 10 | 7.27E-01 | J/J | 7.27E-01 | J/J | 3.60E-02 | 4.20E-02 | 1.07E-01 | | 1.50E+00 | N (a) | | --- |
| Carbazole | 1 / 10 | 10 | 3.45E-01 | J/J | 3.45E-01 | J/J | 3.60E-02 | 4.20E-02 | 6.88E-02 | | 2.40E+01 | N (a) | | --- |

## Table 2-4

### Statistical Summary and Selection of Chemicals of Potential Concern in Surface Soil
### TNTB/WWTP1 Sewer Lines
### Plum Brook Ordnance Works, Sandusky, Ohio



| Chemical | Detection Frequency | Percent Detection | Range of Values, mg/kg: Detected Concentrations Minimum | VQ | Maximum | VQ | Method Detection Limits Minimum | Maximum | Mean mg/kg | BSC [a] mg/kg | RBSC [b] mg/kg | COPC? [c,d] | 95% UCL [e] mg/kg | EPC [f] mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 3 / 10 | 30 | 4.03E-02 | J | 1.50E+00 | J/J | 3.60E-02 | 4.20E-02 | 1.85E-01 | | 1.50E+01 | N (a) | | --- |
| Dibenz(a,h)anthracene | 1 / 10 | 10 | 1.69E-01 | J/J | 1.69E-01 | J/J | 3.60E-02 | 4.20E-02 | 5.12E-02 | | 1.50E-02 | Y | 7.75E-02 | 7.75E-02 |
| Dibenzofuran | 1 / 10 | 10 | 2.08E-01 | J/J | 2.08E-01 | J/J | 3.60E-02 | 4.20E-02 | 5.51E-02 | | 7.80E+00 | N (a) | | --- |
| Di-n-butyl phthalate | 1 / 10 | 10 | 1.50E-01 | J | 1.50E-01 | J | 7.20E-02 | 8.40E-02 | 8.33E-02 | | 6.10E+01 | N (a) | | --- |
| Fluoranthene | 4 / 10 | 40 | 4.40E-02 | J | 4.17E+00 | J/J | 3.60E-02 | 5.65E-02 | 4.61E-01 | | 2.30E+02 | N (a) | | --- |
| Fluorene | 1 / 10 | 10 | 4.24E-01 | J/J | 4.24E-01 | J/J | 3.60E-02 | 4.20E-02 | 7.67E-02 | | 2.30E+01 | N (a) | | --- |
| Indeno(1,2,3-cd)pyrene | 2 / 10 | 20 | 3.86E-02 | J/U | 7.76E-01 | J/J | 3.60E-02 | 4.20E-02 | 1.12E-01 | | 1.50E-01 | Y | 5.43E-01 * | 5.43E-01 |
| Methylnaphthalene, 2- | 2 / 10 | 20 | 4.29E-02 | J/U | 6.58E-02 | J | 3.60E-02 | 4.20E-02 | 4.16E-02 | | 3.10E+01 | N (a) | | --- |
| Phenanthrene | 3 / 10 | 30 | 3.92E-02 | J/U | 3.23E+00 | J/J | 3.60E-02 | 5.65E-02 | 3.58E-01 | | 1.70E+02 [g] | N (a) | | --- |
| Pyrene | 3 / 10 | 30 | 5.69E-02 | J | 2.84E+00 | J/J | 3.60E-02 | 4.20E-02 | 3.23E-01 | | 1.70E+02 | N (a) | | --- |

mg/kg - milligrams per kilogram
BSC - Background screening concentration
COPC - Chemical of Potential Concern
J - The compound/analyte was positively identified; the reported result is the estimated concentration of the compound/analyte detected in the sample analyzed.
RBSC - Risk based screening concentration
U - The compound/analyte was not detected.
UJ/J - The compound/analyte was positively identified in one sample and was averaged with a field duplicate that was nondetect with a potential low bias (UJ qualified).
VQ - Validation qualifier.
x/x - A "/" in the VQ column indicates the value is based on the average of duplicate sample results. The VQ of each duplicate is shown, separated by the "/".

[a] IT Corporation (IT), 1998, ***Site Investigation of Acid Areas*** , Plum Brook Ordnance Works, Sandusky, Ohio, August.
[b] Risk-Based Screening Concentrations based on USEPA Regional Screening Level Table (June 2011) residential soil values and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
[c] N = Chemical is not chosen as a COPC:
(a) = maximum detected concentration is less than the RBSC.
(b) = maximum detected concentration is less than the BSC.
(c) = essential nutrient.
[d] Y = Chemical is chosen as COPC.
[e] 95% Upper Confidence Limit (UCL) determined using U.S. Environmental Protection Agency (EPA), 2010, ProUCL Version 4.1 User Guide (Draft) Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations, EPA/600/R-07/041, Office of Research and Development, Washington, DC, and Technology Support Center, Atlanta, GA, May, on line at http://www.epa.gov/osp/hstl/tsc/ProUCL_v4.1_user.pdf. The recommended UCL was used unless the recommendation was the 97.5% or 99% Chebyshev UCL. In those cases, the 95% Chebyshev UCL was used (*). If more than one UCL was recommended, the more conservative UCL was selected.
[f] Concentration used in risk assessment equal to 95% UCL or maximum detected concentration, whichever is lower.
[g] RBSC based on pyrene.

**Table 2-5**

**Statistical Summary and Selection of Chemicals of Potential Concern in Subsurface Soil**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**



| Chemical | Detection Frequency | Percent Detection | Range of Values, mg/kg: Detected Concentrations Minimum | VQ | Maximum | VQ | Method Detection Limits Minimum | Maximum | Mean mg/kg | BSC [a] mg/kg | RBSC [b] mg/kg | COPC? [c,d] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganics** | | | | | | | | | | | | |
| Aluminum | 14 / 14 | 100 | 2.09E+03 | J | 8.57E+03 | J | 5.10E-01 | 1.10E+00 | 5.04E+03 | 1.55E+04 | 7.70E+03 | N (b) |
| Antimony | 8 / 14 | 57 | 3.35E-01 | J/J | 1.90E+00 | J | 2.25E-01 | 5.60E-01 | 5.69E-01 | 9.30E+00 | 3.10E+00 | N (b) |
| Arsenic | 14 / 14 | 100 | 1.10E+00 | | 1.53E+01 | J | 1.80E-01 | 4.50E-01 | 7.14E+00 | 3.65E+01 | 3.90E-01 | N (b) |
| Barium | 14 / 14 | 100 | 6.30E+00 | J | 4.68E+01 | J | 2.30E-01 | 5.00E-01 | 1.93E+01 | 8.26E+02 | 1.50E+03 | N (b) |
| Beryllium | 14 / 14 | 100 | 1.80E-01 | J | 8.10E-01 | | 4.70E-02 | 1.00E-01 | 4.27E-01 | 1.00E+00 | 1.60E+01 | N (b) |
| Cadmium | 3 / 14 | 21 | 8.50E-02 | J | 2.40E-01 | J | 4.70E-02 | 9.70E-01 | 1.53E-01 | NA | 7.00E+00 | N (a) |
| Calcium | 14 / 14 | 100 | 1.26E+02 | J | 4.72E+04 | J | 4.80E+00 | 1.30E+01 | 1.99E+04 | 5.23E+04 | Nutrient | N (c) |
| Chromium | 14 / 14 | 100 | 4.40E+00 | J | 1.38E+01 | J | 7.40E-02 | 2.00E-01 | 8.21E+00 | 2.90E+01 | 2.90E-01 | N (b) |
| Cobalt | 14 / 14 | 100 | 2.30E+00 | J | 1.38E+01 | J | 3.90E-02 | 8.30E-02 | 6.37E+00 | 1.16E+02 | 2.30E+00 | N (b) |
| Copper | 14 / 14 | 100 | 3.70E+00 | | 4.64E+01 | J | 9.80E-02 | 2.10E-01 | 1.80E+01 | 5.62E+01 | 3.10E+02 | N (b) |
| Iron | 14 / 14 | 100 | 4.22E+03 | J | 4.52E+04 | J | 1.10E+00 | 2.30E+00 | 1.60E+04 | 2.34E+05 | 5.50E+03 | N (b) |
| Lead | 14 / 14 | 100 | 2.30E+00 | J | 1.77E+01 | J | 1.00E-01 | 2.50E-01 | 8.72E+00 | 4.86E+01 | 4.00E+02 | N (b) |
| Magnesium | 14 / 14 | 100 | 3.06E+02 | J | 1.33E+04 | J | 4.70E+00 | 1.00E+01 | 5.16E+03 | 1.04E+04 | Nutrient | N (c) |
| Manganese | 14 / 14 | 100 | 1.01E+01 | J | 1.04E+03 | J | 2.45E-02 | 2.50E-01 | 2.20E+02 | 3.51E+03 | 1.80E+02 | N (b) |
| Mercury | 6 / 13 | 46 | 1.80E-02 | J | 7.80E-02 | J | 1.10E-02 | 1.50E-02 | 2.59E-02 | 8.50E-02 | 2.30E+00 | N (b) |
| Nickel | 14 / 14 | 100 | 5.10E+00 | | 3.44E+01 | J | 1.10E-01 | 2.30E-01 | 1.61E+01 | 5.51E+01 | 1.50E+02 | N (b) |
| Potassium | 14 / 14 | 100 | 1.65E+02 | J | 1.98E+03 | J | 4.70E+00 | 1.00E+01 | 8.48E+02 | 3.39E+03 | Nutrient | N (c) |
| Selenium | 10 / 14 | 71 | 2.50E-01 | UJ/J | 2.30E+00 | J | 1.50E-01 | 3.90E-01 | 5.35E-01 | 2.00E+00 | 3.90E+01 | N (a) |
| Silver | 1 / 14 | 7 | 1.10E-01 | J | 1.10E-01 | J | 5.60E-02 | 1.20E-01 | 7.71E-02 | 1.11E+01 | 3.90E+01 | N (b) |
| Sodium | 8 / 14 | 57 | 1.19E+02 | J | 2.54E+02 | J | 2.30E+01 | 5.00E+01 | 1.25E+02 | NA | Nutrient | N (c) |
| Thallium | 2 / 14 | 14 | 4.20E-01 | J | 5.10E-01 | J | 1.60E-01 | 3.40E+00 | 8.97E-01 | 1.30E+00 | 7.80E-02 | N (b) |
| Vanadium | 14 / 14 | 100 | 6.40E+00 | J | 2.75E+01 | J | 3.10E-02 | 6.60E-02 | 1.47E+01 | 4.09E+01 | 3.90E+01 | N (b) |
| Zinc | 14 / 14 | 100 | 9.30E+00 | J | 6.76E+01 | J | 1.80E-01 | 3.80E-01 | 3.40E+01 | 3.22E+02 | 2.30E+03 | N (b) |
| **Explosives** | | | | | | | | | | | | |
| Amino-2,6-dinitrotoluene, 4- | 6 / 34 | 18 | 6.37E-02 | J | 1.20E+00 | | 3.50E-02 | 4.70E-02 | 9.24E-02 | | 1.50E+01 | N (a) |
| Amino-4,6-dinitrotoluene, 2- | 5 / 34 | 15 | 1.45E-01 | J | 1.05E+00 | | 7.60E-02 | 1.00E-01 | 1.31E-01 | | 1.50E+01 | N (a) |
| Dinitrotoluene, 2,4- | 3 / 34 | 9 | 8.27E-02 | J | 1.73E-01 | | 4.20E-02 | 5.60E-02 | 5.45E-02 | | 7.20E-01 | N (a) |
| Dinitrotoluene, 2,6- | 2 / 34 | 6 | 9.80E-02 | J | 1.01E-01 | J | 3.70E-02 | 4.90E-02 | 4.63E-02 | | 7.20E-01 | N (a) |
| Trinitrobenzene, 1,3,5- | 3 / 34 | 9 | 5.34E-02 | J | 1.01E-01 | J | 3.50E-02 | 4.70E-02 | 4.36E-02 | | 2.20E+02 | N (a) |
| Trinitrotoluene, 2,4,6- | 6 / 34 | 18 | 6.40E-02 | J | 3.65E+00 | | 3.50E-02 | 1.50E-01 | 1.86E-01 | | 3.60E+00 | Y |

## Table 2-5

## Statistical Summary and Selection of Chemicals of Potential Concern in Subsurface Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Chemical | Detection Frequency | Percent Detection | Range of Values, mg/kg: Detected Concentrations Minimum | VQ | Maximum | VQ | Method Detection Limits Minimum | Maximum | Mean mg/kg | BSC [a] mg/kg | RBSC [b] mg/kg | | COPC? [c,d] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | |
| Acenaphthylene | 1 / 14 | 7 | 4.91E-02 | J | 4.91E-02 | J | 3.60E-02 | 4.20E-02 | 3.96E-02 | | 3.40E+02 | | N (a) |
| Anthracene | 1 / 14 | 7 | 4.40E-02 | J | 4.40E-02 | J | 3.60E-02 | 4.20E-02 | 3.93E-02 | | 1.70E+03 | | N (a) |
| Benzo(a)anthracene | 2 / 14 | 14 | 4.13E-02 | J | 1.51E-01 | J | 3.60E-02 | 4.20E-02 | 4.71E-02 | | 1.50E-01 | | Y |
| Benzo(a)pyrene | 1 / 14 | 7 | 1.30E-01 | J | 1.30E-01 | J | 3.60E-02 | 4.20E-02 | 4.54E-02 | | 1.50E-02 | | Y |
| Benzo(b)fluoranthene | 2 / 14 | 14 | 4.50E-02 | J | 1.83E-01 | J | 3.60E-02 | 4.20E-02 | 4.96E-02 | | 1.50E-01 | | Y |
| Benzo(ghi)perylene | 1 / 14 | 7 | 5.68E-02 | J | 5.68E-02 | J | 3.60E-02 | 4.20E-02 | 4.02E-02 | | 1.70E+02 | e | N (a) |
| Benzo(k)fluoranthene | 1 / 14 | 7 | 7.00E-02 | J | 7.00E-02 | J | 3.60E-02 | 4.20E-02 | 4.11E-02 | | 1.50E+00 | | N (a) |
| Chrysene | 1 / 14 | 7 | 1.32E-01 | J | 1.32E-01 | J | 3.60E-02 | 4.20E-02 | 4.55E-02 | | 1.50E+01 | | N (a) |
| Fluoranthene | 2 / 14 | 14 | 1.17E-01 | J | 3.51E-01 | | 3.60E-02 | 4.20E-02 | 6.68E-02 | | 2.30E+02 | | N (a) |
| Indeno(1,2,3-cd)pyrene | 1 / 14 | 7 | 6.68E-02 | J | 6.68E-02 | J | 3.60E-02 | 4.20E-02 | 4.09E-02 | | 1.50E-01 | | N (a) |
| Methylnaphthalene, 2- | 1 / 14 | 7 | 2.59E-01 | | 2.59E-01 | | 3.60E-02 | 4.20E-02 | 5.48E-02 | | 3.10E+01 | | N (a) |
| Naphthalene | 1 / 14 | 7 | 7.65E-02 | J | 7.65E-02 | J | 3.60E-02 | 4.20E-02 | 4.17E-02 | | 3.60E+00 | | N (a) |
| Phenanthrene | 4 / 14 | 29 | 4.24E-02 | J | 1.32E-01 | J | 3.60E-02 | 4.20E-02 | 5.68E-02 | | 1.70E+02 | e | N (a) |
| Pyrene | 2 / 14 | 14 | 7.57E-02 | J | 2.57E-01 | | 3.60E-02 | 4.20E-02 | 5.71E-02 | | 1.70E+02 | | N (a) |

mg/kg - milligrams per kilogram
BSC - Background screening concentration
COPC - Chemical of Potential Concern
J - The compound/analyte was positively identified; the reported result is the estimated concentration of the compound/analyte detected in the sample analyzed.
RBSC - Risk based screening concentration
UJ/J - The compound/analyte was positively identified in one sample and was averaged with a field duplicate that was nondetect with a potential low bias (UJ qualified).
VQ - Validation qualifier.
x/x - A "/" in the VQ column indicates the value is based on the average of duplicate sample results. The VQ of each duplicate is shown, separated by the "/".

[a] IT Corporation (IT), 1998, ***Site Investigation of Acid Areas*** , Plum Brook Ordnance Works, Sandusky, Ohio, August.
[b] Risk-Based Screening Concentrations based on USEPA Regional Screening Level Table (June 2011) residential soil values and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
[c] N = Chemical is not chosen as a COPC:
(a) = maximum detected concentration is less than the RBSC.
(b) = maximum detected concentration is less than the BSC.
(c) = essential nutrient.
[d] Y = Chemical is chosen as COPC.
[e] RBSC based on pyrene.

## Table 2-6

## Statistical Summary and Selection of Chemicals of Potential Concern in Total Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| | | | Range of Values, mg/kg | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Detection | Percent | Detected Concentrations | | | | Method Detection Limits | | Mean | BSC [a] | RBSC [b] | | 95% UCL [e] | EPC [f] |
| Chemical | Frequency | Detection | Minimum | VQ | Maximum | VQ | Minimum | Maximum | mg/kg | mg/kg | mg/kg | COPC? [c,d] | mg/kg | mg/kg |
| **Inorganics** | | | | | | | | | | | | | | |
| Aluminum | 24 / 24 | 100 | 2.09E+03 | J | 8.57E+03 | J | 5.10E-01 | 2.40E+00 | 5.19E+03 | 1.55E+04 | 7.70E+03 | N (b) | | --- |
| Antimony | 12 / 24 | 50 | 2.70E-01 | J | 1.90E+00 | J | 2.20E-01 | 1.00E+00 | 4.86E-01 | 9.30E+00 | 3.10E+00 | N (b) | | --- |
| Arsenic | 24 / 24 | 100 | 1.10E+00 | | 1.53E+01 | J | 1.80E-01 | 8.00E-01 | 5.88E+00 | 3.65E+01 | 3.90E-01 | N (b) | | --- |
| Barium | 24 / 24 | 100 | 6.30E+00 | J | 4.68E+01 | J | 2.30E-01 | 1.10E+00 | 2.14E+01 | 8.26E+02 | 1.50E+03 | N (b) | | --- |
| Beryllium | 24 / 24 | 100 | 1.80E-01 | J | 8.10E-01 | | 4.70E-02 | 2.20E-01 | 4.26E-01 | 1.00E+00 | 1.60E+01 | N (b) | | --- |
| Cadmium | 7 / 24 | 29 | 8.50E-02 | J | 2.40E-01 | J | 4.70E-02 | 9.70E-01 | 1.44E-01 | NA | 7.00E+00 | N (a) | | --- |
| Calcium | 24 / 24 | 100 | 1.26E+02 | J | 4.72E+04 | J | 4.80E+00 | 2.20E+01 | 1.31E+04 | 5.23E+04 | Nutrient | N (c) | | --- |
| Chromium | 24 / 24 | 100 | 4.40E+00 | J | 1.38E+01 | J | 7.40E-02 | 3.60E-01 | 8.11E+00 | 2.90E+01 | 2.90E-01 | N (b) | | --- |
| Cobalt | 24 / 24 | 100 | 2.25E+00 | J/J | 1.38E+01 | J | 3.90E-02 | 1.80E-01 | 5.51E+00 | 1.16E+02 | 2.30E+00 | N (b) | | --- |
| Copper | 24 / 24 | 100 | 3.70E+00 | | 4.64E+01 | J | 9.80E-02 | 4.70E-01 | 1.51E+01 | 5.62E+01 | 3.10E+02 | N (b) | | --- |
| Iron | 24 / 24 | 100 | 4.22E+03 | J | 4.52E+04 | J | 1.10E+00 | 5.10E+00 | 1.41E+04 | 2.34E+05 | 5.50E+03 | N (b) | | --- |
| Lead | 24 / 24 | 100 | 2.30E+00 | J | 1.77E+01 | J | 9.80E-02 | 4.50E-01 | 8.73E+00 | 4.86E+01 | 4.00E+02 | N (b) | | --- |
| Magnesium | 24 / 24 | 100 | 3.06E+02 | J | 1.33E+04 | J | 4.70E+00 | 2.20E+01 | 3.42E+03 | 1.04E+04 | Nutrient | N (c) | | --- |
| Manganese | 24 / 24 | 100 | 1.01E+01 | J | 1.04E+03 | J | 2.45E-02 | 2.50E-01 | 2.00E+02 | 3.51E+03 | 1.80E+02 | N (b) | | --- |
| Mercury | 16 / 23 | 70 | 1.80E-02 | J | 7.80E-02 | J | 1.10E-02 | 1.50E-02 | 2.92E-02 | 8.50E-02 | 2.30E+00 | N (b) | | --- |
| Nickel | 24 / 24 | 100 | 5.05E+00 | | 3.44E+01 | J | 1.10E-01 | 5.10E-01 | 1.39E+01 | 5.51E+01 | 1.50E+02 | N (b) | | --- |
| Potassium | 24 / 24 | 100 | 1.65E+02 | J | 1.98E+03 | J | 4.70E+00 | 2.20E+01 | 6.55E+02 | 3.39E+03 | Nutrient | N (c) | | --- |
| Selenium | 18 / 24 | 75 | 2.50E-01 | UJ/J | 2.30E+00 | J | 1.50E-01 | 6.90E-01 | 4.98E-01 | 2.00E+00 | 3.90E+01 | N (a) | | --- |
| Silver | 1 / 24 | 4 | 1.10E-01 | J | 1.10E-01 | J | 5.60E-02 | 2.70E-01 | 8.07E-02 | 1.11E+01 | 3.90E+01 | N (b) | | |
| Sodium | 10 / 24 | 42 | 1.19E+02 | J | 2.54E+02 | J | 2.30E+01 | 1.10E+02 | 9.80E+01 | NA | Nutrient | N (c) | | --- |
| Thallium | 3 / 24 | 13 | 2.40E-01 | J | 5.10E-01 | J | 1.60E-01 | 3.80E+00 | 1.06E+00 | 1.30E+00 | 7.80E-02 | N (b) | | --- |
| Vanadium | 24 / 24 | 100 | 6.40E+00 | J | 2.75E+01 | J | 3.10E-02 | 1.50E-01 | 1.54E+01 | 4.09E+01 | 3.90E+01 | N (b) | | --- |
| Zinc | 24 / 24 | 100 | 9.30E+00 | J | 6.76E+01 | J | 1.80E-01 | 8.50E-01 | 3.21E+01 | 3.22E+02 | 2.30E+03 | N (b) | | --- |
| **Polychlorinated biphenyls (PCB)** | | | | | | | | | | | | | | |
| Aroclor 1260 | 1 / 24 | 4 | 1.94E-02 | J/U | 1.94E-02 | J/U | 8.80E-03 | 1.00E-02 | 1.00E-02 | | 2.20E-01 | N (a) | | --- |
| **Explosives** | | | | | | | | | | | | | | |
| Amino-2,6-dinitrotoluene, 4- | 8 / 44 | 18 | 6.37E-02 | J | 1.20E+00 | | 3.50E-02 | 4.80E-02 | 8.87E-02 | | 1.50E+01 | N (a) | | --- |
| Amino-4,6-dinitrotoluene, 2- | 7 / 44 | 16 | 1.45E-01 | J | 1.05E+00 | | 7.60E-02 | 1.00E-01 | 1.31E-01 | | 1.50E+01 | N (a) | | --- |
| Dinitrotoluene, 2,4- exp | 4 / 44 | 9 | 5.17E-02 | J | 1.73E-01 | | 4.20E-02 | 5.70E-02 | 5.36E-02 | | 7.20E-01 | N (a) | | --- |
| Dinitrotoluene, 2,6- exp | 2 / 44 | 5 | 9.80E-02 | J | 1.01E-01 | J | 3.70E-02 | 5.00E-02 | 4.59E-02 | | 7.20E-01 | N (a) | | |
| Trinitrobenzene, 1,3,5- | 3 / 44 | 7 | 5.34E-02 | J | 1.01E-01 | J | 3.50E-02 | 4.80E-02 | 4.33E-02 | | 2.20E+02 | N (a) | | |
| Trinitrotoluene, 2,4,6- | 8 / 44 | 18 | 6.40E-02 | J | 3.65E+00 | | 3.50E-02 | 1.50E-01 | 1.76E-01 | | 3.60E+00 | Y | 3.44E-01 | 3.44E-01 |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Acenaphthene | 1 / 24 | 4 | 7.85E-02 | J/U | 7.85E-02 | J/U | 3.60E-02 | 4.20E-02 | 4.03E-02 | | 3.40E+02 | N (a) | | --- |
| Acenaphthylene | 2 / 24 | 8 | 4.91E-02 | J | 5.77E-01 | J/J | 3.60E-02 | 4.20E-02 | 6.14E-02 | | 3.40E+02 | N (a) | | --- |
| Anthracene | 2 / 24 | 8 | 4.40E-02 | J | 7.14E-01 | J/J | 3.60E-02 | 4.20E-02 | 6.69E-02 | | 1.70E+03 | N (a) | | --- |
| Benzo(a)anthracene | 4 / 24 | 17 | 4.13E-02 | J | 1.62E+00 | J/J | 3.60E-02 | 4.20E-02 | 1.10E-01 | | 1.50E-01 | Y | 2.39E-01 | 2.39E-01 |
| Benzo(a)pyrene | 3 / 24 | 13 | 4.76E-02 | J/J | 1.37E+00 | J/J | 3.60E-02 | 4.20E-02 | 9.84E-02 | | 1.50E-02 | Y | 2.20E-01 | 2.20E-01 |
| Benzo(b)fluoranthene | 5 / 24 | 21 | 4.50E-02 | J | 1.95E+00 | J/J | 3.60E-02 | 4.20E-02 | 1.26E-01 | | 1.50E-01 | Y | 2.80E-01 | 2.80E-01 |

## Table 2-6

### Statistical Summary and Selection of Chemicals of Potential Concern in Total Soil
### TNTB/WWTP1 Sewer Lines
### Plum Brook Ordnance Works, Sandusky, Ohio



| Chemical | Detection Frequency | Percent Detection | Range of Values, mg/kg: Detected Concentrations Minimum | VQ | Maximum | VQ | Method Detection Limits Minimum | Maximum | Mean mg/kg | BSC [a] mg/kg | RBSC [b] mg/kg | COPC? [c,d] | 95% UCL [e] mg/kg | EPC [f] mg/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(ghi)perylene | 2 / 24 | 8 | 5.68E-02 | J | 6.49E-01 | J/J | 3.60E-02 | 4.20E-02 | 6.47E-02 | | 1.70E+02 [g] | N (a) | | --- |
| Benzo(k)fluoranthene | 2 / 24 | 8 | 7.00E-02 | J | 7.27E-01 | J/J | 3.60E-02 | 4.20E-02 | 6.85E-02 | | 1.50E+00 | N (a) | | --- |
| Carbazole | 1 / 24 | 4 | 3.45E-01 | J/J | 3.45E-01 | J/J | 3.60E-02 | 4.20E-02 | 5.14E-02 | | 2.40E+01 | N (a) | | --- |
| Chrysene | 4 / 24 | 17 | 4.03E-02 | J | 1.50E+00 | J/J | 3.60E-02 | 4.20E-02 | 1.04E-01 | | 1.50E+01 | N (a) | | --- |
| Dibenz(a,h)anthracene | 1 / 24 | 4 | 1.69E-01 | J/J | 1.69E-01 | J/J | 3.60E-02 | 4.20E-02 | 4.41E-02 | | 1.50E-02 | Y | 5.43E-02 | 5.43E-02 |
| Dibenzofuran | 1 / 24 | 4 | 2.08E-01 | J/J | 2.08E-01 | J/J | 3.60E-02 | 4.20E-02 | 4.57E-02 | | 7.80E+00 | N (a) | | --- |
| Di-n-butyl phthalate | 1 / 24 | 4 | 1.50E-01 | J | 1.50E-01 | J | 7.20E-02 | 8.50E-02 | 8.03E-02 | | 6.10E+01 | N (a) | | --- |
| Fluoranthene | 6 / 24 | 25 | 4.40E-02 | J | 4.17E+00 | J/J | 3.60E-02 | 5.65E-02 | 2.31E-01 | | 2.30E+02 | N (a) | | --- |
| Fluorene | 1 / 24 | 4 | 4.24E-01 | JJ | 4.24E-01 | J/J | 3.60E-02 | 4.20E-02 | 5.47E-02 | | 2.30E+01 | N (a) | | --- |
| Indeno(1,2,3-cd)pyrene | 3 / 24 | 13 | 3.86E-02 | J/U | 7.76E-01 | J/J | 3.60E-02 | 4.20E-02 | 7.05E-02 | | 1.50E-01 | Y | 1.34E-01 | 1.34E-01 |
| Methylnaphthalene, 2- | 3 / 24 | 13 | 4.29E-02 | J/U | 2.59E-01 | | 3.60E-02 | 4.20E-02 | 4.93E-02 | | 3.10E+01 | N (a) | | --- |
| Naphthalene | 1 / 24 | 4 | 7.65E-02 | J | 7.65E-02 | J | 3.60E-02 | 4.20E-02 | 4.02E-02 | | 3.60E+00 | N (a) | | |
| Phenanthrene | 7 / 24 | 29 | 3.92E-02 | J/U | 3.23E+00 | J/J | 3.60E-02 | 5.65E-02 | 1.82E-01 | | 1.70E+02 [g] | N (a) | | --- |
| Pyrene | 5 / 24 | 21 | 5.69E-02 | J | 2.84E+00 | J/J | 3.60E-02 | 4.20E-02 | 1.68E-01 | | 1.70E+02 | N (a) | | --- |

mg/kg - milligrams per kilogram
BSC - Background screening concentration
COPC - Chemical of Potential Concern
J - The compound/analyte was positively identified; the reported result is the estimated concentration of the compound/analyte detected in the sample analyzed.
RBSC - Risk based screening concentration
U - The compound/analyte was not detected.
UJ/J - The compound/analyte was positively identified in one sample averaged with a field duplicate that was nondetect with a potential low bias (UJ qualified).
VQ - Validation qualifier.
x/x - A "/" in the VQ column indicates the value is based on the average of duplicate sample results. The VQ of each duplicate is shown, separated by the "/".

[a] IT Corporation (IT), 1998, ***Site Investigation of Acid Areas*** , Plum Brook Ordnance Works, Sandusky, Ohio, August.
[b] Risk-Based Screening Concentrations based on USEPA Regional Screening Level Table (June 2011) residential soil values and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
[c] N = Chemical is not chosen as a COPC:
(a) = maximum detected concentration is less than the RBSC.
(b) = maximum detected concentration is less than the BSC.
(c) = essential nutrient.
[d] Y = Chemical is chosen as COPC.
[e] 95% Upper Confidence Limit (UCL) determined using U.S. Environmental Protection Agency (EPA), 2010, ProUCL Version 4.1 User Guide (Draft) Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations, EPA/600/R-07/041, Office of Research and Development, Washington, DC, and Technology Support Center, Atlanta, GA, May, on line at http://www.epa.gov/osp/hstl/tsc/ProUCL_v4.1_user.pdf. The recommended UCL was used unless the recommendation was the 97.5% or 99% Chebyshev UCL. In those cases, the 95% Chebyshev UCL was used (*). If more than one UCL was recommended, the more conservative UCL was selected.
[f] Concentration used in risk assessment equal to 95% UCL or maximum detected concentration, whichever is lower.
[g] RBSC based on pyrene.

**Table 2-7**

**Statistical Summary and Selection of Chemicals of Potential Concern in Overburden Monitoring Well Groundwater**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| Chemical | Detection Frequency | Percent hits | Range of values, µg/L: Detected Concentrations Minimum | VQ | Maximum | VQ | Method Detection Limits Minimum | Maximum | Arithmetic Mean µg/L | RBSC [a] µg/L | COPC? [b,c] | EPC [d] µg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganics-Unfiltered** | | | | | | | | | | | | |
| Aluminum | 2 / 4 | 50 | 2.46E+01 | J | 6.98E+01 | J | 1.10E+01 | 2.00E+01 | 3.36E+01 | 3700 | N (a) | --- |
| Barium | 4 / 4 | 100 | 2.23E+01 | J | 9.82E+01 | J | 5.00E+00 | 5.00E+00 | 4.17E+01 | 730 | N (a) | --- |
| Calcium | 4 / 4 | 100 | 5.82E+04 | | 9.41E+04 | | 1.00E+02 | 1.00E+02 | 7.61E+04 | Nutrient | N (b) | --- |
| Iron | 1 / 4 | 25 | 4.14E+01 | J | 4.14E+01 | J | 2.30E+01 | 3.00E+01 | 2.94E+01 | 2600 | N (a) | --- |
| Magnesium | 4 / 4 | 100 | 1.07E+04 | | 1.80E+04 | | 1.00E+02 | 1.00E+02 | 1.34E+04 | Nutrient | N (b) | --- |
| Manganese | 3 / 4 | 75 | 6.20E+00 | J | 1.63E+02 | | 5.00E-01 | 1.00E+00 | 4.79E+01 | 88 | Y | 1.63E+02 |
| Nickel | 1 / 4 | 25 | 2.40E+00 | J | 2.40E+00 | J | 1.00E+00 | 2.30E+00 | 1.68E+00 | 73 | N (a) | --- |
| Potassium | 4 / 4 | 100 | 8.55E+02 | J | 1.11E+04 | | 1.00E+02 | 5.00E+02 | 3.68E+03 | Nutrient | N (b) | --- |
| Selenium | 3 / 4 | 75 | 2.90E+00 | J | 4.90E+00 | J | 2.00E+00 | 3.10E+00 | 3.35E+00 | 18 | N (a) | --- |
| Sodium | 3 / 4 | 75 | 3.16E+03 | J | 1.83E+04 | J | 5.00E+02 | 7.50E+02 | 6.83E+03 | Nutrient | N (b) | --- |
| **Nitroaromatics** | | | | | | | | | | | | |
| Nitrotoluene, 2- | 1 / 4 | 25 | 1.80E-01 | J | 1.80E-01 | J | 6.20E-02 | 8.60E-02 | 9.78E-02 | 0.31 | N (a) | --- |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | |
| Diethyl phthalate | 1 / 4 | 25 | 5.30E+00 | | 5.30E+00 | | 1.90E+00 | 2.00E+00 | 2.78E+00 | 2900 | N (a) | --- |
| **General Chemistry** | | | | | | | | | | | | |
| Chloride | 4 / 4 | 100 | 4.40E+03 | J | 1.81E+04 | | 1.00E+03 | 1.00E+03 | 8.65E+03 | Nutrient | N (b) | --- |
| Nitrate-Nitrite | 3 / 4 | 75 | 1.40E+01 | J | 2.30E+02 | | 3.00E+01 | 1.00E+02 | 9.70E+01 | 1000 [f] | N (a) | --- |
| Sulfate | 4 / 4 | 100 | 1.89E+04 | J | 6.14E+04 | | 1.00E+03 | 1.00E+03 | 4.07E+04 | 250,000 [g] | N (a) | --- |

RBSC - Risk based screening concentration
COPC - Chemical of Potential Concern
µg/L - micrograms per liter
VQ - Validation qualifier
J - The compound/analyte was positively identified; the reported result is the estimated concentration of the compound/analyte detected in the sample analyzed.

[a] Risk-Based Screening Concentrations based on USEPA Regional Screening Level Table (June 2011) tap water values and are based on a risk level of 1.0E-06 and a hazard index of 0.1.

[b] N = Chemical is not chosen as a COPC:
(a) = maximum detected concentration is less than the RBSC.
(b) = essential nutrient.

[c] Y = Chemical is chosen as COPC.

[d] Concentration used in risk assessment equal to the maximum detected concentration.

[e] Some samples were excluded from the dataset because of blank contamination.

[f] Because no Regional Screening Level exists for nitrate-nitrite, 0.1 X the nitrate-nitrite MCL (10 mg/L) (EPA, 2011) is used for screening.

[g] Screening level based on the Secondary Drinking Water Regulation (EPA, 2011).

Reference: U.S. Environmental Protecton Agency (EPA), 2011, ***2011 Edition of the Drinking Water Standards and Health Advisorie*** s, Office of Water, Washington, D.C., January, EPA-822-R-11-002).

## Table 3-1

## Receptor/Exposure Scenarios
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Source Medium | Model | Exposure Medium | Exposure Route |
|---|---|---|---|
| **Groundskeeper – Current** | | | |
| Surface Soil | None | Soil | Incidental Ingestion |
| | | | Dermal Contact |
| | Dust Emissions Based on Activity | Ambient Air | Inhalation |
| | Volatilization from Soil | Ambient Air | Inhalation[a] |
| Subsurface Soil | Not Quantified[b] | | |
| Groundwater | Not Quantified[c] | | |
| **Groundskeeper – Future** | | | |
| Total Soil[d] | None | Soil | Incidental Ingestion |
| | | | Dermal Contact |
| | Dust Emissions Based on Activity | Ambient Air | Inhalation |
| | Volatilization from Soil | Ambient Air | Inhalation |
| Groundwater | None | Tap Water | Ingestion |
| | | | Dermal Contact |
| **Indoor Worker – Future[c]** | | | |
| Surface Soil | None | Soil | Incidental Ingestion |
| | | | Dermal Contact[a] |
| | Dust Emissions; Volatilization | Indoor Air | Inhalation[a] |
| Subsurface Soil | Volatilization from Soil | Indoor Air | Inhalation |
| Groundwater | None | Tap Water | Ingestion |
| | | | Dermal Contact |
| **Construction Worker – Current/Future** | | | |
| Total Soil | None | Soil | Incidental Ingestion |
| | | | Dermal Contact |
| | Dust Emissions Based on Activity | Ambient Air | Inhalation |
| | Volatilization from Soil | Ambient Air | Inhalation |
| Groundwater | Not Quantified[b] | | |

## Table 3-1

## Receptor/Exposure Scenarios
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Source Medium | Model | Exposure Medium | Exposure Route |
|---|---|---|---|
| **On-Site Resident – Future** | | | |
| Total Soil[d] | None | Soil | Incidental Ingestion |
| | | | Dermal Contact |
| | Dust Emissions Based on Wind Erosion | Ambient Air | Inhalation |
| | Volatilization from Soil | Ambient Air | Inhalation |
| Subsurface Soil | Volatilization from Soil | Indoor Air | Inhalation |
| Groundwater | None | Tap Water | Ingestion |
| | | | Dermal Contact |
| | Volatilization from Water | Indoor Air | Inhalation |
| **Hunter – Current/Future** | | | |
| Surface Soil | None | Soil | Incidental Ingestion |
| | | | Dermal Contact |
| | Dust Emissions, Volatilization | Ambient Air | Inhalation[a] |
| | Biouptake | Venison | Venison Consumption |
| Subsurface Soil | Not Quantified[e] | | |
| **Hunter's Child – Current/Future** | | | |
| Surface Soil | Not Quantified[e] | | |
| | Not Quantified[e] | | |
| | Biouptake | Venison | Venison Consumption |
| Subsurface Soil | Not Quantified[e] | | |

[a] Although theoretically complete, this pathway is not quantified as explained in text.

[b] Although contact with this medium is possible, exposure would be sporadic, rather than continuous or predictable. Such exposures do not lend themselves to evaluation under the chronic toxicity paradigm used in a baseline risk assessment.

[c] Even though the mixing of surface and subsurface soil described in footnote "d" might otherwise be applicable, this receptor was selected primarily to evaluate exposure to indoor air resulting from subsurface soil contamination. Surface soil was used for direct contact exposure to avoid potential "double counting" of contaminants in subsurface soil (refer to Section 3.1.3.2 of text).

[d] Total soil represents a mixture of surface and subsurface soil. This is assumed for future scenarios where excavation and regrading is assumed to take place.

[e] There is no plausible pathway for exposure.

## Table 3-2

## Variables Used to Estimate Potential Chemical Intakes and Contact Rates for Receptors
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Pathway Variable | Grounds-keeper | Construction Worker | On-Site Resident | Indoor Worker | Hunter and Hunter's Child |
|---|---|---|---|---|---|
| **General Variables Used in All Intake Models** | | | | | |
| Body weight (BW), kg | 70[a] | 70[a] | Child: 15[a]<br>Adult: 70[a] | 70[a] | Child: 15[a]<br>Adult: 70[a] |
| Averaging time, noncancer (AT), days[b] | 9125 | 183 | Child: 2190<br>Adult: 8760 | 9125 | Child: 2190<br>Adult: 10950 |
| Averaging time, cancer (AT), days[b] | 25550 | 25550 | 25550 | 25550 | 25550 |
| **Inhalation of VOCs and Resuspended Dust from Surface Soil, Total Soil or Subsurface Soil** | | | | | |
| Fraction exposed to contaminated medium ($FI_a$), unitless | 1[c] | 1[c] | 1[c] | NA | NA |
| Inhalation rate ($IR_a$), $m^3$/day | 20[d] | 20[d] | Child: 10[e]<br>Adult: 20[d] | NA | NA |
| Exposure frequency (EF), days/year | 250[d] | 250[f] | 350[a] | NA | NA |
| Exposure duration (ED), years | 25[a] | 0.5[f] | Child: 6[a]<br>Adult: 24[a] | NA | NA |
| **Inhalation of VOCs in Indoor Air from Subsurface Soil** | | | | | |
| Fraction exposed to contaminated medium ($FI_a$), unitless | NA | NA | 1[c] | 1[c] | NA |
| Inhalation rate ($IR_a$), $m^3$/day | NA | NA | Child: 10[e]<br>Adult: 20[d] | 20[d] | NA |
| Exposure frequency (EF), days/year | NA | NA | 350[a] | 250[a] | NA |
| Exposure duration (ED), years | NA | NA | Child: 6[a]<br>Adult: 24[a] | 25[a] | NA |
| **Incidental Ingestion of Soil** | | | | | |
| Fraction exposed to contaminated medium ($FI_{so}$), unitless | 1[c] | 1[c] | 0.9[g] | 1[c] | 1[c] |

## Table 3-2

## Variables Used to Estimate Potential Chemical Intakes and Contact Rates for Receptors
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Pathway Variable | Grounds-keeper | Construction Worker | On-Site Resident | Indoor Worker | Hunter and Hunter's Child |
|---|---|---|---|---|---|
| Soil incidental ingestion rate ($IR_{so}$), mg/day | 100[a] | 330[a] | Child: 200[a]<br>Adult: 100[a] | 50[a] | Child: NA<br>Adult: 100[a] |
| Exposure frequency (EF), days/year | 250[d] | 250[a] | 350[a] | 250[a] | 14[d] |
| Exposure duration (ED), years | 25[a] | 0.5[f] | Child: 6[a]<br>Adult: 24[a] | 25[a] | 30[a] |
| **Dermal Contact with Soil** | | | | | |
| Fraction exposed to contaminated medium ($FI_{so}$), unitless | 1[c] | 1[c] | 1[c] | NA | 1[c] |
| Body surface area exposed to soil ($SA_{so}$), $cm^2$ | 3,300[h] | 3,300[h] | Child: 2,800[h]<br>Adult: 5,700[h] | NA | Child: NA<br>Adult: 3,300[h,i] |
| Soil-to-skin adherence factor ($AF_{so}$), $mg/cm^2$ | 0.2[h] | 0.3[h] | Child: 0.2[h]<br>Adult: 0.07[h] | NA | 0.2[h,i] |
| Dermal absorption factor (ABS), unitless | csv | csv | csv | NA | csv |
| Exposure frequency (EF), days/year | 250[d] | 250[a] | 350[a] | NA | 14[i] |
| Exposure duration (ED), years | 25[a] | 0.5[f] | Child: 6[a]<br>Adult: 24[a] | NA | 30[a] |
| **Inhalation of VOCs from Groundwater** | | | | | |
| Exposure time (ET), hours/day | NA | NA | 24[j] | NA | NA |
| Inhalation rate ($IR_a$), $m^3$/hour | NA | NA | Child: 0.416[e]<br>Adult: 0.833[e] | NA | NA |
| Exposure frequency (EF), days/year | 250[d] | NA | 350[a] | 250[a] | NA |

## Table 3-2

## Variables Used to Estimate Potential Chemical Intakes and Contact Rates for Receptors
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Pathway Variable | Grounds-keeper | Construction Worker | On-Site Resident | Indoor Worker | Hunter and Hunter's Child |
|---|---|---|---|---|---|
| **Drinking Water Ingestion of Groundwater** | | | | | |
| Fraction exposed to contaminated medium ($Fl_{gw}$), unitless | 1[c] | NA | 1[c] | 1[c] | NA |
| Drinking water ingestion rate ($IR_{gw}$), L/day | 1[d] | NA | Child: 1[e]<br>Adult: 2[d] | 1[d] | NA |
| Exposure frequency (EF), days/year | 250[d] | NA | 350[a] | 250[a] | NA |
| **Dermal Contact with Groundwater** | | | | | |
| Fraction exposed to contaminated medium ($Fl_{gw}$), unitless | 1[c] | NA | 1[c] | 1[c] | NA |
| Body surface area exposed to water ($SA_{gw}$), $cm^2$ | 3,300[h,k] | NA | Child: 6,600[l]<br>Adult: 20,000[l] | 3,300[l] | NA |
| Permeability coefficient (PC), cm/hour | csv | NA | csv | csv | NA |
| Exposure time ($ET_{gw}$), hours/day | 1[c] | NA | Child: 0.333[l]<br>Adult: 0.2[l] | 1[c] | NA |
| Exposure frequency (EF), days/year | 250[d] | NA | 350[d] | 250[a] | NA |
| **Venison Consumption** | | | | | |
| Venison ingestion rate ($IR_v$), kg/day | NA | NA | NA | NA | Child: 0.005[i]<br>Adult: 0.013[m] |
| Exposure frequency (EF), days/year | NA | NA | NA | NA | 350[a] |
| Exposure duration (ED), years | NA | NA | NA | NA | Child: 6[a]<br>Adult: 30[n] |

## Table 3-2

## Variables Used to Estimate Potential Chemical Intakes and Contact Rates for Receptors
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



Note: Groundwater pathways are quantified only for Ash Pit 1 because no groundwater samples could be collected at Ash Pit 3 (see Section 2.1 of text).

[a] U.S. Environmental Protection Agency (EPA), 2002, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*, Office of Solid Waste and Emergency Response, Washington, DC, 9355.4-24, December.

[b] For noncancer evaluation, calculated as the product of ED (years) x 365 days/year; for cancer evaluation, calculated as the product of 70 years (assumed human lifetime) x 365 days/year. Source: U.S. Environmental Protection Agency (EPA), 1989a, *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)*, Interim Final, Office of Emergency and Remedial Response, Washington, D.C., EPA/540/1-89/002.

[c] Default value which assumes 100 percent of exposure is to contaminated medium.

[d] U.S. Environmental Protection Agency (EPA), 1991, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors*, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.603.

[e] U.S. Environmental Protection Agency (EPA), 2004a, *User's Guide and Background Technical Document for Region 9 Preliminary Remediation Goals (PRG) Table*, Region 9, San Francisco, California, October, <http://www.epa.gov/region09/waste/sfund /prg/files/04usersguide.pdf>.

[f] Assumed; see Section 3.1.3.4 of text for explanation.

[g] It is assumed that on days when the resident is visiting the ditches and is exposed to sediment that half of the daily exposure via dermal contact and ingestion are associated with ditch sediment (sediment FI=0.5) and half of the exposure is associated with soil (soil FI=0.5). The resident is assumed to be exposed to soil 350 days/year and to sediment 52 days/year. The FI values of 0.1 for sediment and 0.9 for soil are weighted average daily values as described in Section 3.1.3.4 of the text.

[h] U.S. Environmental Protection Agency (EPA), 2004b, *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part E - Supplemental Guidance for Dermal Risk Assessment)*, Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R-99/005, July.

[i] Please see Section 3.1.3.7 of text for detailed explanation.

[j] The *Exposure Factors Handbook* (see reference h) indicates that the 90th percentile for the amount of time spent at a residence is more than 23 hours per day.

[k] Please see Section 3.1.3.2 of text for detailed explanation.

[l] U.S. Environmental Protection Agency (EPA), 1997, *Exposure Factors Handbook*, Final, National Center for Environmental Assessment, Washington, D.C., EPA/600/P-95/002Fa, August.

[m] Please see Section 3.1.3.5 of the text for detailed explanation.

[n] Assumes deer are hunted for a 30-year duration.

csv – Chemical-specific value.
NA – Pathway not applicable for receptor.

**Table 3-3**

**Physical Properties of Site-Related Chemicals[a]**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| Chemical of Potential Concern | Soil-to-forage Biotransfer Factor $B_p$ (unitless) | Biotransfer Factor for Beef $B_b$ (days/kg) | Biotransfer Factor for Venison $B_v$ (unitless) | Diffusivity In Air $D_i$ ($cm^2$/second) | Soil Organic Carbon-Water Partition Coefficient $K_{oc}$ ($cm^3$/g) | log $K_{ow}$ | Absorption Fraction ABS (unitless) | Permeability Coefficient $K_p$ (cm/hour) | *tau* (hour/event) | *t** (hour) | Fraction Absorbed from Water FA (unitless) | B (unitless) | Molecular Weight (g/mole) | Henry's Law Constant (atm-$m^3$/mole) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | | | | | | | | |
| Manganese | NA | NA | NA | NA | 6.50E+01 | NA | NA | 1.00E-03 | NA | NA | NA | NA | 54.94 | NA |
| **Nitroaromatics** | | | | | | | | | | | | | | |
| Trinitrotoluene, 2,4,6- | NA | NA | NA | 5.10E-02 | 1.77E+02 | 1.60E+00 | 0.032 | 9.64E-04 | 1.96 | 4.71 | 1 | 0 | 227.13 | 2.08E-08 |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | NA | NA | NA | 5.10E-02 | 3.98E+05 | 5.66E+00 | 0.13 | 4.70E-01 | 2.03 | 8.53 | 1 | 2.8 | 228.3 | 3.34E-06 |
| Benzo(a)pyrene | NA | NA | NA | 4.30E-02 | 1.02E+06 | 6.10E+00 | 0.13 | 7.00E-01 | 2.69 | 11.67 | 1 | 4.3 | 252.3 | 4.57E-07 |
| Benzo(b)fluoranthene | NA | NA | NA | 2.26E-02 | 1.23E+06 | 6.12E+00 | 0.13 | 7.00E-01 | 2.77 | 12.03 | 1 | 4.3 | 252.3 | 6.57E-07 |
| Dibenz(a,h)anthracene | NA | NA | NA | 2.02E-02 | 4.74E+05 | 6.75E+00 | 0.13 | 1.50E+00 | 3.88 | 17.57 | 0.6 | 9.7 | 278.4 | 1.41E-07 |
| Indeno(1,2,3-cd)pyrene | NA | NA | NA | 1.90E-02 | 3.47E+06 | 6.58E+00 | 0.13 | 1.00E+00 | 3.78 | 16.83 | 0.6 | 6.7 | 276.3 | 1.60E-06 |

*tau* - Lag time associated with rate at which chemical crosses stratum corneum per event.
t* - Time for absorption across the stratum corneum to reach steady state ; equals 2.4 times tau.
B - Ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis
kg - kilogram
g - gram
atm-$m^3$ - atmospheres per cubic meter

[a] See Appendix C which provides references for these values.

**Table 4-1**

**Summary of Toxicity Assessment [a]**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**



| Chemical of Potential Concern | GAF | Weight of Evidence | Oral Slope Factor (mg/kg-day) $^{-1}$ | Dermal Slope Factor (mg/kg-day) $^{-1}$ | Weight of Evidence | Inhalation Unit Risk (µg/m$^3$) $^{-1}$ | Inhalation Slope Factor (mg/kg-day) $^{-1}$ |
|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | |
| Manganese | 0.04 | D | NA | NA | D | NA | NA |
| **Nitroaromatics** | | | | | | | |
| Trinitrotoluene, 2,4,6- | 1 | C | 3.00E-02 | 3.00E-02 | C | NA | NA |
| **Semivolatile Organic Compounds** | | | | | | | |
| Benzo(a)anthracene | 1 | B2 | 7.30E-01 | 7.30E-01 | B2 | 8.80E-05 | 3.10E-01 |
| Benzo(a)pyrene | 1 | B2 | 7.30E+00 | 7.30E+00 | B2 | 8.80E-04 | 3.10E+00 |
| Benzo(b)fluoranthene | 1 | B2 | 7.30E-01 | 7.30E-01 | B2 | 8.80E-05 | 3.10E-01 |
| Dibenz(a,h)anthracene | 1 | B2 | 7.30E+00 | 7.30E+00 | B2 | 8.00E-04 | 3.10E+00 |
| Indeno(1,2,3-cd)pyrene | 1 | B2 | 7.30E-01 | 7.30E-01 | B2 | 8.80E-05 | 3.10E-01 |

mg/kg-day = milligram per kilogram - day
µg/m$^3$ - milligram per cubic meter
GAF - gastrointestinal absorption factor
NA - not available or not applicable
ND - no data or not determined
NC - Noncancer value is regarded as protective of cancer effects in the Integrated Risk Information System (IRIS) evaluation (EPA, 2010).
[a] See Appendix C which provides references for these values.

Weight of Evidence (WOE) EPA Group:
A - Carcinogenic to humans
B - Likely to be carcinogenic to humans (includes both the former B1 and B2 probable human carcinogens as classified on IRIS)
C - Suggested evidence of carcinogenic potential
D - Inadequate evidence to assess carcinogenic potential

**Table 4-1**

**Summary of Toxicity Assessment [a]**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**



| | | Oral | | Dermal | Reference | Inhalation | |
|---|---|---|---|---|---|---|---|
| Chemical of Potential Concern | GAF | Reference Dose mg/kg-day | Target Organs | Reference Dose mg/kg-day | Concentration $mg/m^3$ | Reference Dose mg/kg-day | Target Organs |
| **Metals** | | | | | | | |
| Manganese | 0.04 | 4.70E-02 | CNS | 1.90E-03 | 5.00E-05 | 1.40E-05 | CNS |
| **Nitroaromatics** | | | | | | | |
| Trinitrotoluene, 2,4,6- | 1 | 5.00E-04 | L | 5.00E-04 | ND | NA | NA |
| **Semivolatile Organic Compounds** | | | | | | | |
| Benzo(a)anthracene | 1 | ND | NA | NA | ND | NA | NA |
| Benzo(a)pyrene | 1 | ND | NA | NA | ND | NA | NA |
| Benzo(b)fluoranthene | 1 | ND | NA | NA | ND | NA | NA |
| Dibenz(a,h)anthracene | 1 | ND | NA | NA | ND | NA | NA |
| Indeno(1,2,3-cd)pyrene | 1 | ND | NA | NA | ND | NA | NA |

mg/kg-day = milligram per kilogram - day
$mg/m^3$ - milligram per cubic meter
GAF - gastrointestinal absorption factor
NA - not available or not applicable
ND - no data
NC - Noncancer value is regarded as protective of cancer effects in the Integrated Risk Information System (IRIS) evaluation (EPA, 2010).
[a] See Appendix C which provides references for these values.

Target Organs: CNS - central nervous system; L - liver.

## Table 5-1

## Summary of Risk for All Receptors
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio

| | Groundskeeper [a] | | Construction Worker | | Indoor Worker | | Resident | | | Hunter | | Hunter's Child | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total ILCR | Total HI | Total ILCR | Total HI | Total ILCR | Total HI | Total ILCR | Total Adult - HI | Total Child - HI | Total ILCR | Total HI | Total ILCR | Total HI |
| **Overburden Groundwater Use** | | | | | | | | | | | | | |
| *Exposure Media* | | | | | | | | | | | | | |
| Surface Soil | 6.28E-06 | NA | NE | NE | 1.68E-06 | NA | NE | NE | NE | 4.20E-07 | NA | NA | NA |
| Total Soil | 1.62E-06 | 0.001 | 8.03E-08 | 0.002 | NE | NE | 5.49E-06 | 0.001 | 0.01 | NE | NE | NE | NE |
| Groundwater | NA | 0.04 | NE | NE | NA | 0.04 | NA | 0.1 | 0.2 | NE | NE | NE | NE |
| **Total ILCR or HI** | **2.E-06** | **0.04** | **8.E-08** | **0.002** | **2.E-06** | **0.04** | **5.E-06** | **0.1** | **0.2** | **4.E-07** | **NA** | **NA** | **NA** |

HI - Hazard index.
ILCR - Incremental lifetime cancer risk.
NA - No chemicals of potential concern available for exposure evaluation.
NE - Pathway not evaluated for this receptor.

Note:
[a]Total ILCR and total HI values for the groundskeeper reflect the respective totals for the future groundskeeper assumed to use overburden groundwater. The total ILCR and HI values for the current groundskeeper are simply those shown for surface soil. The rounded current groundskeeper ILCR is 6E-6 and no HI could be calculated (NA).

# FIGURES

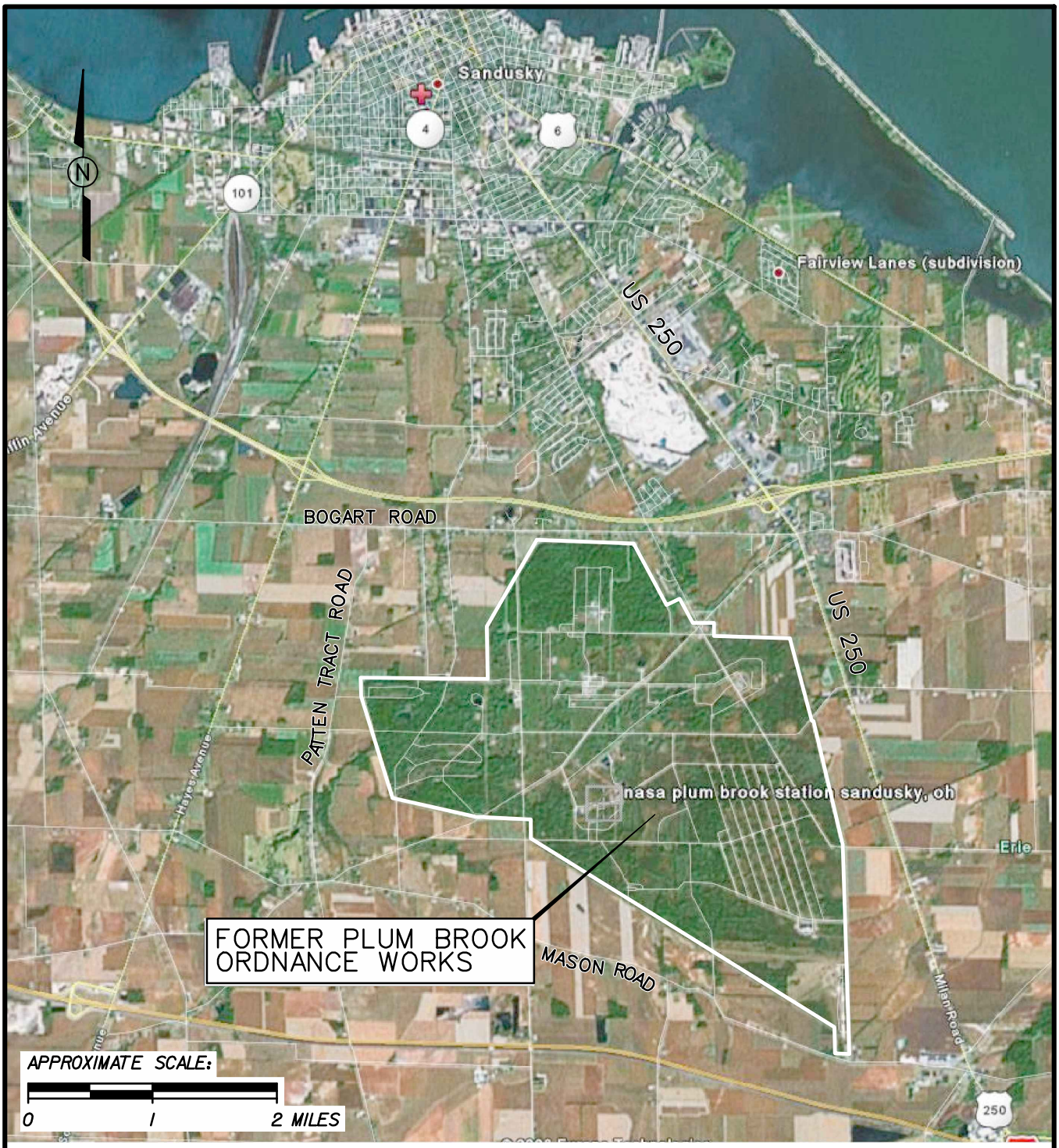


FIGURE 1-1
PBOW VICINITY MAP

*TNTB/WWTP1 SEWER LINES BASELINE*
*HUMAN HEALTH RISK ASSESSMENT*
*FORMER PLUM BROOK ORDNANCE WORKS*
*NASA PLUM BROOK STATION*
*SANDUSKY, OHIO*

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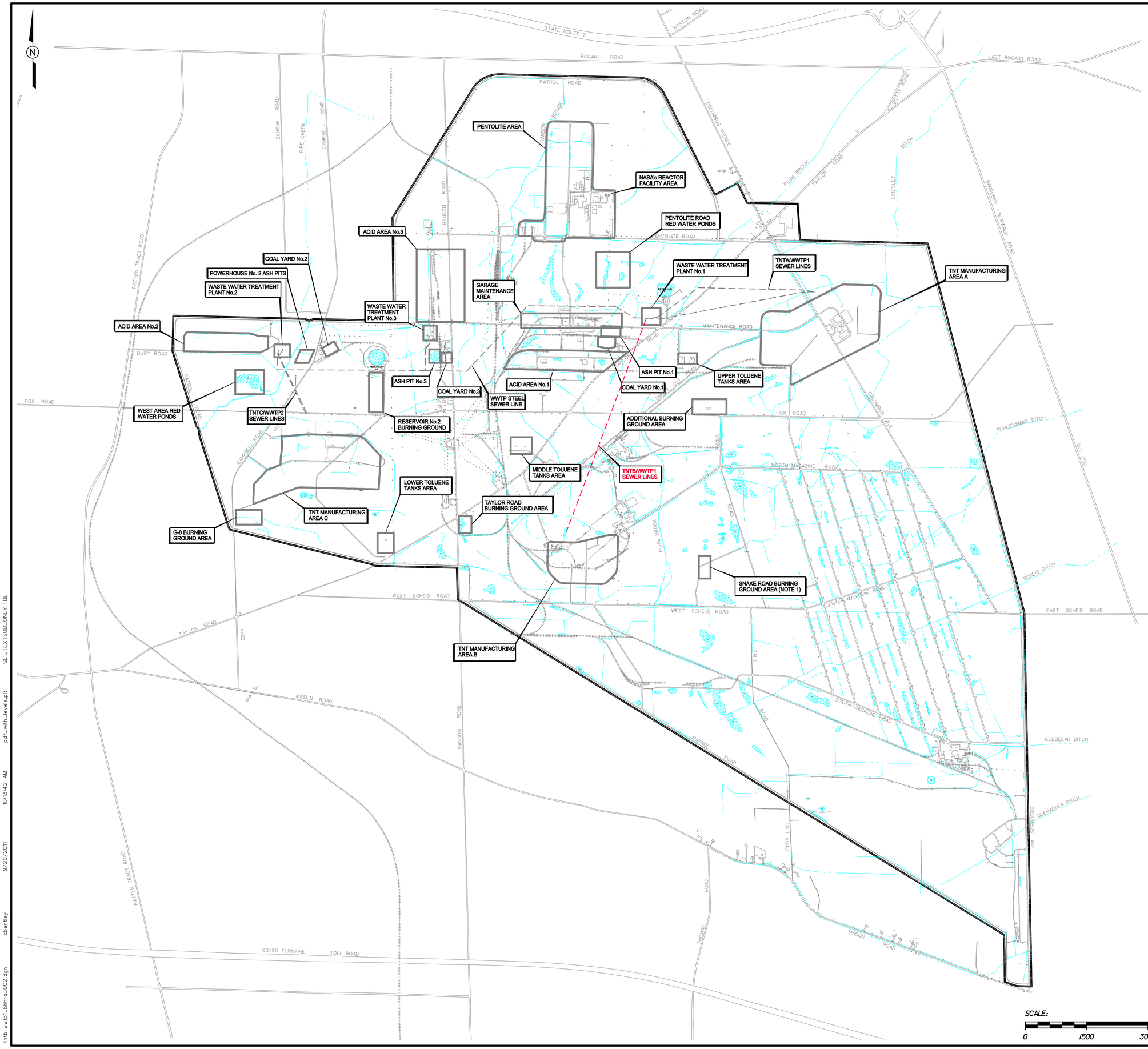
tntb-wwtp1_bhhra_001.dgn cbentley 9/20/2011 10:08:36 AM pdf_with_levels.plt SEI_TEXTSUB_ONLY.TBL




## LEGEND:

- AREA OF CONCERN
- APPROXIMATE LOCATION OF TNTB/WWTP1 SEWER LINES
- POND
- CREEK, DITCH, CONVEYANCE
- RAILROAD
- ROAD
- FENCE
- FACILITY BOUNDARY

## NOTES:

1. SNAKE ROAD BURNING GROUND AREA WAS ALSO REFERRED TO AS "SNAKE ROAD BURN PIT", "SCHEID ROAD BURNING GROUNDS", AND "DISPOSAL AREA THREE".
2. REACTOR FACILITY CONSTRUCTED BY NASA POST WWII AND IS IDENTIFIED FOR LOCATION PURPOSES ONLY.
3. "TNTB/WWTP1 SEWER LINES" REFERS TO THE FORMER SEWER LINES EXTENDING FROM TNT AREA B TO WASTE WATER TREATMENT PLANT No.1.

SCALE:

0 1500 3000 FEET

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FIGURE 1-2
LOCATION OF TNTB/WWTP1 SEWER LINES AT PBOW

*TNTB/WWTP1 SEWER LINES BASELINE HUMAN HEALTH RISK ASSESSMENT*
*FORMER PLUM BROOK ORDNANCE WORKS*
*NASA PLUM BROOK STATION*
*SANDUSKY, OHIO*

tntb-wwtp1_bhhra_002.dgn cbentley 9/20/2011 10:13:42 AM pdf_with_levels.pit SEL_TEXTSUB_ONLY.TBL

tntb-wwtp1_bhhra_003.dgn cbentley 9/20/2011 10:19:01 AM pdf_with_levels.plt SEI_TEXTSUB_ONLY.TBL

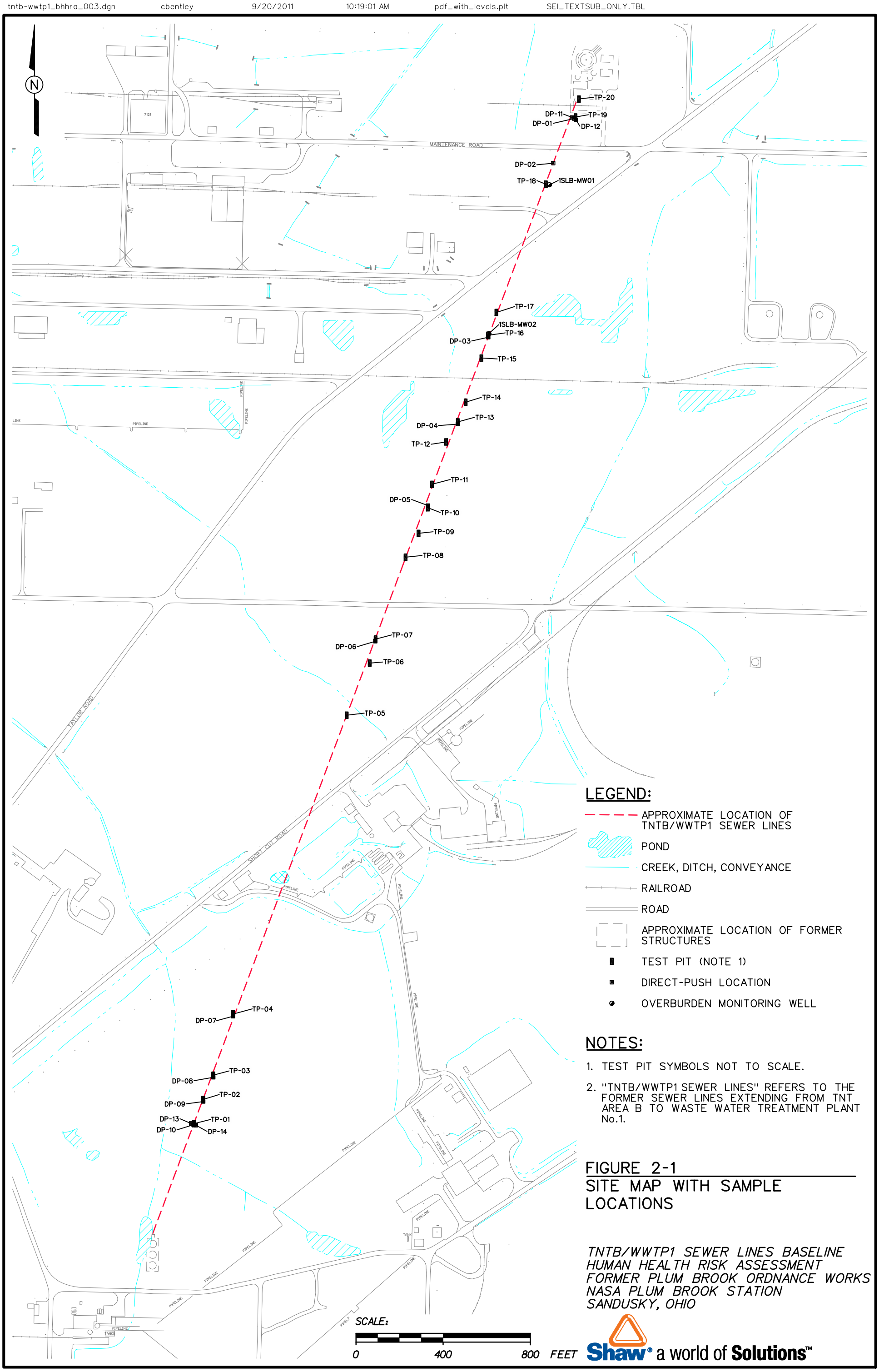
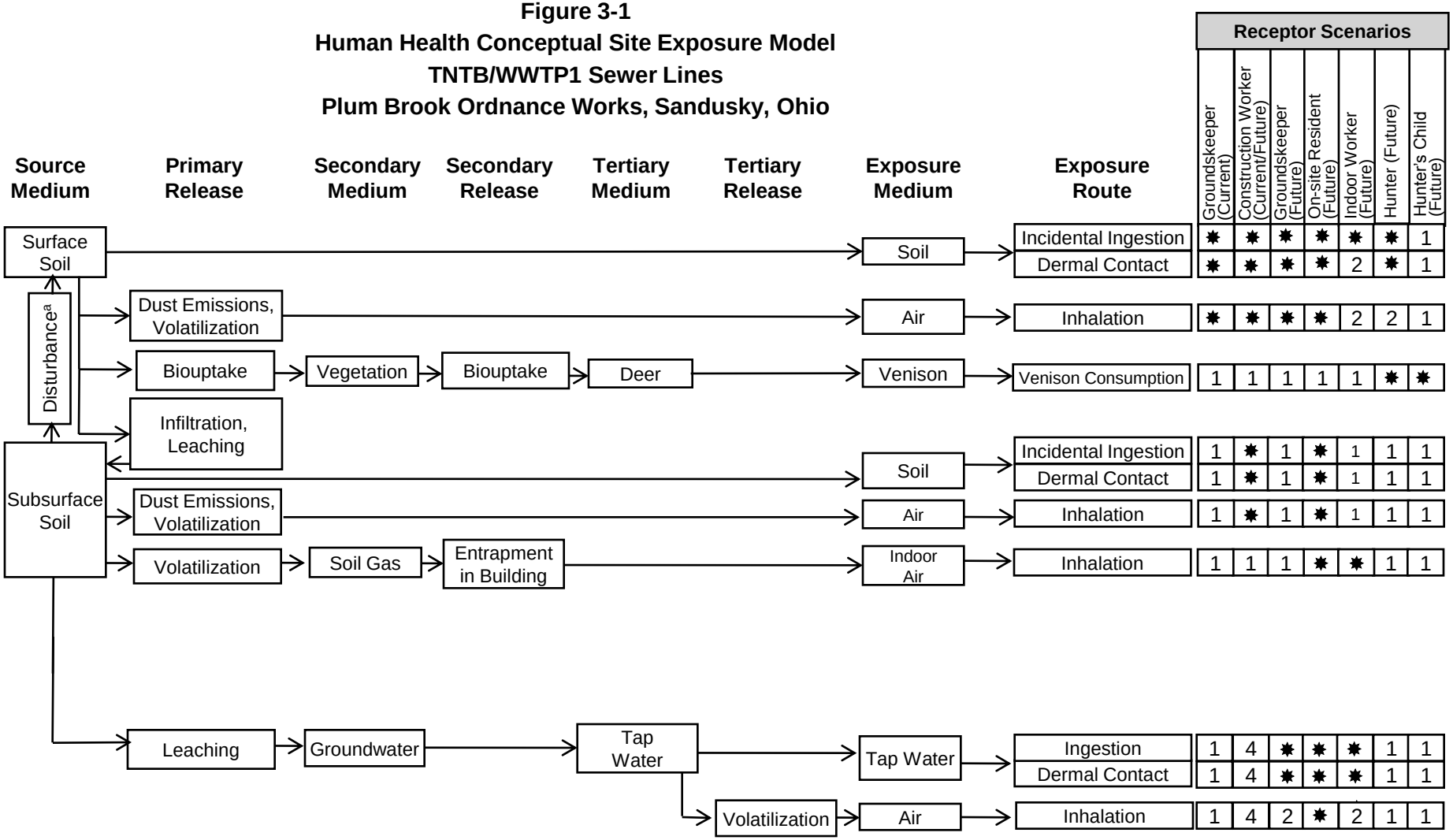



FIGURE 2-1
SITE MAP WITH SAMPLE LOCATIONS

*TNTB/WWTP1 SEWER LINES BASELINE HUMAN HEALTH RISK ASSESSMENT*
*FORMER PLUM BROOK ORDNANCE WORKS*
*NASA PLUM BROOK STATION*
*SANDUSKY, OHIO*

# Figure 3-1
## Human Health Conceptual Site Exposure Model
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio




[a] Current surface soil may have been historically affected by subsurface soil during sewer line removal.
✸ = Complete exposure route quantified in the risk assessment.
1 = There is no plausible pathway for exposure to this medium.
2 = Although theoretically complete, this pathway is not quantified as explained in text.
3 = Contact with this medium, although plausible, is not part of this receptor's normal or expected activities; therefore contact would be sporadic and is not quantified.
4 = For current use there is no plausible exposure pathway. For future use, the pathway is potentially complete, but is not quantified as explained in the text.

# APPENDIX A

# DATA SUMMARY OF CHEMICALS DETECTED IN OVERBURDEN GROUNDWATER PIEZOMETERS

**Table A-1**

**Summary of Piezometer Groundwater Samples**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works**
**Sandusky, Ohio**

| Location | Sample Number | Sample Purpose | Sample Date | Analyses |
|---|---|---|---|---|
| TNTB-SL-PZ01 | PZ0100 | REG | 25-Aug-09 | Exp, Field Tests |
| TNTB-SL-PZ02 | PZ0101 | REG | 25-Aug-09 | Exp, Field Tests |
| TNTB-SL-PZ03 | PZ0102 | REG | 25-Aug-09 | Exp, Field Tests |
| TNTB-SL-PZ03 | PZ0103 | FD | 25-Aug-09 | Exp |
| TNTB-SL-PZ06 | PZ0107 | REG | 26-Aug-09 | Exp, Field Tests |

FD - Field duplicate; averaged with the regular sample at the same location to create one result.
REG - Regular sample
Exp - Explosives

## Table A-2

## Statistical Summary and COPC Selection of Chemicals Detected in Overburden Piezometer Groundwater
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works
## Sandusky, Ohio

| Chemical | Detection Frequency | Percent hits | Range of values, µg/L: Detected Concentrations Minimum | VQ | Maximum | VQ | Reporting Limits Minimum | Maximum | Arithmetic Mean µg/L | RBSC [a] µg/L | COPC? [b,c] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Nitroaromatics** | | | | | | | | | | | |
| Amino-2,6-dinitrotoluene, 4- | 1 / 4 | 25 | 9.20E-01 | | 9.20E-01 | | 4.80E-02 | 4.90E-02 | 2.67E-01 | 7.3 | N (a) |
| Amino-4,6-dinitrotoluene, 2- | 1 / 4 | 25 | 9.05E-01 | | 9.05E-01 | | 7.40E-02 | 7.50E-02 | 2.82E-01 | 7.3 | N (a) |
| Trinitrobenzene, 1,3,5- | 2 / 4 | 50 | 2.45E-01 | | 4.50E-01 | | 4.80E-02 | 4.90E-02 | 1.98E-01 | 110 | N (a) |
| Trinitrotoluene, 2,4,6- | 2 / 4 | 50 | 2.90E-01 | | 1.80E+00 | JJ | 6.60E-02 | 6.80E-02 | 5.56E-01 | 1.8 | N (a) |

BSC - Background screening concentration.
RBSC - Risk based screening concentration.
COPC - Chemical of Potential Concern.
µg/L - micrograms per liter.
VQ - Validation qualifier.
J/J - The compound was positively identified in each duplicate sample at an estimated concentration; the reported result is the average of the estimated concentrations.

[a] Risk-Based Screening Concentrations based on USEPA Regional Screening Level Table (June 2011) tap water values and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
[b] N = Chemical is not chosen as a COPC:
(a) = maximum detected concentration is less than the RBSC.
(b) = maximum detected concentration is less than the BSC.
(c) = essential nutrient.
[c] Y = Chemical is chosen as COPC.

# APPENDIX B

# ProUCL OUTPUT FOR UPPER CONFIDENCE LIMITS ON THE MEAN

**Surface Soil Data for ProUCL Input**
**TNTB/WWTP1 Sewer Lines - PBOW**



| Sample Location | Sample Number | Sample Depth (ft bgs) | | Benzo(a)anthracene | D_Benzo(a)anthracene | Benzo(a)pyrene | D_Benzo(a)pyrene | Benzo(b)fluoranthene |
|---|---|---|---|---|---|---|---|---|
| TNTB-SL-DP01 | DP0100DP0101 | 0 | 1 | 1.617 | 1 | 1.3725 | 1 | 1.945 |
| TNTB-SL-DP02 | DP0104 | 0 | 1 | 0.037 | 0 | 0.037 | 0 | 0.0528 |
| TNTB-SL-DP03 | DP0106 | 0 | 1 | 0.037 | 0 | 0.037 | 0 | 0.037 |
| TNTB-SL-DP04 | DP0108 | 0 | 1 | 0.04 | 0 | 0.04 | 0 | 0.04 |
| TNTB-SL-DP05 | DP0110 | 0 | 1 | 0.039 | 0 | 0.039 | 0 | 0.039 |
| TNTB-SL-DP06 | DP0112DP0113 | 0 | 1 | 0.0472 | 1 | 0.0476 | 1 | 0.06805 |
| TNTB-SL-DP07 | DP0116 | 0 | 1 | 0.036 | 0 | 0.036 | 0 | 0.036 |
| TNTB-SL-DP08 | DP0118 | 0 | 1 | 0.038 | 0 | 0.038 | 0 | 0.038 |
| TNTB-SL-DP09 | DP0120 | 0 | 1 | 0.042 | 0 | 0.042 | 0 | 0.042 |
| TNTB-SL-DP10 | DP0122 | 0 | 1 | 0.036 | 0 | 0.036 | 0 | 0.036 |

**Surface Soil Data for ProUCL Input**
**TNTB/WWTP1 Sewer Lines - PBOW**



| Sample Location | Sample Number | Sample Depth (ft bgs) | | D_Benzo(b)fluoranthene | Dibenz(a,h)anthracene | D_Dibenz(a,h)anthracene | Indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|---|
| TNTB-SL-DP01 | DP0100DP0101 | 0 | 1 | 1 | 0.16935 | 1 | 0.7755 |
| TNTB-SL-DP02 | DP0104 | 0 | 1 | 1 | 0.037 | 0 | 0.037 |
| TNTB-SL-DP03 | DP0106 | 0 | 1 | 0 | 0.037 | 0 | 0.037 |
| TNTB-SL-DP04 | DP0108 | 0 | 1 | 0 | 0.04 | 0 | 0.04 |
| TNTB-SL-DP05 | DP0110 | 0 | 1 | 0 | 0.039 | 0 | 0.039 |
| TNTB-SL-DP06 | DP0112DP0113 | 0 | 1 | 1 | 0.038 | 0 | 0.0386 |
| TNTB-SL-DP07 | DP0116 | 0 | 1 | 0 | 0.036 | 0 | 0.036 |
| TNTB-SL-DP08 | DP0118 | 0 | 1 | 0 | 0.038 | 0 | 0.038 |
| TNTB-SL-DP09 | DP0120 | 0 | 1 | 0 | 0.042 | 0 | 0.042 |
| TNTB-SL-DP10 | DP0122 | 0 | 1 | 0 | 0.036 | 0 | 0.036 |

**Surface Soil Data for ProUCL Input**
**TNTB/WWTP1 Sewer Lines - PBOW**



| Sample Location | Sample Number | Sample Depth (ft bgs) | | D_Indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|
| TNTB-SL-DP01 | DP0100DP0101 | 0 | 1 | 1 |
| TNTB-SL-DP02 | DP0104 | 0 | 1 | 0 |
| TNTB-SL-DP03 | DP0106 | 0 | 1 | 0 |
| TNTB-SL-DP04 | DP0108 | 0 | 1 | 0 |
| TNTB-SL-DP05 | DP0110 | 0 | 1 | 0 |
| TNTB-SL-DP06 | DP0112DP0113 | 0 | 1 | 1 |
| TNTB-SL-DP07 | DP0116 | 0 | 1 | 0 |
| TNTB-SL-DP08 | DP0118 | 0 | 1 | 0 |
| TNTB-SL-DP09 | DP0120 | 0 | 1 | 0 |
| TNTB-SL-DP10 | DP0122 | 0 | 1 | 0 |

General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | ss UCL input.wst |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Benzo(a)anthracene**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 10 | Number of Detected Data | 2 |
| Number of Distinct Detected Data | 2 | Number of Non-Detect Data | 8 |
| | | Percent Non-Detects | 80.00% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.0472 | Minimum Detected | -3.053 |
| Maximum Detected | 1.617 | Maximum Detected | 0.481 |
| Mean of Detected | 0.832 | Mean of Detected | -1.286 |
| SD of Detected | 1.11 | SD of Detected | 2.499 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 8 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 2 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 80.00% |

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | N/A | Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A | 5% Shapiro Wilk Critical Value | N/A |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 0.182 | Mean | -3.426 |
| SD | 0.504 | SD | 1.403 |
| 95% DL/2 (t) UCL | 0.474 | 95% H-Stat (DL/2) UCL | 0.56 |
| | | | |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE method failed to converge properly | | Mean in Log Scale | N/A |

| | |
|---|---|
| SD in Log Scale | N/A |
| Mean in Original Scale | N/A |
| SD in Original Scale | N/A |
| 95% t UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% H-UCL | N/A |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |
| Theta star | N/A |
| Nu star | N/A |
| AppChi2 | N/A |
| 95% Gamma Approximate UCL | N/A |
| 95% Adjusted Gamma UCL | N/A |

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 0.204 |
| SD | 0.471 |
| SE of Mean | 0.211 |
| 95% KM (t) UCL | 0.59 |
| 95% KM (z) UCL | 0.551 |
| 95% KM (jackknife) UCL | 1.3 |
| 95% KM (bootstrap t) UCL | N/A |
| 95% KM (BCA) UCL | N/A |
| 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (Chebyshev) UCL | 1.122 |
| 97.5% KM (Chebyshev) UCL | 1.519 |
| 99% KM (Chebyshev) UCL | 2.3 |

**Potential UCLs to Use**

| | |
|---|---|
| 99% KM (Chebyshev) UCL | 2.3 |

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

**Benzo(a)pyrene**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 10 | Number of Detected Data | 2 |
| Number of Distinct Detected Data | 2 | Number of Non-Detect Data | 8 |
| | | Percent Non-Detects | 80.00% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.0476 | Minimum Detected | -3.045 |
| Maximum Detected | 1.373 | Maximum Detected | 0.317 |
| Mean of Detected | 0.71 | Mean of Detected | -1.364 |
| SD of Detected | 0.937 | SD of Detected | 2.377 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

| | |
|---|---|
| Number treated as Non-Detect | 8 |
| Number treated as Detected | 2 |
| Single DL Non-Detect Percentage | 80.00% |

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

## UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | N/A | Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A | 5% Shapiro Wilk Critical Value | N/A |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 0.157 | Mean | -3.442 |
| SD | 0.427 | SD | 1.352 |
| 95% DL/2 (t) UCL | 0.405 | 95% H-Stat (DL/2) UCL | 0.457 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE method failed to converge properly | | Mean in Log Scale | N/A |
| | | SD in Log Scale | N/A |
| | | Mean in Original Scale | N/A |
| | | SD in Original Scale | N/A |
| | | 95% t UCL | N/A |
| | | 95% Percentile Bootstrap UCL | N/A |
| | | 95% BCA Bootstrap UCL | N/A |
| | | 95% H-UCL | N/A |

| Gamma Distribution Test with Detected Values Only | | Data Distribution Test with Detected Values Only | |
|---|---|---|---|
| k star (bias corrected) | N/A | Data do not follow a Discernable Distribution (0.05) | |
| Theta Star | N/A | | |
| nu star | N/A | | |
| | | | |
| A-D Test Statistic | N/A | **Nonparametric Statistics** | |
| 5% A-D Critical Value | N/A | Kaplan-Meier (KM) Method | |
| K-S Test Statistic | N/A | Mean | 0.18 |
| 5% K-S Critical Value | N/A | SD | 0.397 |
| Data not Gamma Distributed at 5% Significance Level | | SE of Mean | 0.178 |
| | | 95% KM (t) UCL | 0.506 |
| **Assuming Gamma Distribution** | | 95% KM (z) UCL | 0.472 |
| Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 1.105 |
| Minimum | N/A | 95% KM (bootstrap t) UCL | N/A |
| Maximum | N/A | 95% KM (BCA) UCL | 1.373 |
| Mean | N/A | 95% KM (Percentile Bootstrap) UCL | 1.373 |
| Median | N/A | 95% KM (Chebyshev) UCL | 0.955 |
| SD | N/A | 97.5% KM (Chebyshev) UCL | 1.29 |
| k star | N/A | 99% KM (Chebyshev) UCL | 1.949 |
| Theta star | N/A | | |
| Nu star | N/A | Potential UCLs to Use | |
| AppChi2 | N/A | 99% KM (Chebyshev) UCL | 1.949 |
| 95% Gamma Approximate UCL | N/A | | |
| 95% Adjusted Gamma UCL | N/A | | |

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

**Benzo(b)fluoranthene**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 10 | Number of Detected Data | 3 |
| Number of Distinct Detected Data | 3 | Number of Non-Detect Data | 7 |
| | | Percent Non-Detects | 70.00% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.0528 | Minimum Detected | -2.941 |
| Maximum Detected | 1.945 | Maximum Detected | 0.665 |
| Mean of Detected | 0.689 | Mean of Detected | -1.654 |
| SD of Detected | 1.088 | SD of Detected | 2.013 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 7 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 3 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 70.00% |

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | 0.756 |
| 5% Shapiro Wilk Critical Value | 0.767 |
| Data not Normal at 5% Significance Level | |

| Lognormal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | 0.802 |
| 5% Shapiro Wilk Critical Value | 0.767 |
| Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.22 |
| SD | 0.606 |
| 95% DL/2 (t) UCL | 0.571 |
| Maximum Likelihood Estimate(MLE) Method | N/A |
| MLE yields a negative mean | |

| Assuming Lognormal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -3.266 |
| SD | 1.463 |
| 95% H-Stat (DL/2) UCL | 0.829 |
| Log ROS Method | |
| Mean in Log Scale | -7.29 |
| SD in Log Scale | 4.089 |
| Mean in Original Scale | 0.207 |
| SD in Original Scale | 0.611 |
| 95% t UCL | 0.561 |
| 95% Percentile Bootstrap UCL | 0.589 |
| 95% BCA Bootstrap UCL | 0.785 |
| 95% H-UCL | 5511989 |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |
| Data not Gamma Distributed at 5% Significance Level | |

| Assuming Gamma Distribution | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |
| Theta star | N/A |
| Nu star | N/A |
| AppChi2 | N/A |
| 95% Gamma Approximate UCL | N/A |
| 95% Adjusted Gamma UCL | N/A |

| Data Distribution Test with Detected Values Only |
|---|
| Data appear Lognormal at 5% Significance Level |

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.244 |
| SD | 0.567 |
| SE of Mean | 0.22 |
| 95% KM (t) UCL | 0.646 |
| 95% KM (z) UCL | 0.605 |
| 95% KM (jackknife) UCL | 0.582 |
| 95% KM (bootstrap t) UCL | 25.12 |
| 95% KM (BCA) UCL | 1.945 |
| 95% KM (Percentile Bootstrap) UCL | 1.945 |
| 95% KM (Chebyshev) UCL | 1.201 |
| 97.5% KM (Chebyshev) UCL | 1.615 |
| 99% KM (Chebyshev) UCL | 2.429 |
| Potential UCLs to Use | |
| 99% KM (Chebyshev) UCL | 2.429 |

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-cd)pyrene

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 10 | Number of Detected Data | 2 |
| Number of Distinct Detected Data | 2 | Number of Non-Detect Data | 8 |
| | | Percent Non-Detects | 80.00% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.0386 | Minimum Detected | -3.255 |
| Maximum Detected | 0.776 | Maximum Detected | -0.254 |
| Mean of Detected | 0.407 | Mean of Detected | -1.754 |
| SD of Detected | 0.521 | SD of Detected | 2.122 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 9 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 1 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 90.00% |

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | N/A | Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A | 5% Shapiro Wilk Critical Value | N/A |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.0967 |
| SD | 0.239 |
| 95% DL/2 (t) UCL | 0.235 |
| | |
| Maximum Likelihood Estimate(MLE) Method | N/A |

**MLE method failed to converge properly**

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -3.52 |
| SD | 1.17 |
| 95% H-Stat (DL/2) UCL | 0.226 |
| | |
| Log ROS Method | |
| Mean in Log Scale | N/A |
| SD in Log Scale | N/A |
| Mean in Original Scale | N/A |
| SD in Original Scale | N/A |
| 95% t UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% H-UCL | N/A |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| | |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |

**Data not Gamma Distributed at 5% Significance Level**

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |
| Theta star | N/A |
| Nu star | N/A |
| AppChi2 | N/A |
| 95% Gamma Approximate UCL | N/A |
| 95% Adjusted Gamma UCL | N/A |

**Data Distribution Test with Detected Values Only**

**Data do not follow a Discernable Distribution (0.05)**

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.112 |
| SD | 0.221 |
| SE of Mean | 0.0989 |
| 95% KM (t) UCL | 0.294 |
| 95% KM (z) UCL | 0.275 |
| 95% KM (jackknife) UCL | 0.627 |
| 95% KM (bootstrap t) UCL | N/A |
| 95% KM (BCA) UCL | 0.776 |
| 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (Chebyshev) UCL | 0.543 |
| 97.5% KM (Chebyshev) UCL | 0.73 |
| 99% KM (Chebyshev) UCL | 1.096 |

**Potential UCLs to Use**

| | |
|---|---|
| 99% KM (Chebyshev) UCL | 1.096 |

**Warning: Recommended UCL exceeds the maximum observation**

**Note: DL/2 is not a recommended method.**

**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**
**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**
**For additional insight, the user may want to consult a statistician.**

## General UCL Statistics for Full Data Sets

**User Selected Options**

| | |
|---|---|
| From File | ss UCL input.wst |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Dibenz(a,h)anthracene**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 10 | Number of Distinct Observations | 7 |

| **Raw Statistics** | | **Log-transformed Statistics** | |
|---|---|---|---|
| Minimum | 0.036 | Minimum of Log Data | -3.324 |
| Maximum | 0.169 | Maximum of Log Data | -1.776 |
| Mean | 0.0512 | Mean of log Data | -3.119 |
| Median | 0.038 | SD of log Data | 0.474 |
| SD | 0.0415 | | |
| Std. Error of Mean | 0.0131 | | |
| Coefficient of Variation | 0.811 | | |
| Skewness | 3.151 | | |

**Relevant UCL Statistics**

| **Normal Distribution Test** | | **Lognormal Distribution Test** | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.406 | Shapiro Wilk Test Statistic | 0.457 |
| Shapiro Wilk Critical Value | 0.842 | Shapiro Wilk Critical Value | 0.842 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0753 | 95% H-UCL | 0.0699 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 0.0813 |
| 95% Adjusted-CLT UCL (Chen-1995) | 0.0868 | 97.5% Chebyshev (MVUE) UCL | 0.0954 |
| 95% Modified-t UCL (Johnson-1978) | 0.0775 | 99% Chebyshev (MVUE) UCL | 0.123 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 2.545 |
| Theta Star | 0.0201 |
| MLE of Mean | 0.0512 |
| MLE of Standard Deviation | 0.0321 |
| nu star | 50.9 |
| Approximate Chi Square Value (.05) | 35.52 |
| Adjusted Level of Significance | 0.0267 |
| Adjusted Chi Square Value | 33.3 |
| Anderson-Darling Test Statistic | 2.772 |
| Anderson-Darling 5% Critical Value | 0.731 |
| Kolmogorov-Smirnov Test Statistic | 0.472 |
| Kolmogorov-Smirnov 5% Critical Value | 0.268 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 0.0734 |
| 95% Adjusted Gamma UCL | 0.0783 |

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 0.0728 |
| 95% Jackknife UCL | 0.0753 |
| 95% Standard Bootstrap UCL | 0.0723 |
| 95% Bootstrap-t UCL | 0.484 |
| 95% Hall's Bootstrap UCL | 0.241 |
| 95% Percentile Bootstrap UCL | 0.0772 |
| 95% BCA Bootstrap UCL | 0.0899 |
| 95% Chebyshev(Mean, Sd) UCL | 0.108 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.133 |
| 99% Chebyshev(Mean, Sd) UCL | 0.182 |

**Potential UCL to Use**

| | |
|---|---|
| Use 95% Student's-t UCL | 0.0753 |
| or 95% Modified-t UCL | 0.0775 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

**Total Soil Data for ProUCL Input**
**TNTB/WWTP1 Sewer Lines - PBOW**



| Sample Location | Sample Number | Sample Depth (ft bgs) | | Trinitrotoluene, 2,4,6- | D_Trinitrotoluene, 2,4,6- | Benzo(a)anthracene | D_Benzo(a)anthracene |
|---|---|---|---|---|---|---|---|
| TNTB-SL-DP01 | DP0100DP0101 | 0 | 1 | 0.042 | 0 | 1.617 | 1 |
| TNTB-SL-DP01 | DP0103 | 8 | 10 | 0.042 | 0 | 0.151 | 1 |
| TNTB-SL-DP02 | DP0104 | 0 | 1 | 0.041 | 0 | 0.037 | 0 |
| TNTB-SL-DP02 | DP0105 | 8 | 10 | 0.041 | 0 | 0.04 | 0 |
| TNTB-SL-DP03 | DP0106 | 0 | 1 | 0.04 | 0 | 0.037 | 0 |
| TNTB-SL-DP03 | DP0107 | 8 | 10 | 0.192 | 1 | 0.042 | 0 |
| TNTB-SL-DP04 | DP0108 | 0 | 1 | 0.048 | 0 | 0.04 | 0 |
| TNTB-SL-DP04 | DP0109 | 8 | 10 | 0.047 | 0 | 0.039 | 0 |
| TNTB-SL-DP05 | DP0110 | 0 | 1 | 0.042 | 0 | 0.039 | 0 |
| TNTB-SL-DP05 | DP0111 | 8 | 10 | 0.038 | 0 | 0.037 | 0 |
| TNTB-SL-DP06 | DP0112DP0113 | 0 | 1 | 0.042 | 0 | 0.0472 | 1 |
| TNTB-SL-DP06 | DP0115 | 9 | 10 | 0.038 | 0 | 0.042 | 0 |
| TNTB-SL-DP07 | DP0116 | 0 | 1 | 0.043 | 0 | 0.036 | 0 |
| TNTB-SL-DP07 | DP0117 | 4 | 6 | 0.04 | 0 | 0.036 | 0 |
| TNTB-SL-DP08 | DP0118 | 0 | 1 | 0.04 | 0 | 0.038 | 0 |
| TNTB-SL-DP08 | DP0119 | 2 | 4 | 0.045 | 0 | 0.042 | 0 |
| TNTB-SL-DP09 | DP0120 | 0 | 1 | 0.179 | 1 | 0.042 | 0 |
| TNTB-SL-DP09 | DP0121 | 2 | 4 | 1.02 | 1 | 0.038 | 0 |
| TNTB-SL-DP10 | DP0122 | 0 | 1 | 0.908 | 1 | 0.036 | 0 |
| TNTB-SL-DP10 | DP0123 | 2 | 3.5 | 0.065 | 1 | 0.037 | 0 |
| TNTB-SL-DP11 | DP0124 | 8 | 10 | 0.038 | 0 | 0.039 | 0 |
| TNTB-SL-DP12 | DP0125 | 8 | 10 | 0.037 | 0 | 0.0413 | 1 |
| TNTB-SL-DP13 | DP0126 | 2 | 3.5 | 0.04 | 0 | 0.037 | 0 |
| TNTB-SL-DP14 | DP0127DP0130 | 2 | 3.5 | 0.042 | 0 | 0.0375 | 0 |
| TNTB-SL-TP01 | SL0085 | 2 | 3 | 3.65 | 1 | | |
| TNTB-SL-TP02 | SL0086 | 2 | 3 | 0.039 | 0 | | |
| TNTB-SL-TP03 | SL0087 | 2 | 3 | 0.064 | 1 | | |
| TNTB-SL-TP04 | SL0088 | 2 | 3 | 0.039 | 0 | | |
| TNTB-SL-TP05 | SL0089 | 2 | 3 | 0.038 | 0 | | |
| TNTB-SL-TP06 | SL0090 | 2 | 3 | 0.035 | 0 | | |
| TNTB-SL-TP07 | SL0091SL0092 | 2 | 3 | 0.0405 | 0 | | |
| TNTB-SL-TP08 | SL0094 | 2 | 3 | 0.038 | 0 | | |
| TNTB-SL-TP09 | SL0095 | 2 | 3 | 0.042 | 0 | | |
| TNTB-SL-TP10 | SL0096SL0097 | 2 | 3 | 0.042 | 0 | | |
| TNTB-SL-TP11 | SL0099 | 1.5 | 2 | 0.042 | 0 | | |
| TNTB-SL-TP12 | SL0100 | 1.5 | 2 | 0.043 | 0 | | |
| TNTB-SL-TP13 | SL0101 | 1.5 | 2 | 0.038 | 0 | | |
| TNTB-SL-TP14 | SL0102 | 1.5 | 2 | 0.043 | 0 | | |
| TNTB-SL-TP15 | SL0103 | 1.5 | 2 | 0.038 | 0 | | |
| TNTB-SL-TP16 | SL0104 | 1.5 | 2 | 0.04 | 0 | | |
| TNTB-SL-TP17 | SL0105 | 1.5 | 2 | 0.043 | 0 | | |
| TNTB-SL-TP18 | SL0106 | 1.5 | 2 | 0.046 | 0 | | |
| TNTB-SL-TP19 | SL0107 | 1.5 | 2 | 0.15 | 0 | | |
| TNTB-SL-TP20 | SL0108 | 1.5 | 2 | 0.0991 | 1 | | |

| Sample Location | Sample Number | Sample Depth (ft bgs) | | Benzo(a)pyrene | D_Benzo(a)pyrene | Benzo(b)fluoranthene | D_Benzo(b)fluoranthene | Dibenz(a,h)anthracene |
|---|---|---|---|---|---|---|---|---|
| TNTB-SL-DP01 | DP0100DP0101 | 0 | 1 | 1.3725 | 1 | 1.945 | 1 | 0.16935 |
| TNTB-SL-DP01 | DP0103 | 8 | 10 | 0.13 | 1 | 0.183 | 1 | 0.04 |
| TNTB-SL-DP02 | DP0104 | 0 | 1 | 0.037 | 0 | 0.0528 | 1 | 0.037 |
| TNTB-SL-DP02 | DP0105 | 8 | 10 | 0.04 | 0 | 0.04 | 0 | 0.04 |
| TNTB-SL-DP03 | DP0106 | 0 | 1 | 0.037 | 0 | 0.037 | 0 | 0.037 |
| TNTB-SL-DP03 | DP0107 | 8 | 10 | 0.042 | 0 | 0.042 | 0 | 0.042 |
| TNTB-SL-DP04 | DP0108 | 0 | 1 | 0.04 | 0 | 0.04 | 0 | 0.04 |
| TNTB-SL-DP04 | DP0109 | 8 | 10 | 0.039 | 0 | 0.039 | 0 | 0.039 |
| TNTB-SL-DP05 | DP0110 | 0 | 1 | 0.039 | 0 | 0.039 | 0 | 0.039 |
| TNTB-SL-DP05 | DP0111 | 8 | 10 | 0.037 | 0 | 0.037 | 0 | 0.037 |
| TNTB-SL-DP06 | DP0112DP0113 | 0 | 1 | 0.0476 | 1 | 0.06805 | 1 | 0.038 |
| TNTB-SL-DP06 | DP0115 | 9 | 10 | 0.042 | 0 | 0.042 | 0 | 0.042 |
| TNTB-SL-DP07 | DP0116 | 0 | 1 | 0.036 | 0 | 0.036 | 0 | 0.036 |
| TNTB-SL-DP07 | DP0117 | 4 | 6 | 0.036 | 0 | 0.036 | 0 | 0.036 |
| TNTB-SL-DP08 | DP0118 | 0 | 1 | 0.038 | 0 | 0.038 | 0 | 0.038 |
| TNTB-SL-DP08 | DP0119 | 2 | 4 | 0.042 | 0 | 0.042 | 0 | 0.042 |
| TNTB-SL-DP09 | DP0120 | 0 | 1 | 0.042 | 0 | 0.042 | 0 | 0.042 |
| TNTB-SL-DP09 | DP0121 | 2 | 4 | 0.038 | 0 | 0.038 | 0 | 0.038 |
| TNTB-SL-DP10 | DP0122 | 0 | 1 | 0.036 | 0 | 0.036 | 0 | 0.036 |
| TNTB-SL-DP10 | DP0123 | 2 | 3.5 | 0.037 | 0 | 0.037 | 0 | 0.037 |
| TNTB-SL-DP11 | DP0124 | 8 | 10 | 0.039 | 0 | 0.039 | 0 | 0.039 |
| TNTB-SL-DP12 | DP0125 | 8 | 10 | 0.039 | 0 | 0.045 | 1 | 0.039 |
| TNTB-SL-DP13 | DP0126 | 2 | 3.5 | 0.037 | 0 | 0.037 | 0 | 0.037 |
| TNTB-SL-DP14 | DP0127DP0130 | 2 | 3.5 | 0.0375 | 0 | 0.0375 | 0 | 0.0375 |
| TNTB-SL-TP01 | SL0085 | 2 | 3 | | | | | |
| TNTB-SL-TP02 | SL0086 | 2 | 3 | | | | | |
| TNTB-SL-TP03 | SL0087 | 2 | 3 | | | | | |
| TNTB-SL-TP04 | SL0088 | 2 | 3 | | | | | |
| TNTB-SL-TP05 | SL0089 | 2 | 3 | | | | | |
| TNTB-SL-TP06 | SL0090 | 2 | 3 | | | | | |
| TNTB-SL-TP07 | SL0091SL0092 | 2 | 3 | | | | | |
| TNTB-SL-TP08 | SL0094 | 2 | 3 | | | | | |
| TNTB-SL-TP09 | SL0095 | 2 | 3 | | | | | |
| TNTB-SL-TP10 | SL0096SL0097 | 2 | 3 | | | | | |
| TNTB-SL-TP11 | SL0099 | 1.5 | 2 | | | | | |
| TNTB-SL-TP12 | SL0100 | 1.5 | 2 | | | | | |
| TNTB-SL-TP13 | SL0101 | 1.5 | 2 | | | | | |
| TNTB-SL-TP14 | SL0102 | 1.5 | 2 | | | | | |
| TNTB-SL-TP15 | SL0103 | 1.5 | 2 | | | | | |
| TNTB-SL-TP16 | SL0104 | 1.5 | 2 | | | | | |
| TNTB-SL-TP17 | SL0105 | 1.5 | 2 | | | | | |
| TNTB-SL-TP18 | SL0106 | 1.5 | 2 | | | | | |
| TNTB-SL-TP19 | SL0107 | 1.5 | 2 | | | | | |
| TNTB-SL-TP20 | SL0108 | 1.5 | 2 | | | | | |

**Total Soil Data for ProUCL Input**
**TNTB/WWTP1 Sewer Lines - PBOW**

| Sample Location | Sample Number | Sample Depth (ft bgs) | | D_Dibenz(a,h)anthracene | Indeno(1,2,3-cd)pyrene | D_Indeno(1,2,3-cd)pyrene |
|---|---|---|---|---|---|---|
| TNTB-SL-DP01 | DP0100DP0101 | 0 | 1 | 1 | 0.7755 | 1 |
| TNTB-SL-DP01 | DP0103 | 8 | 10 | 0 | 0.0668 | 1 |
| TNTB-SL-DP02 | DP0104 | 0 | 1 | 0 | 0.037 | 0 |
| TNTB-SL-DP02 | DP0105 | 8 | 10 | 0 | 0.04 | 0 |
| TNTB-SL-DP03 | DP0106 | 0 | 1 | 0 | 0.037 | 0 |
| TNTB-SL-DP03 | DP0107 | 8 | 10 | 0 | 0.042 | 0 |
| TNTB-SL-DP04 | DP0108 | 0 | 1 | 0 | 0.04 | 0 |
| TNTB-SL-DP04 | DP0109 | 8 | 10 | 0 | 0.039 | 0 |
| TNTB-SL-DP05 | DP0110 | 0 | 1 | 0 | 0.039 | 0 |
| TNTB-SL-DP05 | DP0111 | 8 | 10 | 0 | 0.037 | 0 |
| TNTB-SL-DP06 | DP0112DP0113 | 0 | 1 | 0 | 0.0386 | 1 |
| TNTB-SL-DP06 | DP0115 | 9 | 10 | 0 | 0.042 | 0 |
| TNTB-SL-DP07 | DP0116 | 0 | 1 | 0 | 0.036 | 0 |
| TNTB-SL-DP07 | DP0117 | 4 | 6 | 0 | 0.036 | 0 |
| TNTB-SL-DP08 | DP0118 | 0 | 1 | 0 | 0.038 | 0 |
| TNTB-SL-DP08 | DP0119 | 2 | 4 | 0 | 0.042 | 0 |
| TNTB-SL-DP09 | DP0120 | 0 | 1 | 0 | 0.042 | 0 |
| TNTB-SL-DP09 | DP0121 | 2 | 4 | 0 | 0.038 | 0 |
| TNTB-SL-DP10 | DP0122 | 0 | 1 | 0 | 0.036 | 0 |
| TNTB-SL-DP10 | DP0123 | 2 | 3.5 | 0 | 0.037 | 0 |
| TNTB-SL-DP11 | DP0124 | 8 | 10 | 0 | 0.039 | 0 |
| TNTB-SL-DP12 | DP0125 | 8 | 10 | 0 | 0.039 | 0 |
| TNTB-SL-DP13 | DP0126 | 2 | 3.5 | 0 | 0.037 | 0 |
| TNTB-SL-DP14 | DP0127DP0130 | 2 | 3.5 | 0 | 0.0375 | 0 |
| TNTB-SL-TP01 | SL0085 | 2 | 3 | | | |
| TNTB-SL-TP02 | SL0086 | 2 | 3 | | | |
| TNTB-SL-TP03 | SL0087 | 2 | 3 | | | |
| TNTB-SL-TP04 | SL0088 | 2 | 3 | | | |
| TNTB-SL-TP05 | SL0089 | 2 | 3 | | | |
| TNTB-SL-TP06 | SL0090 | 2 | 3 | | | |
| TNTB-SL-TP07 | SL0091SL0092 | 2 | 3 | | | |
| TNTB-SL-TP08 | SL0094 | 2 | 3 | | | |
| TNTB-SL-TP09 | SL0095 | 2 | 3 | | | |
| TNTB-SL-TP10 | SL0096SL0097 | 2 | 3 | | | |
| TNTB-SL-TP11 | SL0099 | 1.5 | 2 | | | |
| TNTB-SL-TP12 | SL0100 | 1.5 | 2 | | | |
| TNTB-SL-TP13 | SL0101 | 1.5 | 2 | | | |
| TNTB-SL-TP14 | SL0102 | 1.5 | 2 | | | |
| TNTB-SL-TP15 | SL0103 | 1.5 | 2 | | | |
| TNTB-SL-TP16 | SL0104 | 1.5 | 2 | | | |
| TNTB-SL-TP17 | SL0105 | 1.5 | 2 | | | |
| TNTB-SL-TP18 | SL0106 | 1.5 | 2 | | | |
| TNTB-SL-TP19 | SL0107 | 1.5 | 2 | | | |
| TNTB-SL-TP20 | SL0108 | 1.5 | 2 | | | |

## General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | TS UCL input.wst |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Trinitrotoluene, 2,4,6-**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 44 | Number of Detected Data | 8 |
| Number of Distinct Detected Data | 8 | Number of Non-Detect Data | 36 |
| | | Percent Non-Detects | 81.82% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.064 | Minimum Detected | -2.749 |
| Maximum Detected | 3.65 | Maximum Detected | 1.295 |
| Mean of Detected | 0.772 | Mean of Detected | -1.243 |
| SD of Detected | 1.225 | SD of Detected | 1.482 |
| Minimum Non-Detect | 0.035 | Minimum Non-Detect | -3.352 |
| Maximum Non-Detect | 0.15 | Maximum Non-Detect | -1.897 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 39 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 5 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 88.64% |

**Warning: There are only 8 Detected Values in this data**
**Note: It should be noted that even though bootstrap may be performed on this data set**
**the resulting calculations may not be reliable enough to draw conclusions**

**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.651 | Shapiro Wilk Test Statistic | 0.894 |
| 5% Shapiro Wilk Critical Value | 0.818 | 5% Shapiro Wilk Critical Value | 0.818 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.158 |
| SD | 0.574 |
| 95% DL/2 (t) UCL | 0.304 |
| | |
| Maximum Likelihood Estimate(MLE) Method | N/A |

**MLE yields a negative mean**

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -3.38 |
| SD | 1.199 |
| 95% H-Stat (DL/2) UCL | 0.112 |
| | |
| Log ROS Method | |
| Mean in Log Scale | -6.432 |
| SD in Log Scale | 3.006 |
| Mean in Original Scale | 0.142 |
| SD in Original Scale | 0.579 |
| 95% t UCL | 0.288 |
| 95% Percentile Bootstrap UCL | 0.3 |
| 95% BCA Bootstrap UCL | 0.418 |
| 95% H-UCL | 1.587 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.473 |
| Theta Star | 1.632 |
| nu star | 7.572 |
| | |
| A-D Test Statistic | 0.616 |
| 5% A-D Critical Value | 0.754 |
| K-S Test Statistic | 0.754 |
| 5% K-S Critical Value | 0.307 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution Test with Detected Values Only**

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 3.65 |
| Mean | 0.14 |
| Median | 0.000001 |
| SD | 0.579 |
| k star | 0.0957 |
| Theta star | 1.467 |
| Nu star | 8.42 |
| AppChi2 | 2.98 |
| 95% Gamma Approximate UCL | 0.397 |
| 95% Adjusted Gamma UCL | 0.412 |

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.193 |
| SD | 0.56 |
| SE of Mean | 0.0902 |
| 95% KM (t) UCL | 0.344 |
| 95% KM (z) UCL | 0.341 |
| 95% KM (jackknife) UCL | 0.336 |
| 95% KM (bootstrap t) UCL | 0.639 |
| 95% KM (BCA) UCL | 0.396 |
| 95% KM (Percentile Bootstrap) UCL | 0.373 |
| 95% KM (Chebyshev) UCL | 0.586 |
| 97.5% KM (Chebyshev) UCL | 0.756 |
| 99% KM (Chebyshev) UCL | 1.09 |
| | |
| Potential UCLs to Use | |
| 95% KM (t) UCL | 0.344 |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

**Benzo(a)anthracene**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 24 | Number of Detected Data | 4 |
| Number of Distinct Detected Data | 4 | Number of Non-Detect Data | 20 |
| | | Percent Non-Detects | 83.33% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.0413 | Minimum Detected | -3.187 |
| Maximum Detected | 1.617 | Maximum Detected | 0.481 |
| Mean of Detected | 0.464 | Mean of Detected | -1.913 |
| SD of Detected | 0.77 | SD of Detected | 1.698 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 21 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 3 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 87.50% |

**Warning: There are only 4 Distinct Detected Values in this data**
**Note: It should be noted that even though bootstrap may be performed on this data set**
**the resulting calculations may not be reliable enough to draw conclusions**

**It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.**

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.68 | Shapiro Wilk Test Statistic | 0.852 |
| 5% Shapiro Wilk Critical Value | 0.748 | 5% Shapiro Wilk Critical Value | 0.748 |
| **Data not Normal at 5% Significance Level** | | **Data appear Lognormal at 5% Significance Level** | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 0.0934 | Mean | -3.61 |
| SD | 0.326 | SD | 0.99 |
| 95% DL/2 (t) UCL | 0.207 | 95% H-Stat (DL/2) UCL | 0.0744 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| **MLE yields a negative mean** | | Mean in Log Scale | -8.244 |
| | | SD in Log Scale | 3.572 |
| | | Mean in Original Scale | 0.0777 |
| | | SD in Original Scale | 0.329 |
| | | 95% t UCL | 0.193 |
| | | 95% Percentile Bootstrap UCL | 0.209 |
| | | 95% BCA Bootstrap UCL | 0.282 |
| | | 95% H-UCL | 25.37 |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | 0.303 |
| Theta Star | 1.529 |
| nu star | 2.428 |
| | |
| A-D Test Statistic | 0.562 |
| 5% A-D Critical Value | 0.679 |
| K-S Test Statistic | 0.679 |
| 5% K-S Critical Value | 0.409 |

Data appear Gamma Distributed at 5% Significance Level

| Assuming Gamma Distribution | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 1.617 |
| Mean | 0.0774 |
| Median | 0.000001 |
| SD | 0.33 |
| k star | 0.106 |
| Theta star | 0.733 |
| Nu star | 5.066 |
| AppChi2 | 1.183 |
| 95% Gamma Approximate UCL | 0.331 |
| 95% Adjusted Gamma UCL | N/A |

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.112 |
| SD | 0.315 |
| SE of Mean | 0.0742 |
| 95% KM (t) UCL | 0.239 |
| 95% KM (z) UCL | 0.234 |
| 95% KM (jackknife) UCL | 0.22 |
| 95% KM (bootstrap t) UCL | 1.086 |
| 95% KM (BCA) UCL | 1.617 |
| 95% KM (Percentile Bootstrap) UCL | 0.334 |
| 95% KM (Chebyshev) UCL | 0.435 |
| 97.5% KM (Chebyshev) UCL | 0.575 |
| 99% KM (Chebyshev) UCL | 0.85 |

| Potential UCLs to Use | |
|---|---|
| 95% KM (t) UCL | 0.239 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(a)pyrene

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 24 | Number of Detected Data | 3 |
| Number of Distinct Detected Data | 3 | Number of Non-Detect Data | 21 |
| | | Percent Non-Detects | 87.50% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.0476 | Minimum Detected | -3.045 |
| Maximum Detected | 1.373 | Maximum Detected | 0.317 |
| Mean of Detected | 0.517 | Mean of Detected | -1.59 |
| SD of Detected | 0.742 | SD of Detected | 1.726 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 21 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 3 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 87.50% |

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.796 | Shapiro Wilk Test Statistic | 0.949 |
| 5% Shapiro Wilk Critical Value | 0.767 | 5% Shapiro Wilk Critical Value | 0.767 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |
| **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 0.0815 | Mean | -3.654 |
| SD | 0.276 | SD | 0.947 |
| 95% DL/2 (t) UCL | 0.178 | 95% H-Stat (DL/2) UCL | 0.066 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| **MLE yields a negative mean** | | Mean in Log Scale | -11.17 |
| | | SD in Log Scale | 4.788 |
| | | Mean in Original Scale | 0.0646 |
| | | SD in Original Scale | 0.28 |
| | | 95% t UCL | 0.163 |
| | | 95% Percentile Bootstrap UCL | 0.177 |
| | | 95% BCA Bootstrap UCL | 0.245 |
| | | 95% H-UCL | 11265 |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| | |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |
| Data not Gamma Distributed at 5% Significance Level | |
| | |
| **Assuming Gamma Distribution** | |
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |
| Theta star | N/A |
| Nu star | N/A |
| AppChi2 | N/A |
| 95% Gamma Approximate UCL | N/A |
| 95% Adjusted Gamma UCL | N/A |

| Data Distribution Test with Detected Values Only |
|---|
| Data appear Normal at 5% Significance Level |

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.106 |
| SD | 0.265 |
| SE of Mean | 0.0661 |
| 95% KM (t) UCL | 0.22 |
| 95% KM (z) UCL | 0.215 |
| 95% KM (jackknife) UCL | 0.193 |
| 95% KM (bootstrap t) UCL | 0.765 |
| 95% KM (BCA) UCL | N/A |
| 95% KM (Percentile Bootstrap) UCL | 1.373 |
| 95% KM (Chebyshev) UCL | 0.395 |
| 97.5% KM (Chebyshev) UCL | 0.519 |
| 99% KM (Chebyshev) UCL | 0.764 |
| | |
| **Potential UCLs to Use** | |
| 95% KM (t) UCL | 0.22 |
| 95% KM (Percentile Bootstrap) UCL | 1.373 |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

**Benzo(b)fluoranthene**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 24 | Number of Detected Data | 5 |
| Number of Distinct Detected Data | 5 | Number of Non-Detect Data | 19 |
| | | Percent Non-Detects | 79.17% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.045 | Minimum Detected | -3.101 |
| Maximum Detected | 1.945 | Maximum Detected | 0.665 |
| Mean of Detected | 0.459 | Mean of Detected | -1.953 |
| SD of Detected | 0.833 | SD of Detected | 1.562 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 19 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 5 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 79.17% |

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.604 | Shapiro Wilk Test Statistic | 0.805 |
| 5% Shapiro Wilk Critical Value | 0.762 | 5% Shapiro Wilk Critical Value | 0.762 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |
| **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 0.111 | Mean | -3.532 |
| SD | 0.392 | SD | 1.054 |
| 95% DL/2 (t) UCL | 0.248 | 95% H-Stat (DL/2) UCL | 0.0906 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| **MLE yields a negative mean** | | Mean in Log Scale | -7.457 |
| | | SD in Log Scale | 3.423 |
| | | Mean in Original Scale | 0.096 |
| | | SD in Original Scale | 0.396 |
| | | 95% t UCL | 0.234 |
| | | 95% Percentile Bootstrap UCL | 0.255 |
| | | 95% BCA Bootstrap UCL | 0.341 |
| | | 95% H-UCL | 22.17 |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | 0.348 |
| Theta Star | 1.32 |
| nu star | 3.476 |
| | |
| A-D Test Statistic | 0.782 |
| 5% A-D Critical Value | 0.709 |
| K-S Test Statistic | 0.709 |
| 5% K-S Critical Value | 0.371 |

Data follow Appr. Gamma Distribution at 5% Significance Level

| Assuming Gamma Distribution | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 1.945 |
| Mean | 0.0956 |
| Median | 0.000001 |
| SD | 0.396 |
| k star | 0.108 |
| Theta star | 0.888 |
| Nu star | 5.168 |
| AppChi2 | 1.23 |
| 95% Gamma Approximate UCL | 0.401 |
| 95% Adjusted Gamma UCL | 0.448 |

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data Follow Appr. Gamma Distribution at 5% Significance Level

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.131 |
| SD | 0.379 |
| SE of Mean | 0.0865 |
| 95% KM (t) UCL | 0.28 |
| 95% KM (z) UCL | 0.274 |
| 95% KM (jackknife) UCL | 0.261 |
| 95% KM (bootstrap t) UCL | 4.901 |
| 95% KM (BCA) UCL | 1.945 |
| 95% KM (Percentile Bootstrap) UCL | 0.297 |
| 95% KM (Chebyshev) UCL | 0.508 |
| 97.5% KM (Chebyshev) UCL | 0.672 |
| 99% KM (Chebyshev) UCL | 0.992 |
| | |
| Potential UCLs to Use | |
| 95% KM (t) UCL | 0.28 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-cd)pyrene

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 24 | Number of Detected Data | 3 |
| Number of Distinct Detected Data | 3 | Number of Non-Detect Data | 21 |
| | | Percent Non-Detects | 87.50% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.0386 | Minimum Detected | -3.255 |
| Maximum Detected | 0.776 | Maximum Detected | -0.254 |
| Mean of Detected | 0.294 | Mean of Detected | -2.072 |
| SD of Detected | 0.418 | SD of Detected | 1.598 |
| Minimum Non-Detect | 0.036 | Minimum Non-Detect | -3.324 |
| Maximum Non-Detect | 0.042 | Maximum Non-Detect | -3.17 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 22 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 2 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 91.67% |

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.779 | Shapiro Wilk Test Statistic | 0.882 |
| 5% Shapiro Wilk Critical Value | 0.767 | 5% Shapiro Wilk Critical Value | 0.767 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |
| **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 0.0536 | Mean | -3.714 |
| SD | 0.154 | SD | 0.792 |
| 95% DL/2 (t) UCL | 0.108 | 95% H-Stat (DL/2) UCL | 0.0486 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| **MLE method failed to converge properly** | | Mean in Log Scale | -7.95 |
| | | SD in Log Scale | 2.982 |
| | | Mean in Original Scale | 0.0373 |
| | | SD in Original Scale | 0.158 |
| | | 95% t UCL | 0.0925 |
| | | 95% Percentile Bootstrap UCL | 0.102 |
| | | 95% BCA Bootstrap UCL | 0.135 |
| | | 95% H-UCL | 1.103 |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| | |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |
| Data not Gamma Distributed at 5% Significance Level | |
| | |
| **Assuming Gamma Distribution** | |
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |
| Theta star | N/A |
| Nu star | N/A |
| AppChi2 | N/A |
| 95% Gamma Approximate UCL | N/A |
| 95% Adjusted Gamma UCL | N/A |

Note: DL/2 is not a recommended method.

| Data Distribution Test with Detected Values Only |
|---|
| Data appear Normal at 5% Significance Level |

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.0705 |
| SD | 0.147 |
| SE of Mean | 0.0368 |
| 95% KM (t) UCL | 0.134 |
| 95% KM (z) UCL | 0.131 |
| 95% KM (jackknife) UCL | 0.115 |
| 95% KM (bootstrap t) UCL | 0.921 |
| 95% KM (BCA) UCL | N/A |
| 95% KM (Percentile Bootstrap) UCL | 0.776 |
| 95% KM (Chebyshev) UCL | 0.231 |
| 97.5% KM (Chebyshev) UCL | 0.3 |
| 99% KM (Chebyshev) UCL | 0.436 |
| | |
| **Potential UCLs to Use** | |
| 95% KM (t) UCL | 0.134 |
| 95% KM (Percentile Bootstrap) UCL | 0.776 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

General UCL Statistics for Full Data Sets

| User Selected Options | |
|---|---|
| From File | TS UCL input.wst |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Dibenz(a,h)anthracene**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 24 | Number of Distinct Observations | 8 |

| **Raw Statistics** | | **Log-transformed Statistics** | |
|---|---|---|---|
| Minimum | 0.036 | Minimum of Log Data | -3.324 |
| Maximum | 0.169 | Maximum of Log Data | -1.776 |
| Mean | 0.0441 | Mean of log Data | -3.193 |
| Median | 0.0385 | SD of log Data | 0.306 |
| SD | 0.0268 | | |
| Std. Error of Mean | 0.00546 | | |
| Coefficient of Variation | 0.607 | | |
| Skewness | 4.856 | | |

**Relevant UCL Statistics**

| **Normal Distribution Test** | | **Lognormal Distribution Test** | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.27 | Shapiro Wilk Test Statistic | 0.349 |
| Shapiro Wilk Critical Value | 0.916 | Shapiro Wilk Critical Value | 0.916 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
|---|---|---|---|
| 95% Student's-t UCL | 0.0534 | 95% H-UCL | 0.0483 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 0.0548 |
| 95% Adjusted-CLT UCL (Chen-1995) | 0.0588 | 97.5% Chebyshev (MVUE) UCL | 0.0599 |
| 95% Modified-t UCL (Johnson-1978) | 0.0543 | 99% Chebyshev (MVUE) UCL | 0.07 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 6.286 |
| Theta Star | 0.00701 |
| MLE of Mean | 0.0441 |
| MLE of Standard Deviation | 0.0176 |
| nu star | 301.7 |
| Approximate Chi Square Value (.05) | 262.5 |
| Adjusted Level of Significance | 0.0392 |
| Adjusted Chi Square Value | 259.9 |
| Anderson-Darling Test Statistic | 6.523 |
| Anderson-Darling 5% Critical Value | 0.745 |
| Kolmogorov-Smirnov Test Statistic | 0.459 |
| Kolmogorov-Smirnov 5% Critical Value | 0.178 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 0.0507 |
| 95% Adjusted Gamma UCL | 0.0512 |

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 0.0531 |
| 95% Jackknife UCL | 0.0534 |
| 95% Standard Bootstrap UCL | 0.0528 |
| 95% Bootstrap-t UCL | 0.134 |
| 95% Hall's Bootstrap UCL | 0.0961 |
| 95% Percentile Bootstrap UCL | 0.0549 |
| 95% BCA Bootstrap UCL | 0.0609 |
| 95% Chebyshev(Mean, Sd) UCL | 0.0679 |
| 97.5% Chebyshev(Mean, Sd) UCL | 0.0782 |
| 99% Chebyshev(Mean, Sd) UCL | 0.0984 |

**Potential UCL to Use**

| | |
|---|---|
| Use 95% Student's-t UCL | 0.0534 |
| or 95% Modified-t UCL | 0.0543 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

# APPENDIX C

# TOXICOLOGICAL PROFILES

# *Introduction to the Toxicological Profiles*

## *1.0 Purpose and Use of the Toxicological Profiles*

Human health toxicological profiles are presented for each chemical of potential concern (COPC), each chemical for which documentation of chemical-specific values is required or about which there are chemical-specific issues that require resolution. The toxicological profiles provide documentation of the chemical-specific physical properties and toxicity values used in the risk assessment (RA). They also discuss the identity, classification and uses of the chemical, the common sources of release to the environment and the fate of the chemical in the environment, including the relevance of aquatic and terrestrial food-chain pathways to human health. A brief review of toxicokinetics discusses absorption, distribution, metabolism or biotransformation, excretion of the parent compound and metabolites, and mechanism of toxicity including identifying the ultimate toxicant – i.e., the moiety (parent chemical or metabolite) identified as most likely responsible for the adverse effects associated with the chemical. This information may be helpful to determine whether laboratory animals may serve as appropriate models for toxicity to humans, and to clarify the nature of toxicological interactions with other chemicals. A discussion of dermal exposure provides perspective on the significance of dermal uptake, and documents the development of dermal toxicity values and the extent or rate of dermal uptake from soil or water according to the latest USEPA (2004) guidance.

The noncancer effects evaluation and carcinogenicity evaluation provide an overall perspective on the nature of the adverse effects associated with the chemical, as well as documentation of the toxicity values. Chemical-specific issues or controversies that may influence the interpretation or application of the results of the RA are also discussed herein. The toxicity values used in the RA are summarized in a table.

*The overall purpose of the toxicological profiles is to provide perspective on characteristics of each of the chemicals included in the RA so that the numerical risk estimates can be interpreted and applied wisely in the management of the site.*

## *2.0 Chemical Identity*

The identity of the chemical or chemical class is given in the title of each profile; additional information or clarification is provided in the *Introduction and Physical Properties* Section as required. The hyphenated number in parentheses following the chemical name is its unique Chemical Abstract Service (CAS) registration number. The CAS number may be located in the profile title, text, or in the case of multiple isomers or members of a chemical class, in the table that provides the physical properties.

## *3.0 Physical Properties*

The toxicological profiles also provide documentation for the physical properties or constants that are important for chemical transport modeling, such as molecular weight (MW) in grams per mole (g/mole), the log of the octanol/water partition coefficient (log $K_{ow}$), Henry's Law constant (H) in atmosphere-cubic meters per mole (atm-$m^3$/mole), the soil/water partition coefficient ($K_d$) in liters per kilogram (L/kg) for metals, the log of the soil/organic carbon partition coefficient (log $K_{oc}$) (unitless) for organic chemicals, diffusivity in air ($D_a$) in square centimeters per second ($cm^2$/s), diffusivity in water ($D_w$) in $cm^2$/s, vapor pressure (VP) in atmospheres (atm), solubility

in water (S) in milligrams per liter (mg/L), and, for volatile organic compounds (VOC), boiling point of pure compound ($T_b$) in degrees Kelvin (°K), critical temperature ($T_c$) in °K, and enthalpy of vaporization at the boiling point ($\Delta H_{v,b}$) in calories per mole (cal/mol). Organic chemicals are designated as VOCs or semivolatile organic compounds (SVOC) based on their propensity to volatilize from environmental media. Chemicals designated as VOCs generally have an H greater than 1E-5 atm-$m^3$/mole (EPA, 2002).

The physical constants generally are taken from the most reliable source (i.e., the source that provides the highest level of documentation). Values for interrelated properties are usually taken from the same source (e.g., H is often estimated from VP and S; therefore, the same source is generally used for all three property values). When one source provides several values for a given property, professional judgment is used to select the most appropriate. Obvious outliers may be dropped from consideration. The average or the midpoint of a range of values may be selected. $K_d$ values for metals and $K_{oc}$ values for ionizing organic compound are based on a default pH of 6.8 (EPA, 2002) if the data are available. VP, S and H values are limited to those provided for normal ambient temperatures (0 to 30 °C) and the reference temperature is provided.

When values for H are not located, they are calculated as follows, provided the requisite information is available (EPA, 1998):

$$H = \frac{VP \bullet MW}{S}$$

where:

| | | |
|---|---|---|
| H | = | Henry's law constant (atm-$m^3$/mole, calculated) |
| VP | = | vapor pressure (atm) |
| MW | = | molecular weight (g/mole) |
| S | = | solubility in water (mg/L). |

When values for $K_{oc}$ are not located, they are calculated as follows for phthalates and polyaromatic aromatic hydrocarbons (PAH) provided log $K_{ow}$ is available (EPA, 1998):

$$\log K_{oc} = 0.97 \log K_{ow} - 0.094$$

where:

| | | |
|---|---|---|
| $K_{oc}$ | = | soil/organic carbon partition coefficient (unitless, calculated) |
| $K_{ow}$ | = | octanol/water partition coefficient (unitless). |

$K_{oc}$ for other organic chemicals is calculated as follows provided log $K_{ow}$ is available (EPA, 1998):

$$\log K_{oc} = 0.78 \log K_{ow} + 0.151$$

where:

$K_{oc}$ = soil/organic carbon partition coefficient (unitless, calculated)
$K_{ow}$ = octanol/water partition coefficient (unitless).

When values for $D_a$ are not located, they are calculated as follows (EPA, 1998):

$$D_a = \frac{1.9}{MW^{2/3}}$$

where:

$D_a$ = diffusivity in air ($cm^2/s$, calculated)
MW = molecular weight (g/mole).

When values for $D_w$ are not located, they are calculated as follows (EPA, 1998):

$$D_w = \frac{22E{-}5}{MW^{2/3}}$$

where:

$D_w$ = diffusivity in water ($cm^2/s$, calculated)
MW = molecular weight (g/mole).

Values for $T_b$, $T_c$ and $\Delta H_{v,b}$ for VOCs are preferentially taken from EPA (2004), unless there is evidence that values provided by other sources (HSDB, 2011; NIST, 2011) are more reliable. If values are not located for these variables, they may be estimated by the most appropriate technique for the specific chemical or class to which it belongs as recommended by Lyman et al. (1990). The estimation method used is identified by footnote in the table of physical properties.

## *4.0 Environmental Release, Fate and Transport*

The toxicological profiles also present the predominant sources of release to the environment as well as a qualitative or semi-quantitative description of the fate and transport of the chemical in air, water, sediment, and soil. No attempt is made to present detailed quantitative data because environmental fate is usually highly dependent on climatic conditions and the characteristics of the medium of interest, both of which may differ from location to location and change from time to time. The source and fate information may provide perspective regarding the likelihood that the chemical's presence is related to site activities, that the chemical will migrate across media, or that the chemical will persist at toxicologically significant levels.

Biotransfer factors are provided for chemicals for which food-chain pathways may be significant, which includes a few inorganic chemicals and those organic chemicals that are highly lipophilic, persist in the environment, and are resistant to metabolism by lower trophic organisms in the food chain. High lipophilicity is indicated by a log $K_{ow}$ greater than 3 (Lyman et al., 1990). Lipophilicity enhances partitioning to biomedia and passage across biological

membranes. Persistence in the environment is evidence that the chemical might resist biotransformation and, therefore, remain in edible tissues at toxicologically significant concentrations. Toxicokinetic data, when available, clarify the potential for biotransfer. Biotransformation products may be more toxic than the parent compound, but they tend to be short-lived or more quickly removed from the body, reducing the likelihood of significant bioaccumulation. Similarly, VOCs tend to be mobile and labile (i.e., subject to rapid and extensive biotransformation and excretion), and generally do not participate significantly in food-chain pathways. Therefore, biotransfer factors are not estimated for VOCs, with few exceptions. Some SVOCs, however, are highly lipophilic and may persist. Biotransfer factors generally are not estimated unless empirical data suggest that participation in food-chain pathways is likely to be significant.

The biotransfer factors of interest are water-to-fish bioconcentration factors (BCF) or bioaccumulation factors (BAF), or biota-sediment accumulation factors (BSAF), soil-to-plant biotransfer factors (Bp), cattle ingestion-to-beef factors (Bb) and cattle ingestion-to-milk factors (Bm). Separate soil-to-plant biotransfer factors are available for the reproductive parts of plants (e.g., fruits, seeds) and the vegetative parts of plants (e.g., stems, leaves) for inorganic and some organic chemicals. Soil-to-plant factors for the reproductive parts of plants are designated Bpr; soil-to-plant factors for the vegetative parts of plants are designated Bpv.

Most chemicals in surface water bodies remain predominantly in the dissolved phase in the water column or partition to sediment, which generally settles to the bottom. The difference in concentration between surface water and sediment is usually upwards of an order of magnitude. Theoretically it is appropriate to evaluate biotransfer from both media, using BCF to quantify uptake from water and BSAF to quantify uptake from sediment. Quantification of biotransfer, however, is accompanied by considerable uncertainty and variability because field conditions cannot be readily duplicated in the laboratory where BCF values are generally measured. Therefore, the biotransfer models for either medium are intentionally designed to be very conservative to ensure protection of human health. Consequently, evaluating biotransfer from both water and sediment captures the conservatism of both models and is likely to grossly overestimate total biotransfer. Therefore, most chemicals with the potential to participate significantly in aquatic food chain pathways are evaluated for bioconcentration from surface water *or* bioaccumulation from sediment, depending on which pathway is expected to predominate, but not both.

BCF values are adopted from empirical data when the data are clearly the best choice (i.e., similar results in multiple species of fin fish). When the empirical data are few or inconsistent, BCFs for inorganic chemicals are taken from various sources. BCF values for organic chemicals are generally estimated from the Bintein and Devillers model (Devillers et al., 1996):

$$\log BCF = 0.910 \log K_{ow} - 1.975 \log(6.8E{-}7 K_{ow} + 1) - 0.786$$

where:

BCF = bioconcentration factor (L/kg, calculated)
$K_{ow}$ = octanol/water partition coefficient (unitless).

The Bintein and Devillers model is selected over simpler models adopted by the EPA largely because the Bintein and Devillers approach has undergone scrutiny since first published (Bintein and Devillers, 1993), and considerable effort was expended to validate the model; i.e., to compare modeled and empirical results. The Bintein and Devillers model is probably more realistic than simpler models, particularly for chemicals with higher log $K_{ow}$ values. BSAF values are chosen instead of BCFs for those very highly lipophilic chemicals such as the polychlorinated biphenyls (PCB), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF) and selected organochlorine pesticides expected to partition almost entirely to benthic sediment.

Soil-to-plant biotransfer factors (Bp) for SVOCs are estimated by a simple model by Travis and Arms (1988), which is based only on log $K_{ow}$:

$$\log Bp = 1.588 - 0.578 \log K_{ow}$$

where:

Bp = soil-to-plant biotransfer factor (unitless, calculated)
$K_{ow}$ = octanol/water partition coefficient (unitless).

Separate biotransfer factors are not estimated for the reproductive parts of plants (Bpr) and the vegetative parts of plants (Bpv) by the Travis and Arms model.

Cattle ingestion-to-beef factors (Bb) for SVOCs are estimated by a simple model by Travis and Arms (1988), which is based only on log $K_{ow}$:

$$\log Bb = -7.6 + \log K_{ow}$$

where:

Bb = cattle ingestion-to-beef biotransfer factor (days/kg, calculated)
$K_{ow}$ = octanol/water partition coefficient (unitless).

Cattle ingestion-to-milk factors (Bm) for SVOCs are estimated by a simple model by Travis and Arms (1988), which is based only on log $K_{ow}$:

$$\log Bm = -8.10 + \log K_{ow}$$

where:

Bm = cattle ingestion-to-milk biotransfer factor (days/kg, calculated)
$K_{ow}$ = octanol/water partition coefficient (unitless).

It should be understood that the biotransfer models described above depend only on one or two physical property values that are related largely to the propensity for transfer across biological membranes. Many compounds have relatively large log $K_{ow}$ values, indicating ready passage across membranes; however, they are sufficiently volatile, or are otherwise mobile or labile so

they are unable to persist in biological tissues. For example, many constituents with high log $K_{ow}$ values are efficiently metabolized by lower trophic organisms in the food chain so that significant human exposure does not occur. Such is the case for practically all VOCs and most SVOCs; relatively few compounds participate significantly in food-chain pathways. Therefore, biotransfer is evaluated as a potential pathway only for those chemicals with empirical data that indicate food-chain exposure could be significant.

## *5.0 Toxicokinetics*

A toxicokinetics section was added to the toxicological profiles in early 2004. Toxicokinetics describes the uptake or absorption of the chemical from contact media, the distribution of the chemical (or its metabolites) within the body following absorption, the metabolism or biotransformation of the chemical, and the mechanisms of excretion of the parent compound and its biotransformation products from the body. The toxicokinetics section documents the gastrointestinal (GI) absorption factor (GAF) required to develop toxicity factors for dermal exposure, because dermal risk characterization depends on an absorbed dose rather than an exposure dose. The toxicokinetics section also identifies the compounds that are rapidly metabolized or eliminated, which justifies excluding their evaluation in food-chain pathways even though they may have a large $K_{ow}$ that indicates ready passage across cell membranes. This section also tries to identify the ultimate toxicant and elucidate the most important mechanism(s) of toxicity.

## *6.0 Dermal Exposure*

The toxicological profiles provide the documentation for the GAF, which is used to develop the dermal toxicity values. The toxicological profiles also provide documentation for the dermal absorption factor (ABS), which describes the extent of dermal uptake from soil, and the time for dermal uptake to reach steady state (t*), the permeability coefficient ($K_p$), the lag time for chemical to cross the stratum corneum ($\tau$), the fraction absorbed (FA), and the ratio of the permeability coefficient for passage across the stratum corneum to the permeability coefficient for passage across the viable epidermis (B), all which are used to estimate the rate of dermal uptake from water. These values are taken from EPA (2004) if available. Otherwise, they are estimated by the EPA (2004) methods.

## *7.0 Toxicity Evaluation*

The toxicological profile contains a brief description of the nature of the adverse effects associated with the chemical. It is important to note that a discussion of adverse effects without a discussion of dose is incomplete and potentially misleading, because virtually any chemical may be toxic at some dose, and many chemicals (e.g., nutritionally required minerals, vitamins, amino acids, etc.) enhance human health at some low dose. An ever growing and compelling body of evidence suggests that many environmental contaminants also enhance health at low doses (Hart and Frame, 1996).

## *7.1 Noncancer Evaluation*

The toxicity values for noncancer effects include a reference dose (RfD) expressed in milligrams per kilogram per day (mg/kg-day) for chronic or subchronic oral exposure, and a reference concentration (RfC), in milligrams per cubic meter ($mg/m^3$), for chronic or subchronic inhalation exposure. The inhalation RfC in units of $mg/m^3$ may be converted to an equivalent inhalation

RfD by assuming continuous chronic exposure of humans with a body weight of 70 kg and an inhalation rate of 20 $m^3$/day (EPA, 1989, 1991). In other words, the RfC expressed as mg/$m^3$ is multiplied by the inhalation rate of 20 $m^3$/day, and the result is divided by the assumed adult body weight of 70 kg to yield an inhalation RfD expressed as mg/kg-day.

RfD and RfC values are usually derived from empirical benchmark doses (BMD) or concentrations called no-observed-effect levels (NOEL) or no-observed-adverse-effect levels (NOAEL) from animal toxicity or human epidemiology studies. If the data do not permit identifying a NOEL or NOAEL, a lowest-observed-adverse-effect level (LOAEL) or lowest-effect level (LEL) may be used. A frank-effect level (FEL), e.g., mortality, shortened life span or serious physiologic, neurologic or behavioral disturbances, is generally considered an inappropriate benchmark from which to develop an RfD or RfC. Some RfD and RfC derivations employ a BMD that is a statistically estimated dose for humans at which some low proportion of the population may experience some minimally adverse effect. A BMD at which 10 percent of the population may be expected to experience such an effect is expressed as $BMD_{10}$. The RfD or RfC is derived by dividing the benchmark level (e.g., NOAEL or $BMD_{10}$) by a series of uncertainty and modifying factors, which collectively are designated the uncertainty factor (UF).

RfD and RfC values are not currently available for acute toxicity and acute exposure is not evaluated in the RA. Nonetheless, the levels associated with acute lethality and data regarding the effects of acute exposure to levels higher than ordinarily observed in chronic environmental exposure provide additional perspective regarding the toxicity of the chemical. Therefore, information regarding acute toxicity, when available, is included in the profiles. Lethality data for laboratory animals are generally expressed as the oral dose associated with lethality of 50 percent of an exposed population ($LD_{50}$) or the concentration in air associated with lethality of 50 percent of an exposed population ($LC_{50}$). Occasionally the dose associated with lethality in a low percentage of an exposed population ($LD_{LO}$) is presented.

RfD and RfC values are derived for both chronic and subchronic exposure. For purposes of the RA, chronic exposure is defined as equal to or greater than 7 years, i.e., at least 10 percent of expected life span; subchronic exposure is defined as 2 weeks to 7 years.

Under the assumption of monotonicity (i.e., incidence, intensity, or severity of effects can increase, but cannot decrease, with increasing magnitude or duration of exposure), a chronic RfD may be considered sufficiently protective for subchronic exposure, but a subchronic RfD may not be protective for chronic exposure. Currently, verified subchronic RfD values are unavailable. Provisional subchronic RfDs exist for few chemicals and are compiled in the Health Effects Assessment Summary Tables (HEAST) (EPA, 1997) and some National Center for Environmental Assessment (NCEA) or Provisional Peer Reviewed Toxicity Value (PPRTV) derivations. Although once updated semi-annually, the HEAST is no longer updated, because the EPA (2005) Integrated Risk Information System (IRIS) is generally considered the source of the highest quality toxicity values. For some chemicals the PPRTV derivations are more recent and it is known that summaries on IRIS will be replaced with the PPRTV derivations. In these cases the PPRTV values will be selected preferentially to those on IRIS. Subchronic RfD and RfC values are generally obtained from EPA (1997) or more recent NCEA or PPRTV evaluations, or they may be derived *de novo* from the toxicological data set or from chronic RfD values as follows:

- If the UF applied in the derivation of the chronic RfD does not provide for expansion from subchronic to chronic exposure (e.g., if the chronic RfD was derived from a chronic study), the chronic RfD is adopted as being sufficiently protective for subchronic exposure.

- If the UF applied in the derivation of the chronic RfD contains a component to expand from subchronic to chronic exposure, the subchronic RfD is derived by multiplying the chronic RfD by the component of the UF used to expand from subchronic to chronic exposure (e.g., if a factor of 10 was used to expand from subchronic to chronic exposure, the subchronic RfD will be 10 times larger than the chronic RfD).

### *7.2 Carcinogenicity Evaluation*

The evaluation of the potential carcinogenicity of a chemical includes both a qualitative and a quantitative aspect (EPA, 1986, 2005). EPA (2005) recognizes five weight-of-evidence group classifications for carcinogenicity. Formerly, EPA (1986) used a letter-based system to describe the weight of evidence for carcinogenicity. Reference to this former system is included because many of the carcinogenicity assessments listed on the Integrated Risk Information System (IRIS) use the former letter-based system (EPA, 2011). The five EPA weight-of-evidence classifications are as follows:

- ***Carcinogenic to Humans*** (corresponds to the former Group A - Human Carcinogen).

- ***Likely to be Carcinogenic to Humans*** (includes both the former Group B1 and Group B2-Probable Human Carcinogens)

- ***Suggestive Evidence of Carcinogenic Potential*** (corresponds to the former Group C - Possible Human Carcinogen)

- ***Inadequate Information to Assess Carcinogenic Potential*** (corresponds to the former Group D - Not Classifiable as to Human Carcinogenicity)

- ***Not Likely to be Carcinogenic to Humans*** (corresponds to the former Group E - Evidence of Noncarcinogenicity to Humans).

Toxicity values for cancer risk include a slope factor (SF) for oral exposure, expressed as the risk per mg/kg-day ingested dose, and a unit risk factor (URF) for inhalation exposure, expressed as the risk per microgram per cubic meter ($\mu g/m^3$) in ambient air. These quantitative estimates are generally provided for chemicals in EPA weight-of-evidence Groups A, B and C if the data are adequate. The SF or URF is usually estimated as an upper bound on the slope of the dose- or concentration-response curve from animal toxicity or human epidemiology studies. The inhalation URF in units of risk per $\mu g/m^3$ may be converted to an equivalent inhalation SF in units of risk per mg/kg-day by assuming continuous lifetime exposure of humans with a body weight to 70 kg and an inhalation rate of 20 $m^3$/day. In other words, the URF expressed as risk per $\mu g/m^3$ is divided by the inhalation rate of 20 $m^3$/day, and multiplied by the assumed body weight of 70 kg and a conversion factor of 1000 $\mu g/mg$.

EPA (1986, 2005) generally assumes that there are no thresholds for carcinogenic expression; therefore, any exposure represents some quantifiable risk. A few potential carcinogens are understood to require a threshold for carcinogenic expression. Such chemicals are more appropriately evaluated with an RfD developed as described above.

### *7.3 Hierarchy for Selecting Toxicity Data*

Toxicity values generally are chosen using the following hierarchy:

- The EPA's (2011) on-line IRIS database containing toxicity values that have undergone the most rigorous Agency review.
- PPRTV derivations for the Superfund Technical Support Center (STSC); there may be individual chemicals for which the PPRTV derivations supercede those on IRIS.
- Older NCEA derivations for the STSC, HEAST (EPA, 1997), or other EPA documents or memoranda.

When EPA-derived toxicity values are not located in any of the above sources, Minimal Risk Levels (MRL) from the Agency for Toxic Substances Disease Registry (ATSDR) toxicological profiles may be adopted or adapted for use in the RA. MRLs are derived by a methodology similar to the EPA methodology for RfD derivation. ATSDR toxicological profiles generally identify levels significant to human health with particular emphasis on target organ and mechanism of toxicity. Also, the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) has derived toxicity values for certain chemicals (and their degradation products) associated with military use. Finally, the primary literature may be surveyed to determine whether sufficient data exist to derive a toxicity value using the EPA methodology. The use of surrogate chemicals is also considered if the chemical structure, adverse effects, and toxic potency of the surrogate and chemical of interest are judged to be sufficiently similar.

GAFs, used to derive dermal RfD values and SFs from the corresponding oral toxicity values, are obtained from the following hierarchy:

- EPA (2004)
- Empirical data
- PPRTV summaries or NCEA position papers
- Federal agency reviews of the empirical data, such as ATSDR toxicological profiles and various EPA criteria documents
- Other published reviews of the empirical data.

## *8.0 References*


Bintein, S. and J. Devillers, 1993, "Nonlinear Dependence of Fish Bioconcentration on n-Octanol/Water Partition Coefficient," ***SAR and QSAR in Environmental Research***, 1: 29-39.

Devillers, J., S. Bintein and D. Domine, 1996, "Comparison of BCF Models Based on Log P," ***Chemosphere***, 33(6): 1047-1065.

Hart, R.W. and L.T. Frame, 1996, "Toxicological Defense Mechanisms and How They May Affect the Nature of Dose-Response Relationships," ***Biological Effects of Low Level Exposure (BELLE) Newsletter***, 5(1): 1-16.

Hazardous Substance Data Bank (HSDB), 2011, National Library of Medicine, on line.

Lyman, W.J., W.F. Reehl and D.H. Rosenblatt, 1990, ***Handbook of Chemical Property Estimation Methods, Environmental Behavior of Organic Compounds***, American Chemical Society, Washington, D.C.

National Institute of Standards and Technology (NIST), 2011, ***NIST Chemistry WebBook***, on line.

Travis, C.C. and A.D. Arms, 1988, "Bioconcentration of Organics in Beef, Milk and Vegetation," ***Environmental Science and Technology***, 22(3): 271-274.

U.S. Environmental Protection Agency (EPA), 1986, "Guidelines for Carcinogen Risk Assessment," ***Federal Register***, 51(185): 33992-34003.

U.S. Environmental Protection Agency (EPA), 1989, ***Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)***, Interim Final, Office of Emergency and Remedial Response, Washington, D.C., EPA/540/1-89/002, December.

U.S. Environmental Protection Agency (EPA), 1991, ***Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Standard Default Exposure Factors***, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03, 25 March.

U.S. Environmental Protection Agency (EPA), 1997, ***Health Effects Assessment Summary Tables, FY 1997 Update***, Office of Solid Waste and Emergency Response, Washington, D.C., 9200.6-303(97-1), EPA 540/R-97-036, PB97-921199.

U.S. Environmental Protection Agency (EPA), 1998, ***Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Volume Two***, Peer Review Draft, Office of Solid Waste and Emergency Response, Washington, D.C., EPA530-D-98-001B, July.

U.S. Environmental Protection Agency (EPA), 2002, ***Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites***, Office of Solid Waste and Emergency Response, Washington, D.C., 9355.4-24, December.

U.S. Environmental Protection Agency (EPA), 2004, ***Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final***, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R/99/005, OSWER 9285.7-02EP July.

U.S. Environmental Protection Agency (EPA), 2005, ***Guidelines for Carcinogen Risk Assessment***, Risk Assessment Forum, Washington, D.C., March, EPA/630/P-03/001B.

U.S. Environmental Protection Agency (EPA), 2011, ***Integrated Risk Information System (IRIS)***, National Center for Environmental Assessment, Cincinnati, Ohio, on line.

## METALS

### *INORGANIC MANGANESE (7439-96-5)*

### *1.0 Introduction and Physical Properties*

Manganese is a naturally occurring **metal** found in the earth's crust in the form of numerous minerals such as pyrolusite, romanechite, manganite and hausmannite (ATSDR, 2000; HSDB, 2011; Keen and Leach, 1988). It occurs ubiquitously in the environment, constituting approximately 0.085 percent of the earth's crust, commonly in valence states of +2, +4 and +7; valences of +1, +3, +5 and +6 are rare. Manganese is used in the manufacture of steel, and in other metallurgical processes, batteries, and various manganese-containing chemicals including matches, glass and porcelain, fireworks, varnishes, ceramics, diagnostic contrast media and fungicides. Relevant physical properties are compiled below:

| MW | log $K_{ow}$ | H | $K_d$ | $D_a$ | $D_w$ | VP | S |
|---|---|---|---|---|---|---|---|
| 54.938[a] (Elemental) | NA | NA | 65[b] | NA | NA | NA | Note 1[c] |

MW = molecular weight (g/mole); log $K_{ow}$ = base 10 logarithm of the octanol/water partition coefficient (unitless); H = Henry's Law constant (atm-$m^3$/mole) at the reference temperature; $K_d$ = soil/water partition coefficient (L/kg); $D_a$ = diffusivity in air ($cm^2$/second); $D_w$ = diffusivity in water ($cm^2$/second); VP = vapor pressure (atm) at the reference temperature; S = solubility in water (mg/L) at the reference temperature; NA = not applicable.
Note 1: Metallic manganese decomposes in the presence of water. Manganous chloride as a typical manganese salt: 7.23E+5 mg/L (25˚ C).
[a]Hazardous Substance Data Bank (HSDB), 2011, National Library of Medicine, on line.
[b]Baes, C.F., R.D. Sharp, A.L. Sjoreen, R.W. Shor, 1984, ***A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides through Agriculture***, Health and Safety Division, Oak Ridge National Laboratory, ORNL-5786, September.
[c]Agency for Toxic Substances and Disease Registry, (ATSDR), 2000, ***Update Toxicological Profile for Manganese***, U.S. Public Health Service, Atlanta, Georgia, September, on line.

### *2.0 Environmental Fate and Transport*

Inorganic manganese compounds enter the atmosphere and other environmental compartments from the weathering of rocks and windblown soil (HSDB, 2011). Anthropogenic sources of atmospheric manganese include metal processing, disposal and use of manganese-containing materials (antiseptics, catalysts, dietary supplements, dry cells, feed additives, fertilizers, pesticides and pigments), resuspension of manganese-containing soil dust, and fly ash emissions from incinerators (ATSDR, 2000; HSDB, 2011). Another source of atmospheric manganese is the combustion of gasoline containing organic manganese anti-knock ingredients such as methylcyclopentadienyl manganese tricarbonyl (MMT). It is unclear whether manganese from this source remains as an organic form or is converted to an inorganic form. The use of MMT in gasoline has been discontinued because of deleterious effects on catalytic converters. Manganese may be released to water by discharge from industrial facilities or in leachate from landfills and soil. Landfill disposal of manganese-containing wastes is the predominant source of manganese release to soil.

Manganese exists in the air bound to particles; dry deposition is the primary removal mechanism, although wet deposition may also be significant (ATSDR, 2000). Manganese in fly ash exists as chlorides and oxides that are relatively soluble and mobile in the environment.

Manganese in water exists as any of several sparingly soluble salts that attach to suspended sediment (ATSDR, 2000). Sedimentation is the primary removal process. Soluble forms also exist, depending on pH of the water, and may be released from sediment. The extent of absorption to constituents of soil is highly variable. Low concentrations may irreversibly bind to clay, but higher concentrations often manifest considerable mobility.

Manganese may accumulate in various kinds of plants such as legumes, nuts, heather, and tea, and in the lower aquatic trophic levels, but not significantly in the higher aquatic trophic levels or most terrestrial animals (ATSDR, 2000; HSDB, 2011). This indicates that food-chain pathways are unlikely to be significant for human health; therefore, biotransfer factors are not compiled or estimated.

## *3.0 Toxicokinetics*

Manganese is nutritionally essential for humans (ATSDR, 2000). Stable tissue levels are maintained by homeostatic regulation of GI absorption and biliary excretion.

Manganese is absorbed by the respiratory tract (ATSDR, 2000), although data quantifying the extent of absorption were not located. Smaller particles are probably retained in the lung eventually to be absorbed; larger particles are probably removed by mucocilliary elevation and swallowed so that they become available for GI absorption. The more soluble compounds are more readily absorbed by the respiratory tract. Studies in rats given radiolabeled manganese by intranasal administration suggest that olfactory uptake and direct transmission to the brain may occur.

GI absorption of manganese in humans averages 3 to 5 percent, but homeostatic mechanisms reduce the extent of absorption at higher doses (ATSDR, 2000). The more soluble compounds are more readily absorbed. Iron deficiency enhances manganese uptake. Absorption appears to be more efficient and resulting tissue levels appear to be higher in infants than adults.

Quantitative data regarding dermal uptake of manganese were not located.

Normal tissue levels of manganese in humans range from 0.1 to 1 mg/kg wet weight with highest levels in liver, pancreas and kidney, and lowest levels in bone and fat (ATSDR, 2000). Animal studies (inhalation, intranasal, intratracheal and oral administration) confirm that many tissues including the brain, and in some instances specific regions of the brain, show significant increases in manganese levels after treatment. Tissue levels recede toward normal after treatment ceases.

Metabolism of manganese appears to be limited to oxidation-reduction changes in valence state (ATSDR, 2000). The evidence suggests that manganese (+2) is oxidized to manganese (+3), which alters its tissue distribution and slows excretion. Manganese is removed from the blood in the liver and is excreted principally through the bile. Urine, sweat and milk represent minor excretory routes. Animal studies show that the young are less efficient than adults in excreting manganese, although the young do not appear to be more sensitive to its effects.

## 4.0 Dermal Exposure

Data were not located regarding the extent of dermal uptake of manganese from soil, and EPA (2004) provides no estimate of the extent of dermal absorption (ABS). EPA (2004) recommends that dermal uptake from soil should not be quantified for chemicals without ABS recommendations, but that these chemicals should be discussed qualitatively as a source of uncertainty. Empirical data regarding the uptake of soluble forms of manganese from water were not located. ATSDR (2000), however, notes that the uptake of manganese across intact skin is "extremely limited," suggesting that uptake of toxicologically significant amounts is unlikely. EPA (2004) provides no chemical-specific estimate of $K_p$ for manganese; therefore, the default $K_p$ value of 1E-3 cm/hr is used to estimate dermal uptake of manganese from water.

## 5.0 Noncancer Effects Evaluation

Manganese is nutritionally required by humans for normal growth and health (EPA, 2011). Humans exposed to approximately 0.8 mg manganese/kg-day in drinking water (28 mg/L) exhibited lethargy, increased muscle tonus, tremor and mental disturbances. The elderly appeared to be more sensitive than children. Oral treatment of laboratory rodents induces biochemical changes in the brain, but rodents do not exhibit the neurological signs exhibited by humans.

EPA (2011) verified a chronic oral RfD for manganese of 1.4E-1 mg/kg-day from a NOAEL of 1.4E-1 mg/kg-day for neurologic effects from human dietary studies and an uncertainty factor of 1. Confidence in the RfD is medium. The oral RfD of 1.4E-1 mg/kg-day will be used for dietary items other than drinking water. EPA (2011) recommends that the contribution of background diet should be subtracted and that a modifying factor of 3 should be used to adjust for use when oral exposure involves drinking water and non-dietary ingestion. The oral RfD resulting from these manipulations is 2.4E-2 mg/kg-day, which will be used for drinking water and incidental ingestion of non-dietary items. The CNS is the target organ for chronic oral exposure to manganese. EPA (1997) effectually adopts the chronic oral RfD as sufficiently protective for subchronic oral exposure.

The NOAEL described above is associated with a dose rate of approximately 10 mg/day for an adult. However, EPA (2002) notes that normal intake levels may well exceed 10 mg/day, especially with diets containing substantial amounts of whole-grain cereals, nuts, green leafy vegetables, and tea. Adverse effects have not been reported at dietary levels of 10 mg/day. It is likely that larger dose rates are innocuous as well.

Occupational exposure to high concentrations in air induces a generally typical spectrum of neurological effects, and increased incidence of pneumonia (ACGIH, 1991). EPA (2011) presents a verified chronic inhalation RfC of 5E-5 mg/m$^3$ (equivalent to an inhalation RfD of 1.4E-5 mg/kg-day) based on a LOAEL for neurological effects in occupationally exposed humans and an uncertainty factor of 1000. The uncertainty factor consists of three factors of 10 each to provide additional protection for unusually sensitive individuals, to extrapolate a NOAEL from a LOAEL, and to address database limitations including the less-than-chronic periods of exposure, the lack of developmental toxicity data, and uncertainty regarding potential but unquantified differences in the toxicity of different forms of manganese. Confidence in the RfC is medium. The CNS is the target organ for inhalation exposure to manganese. The chronic inhalation RfC is adopted as sufficiently protective for subchronic inhalation exposure.

## 6.0 Carcinogenicity Evaluation

EPA (2011) classified manganese in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans). Quantitative cancer risk estimates are not derived for Group D chemicals.

## 7.0 Toxicity Summary

| Noncancer Effects | | | | | | Carcinogenicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Oral Exposure | | | Inhalation Exposure | | | Oral Exposure | | Inhalation Exposure | | |
| sRfDo | cRfDo | TO | sRfC/ sRfDi | cRfC/ cRfDi | TO | WOE | SFo | WOE | URFi | SFi |
| 1.4E-1[a]/ 2.4E-2[b] | 1.4E-1[a]/ 2.4E-2[b] | CNS | 5E-5/ 1.4E-4 | 5E-5/ 1.4E-5 | CNS | D | ND | D | ND | ND |

sRfDo = subchronic oral reference dose (milligrams per kilogram-day); cRfDo = chronic oral reference dose (milligrams per kilogram-day); TO = target organ(s) or critical effect(s); sRfC = subchronic inhalation reference concentration (milligrams per cubic meter); sRfDi = subchronic inhalation reference dose (milligrams per kilogram-day); cRfC = chronic inhalation reference concentration (milligrams per cubic meter); cRfDi = chronic inhalation reference dose (milligrams per kilogram-day); WOE = cancer weight-of-evidence evaluation; SFo = oral cancer slope factor (risk per milligram per kilogram-day); URFi = inhalation unit risk factor (risk per microgram per cubic meter); SFi = inhalation cancer slope factor (risk per milligram per kilogram-day); ND = no data.
Target organ or critical effect abbreviations: CNS = central nervous system.
[a]Dietary items other than drinking water.
[b]Ingestion of environmental media and drinking water.

## 8.0 References


Agency for Toxic Substances and Disease Registry, (ATSDR), 2000, ***Update Toxicological Profile for Manganese***, U.S. Public Health Service, Atlanta, Georgia, September, on line.

American Conference of Governmental Industrial Hygienists (ACGIH), 1991, ***Documentation of the Threshold Limit Values and Biological Exposure Indices***, Sixth Edition, ACGIH, Cincinnati, Ohio, pp. 876-878.

Hazardous Substance Data Bank (HSDB), 2011, National Library of Medicine, on line.

Keen and Leach, 1988, "Manganese," in Seiler, H.G. and H. Sigel, eds., ***Handbook on Toxicity of Inorganic Compounds***, Marcel Dekker, Inc., New York, pp. 405-415.

U.S. Environmental Protection Agency (EPA), 1997, ***Health Effects Assessment Summary Tables, FY 1997 Update***, Office of Solid Waste and Emergency Response, Washington, D.C., 9200.6-303(97-1), EPA 540/R-97-036, PB97-921199.

U.S. Environmental Protection Agency (EPA), 2004, ***Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final***, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R/99/005, OSWER 9285.7-02EP July.

U.S. Environmental Protection Agency (EPA), 2011, ***Integrated Risk Information System (IRIS)***, National Center for Environmental Assessment, Cincinnati, Ohio, on line.

## NITROAROMATIC EXPLOSIVES

### *2,4,6-TRINITROTOLUENE (TNT) (118-96-7)*

### *1.0 Introduction and Physical Properties*

TNT is an SVOC that occurs as a pale yellow solid, crystal or flake at ambient temperatures (HSDB, 2011). It is classified as a high explosive and is used as a military explosive in bombs and grenades (ATSDR, 1995; HSDB, 2011). It has found wide use in filling shells and airborne detonation bombs because it can withstand the shock of ejection from a gun barrel but can be exploded on impact with a detonator mechanism. It is used as a pure compound or combined with other explosive chemicals for military application. Small amounts are used in industrial explosives. Minor applications include use as a chemical intermediate in the manufacture of dyestuffs and photographic chemicals. Relevant physical properties are compiled below:

| MW | log $K_{ow}$ | H | log $K_{oc}$ | $D_a$ | $D_w$ | VP | S | $T_b$ | $T_c$ | $\Delta H_{v,b}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 227.13 | 1.60 | 2.08E-8 (25°C) | 3.20 | 5.10E-2[a] (25°C)[b] | 5.91E-6[a] (25°C)[b] | 1.06E-8 (20°C) | 5.52E+2 (25°C) | NA | NA | NA |

MW = molecular weight (g/mole); log $K_{ow}$ = base 10 logarithm of the octanol/water partition coefficient (unitless); H = Henry's Law constant (atm-$m^3$/mole) at the reference temperature; log $K_{oc}$ = base 10 logarithm of the soil/organic carbon partition coefficient (L/kg); $D_a$ = diffusivity in air ($cm^2$/second); $D_w$ = diffusivity in water ($cm^2$/second); VP = vapor pressure (atm) at the reference temperature; S = solubility in water (mg/L) at the reference temperature; $T_b$ = normal boiling point of pure liquid compound (°K); $T_c$ = critical temperature (°K); $\Delta H_{v,b}$ = enthalpy of vaporization at the boiling point (cal/mole); NA = not applicable.
Note: All values are from [h]U.S. Environmental Protection Agency (EPA), 2011, *EPISuite electronic database*, unless otherwise noted.
[a]Estimated as described in Introduction to Toxicity Profiles.
[b]Assumed.

### *2.0 Environmental Fate and Transport*

TNT may be released to the environment in wastewater and air effluents from its production and use as a military explosive and propellant, and during the disposal or open detonation of outdated or unwanted munitions (ATSDR, 1995; HSDB, 2011). The behavior of TNT in the environment is expected to be controlled largely by its relatively high water solubility and relatively low vapor pressure. In addition, direct and indirect photolysis yields a large number of degradation products, many of which are persistent in environmental media. Photolysis products include dinitroanthrils, trinitrobenzaldehyde, trinitrobenzyl alcohol, various nitroanilines, condensed azo and axoxy derivatives, and 1,3,5-trinitrobenzene.

Although low, the vapor pressure of TNT is sufficient to suggest that the compound will exist largely in the vapor phase in the atmosphere, where it is expected to be subject to photolysis (HSDB, 2011). The photolysis half-life has been estimated at approximately 110 days. The solubility of TNT in water suggests that wet deposition may be a significant removal process.

TNT on the surface of soil is subject to photolysis (ATSDR, 1995; HSDB, 2011). Mobility in soil is expected to be low to moderate. Large quantities released to soil (e.g., from former munitions production works) may result in substantial concentrations in groundwater. TNT in soil is subject to degradation to a number of nitro reduction products (amino compounds, mono- and dinitro compounds).

TNT in surface water is subject to photolysis; volatilization and hydrolysis are not expected to be significant (ATSDR, 1995; HSDB, 2011). Photolysis gives rise to the persistent red or pink water condition frequently observed with TNT contamination. Biodegradation occurs too slowly

to be an important removal process. TNT and some of its degradation products will partition moderately to sediment or suspended particles in water.

Bioconcentration or bioaccumulation are not expected to be significant for TNT (ATSDR, 1995; HSDB, 2011); therefore, biotransfer factors are not developed.

## *3.0 Data for Evaluating Dermal Exposure*

Pharmacokinetic data are limited to studies of oral administration of radiolabeled compound to several species followed by collection and measurement of radioactivity in urine, gastrointestinal tract (including contents) and feces (ATSDR, 1995). Total recovery from these compartments ranged from 92 to 104 percent, suggesting little metabolism to radioactive metabolites that were exhaled. The percent of the dose recovered in the urine may be considered a minimal estimate of GI absorption, because the extent of biliary excretion and enterohepatic recirculation has not been investigated. Urinary recovery averaged 60 percent in rats, mice and dogs, and approximately 74 percent in rabbits.

EPA (2004) notes that organic chemicals are generally well absorbed from the GI tract, and recommends that oral toxicity values should not be adjusted when used for dermal exposure unless empirical data demonstrate that GI absorption is significantly less than complete. Therefore, no GAF is developed for TNT and the oral toxicity values described below should be used for dermal exposure without adjustment for GI absorption.

Studies indicate that TNT is rapidly absorbed through the skin of occupationally exposed humans, but quantitative data were not located (ATSDR, 1995). Dermal absorption ranged from 17 to 68 percent of a single dose of radioactivity in studies using laboratory animals exposed for 24 hours to radiolabeled compound. Absorption appeared to be more complete in rabbits and mice than in rats and dogs, suggesting that species differences are significant. Data were not located regarding the dermal uptake of TNT from soil, which would account for the matrix effect, or the ability of soil to bind the chemical and retard its dermal uptake. An ABS of 0.032 (EPA, 2010) is adopted for this evaluation. $K_p$, $\tau$, FA and B values are estimated by the EPA (2004) method as follows:

| Chemical | $K_p$ | $\tau$ | FA | B |
|---|---|---|---|---|
| 2,4,6-Trinitrotoluene | 9.64E-4 | 1.96E+0 | 1.0[a] | 0[b] |

$K_p$ = permeability coefficient (cm/hour); $\tau$ = lag time for chemical to cross stratum corneum (hours); FA = fraction absorbed (unitless); B = ratio of the permeability coefficient for passage across the stratum corneum relative to the permeability coefficient for passage across the viable epidermis (unitless).
[a]Assumed based on the value used for similar compounds.
[b]Sufficiently small to be rounded to zero.

## *4.0 Noncancer Effects Evaluation*

Single-dose oral LD50 values for TNT include 1010 to 1320 mg/kg for male rats, 795 to 820 mg/kg for female rats, and 660 to 1014 mg/kg in mice (ATSDR, 1995; EPA, 1993; HSDB, 2011). Female rats appear to be slightly more sensitive than males, but no significant gender differences appear in mice. Acutely poisoned animals exhibit tremors and convulsions. The radicals produced during intracellular nitroreduction of TNT inflict damage on several organelles across many different cell and tissue types.

The critical effect of prolonged oral exposure of animals to TNT is liver damage (EPA, 2011). Dogs appear to be more sensitive than rats or mice. A verified RfD for chronic oral exposure of 5E-4 mg/kg-day was derived from a LOAEL of 0.5 mg/kg-day associated with hepatic swelling and hepatocytomegaly in a 26-week feeding study in dogs. An uncertainty factor of 1000 was applied. The UF of 1000 allows for uncertainties in laboratory animal-to-man dose extrapolation, interindividual sensitivity, subchronic-to-chronic extrapolation, and LOAEL-to-NOAEL extrapolation, although the individual uncertainty factors for each category were not given. Hemosiderosis, evidence of erythrocyte destruction, was observed in dogs treated at a dose rate as low as 2 mg/kg-day (ATSDR, 1995). Confidence in the oral RfD is medium. EPA (1997) adopted the verified chronic oral RfD as the provisional oral RfD for subchronic exposure.

Although the key study is described as a comprehensive and well designed subchronic study, only effects on the liver were reported by EPA (2011), presumably because the liver effects were the critical effects upon which the oral RfD is based. Specifically, observations regarding clinical chemistry, hematology, urinalyses, periodic electrocardiography and ophthalmic examinations were not reported. Additional information from other sources, however, indicates that anemia is one of the major signs of TNT toxicity consistently observed in rats, mice and dogs (ATSDR, 1995). TNT and/or its metabolites induce the oxidation of intracellular hemoglobin to methemoglobin, which results in erythrocytic hemolysis. Hemolytic anemia is followed by a compensatory response manifested primarily as reticulocytosis. Effects on the testes, including irreversible atrophy and decreased reproductive performance, apparently secondary to altered zinc and copper nutrition, are observed in rats treated with much higher dose rates (e.g., 125 mg/kg-day).

Target organs at or near the threshold for toxicity include the erythrocyte and liver. Effects on the erythrocyte arise from the oxidation of hemoglobin to methemoglobin, which is consistently observed with exposure to inorganic nitrates and nitrites, as well as with many other nitroaromatic compounds (HSDB, 2011). Mild effects on the liver occur at slightly lower doses; the mechanism of hepatotoxicity has not been elucidated. Effects on the testes at higher levels probably arise from reduced levels of circulating ceruloplasmin, which is necessary for proper zinc nutrition at the cellular level.

Information regarding the inhalation toxicity of TNT are limited to occupational studies, which probably also include dermal exposure, generally associated with the manufacture of explosives for World War I and World War II (ATSDR, 1995). Effects attributed to occupational exposure include deaths from liver disease and aplastic anemia, anemia, dermatitis and cataracts. The data are insufficient to derive an RfC for inhalation exposure to TNT.

## *5.0 Carcinogenicity Evaluation*

TNT is classified in EPA weight-of-evidence Group C (possible human carcinogen) on the basis of positive mutagenicity studies and dietary studies that showed an increased incidence of urinary bladder tumors in rats (EPA, 2011). Human data are inadequate. An oral SF of 3.0E-2 per mg/kg-day is based on the incidence of bladder tumors in female rats in a 24-month dietary study. The data are inadequate for potency estimation for inhalation exposure.

## 6.0 Toxicity Summary

Toxicity values for TNT are summarized below:

| Noncancer Effects | | | | | | Carcinogenicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Oral Exposure[a] | | | Inhalation Exposure | | | Oral Exposure[a] | | Inhalation Exposure | | |
| sRfDo | cRfDo | TO | sRfC/ sRfDi | cRfC/ cRfDi | TO | WOE | SFo | WOE | URFi | SFi |
| 5E-4 | 5E-4 | L, E | ND | ND | NA | C | 3.0E-2 | C | ND | ND |

sRfDo = subchronic oral reference dose (milligrams per kilogram-day); cRfDo = chronic oral reference dose (milligrams per kilogram-day); TO = target organ(s) or critical effect(s); sRfC = subchronic inhalation reference concentration (milligrams per cubic meter); sRfDi = subchronic inhalation reference dose (milligrams per kilogram-day); cRfC = chronic inhalation reference concentration (milligrams per cubic meter); cRfDi = chronic inhalation reference dose (milligrams per kilogram-day); WOE = cancer weight-of-evidence evaluation; SFo = oral cancer slope factor (risk per milligram per kilogram-day); URFi = inhalation unit risk factor (risk per microgram per cubic meter); SFi = inhalation cancer slope factor (risk per microgram per kilogram-day); ND = no data; NA = not applicable.
Target organ abbreviations: L = liver; E = erythrocyte.
[a]sRfDo, cRfDo and SFo should be used for dermal exposure without adjustment for GI absorption.

## 7.0 References


Agency for Toxic Substances and Disease Registry, (ATSDR), 1995, ***Toxicological Profile for 2,4,6-Trinitrotoluene (TNT)***, U.S. Department of Health and Human Services, Atlanta, Georgia, on line.

Hazardous Substance Data Bank (HSDB), 2003, National Library of Medicine, on line.

U.S. Environmental Protection Agency (EPA), 1993, ***Risk Assessment Issue Paper for: Derivation of Oral RfD for 2-Amino-4,6-Dinitrotoluene (CASRN 35572-78-2) and 4-Amino-2,6-Dinitrotoluene (CASRN 19406-51-0) By Analogy to 2,4,6-Trinitrotoluene Systemic Toxicity Assessment***, National Center for Environmental Assessment, Cincinnati, Ohio, 23 February.

U.S. Environmental Protection Agency (EPA), 1997, ***Health Effects Assessment Summary Tables, FY 1997 Update***, Office of Solid Waste and Emergency Response, 9200.6-303 (97-1), EPA-540-R-97-036, PB97-921199, July.

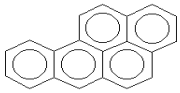
U.S. Environmental Protection Agency (EPA), 2004, ***Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim, Final***, Office of Emergency and Remedial Response, Washington, D.C., EPA/540/R/99/005, OSWER 9285.7-0SEP, NTIS No. PB99-963312, July.

U.S. Environmental Protection Agency (EPA), 2010, ***Regional Screening Level Table, (November 2010)***, on line at www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/usersguide.htm.

U.S. Environmental Protection Agency (EPA), 2011, ***Integrated Risk Information System (IRIS)***, National Center for Environmental Assessment, Cincinnati, Ohio, on line.

## SEMIVOLATILE ORGANIC COMPOUNDS

### *POLYNUCLEAR AROMATIC HYDROCARBONS a.k.a. POLYCYCLIC AROMATIC HYDROCARBONS a.k.a. POLYAROMATIC HYDROCARBONS (PAH) (130498-29-2)*



Benzo(a)Pyrene
(A representative and the most studied member of this class of compounds.)

### *1.0 Introduction and Physical Properties*

The PAHs regularly observed in environmental media and addressed in this profile include acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene. All exist as solids at room temperature. Classification as **SVOC** or **VOC** is made in the following table. PAHs are the products of incomplete combustion of fossil fuels or other organic matter, hence include both natural and anthropogenic sources (ATSDR, 1995a; HSDB, 2011). Several are also components of crude oil. Naphthalene is used in the synthesis of phthalic anhydride, the insecticide carbaryl, leather tanning agents and surface active agents, and is a component of diesel and other fuels (ATSDR, 1995b). Relevant physical properties are compiled below:

| MW | log $K_{ow}$ | H | log $K_{oc}$ | $D_a$ | $D_w$ | VP | S | $T_b$ | $T_c$ | $\Delta H_{v,b}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene (83-32-9) **(VOC)** | | | | | | | | | | |
| 154.21[a] | 3.92[a] | 1.55E-4[b] (25°C) | 3.85[b] | 4.21E-2[b] (25°C) | 7.69E-6[b] (25°C) | 3.29E-6[a] (25°C) | 4.24E+0[b] (20-25°C) | 550.54[c] | 803.15[c] | 1.22E+4[c] |
| Acenaphthylene (208-96-8) **(VOC)** | | | | | | | | | | |
| 152.20[a] | 4.07[a] | 1.13E-5[a] (25°C) | 3.42[a] | 6.67E-2[d] (25°C)[e] | 7.72E-6[d] (25°C)[e] | 1.20E-6[a] (25°C) | 3.93E+0[a] (25°C) | 543.2[a] | 797[f] | 1.1E+4[g] |
| Anthracene (120-12-7) **VOC)** | | | | | | | | | | |
| 178.23[a] | 4.45[a] | 6.51E-5[b] (25°C) | 4.47[b] | 3.24E-2[b] (25°C) | 7.74E-6[b] (25°C) | 3.51E-9[a] (25°C) | 4.34E-2[b] (20-25°C) | 615.18[c] | 873.00[c] | 1.31E+4[c] |
| Benzo(a)anthracene (56-55-3) **(SVOC)** | | | | | | | | | | |
| 228.3[h] | 5.66[h] | 3.34E-6[b] (25°C) | 5.60[b] | 5.10E-2[b] (25°C) | 9.00E-6[b] (25°C) | 2.50E-9[a] (25°C) | 9.40E-3[b] (20-25°C) | 708.15[c] | 1004.8[c] | 1.60E+4[c] |
| Benzo(a)pyrene (50-32-8) **(SVOC)** | | | | | | | | | | |
| 252.3[a] | 6.10[h] | 4.57E-7[k] (25°C) | 6.01[b] | 4.30E-2[b] (25°C) | 9.00E-6[b] (25°C) | 7.22E-12[a] (25°C) | 1.62E-3[b] (20-25°C) | 715.90[c] | 969.27[c] | 1.90+4[c] |
| Benzo(b)fluoranthene (205-99-2) **(VOC)** | | | | | | | | | | |
| 252.3[h] | 6.12[h] | 6.57E-7[k] (25°C) | 6.09[b] | 2.26E-2[b] (25°C) | 5.56E-6[b] (25°C) | 6.58E-10[a] (20°C) | 1.50E-3[b] (20-25°C) | 715.90[c] | 969.27[c] | 1.70+4[c] |
| Benzo(k)fluoranthene (207-08-9) **(SVOC)** | | | | | | | | | | |
| 252.32[a] | 6.84[a] | 8.29E-7[b] (25°C) | 6.09[b] | 2.26E-2[b] (25°C) | 5.56E-6[b] (25°C) | 1.28E-12[a] (25°C) | 8.00E-4[b] (20-25°C) | 753.15[c] | 1019.7[c] | 1.80E+4[c] |
| Benzo(g,h,i)perylene (191-24-2) **(SVOC)** | | | | | | | | | | |
| 276.34[a] | 6.63[a] | 2.66E-7[a] (20°C) | 4.98[a] | 4.48E-2[d] (25°C)[e] | 5.19E-6[d] (25°C)[e] | 1.3E-13[a] (25°C) | 2.6E-4[a] (25°C) | 823[a] | 1097[f] | 1.96E+4[g] |
| Chrysene (218-01-9) **(VOC)** | | | | | | | | | | |
| 228.3[h] | 5.66[h] | 9.46E-5[b] (25°C) | 5.60[b] | 2.48E-2[b] (25°C) | 6.21E-6[b] (25°C) | 8.20E-12[a] (25°C) | 1.60E-3[b] (20-25°C) | 714.15[c] | 979.0[c] | 1.65E+4[c] |
| Dibenz(a,h)anthracene (53-70-3) **(SVOC)** | | | | | | | | | | |
| 278.4[h] | 6.84[h] | 1.47E-8[b] (25°C) | 6.58[b] | 2.02E-2[b] (25°C) | 5.18E-6[b] (25°C) | 1.32E-13[a] (20°C) | 2.49E-3[b] (20-25°C) | 743.24[c] | 990.41[c] | 3.00E+4[c] |
| Fluoranthene (206-44-0) **(VOC)** | | | | | | | | | | |
| 202.3[h] | 4.95[h] | 1.61E-5[b] (25°C) | 5.03[b] | 3.02E-2[b] (25°C) | 6.35E-6[b] (25°C) | 1.21E-8[a] (25°C) | 2.06E-1[b] (20-25°C) | 655.95[c] | 905.0[c] | 1.38E+4[c] |

| MW | log $K_{ow}$ | H | log $K_{oc}$ | $D_a$ | $D_w$ | VP | S | $T_b$ | $T_c$ | $\Delta H_{v,b}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluorene (86-73-7) **(VOC)** | | | | | | | | | | |
| 166.21[a] | 4.18[i] | 6.37E-5[b] (25°C) | 4.14[b] | 3.63E-2[b] (25°C) | 7.88E-6[b] (25°C) | 4.21E-7[a] (20°C) | 1.98E+0[b] (20-25°C) | 570.44[c] | 870.0[c] | 1.27E+4[c] |
| Indeno(1,2,3-cd)pyrene (193-39-5) **(SVOC)** | | | | | | | | | | |
| 276.3[h] | 6.58[h] | 1.60E-6[b] (25°C) | 6.54[b] | 1.90E-2[b] (25°C) | 5.66E-6[b] (25°C) | 1.71E-13[a] (25°C) | 2.20E-5[b] (20-25°C) | 809.15[c] | 1078.2[c] | 1.90E+4[c] |
| Naphthalene (91-20-3) **(VOC)** | | | | | | | | | | |
| 128.2[h] | 3.30[h] | 4.40E-4[k] (25°C) | 3.30[b] | 5.90E-2[b] (25°C) | 7.50E-6[b] (25°C) | 1.12E-4[a] (25°C) | 3.10E+1[b] (20-25°C) | 491.14[c] | 748.40[c] | 1.04E+4[c] |
| Phenanthrene (85-01-8) **(VOC)** | | | | | | | | | | |
| 178.2[h] | 4.46[h] | 1.24E-4[a] (25°C) | 4.36[a] | 6.00E-2[d] (25°C)[e] | 6.95E-6[d] (25°C)[e] | 8.95E-7[a] (25°C) | 1.29E+0[a] (25°C) | 613.2[a] | 869.2[j] | 1.42E+4[a] |
| Pyrene (129-00-0) **(VOC)** | | | | | | | | | | |
| 202.26[a] | 4.88[a] | 1.1E-5[b] (25°C) | 5.02[b] | 2.72E-2[b] (25°C) | 7.24E-6[b] (25°C) | 1.17E-7[a] (25°C) | 1.35E-1[b] (20-25°C) | 667.95[c] | 936.0[c] | 1.44E+4[c] |

MW = molecular weight (g/mole); log $K_{ow}$ = base 10 logarithm of the octanol/water partition coefficient (unitless); H = Henry's Law constant (atm-$m^3$/mole) at the reference temperature; log $K_{oc}$ = base 10 logarithm of the soil/organic carbon partition coefficient (L/kg); $D_a$ = diffusivity in air ($cm^2$/second); $D_w$ = diffusivity in water ($cm^2$/second); VP = vapor pressure (atm) at the reference temperature; S = solubility in water (mg/L) at the reference temperature; $T_b$ = normal boiling point (at 1 atm) of pure liquid compound (°K); $T_c$ = critical temperature (°K);.$H_{v,b}$ = enthalpy of vaporization at the boiling point (cal/mole); ND = no data.

[a]Hazardous Substance Data Bank (HSDB), 2011, National Library of Medicine, on line, accessed 23 April.

[b]U.S. Environmental Protection Agency (EPA), 2002, ***Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites***, Office of Solid Waste and Emergency Response, Washington, D.C., 9355.4-24, December.

[c]U.S. Environmental Protection Agency (EPA), 2000, ***User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings, Revised***, Office of Emergency and Remedial Response, Washington, D.C., December.

[d]Calculated as described in Introduction to Toxicological profiles.

[e]Assumed.

[f]Estimated from Equation 12-4 in Lyman, W.J., W.F. Reehl and D.H. Rosenblatt, 1990, ***Handbook of Chemical Property Estimation Methods***, American Chemical Society, Washington, D.C..

[g]Estimated from Equation 13-5 in Lyman, W.J., W.F. Reehl and D.H. Rosenblatt, 1990, ***Handbook of Chemical Property Estimation Methods***, American Chemical Society, Washington, D.C..

[h]U.S. Environmental Protection Agency (EPA), 2004, ***Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part E - Supplemental Guidance for Dermal Risk Assessment)***, Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R-99/005, July.

[i]Syracuse Research Corporation (SRC), 2004, ***CHEMFATE Search Results***, on line, accessed 23 April.

[j]National Institute of Standards and Technology (NIST), 2004, Standard Reference Data Program, Online Data Bases, accessed 23 April.

[k]U.S. Environmental Protection Agency (EPA), 2011, *EPISuite electronic database*.

## *2.0 Environmental Fate and Transport*

The PAHs are ubiquitous products of incomplete combustion; natural sources include volcanoes and forest fires (ATSDR, 1995a, b; HSDB, 2011). There is some evidence for biosynthesis by plants, bacteria and algae. Some of the PAHs occur naturally in fossil fuels. Anthropogenic releases to the environment, primarily to the atmosphere, greatly outweigh the natural sources and include any processes that involve incomplete combustion of fossil fuels and organic matter, including wood-burning for home heat (the predominant source), cigarette smoke, internal combustion engine exhaust, and fuel oil emissions. Industrial sources include coal mining, processing and storing, wood treatment (creosote), manufactured gas plants (coal tar), power generation, production of coal tar, coke and asphalt, petroleum cracking and industrial and municipal incineration. Other sources include various crude oils, fresh and used motor oils, gasolines, charcoal-broiled foods, processed foods, various oils, margarine, butter and fats, fruits, vegetables, and cereals, roasted coffee and tea. Indoor sources include unvented kerosene heaters and gas cooking and heating appliances. Naphthalene is released during its manufacture and processes that involve its use (e.g., vaporization from moth balls).

Although PAHs generally occur in mixtures, certain chemicals tend to predominate in different sources so that the PAH pattern observed in a given medium may provide a clue to the source. The following compilation relates individual PAHs and sources:

| Source[a] | Individual PAHs |
|---|---|
| Residential wood burning | Acenaphthylene |
| Auto emissions | Benzo(g,h,i)perylene, pyrene |
| Diesel exhaust particulates | Fluoranthene, phenanthrene, pyrene |
| Diesel exhaust vapors | Phenanthrene, anthracene |

| Source[a] | Individual PAHs |
|---|---|
| Diesel total emissions | Acenaphthene, fluorene, phenanthrene |
| Fly ash & bottom ash from U.S. municipal waste incinerators | Phenanthrene |
| Fly ash from U.K. municipal waste incinerators | Benzo(g,h,i)perylene |
| Particulate emissions from municipal waste incinerator | Benzo(a)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene |
| Municipal/medical waste incinerator | Benzo(a)anthracene, benzo(g,h,i)perylene |
| Rotary kiln incinerator charged with polyethylene, no afterburner | Fluoranthene, phenanthrene, pyrene (see next entry) |
| Rotary kiln incinerator charged with polyethylene with afterburner | Benzo(a)anthracene, phenanthrene (total PAH emissions reduced 100-fold compared with no afterburner) |
| Coal tar pitch emissions | Phenanthrene and pyrene 20 to 80 X > benzo(a)pyrene, benzo(g,h,i)perylene |
| Natural gas home appliances – fine particulate emissions | Chrysene, fluoranthene, pyrene, triphenylene |
| Groundwater near coal & oil gasification plant | Acenaphthylene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, chrysene |
| Groundwater near wood treatment facilities | Benzo(a)pyrene, phenanthrene |
| [a]Agency for Toxic Substances and Disease Registry, (ATSDR), 1995, ***Update Toxicological Profile for Polycyclic Aromatic Hydrocarbons (PAHs)***, U.S. Public Health Service, Atlanta, Georgia, August, on line. | |

Data compiled for soils are not included in the table above because the lists are long and the variation from one site to another is great, so that the information is not useful for identifying sources. Similarly, sediment is a sink for PAHs from all sources including atmospheric deposition from far distant locations, and the patterns observed in sediment do not necessarily reflect a nearby source (ATSDR, 1995a). Generally, PAHs associated with combustion exhibit highly condensed ring structures and little alkylation (i.e., benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, benzo(e)pyrene, chrysene, fluoranthene, pyrene).

Crude petroleum and products made from crude petroleum (e.g., asphalts, fuels, oils) contain PAHs, but the patterns observed depend on the location of the source (ATSDR, 1995a; Potter and Simmons, 1998). Phenanthrene and alkylated forms of PAHs, particularly the methylnaphthalenes, often predominate in petroleum products.

The partitioning and fate of the PAHs in environmental media depend largely on VP (tendency to exist in air as a vapor), H (indicator of partitioning between air and water) and $K_{oc}$ (indicator of affinity to bind to organic matter in soil and sediment). ATSDR (1995a) noted that H and $K_{oc}$ are roughly directly related to MW, and that VP is roughly inversely related to MW. Therefore, they grouped the PAHs into the following categories to facilitate understanding their behavior in the environment:

- Low MW (152 to 178 g/mole) – acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, phenanthrene

- Medium MW (approximately 202 g/mole) – fluoranthene, pyrene

- High MW (228 to 278 g/mole) – benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene.

PAHs exist in the atmosphere as vapors or adsorbed to particulates, the proportion depending on the vapor pressure of the individual chemical and atmospheric conditions such as temperature and humidity (ATSDR, 1995a, b; HSDB, 2011). Generally, the two- and three-ring compounds (low and medium MW except pyrene) exist predominantly as vapors; the four-ring compounds exist in both the vapor and particulate phase, and compounds with 5 or more rings (benzo[a]pyrene, benzo[g,h,i]perylene exist predominantly as particulates. Increasing atmospheric temperature and relative humidity favors existence in the vapor phase. PAHs may travel short or long distances before removal from the air. Vapor forms are subject to chemical oxidation processes in the air, which reduces the distance they may travel. Residence time and transport distance is inversely related to the size of the particles on which the PAHs are adsorbed. Small particles may have residence times of weeks, permitting transport for hundreds or upwards of a thousand miles. Wet and dry deposition accounts for removal of the particulates.

The predominant sources of PAHs in surface water are deposition from the atmosphere, industrial and sewage effluent and oil spills (ATSDR, 1995a, b). Runoff and erosion can also contribute PAHs to surface water bodies. Volatilization is a significant fate process for PAHs with H values of 1E-5 atm-$m^3$/mole or greater (generally the low and medium MW compounds). Volatilization is a very limited removal process for most of the high MW compounds. Volatilization is enhanced by high temperature, turbulence and high wind. Sorption to benthic or suspended sediment and biodegradation are competing removal processes. Generally, volatilization and biodegradation are the predominant removal processes for the low MW compounds, and volatilization and sorption are the predominant removal processes for medium and high MW compounds. Naphthalene is relatively water soluble and may remain largely in solution. PAHs in sediment may biodegrade, recycle back to the water column (lower MW compounds) or accumulate in the lower trophic levels of living organisms.

Deposition from the atmosphere is the principal source of PAHs in soil (ATSDR, 1995a, b). Other sources include industrial activities, disposal of sewage sludge, and leaching from coal storage sites. Most PAHs sorb to soil constituents because of their low solubility and high affinity for organic matter. Volatilization is an important removal process for the low molecular weight compounds. Some of the low molecular weight compounds, particularly naphthalene, may leach fairly rapidly to groundwater.

The high lipophilicity of many PAHs evidenced by high log $K_{ow}$ values suggest that the PAHs might cross biologic membranes and participate significantly in food-chain pathways involving fish, fruit and vegetable, and meat and milk consumption. This, however, is not the case. For example, the PAHs are efficiently metabolized and excreted by fin fish, greatly reducing the likelihood of bioconcentration from water or bioaccumulation from sediment (ATSDR, 1995a). Consequently, there are often great discrepancies between modeled BCF values and empirical BCF values, where care was taken to identify the parent compound rather than PAH metabolites in fish tissue. This distinction is necessary because aromatic fragments from PAH metabolism are readily assimilated as normal endogenous components of biological tissue. PAH concentrations in aquatic food-chain systems usually decrease with increasing trophic level, reflecting the generally greater efficiency of metabolism in the higher trophic organisms.

Approximate tissue-to-sediment PAH concentration ratios were reported to be 0.6 to 1.2 for amphipods, 0.1 for clams, and 0.05 for fin fish and shrimp.

It has been reported that terrestrial plants can accumulate PAHs from soil by uptake through the roots (ATSDR, 1995a). More careful investigation, however, reveals that root uptake is quite low, and there is no evidence of bioconcentration or biomagnification. For example, PAH ratios in vegetation to soil in one survey ranged from 0.001 to 0.18 for total PAHs, and from 0.002 to 0.33 for benzo(a)pyrene. It is likely that most of the PAH contamination on the vegetation resulted from atmospheric deposition. Increased concentrations in vegetation have not been observed when soil PAH concentrations were greatly increased by amendment with sewage sludge. Data from carrots (*Daucus carotu*) showed that PAHs adhere to the outer skin of the root but show little tendency to penetrate to deeper layers, and even less tendency to translocate to aerial parts.

The inability of plants to bioconcentrate PAHs from soil reduces concern for bioconcentration in agricultural products such as meat and milk. It should be noted, however, that measurable concentrations of PAHs may accumulate on the aerial parts of plants because of deposition from the atmosphere (ATSDR, 1995a). Also, food-producing animals ingest a substantial amount of soil while grazing or consuming mechanically harvested forage crops. Mammals, however, efficiently metabolize the PAHs to polar compounds that are readily excreted, reducing concern for bioconcentration.

In summary, the PAHs are highly lipophilic, which implies significance in food-chain exposure pathways. Empirical data, however, show that fish and mammals efficiently metabolize and eliminate these compounds. Furthermore, bioconcentration in plants because of uptake from soil is not significant. Therefore, it is unlikely that the PAHs would participate significantly in food-chain pathways, and biotransfer factors are not estimated.

## *3.0 Toxicokinetics*

The PAHs are absorbed by all routes of exposure, but the rate and extent depends on the compound, the species of animal and the vehicle (or nature of the particulates) (ATSDR, 1995a). PAHs are readily absorbed during inhalation exposure; however, intratracheal instillation studies indicate that particle size is the most important determiner of the extent of pulmonary uptake.

Toxicokinetic studies of several PAHs summarized by ATSDR (1995a) provide limited quantitative information regarding the extent of GI absorption. Limitations arise largely because biliary excretion complicates quantification of uptake from the GI tract. A study of benzo(a)pyrene in rats suggests that GI absorption ranges from 38 to 58 percent. A study in rats reported absorption efficiency for anthracene ranging from 53 to 74 percent. GI absorption of pyrene, chrysene and dibenzo(a,h)anthracene is described as high. Administration of the test compound in oil or in a high-fat diet appears to increase the extent of GI absorption.

Empirical data with pure compound dissolved or suspended in various vehicles suggest that dermal uptake of benzo(a)pyrene is extensive (ATSDR, 1995a). One occupational study reported that approximately 75 percent of systemically absorbed pyrene entered the body through dermal uptake rather than through inhalation exposure. Combining PAHs with soil appears to significantly reduce the extent of dermal uptake compared with oleaginous or acetone vehicles.

Anecdotal evidence from using cloth diapers stored in contact with naphthalene indicates that naphthalene is absorbed by the skin, but quantitative data are not available (ATSDR, 1995b).

Distribution of absorbed PAHs is generally widespread, with highest levels located initially in lipid-rich tissues (ATSDR, 1995a). Highest levels of metabolites (radioactivity following administration of radiolabeled compounds) are located in the liver and GI tract, even after inhalation exposure, probably reflecting extensive metabolism in the liver followed by biliary excretion. Ciliary clearance and deglutition probably contribute to levels associated with the GI tract. Concentrations of radioactivity following administration of radiolabeled compound reveal fetal levels approximately 2- to 10-fold lower than maternal levels, although this depends on the specific compound administered.

Metabolism of the PAHs, particularly benzo(a)pyrene, has been extensively studied (ATSDR, 1995a). Metabolism proceeds rapidly, yielding products that are more water soluble and readily excreted than the parent compound. All tissues have the ability to metabolize the PAHs, potentially to carcinogenic intermediates, which probably accounts for the observation that cancers occur at the point of contact. There is considerable variability in tissue metabolic activity; however, the liver is probably the most active in most cases.

ATSDR (1995a) distinguishes between “alternant” and “nonalternant” PAHs, based on the nature of the electron density associated with the molecule, which influences how that compound is metabolized to its ultimate carcinogen. Alternant PAHs (e.g., benzo[a]pyrene, benzo[a]anthracene, chrysene, dibenz[a,h]anthracene) exhibit a uniformly distributed electron density. Nonalternant PAHs (e.g., fluoranthene, benzo[k]fluoranthene, indeno[1,2,3-cd]pyrene) behave more like two separate molecules because of uneven electron distribution.

Alternant PAHs (based on data for benzo[a]pyrene) are initially metabolized by the microsomal cytochrome P-450 system to several arene oxides (ATSDR, 1995a). These may re-arrange spontaneously to phenols or undergo hydration to form the corresponding trans-dihydrodiols. Further oxidation of the dihydrodiols results in formation of quinones, phenol diols and dihydrodiol epoxides. Phenols may be formed by direct insertion of oxygen into a ring. Many of the metabolites resulting from the reactions described above are subject to conjugation with various substrates followed rapidly by excretion. The dihydrodiol epoxides that form in the “bay” region (the three-sided concave region formed by the fusion of three benzene rings) are most likely the ultimate carcinogens that covalently bind to macromolecules such as DNA, resulting in alkylation or other adducts that yield genetic errors.

Metabolism of the nonalternant PAHs differs from the alternant PAHs in that more extensive oxidation to hydroxy-epoxy-diols may be important to achieve genotoxicity (ATSDR, 1995a). Dihydrodiol epoxide formation in the bay region is associated with carcinogenicity of the PAHs generally; however, some of the nonalternant PAHs yield reactive metabolites that deviate from the classical bay region model.

PAH metabolites are readily excreted, largely through the bile, although some metabolites are excreted by the kidney (ATSDR, 1995a). The extent of elimination is species specific. In one inhalation study rats excreted metabolites much more efficiently than dogs or monkeys.

## 4.0 Dermal Exposure

EPA (2004) recommends that oral toxicity values for the PAHs should not be adjusted when applied to dermal exposure because GI absorption probably exceeds 50 percent. Therefore, no GAF is estimated and the oral toxicity values described below should be used for dermal exposure without adjustment.

Empirical data with pure compound dissolved or suspended in various vehicles suggest that dermal uptake of benzo(a)pyrene is extensive (ATSDR, 1995a). Anecdotal evidence from using cloth diapers stored in contact with naphthalene indicates that naphthalene is absorbed by the skin, but quantitative data are not available (ATSDR, 1995b). EPA (2004) reviewed empirical data regarding dermal uptake of benzo(a)pyrene and recommended an ABS of 0.13 for the PAHs. However, EPA (2004) also notes that VOCs tend to volatilize from soil when applied to the skin, reducing dermal uptake to toxicologically insignificant levels. Therefore, the ABS of 0.13 is applied to all the PAHs identified above as SVOCs. Dermal uptake of the PAHs identified as VOCs is not quantified.

Values for t*, $K_p$, $\tau$, FA and B are provided or estimated as follows:

| Chemical | t* | $K_p$ | $\tau$ | FA | B |
|---|---|---|---|---|---|
| Acenaphthene[a] | 1.84 | 8.39E-2 | 7.67E-1 | 1 | 0.4 |
| Acenaphthylene[a] | 1.79 | 1.08E-1 | 7.47E-1 | 1 | 0.5 |
| Anthracene[a] | 4.06 | 1.38E-1 | 1.05E+0 | 1 | 0.7 |
| Benzo(a)anthracene[b] | 8.53 | 4.7E-1 | 2.03E+0 | 1.0 | 2.8 |
| Benzo(a)pyrene[b] | 11.67 | 7.0E-1 | 2.69E+0 | 1.0 | 4.3 |
| Benzo(b)fluoranthene[b] | 12.03 | 7.0E-1 | 2.77E+0 | 1.0 | 4.3 |
| Benzo(k)fluoranthene[a] | 12.40 | 2.00E+0 | 2.72E+0 | 0.4 | 12 |
| Benzo(g,h,i)perylene[a] | 8.89 | 1.07E+0 | 3.70E+0 | 0.7 | 6.8 |
| Chrysene[b] | 8.53 | 4.7E-1 | 2.03E+0 | 1.0 | 2.8 |
| Dibenz(a,h)anthracene[b] | 17.57 | 1.5E+0 | 3.88E+0 | 0.6 | 9.7 |
| Fluoranthene[b] | 5.68 | 2.2E-1 | 1.45E+0 | 1.0 | 1.2 |
| Fluorene[a] | 2.15 | 1.07E-1 | 8.95E-1 | 1 | 0.5 |
| Indeno(1,2,3-cd)pyrene[b] | 16.83 | 1.0E+0 | 3.78E+0 | 0.6 | 6.7 |
| Naphthalene[b] | 1.34 | 4.7E-2 | 5.6E-1 | 1 | 0.2 |
| Phenanthrene[b] | 4.11 | 1.4E-1 | 1.06E+0 | 1 | 0.7 |
| Pyrene[a] | 3.42 | 1.94E-1 | 1.43E+0 | 1 | 1.1 |

t* = time for dermal uptake to reach steady state (hours); $K_p$ = permeability coefficient (cm/hour); $\tau$ = lag time for chemical to cross stratum corneum (hours); FA = fraction absorbed (unitless); B = ratio of the permeability coefficient for passage across the stratum corneum relative to the permeability coefficient for passage across the viable epidermis (unitless).
[a]Estimated as described in Introduction to Toxicological profiles.
[b]Provided by U.S. Environmental Protection Agency (EPA), 2004, ***Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part E - Supplemental Guidance for Dermal Risk Assessment)***, Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R-99/005, July.

## 5.0 Noncancer Effects Evaluation

The PAHs are generally divided into two EPA cancer weight-of-evidence groups: Group D – not classifiable as to carcinogenicity to humans, and Group B2 – probable human carcinogens. The Group D PAHs have not been evaluated for carcinogenicity by toxicity testing; therefore, cancer SFs or URFs cannot be estimated for these compounds (EPA, 1986, 2011). Risk evaluation of these compounds is limited to noncancer effects. It is theoretically possible that cancer risk could be the "driver" for some of these compounds. However, the mechanism of carcinogenicity of the PAHs is fairly well understood to be correlated with molecular

morphology and the propensity to form certain active metabolites (ATSDR, 1995a). The Group D PAHs either do not fit the morphologic mold or have been shown empirically to be unlikely to cause cancer, reducing greatly the uncertainty that significant cancer risk is being overlooked.

Cancer SFs and URFs are available for the Group B2 compounds, but noncancer RfDs or RfCs are not. Therefore, risk evaluation of these compounds is limited to cancer risk. These compounds have the morphologic requirements for carcinogenicity; therefore, it has been thought that cancer risk is the driver, and that noncancer effects are relatively insignificant, although empirical data were lacking until recently.

Recent data support this assumption. De Jong et al. (2008) reported a study in which male rats were treated by gavage with benzo(a)pyrene 5 days per week for 35 days at dose rates of 0 (control), 3, 10, 30 or 90 mg/kg. Significantly reduced rate of body weight gain and altered organ weights were observed in the 90 mg/kg group. Fore stomach lesions were found in the 30 and 90 mg/kg groups. Decreased thymus weights and hematological evidence of erythrocyte toxicity were observed in a dose-related manner in rats treated with 10 mg/kg and above. Subtle alterations in measures of immune function were also observed in these groups, establishing 10 mg/kg as the LOAEL and 3 mg/kg as the NOAEL for this study. The 3 mg/kg dose is equivalent to a NOAEL of 2.1 mg/kg-day when adjusted for continuous exposure. Application of an uncertainty factor of 1000 (factor of 10 to expand from subchronic to chronic exposure, and factors of 10 each to provide additional protection for intra- and interspecies variation) allows development of a preliminary oral RfD of 2E-3 mg/kg-day. Uncertainty surrounding the preliminary oral RfD is very high because the data base for the noncancer effects of benzo(a)pyrene is essentially limited to one study and several toxicological endpoints (e.g., developmental, reproductive, neurological) were not investigated.

The sole purpose for developing this oral RfD is to evaluate the potential for noncancer effects to be the driver for the Group B2 PAHs. The RfD was not developed with sufficient rigor to be used in the risk assessment of the noncancer effects of benzo(a)pyrene. The oral SF for benzo(a)pyrene is 7.3 per mg/kg-day (please see below), from which it is estimated that the oral RfD is equivalent to a cancer risk of 1.5E-2. This cancer risk is orders of magnitude above the EPA (1990) risk management range of 1E-6 to 1E-4, strengthening the position that noncancer effects are unlikely to be the driver for the Group B2 PAHs.

Data regarding the toxicity of acute oral exposure to the PAHs are generally scarce. Prolonged oral exposure to the Group D PAHs is associated with a number of renal, hematologic and other effects, depending on the compound.

Subchronic (90 day) gavage treatment of mice with acenaphthene is associated with histopathologic evidence of liver hypertrophy. A verified RfD of 6E-2 mg/kg-day for chronic oral exposure was derived from the NOAEL of 175 mg/kg-day and an uncertainty factor of 3000 (EPA, 2011). The LOAEL in this study was 350 mg/kg-day. Confidence in the RfD is low. The liver is considered the target organ for prolonged oral exposure to acenaphthene. EPA (1997) derived a provisional subchronic oral RfD for acenaphthene of 6E-1 mg/kg-day from the same mouse study using an uncertainty factor of 300.

A verified RfD of 3E-1 mg/kg-day for chronic oral exposure to anthracene was derived from a NOEL of 1000 mg/kg-day, the highest dose tested, in a 90-day gavage study in mice (EPA,

2011). An uncertainty factor of 3000 was applied. Confidence in the RfD is low. The data are inadequate to identify a target organ for prolonged oral exposure to anthracene. EPA (1997) derived a provisional subchronic oral RfD for anthracene of 3E+0 mg/kg-day from the same mouse study using an uncertainty factor of 300.

Subchronic exposure to fluoranthene induces liver and kidney effects and hematologic alterations in orally treated mice (EPA, 2011). A verified RfD of 4E-2 mg/kg-day for chronic oral exposure was derived from a NOAEL of 125 mg/kg-day in a 13-week gavage study. The LOAEL was 250 mg/kg-day in this study. An uncertainty factor of 3000 was applied. Confidence in the oral RfD is low. The kidney, liver and blood cells are chosen as the target organs for prolonged oral exposure to fluoranthene. EPA (1997) derived a provisional subchronic oral RfD for fluoranthene of 4E-1 mg/kg-day from the same mouse study using an uncertainty factor of 300.

Subchronic exposure to fluorene induces hemolytic anemia in orally treated mice (EPA, 2011). A verified RfD of 4E-2 mg/kg-day for chronic oral exposure was derived from a NOAEL of 125 mg/kg-day in a 13-week gavage study. The LOAEL was 250 mg/kg-day in this study. An uncertainty factor of 3000 was applied. Confidence in the oral RfD is low. The erythrocyte is the target organ for prolonged oral exposure to fluorene. EPA (1997) derived a provisional subchronic oral RfD for fluorene of 4E-1 mg/kg-day from the same mouse study using an uncertainty factor of 300.

Single-dose $LD_{50}$ values for naphthalene include 533 to 710 mg/kg for mice and 2200 to 2400 mg/kg for rats, establishing the mouse as more sensitive to the lethal effects of acute oral exposure (ATSDR, 1995b). Decreased terminal body weights, accompanied by a remarkable absence of hematological and histopathological effects, were observed in rats treated by gavage for 13 weeks (EPA, 2011). The LOAEL in this study was 142 mg/kg-day associated with greater than 10 percent reduction in terminal body weights. The NOAEL was 71 mg/kg-day. The high dose rate, 286 mg/kg-day was a FEL associated with increased mortality. Application of an uncertainty factor of 3000 (10 to extrapolate from rats to humans, 10 to protect sensitive humans, 10 to extrapolate from subchronic to chronic exposure, and 3 for database deficiencies) to the NOAEL of 71 mg/kg-day yields the verified chronic oral RfD of 2E-2 mg/kg-day. Confidence in the RfD is low. A preliminary subchronic oral RfD can be derived for naphthalene by applying an uncertainty factor of 300 to the NOAEL of 71 mg/kg-day described above. The uncertainty factor of 300 reflects the chronic uncertainty factor of 3000 without the factor of 10 to expand from subchronic to chronic exposure. The preliminary subchronic oral RfD so derived is 2E-1 mg/kg-day.

The key study described above is not sufficient to identify target organs for prolonged oral exposure to naphthalene. Adults, children and neonates exposed to moth balls exhibit hemolytic anemia, evidence of liver disease and neurological deficits (EPA, 1993a, 1998). The liver effects and neurological deficits may be secondary to hemolytic anemia and reduced oxygen-carrying capacity of the blood. Hemolytic anemia and cataract formation have been seen also in orally exposed humans (EPA, 1998). The data suggest that the erythrocyte may be the most sensitive tissue in humans. Among common species of laboratory mammals, hemolytic anemia is seen only in dogs (EPA, 1998). Cataracts are seen in several laboratory mammals, but only at relatively high doses. The key study identifies reduced body weight as the critical effect in rats. Rats, however, do not exhibit hemolytic anemia, and exhibit cataracts only at very high doses,

suggesting that rats may not be a totally acceptable model for the toxicity of naphthalene to humans. Therefore, based on the effects observed in humans, the erythrocyte and eye are selected as target organs for prolonged oral exposure to naphthalene. Reduced body weight is also included as a critical effect because this was the only endpoint observed in rats in the key study.

EPA (1993a, 2011) reported a 2-year study in which mice were exposed to naphthalene vapors for 6 hours/day on 5 days/week. Inflammation of the nasal and olfactory epithelium was the most consistently observed sign; granulomatous lesions in the lungs were also observed. There was equivocal evidence of hematologic involvement. The lowest exposure concentration, 10 ppm, was a LOAEL for the nasal effects, which are considered the critical effects of inhalation exposure. The LOAEL is equivalent to a human equivalent concentration of 9.3 mg/m$^3$ (EPA, 2011). Application of an uncertainty factor of 3000 yields a verified chronic inhalation RfC of 3E-3 mg/m$^3$, which is equivalent to a chronic inhalation RfD of 8.6E-4 mg/kg-day. The nasal and olfactory epithelia are the target organs for inhalation exposure to naphthalene. Confidence in the RfC is medium. The chronic inhalation RfC of 3E-3 mg/m$^3$, equivalent to an inhalation RfD of 8.6E-4 mg/kg-day, is adopted as sufficiently protective for subchronic inhalation exposure as well.

Subchronic exposure to pyrene induces mild renal tubular degeneration and reduced kidney weight in orally treated mice (EPA, 2011). A verified RfD of 3E-2 mg/kg-day for chronic oral exposure was derived from a NOAEL of 75 mg/kg-day in a 13-week gavage study. The LOAEL was 125 mg/kg-day in this study. An uncertainty factor of 3000 was applied. Confidence in the oral RfD is low. The kidney tubule is chosen as the target organ for chronic oral exposure to pyrene. EPA (1997) derived a provisional subchronic oral RfD for pyrene of 3E-1 mg/kg-day from the same mouse study using an uncertainty factor of 300.

Data regarding prolonged oral exposure are not available for several of the Group D PAHs, which hinders estimation of an RfD or RfC and compromises evaluation of the potential for noncancer effects. Therefore, surrogates are used to develop toxicity values for the noncancer effects.

Generally surrogates are chosen on the basis of the following hierarchy:

- Toxicological similarity (effects and dose-response relationship).
- Toxicokinetic similarity, assuming that likeness in absorption, distribution and especially products of biotransformation suggests toxicological similarity.
- Structural similarity, assuming that likeness in structure suggests similarity in toxicokinetics.

Selection of defensible surrogates for the PAHs is compromised because toxicological and toxicokinetic data are virtually non-existent (except for benzo[a]pyrene), and the structural similarities often are not very convincing, which imparts a great deal of uncertainty to the effort. Therefore, the most defensible approach for some of the PAHs is to select the most conservative surrogate; i.e., the PAH with the smallest verified oral RfD, which happens to be pyrene.

Data regarding the effects of chronic or subchronic exposure to acenaphthylene were not located in the available literature. Acenaphthene is adopted as a reasonable surrogate for acenaphthylene based on structural similarity, since the surrogate differs from the principal chemical only in the presence of two hydrogen atoms and the absence of a double bond. Therefore, the verified chronic oral RfD of 6E-2 mg/kg-day for acenaphthene is adopted as the RfD for chronic oral exposure to acenaphthylene. The liver, which is the target organ for acenaphthene, is adopted for oral exposure to acenaphthylene. Similarly, the provisional subchronic oral RfD of 6E-1 mg/kg-day for acenaphthene is adopted as the RfD for subchronic oral exposure to acenaphthylene.

Data regarding the effects of chronic or subchronic exposure to benzo(g,h,i)perylene were not located in the available literature. Pyrene is adopted as a reasonable surrogate for benzo(g,h,i)perylene based somewhat on structural similarity, but more on the selection of a conservative approach as justified above. Therefore, the verified oral RfD of 3E-2 mg/kg-day for pyrene is adopted as the oral RfD for chronic exposure to benzo(g,h,i)perylene. Similarly, the provisional subchronic oral RfD of 3E-1 mg/kg-day for pyrene is adopted as the RfD for subchronic oral exposure to benzo(g,h,i)perylene. The kidney tubule, which is the target organ for pyrene, is adopted for oral exposure to benzo(g,h,i)perylene.

Relevant data regarding chronic or subchronic exposure to phenanthrene were not located. Potential surrogates based on similarity in chemical structure include anthracene and pyrene. Pyrene is selected as the surrogate only because it is the more conservative choice. Therefore, the verified oral RfD of 3E-2 mg/kg-day for pyrene is adopted as the oral RfD for chronic exposure to phenanthrene. Similarly, the provisional subchronic oral RfD of 3E-1 mg/kg-day for pyrene is adopted as the RfD for subchronic oral exposure to phenanthrene. The kidney tubule, which is the target organ for pyrene, is adopted for oral exposure to phenanthrene.

Data regarding inhalation exposure sufficient for development of inhalation RfCs were not located for any of the PAHs with the exception of naphthalene as noted above.

## *6.0 Carcinogenicity Evaluation*

Acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene and pyrene are classified in EPA cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans) because of a lack of human data and inadequate animal data (EPA, 2011). Data regarding the carcinogenicity of acenaphthene were not located. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, , chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene are classified in EPA weight-of-evidence Group B2 (probable human carcinogens) (EPA, 1997, 2011). Benzo(a)pyrene is the most extensively studied member of the class, inducing tumors in tissues at the point of contact of practically all laboratory species tested by all routes of exposure.

Although epidemiology studies suggested that complex mixtures that contain PAHs (coal tar, soots, coke oven emissions, cigarette smoke) are carcinogenic to humans, the carcinogenicity cannot be attributed to PAHs alone because of the presence of other potentially carcinogenic substances in these mixtures (ATSDR, 1995a). In addition, recent investigations showed that the PAH fraction of roofing tar, cigarette smoke and coke oven emissions accounted for only 0.1-8% of the total mutagenic activity in *Salmonella* of the unfractionated complex mixture (Lewtas, 1988). Aromatic amines, nitrogen heterocyclic compounds, highly oxygenated quinones, diones,

and nitrooxygenated compounds, none of which would be expected to arise from in vivo metabolism of PAHs, probably accounts for the majority of the mutagenicity of coke oven emissions and cigarette smoke. Furthermore, coal tar, which contains a mixture of many PAHs, has a long history of use in the clinical treatment of a variety of skin disorders in humans (ATSDR, 1995a).

Because of the lack of human cancer data, assignment of individual PAHs to EPA cancer weight-of-evidence groups is based largely on the results of animal studies with large doses of purified compound (EPA, 2011). Frequently, unnatural routes of exposure, including implants of the test chemical in beeswax and trioctanoin in the lungs of female rats, intratracheal instillation, and subcutaneous or intraperitoneal injection, were used. Although the carcinogenicity of benzo(a)pyrene in animals managed in an unnatural manner in laboratory conditions has been well established, the potential for carcinogenicity to humans in environmental settings involving exposure to low concentrations remains unclear.

EPA (200) verified a SF for oral exposure to benzo(a)pyrene of 7.3E+0 per mg/kg-day, based on several dietary studies in mice and rats. Recent reevaluations of the carcinogenicity and mutagenicity of the Group B2 PAHs suggest that there are large differences between individual PAHs in cancer potency (Krewski et al., 1989). Based on the available cancer and mutagenicity data, and assuming that there is a constant relative potency between different potential carcinogens across different bioassay systems and that the PAHs under consideration have similar dose-response curves, EPA (1993b) adopted relative potency values for several PAHs. These values and the corresponding oral SFs, based on a relative potency for benzo(a)pyrene of 1.0, are presented below:

| Relative Potency Estimates for PAHs | | | | |
|---|---|---|---|---|
| | | | Inhalation | |
| PAH | Relative Potency | Oral Slope Factor (per mg/kg-day) | Unit Risk Factor (per µg/m$^3$) | Slope Factor (per mg/kg-day) |
| Benzo(a)pyrene | 1.0 | 7.3E+0 | 8.8E-4 | 3.1E+0 |
| Benzo(a)anthracene | 0.1 | 7.3E-1 | 8.8E-5 | 3.1E-1 |
| Benzo(b)fluoranthene | 0.1 | 7.3E-1 | 8.8E-5 | 3.1E-1 |
| Benzo(k)fluoranthene | 0.01 | 7.3E-2 | 8.8E-6 | 3.1E-2 |
| Chrysene | 0.001 | 7.3E-3 | 8.8E-7 | 3.1E-3 |
| Dibenz(a,h)anthracene | 1.0 | 7.3E+0 | 8.8E-4 | 3.1E+0 |
| Indeno(1,2,3-cd)pyrene | 0.1 | 7.3E-1 | 8.8E-5 | 3.1E-1 |

Although the EPA has not verified SFs for Group B2 PAHs other than benzo(a)pyrene, the SFs above represent reasonable estimates based on the data available. The relative potency approach employed here meets criteria considered to be desirable for this type of analysis (Lewtas, 1988). For example, the chemicals compared have similar chemical structures and would be expected to have similar toxicokinetic fate in mammalian systems. In addition, the available data suggest that the Group B2 PAHs have a similar mechanism of action, inducing frameshift mutations in *Salmonella* and tumor initiation in the mouse skin painting assay. Similar noncancer effects (minor changes in the blood, liver, kidneys) of the Group D PAHs support the hypothesis of a common mechanism of toxicity. Finally, the same endpoints of toxicity, i.e., potency in various cancer assays, and related data, were used to derive the relative potency values (Krewski et al., 1989). The oral SF for benzo(a)pyrene of 7.3E+0 per mg/kg-day, and the SFs presented above for the other Group B2 PAHs are adopted for the purposes of this evaluation.

An EPA (1994) evaluation of the inhalation cancer data suggests adoption of an inhalation SF for benzo(a)pyrene of 3.1E+0 per mg/kg-day, based on the incidence of upper respiratory and digestive tract tumors in hamsters. Applying the relative potency estimates presented above yield the inhalation URFs and SFs for the other Group B2 PAHs presented above.

EPA (2011) classified naphthalene in EPA cancer weight-of-evidence group C – possible human carcinogen – based on benign respiratory tumors and one carcinoma in female mice exposed to naphthalene by inhalation. Cancer potency factors are not available because the data are not sufficient.

## *7.0 Toxicity Summary*

Toxicity values for the PAHs are summarized below:

| Noncancer Effects | | | | | | Carcinogenicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Oral Exposure[a] | | | Inhalation Exposure | | | Oral Exposure[a] | | Inhalation Exposure | | |
| sRfDo | cRfDo | TO | sRfC/ sRfDi | cRfC/ cRfDi | TO | WOE | SFo | WOE | URFi | SFi |
| Acenaphthene | | | | | | | | | | |
| 6E-1 | 6E-2 | L | ND | ND | NA | ND | NA | ND | NA | NA |
| Acenaphthylene | | | | | | | | | | |
| 6E-1 | 6E-2 | L | ND | ND | NA | D | NA | D | NA | NA |
| Anthracene | | | | | | | | | | |
| 3E+0 | 3E-1 | ND | ND | ND | NA | D | NA | D | NA | NA |
| Benzo(a)anthracene | | | | | | | | | | |
| ND | ND | NA | ND | ND | NA | B2 | 7.3E-1 | B2 | 8.8E-5 | 3.1E-1 |
| Benzo(a)pyrene | | | | | | | | | | |
| ND | ND | NA | ND | ND | NA | B2 | 7.3E+0 | B2 | 8.8E-4 | 3.1E+0 |
| Benzo(b)fluoranthene | | | | | | | | | | |
| ND | ND | NA | ND | ND | NA | B2 | 7.3E-1 | B2 | 8.8E-5 | 3.1E-1 |
| Benzo(k)fluoranthene | | | | | | | | | | |
| ND | ND | NA | ND | ND | NA | B2 | 7.3E-2 | B2 | 8.8E-6 | 3.1E-2 |
| Benzo(g,h,i)perylene | | | | | | | | | | |
| 3E-1 | 3E-2 | K | ND | ND | NA | D | NA | D | NA | NA |
| Chrysene | | | | | | | | | | |
| ND | ND | NA | ND | ND | NA | B2 | 7.3E-3 | B2 | 8.8E-7 | 3.1E-3 |
| Dibenz(a,h)anthracene | | | | | | | | | | |
| ND | ND | NA | ND | ND | NA | B2 | 7.3E+0 | B2 | 8.8E-4 | 3.1E+0 |
| Fluoranthene | | | | | | | | | | |
| 4E-1 | 4E-2 | L,K,B | ND | ND | NA | D | NA | D | NA | NA |
| Fluorene | | | | | | | | | | |
| 4E-1 | 4E-2 | E | ND | ND | NA | D | NA | D | NA | NA |
| Indeno(1,2,3-cd)pyrene | | | | | | | | | | |
| ND | ND | NA | ND | ND | NA | B2 | 7.3E-1 | B2 | 8.8E-5 | 3.1E-1 |
| Naphthalene | | | | | | | | | | |
| 2E-1 | 2E-2 | E, Ey, BW | 3E-3/ 8.6E-4 | 3E-3/ 8.6E-4 | Ne, Oe | C | ND | C | ND | ND |
| Phenanthrene | | | | | | | | | | |
| 3E-1 | 3E-2 | K | ND | ND | NA | D | NA | D | NA | NA |
| Pyrene | | | | | | | | | | |
| 3E-1 | 3E-2 | K | ND | ND | NA | D | NA | D | NA | NA |

| Noncancer Effects | | | | | | Carcinogenicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Oral Exposure[a] | | | Inhalation Exposure | | | Oral Exposure[a] | | Inhalation Exposure | | |
| sRfDo | cRfDo | TO | sRfC/ sRfDi | cRfC/ cRfDi | TO | WOE | SFo | WOE | URFi | SFi |

sRfDo = subchronic oral reference dose (milligrams per kilogram-day); cRfDo = chronic oral reference dose (milligrams per kilogram-day); TO = target organ(s) or critical effect(s); sRfC = subchronic inhalation reference concentration (milligrams per cubic meter); sRfDi = subchronic inhalation reference dose (milligrams per kilogram-day); cRfC = chronic inhalation reference concentration (milligrams per cubic meter); cRfDi = chronic inhalation reference dose (milligrams per kilogram-day); WOE = cancer weight-of-evidence evaluation; SFo = oral cancer slope factor (risk per milligram per kilogram-day); URFi = inhalation unit risk factor (risk per microgram per cubic meter); SFi = inhalation cancer slope factor (risk per milligram per kilogram-day); ND = no data; NA = not applicable.
Target organ or critical effect abbreviations: B = blood cells; BW = reduced body weight; E = erythrocyte; Ey = eye; L = liver; K = kidney; Ne = nasal epithelium; Oe = olfactory epithelium.
[a]sRfDo, cRfDo and SFo should be used for dermal exposure without adjustment for GI absorption.

## *8.0 References*


Agency for Toxic Substances and Disease Registry, (ATSDR), 1995a, ***Update Toxicological Profile for Polycyclic Aromatic Hydrocarbons (PAHs)***, U.S. Public Health Service, Atlanta, Georgia, August, on line.

Agency for Toxic Substances and Disease Registry, (ATSDR), 1995b, ***Update Toxicological Profile for Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene***, U.S. Public Health Service, Atlanta, Georgia, August, on line.

De Jong, W.H., E.D. Kroes, J.G. Vos and H. Van Loveren, 1999, "Detection of Immunotoxicity of Benzo[a]pyrene in a Subacute Toxicity Study after Oral Exposure in Rats," ***Toxicological Sciences*** 50: 214-220.

Hazardous Substance Data Bank (HSDB), 2011, National Library of Medicine, on line.

Krewski, D., T. Thorslund and J. Withey, 1989, "Carcinogenic Risk Assessment of Complex Mixtures," ***Toxicology and Industrial Health***, 5: 851-867.

Lewtas, J., 1988, "Genotoxicity of Complex Mixtures: Strategies for the Identification and Comparative Assessment of Airborne Mutagens and Carcinogens from Combustion Sources," ***Fundamental and Applied Toxicology***, 10: 571-589.

Potter, T.L. and K.E. Simmons, 1998, ***Composition of Petroleum Mixtures***, Volume 2, Total Petroleum Hydrocarbon Criteria Working Group Series, University of Massachusetts, Amherst, May.

U.S. Environmental Protection Agency (EPA), 1986, "Guidelines for Carcinogen Risk Assessment," ***Federal Register*** 51(185): 33992-34003.

U.S. Environmental Protection Agency (EPA), 1990, "National Oil and Hazardous Substances Pollution Contingency Plan," ***Federal Register*** 55(46): 8666-8865.

U.S. Environmental Protection Agency (EPA), 1993a, ***Risk Assessment Issue Paper for: Derivation of a Subchronic RfC for Naphthalene (CASRN 91-20-3)***, National Center for Environmental Assessment, Cincinnati, Ohio, March 12.

U.S. Environmental Protection Agency (EPA), 1993b, ***Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons***, Office of Health and Environmental Assessment, Cincinnati, Ohio, EPA/600/R-93/089, March.

U.S. Environmental Protection Agency (EPA), 1994, ***Risk Assessment Issue Paper: Status of Inhalation Cancer Unit Risk for Benzo(a)Pyrene (CAS No. 50-32-8)***, National Center for Environmental Assessment, Cincinnati, Ohio, November 18.

U.S. Environmental Protection Agency (EPA), 1997, ***Health Effects Assessment Summary Tables, FY 1997 Update***, Office of Solid Waste and Emergency Response, Washington, D.C., 9200.6-303(97-1), EPA 540/R-97-036, PB97-921199.

U.S. Environmental Protection Agency (EPA), 1998, ***Toxicological Review of Naphthalene (CAS No. 91-20-3) In Support of Summary Information on the Integrated Risk Information System (IRIS)***, August.

U.S. Environmental Protection Agency (EPA), 2004, ***Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part E - Supplemental Guidance for Dermal Risk Assessment)***, Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R-99/005, July.

U.S. Environmental Protection Agency (EPA), 2011, ***Integrated Risk Information System (IRIS)***, National Center for Environmental Assessment, Cincinnati, Ohio, on line.

# APPENDIX D

# RISK CHARACTERIZATION SPREADSHEETS

## Table D-1

## Groundskeeper, Current Scenarios, Exposure to Surface Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| | | Incidental Ingestion | | | | Dermal Contact | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemicals of Potential Concern | EPC mg/kg | Cancer Dose mg/kg-day | Noncancer Dose mg/kg-day | ILCR | HQ | Dose Absorbed mg/cm$^2$-day | Cancer Dose mg/kg-day | Noncancer Dose mg/kg-day | ILCR | HQ |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| Benzo(a)anthracene | 1.12E+00 | 3.92E-07 | 1.10E-06 | 2.86E-07 | NA | 2.92E-08 | 3.36E-07 | 9.42E-07 | 2.46E-07 | NA |
| Benzo(a)pyrene | 9.55E-01 | 3.34E-07 | 9.34E-07 | 2.44E-06 | NA | 2.48E-08 | 2.86E-07 | 8.02E-07 | 2.09E-06 | NA |
| Benzo(b)fluoranthene | 1.20E+00 | 4.20E-07 | 1.18E-06 | 3.06E-07 | NA | 3.12E-08 | 3.60E-07 | 1.01E-06 | 2.63E-07 | NA |
| Dibenz(a,h)anthracene | 7.75E-02 | 2.71E-08 | 7.58E-08 | 1.98E-07 | NA | 2.02E-09 | 2.32E-08 | 6.51E-08 | 1.70E-07 | NA |
| Indeno(1,2,3-cd)pyrene | 5.43E-01 | 1.90E-07 | 5.31E-07 | 1.39E-07 | NA | 1.41E-08 | 1.63E-07 | 4.56E-07 | 1.19E-07 | NA |
| **Total ILCR or HI** | | | | **3.37E-06** | **NA** | | | | **2.89E-06** | **NA** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
mg/m$^3$ - milligram per cubic meter

## Table D-1

## Groundskeeper, Current Scenarios, Exposure to Surface Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Chemicals of Potential Concern | Concentration in Air $C_a$ mg/m$^3$ | Inhalation Cancer Dose mg/kg-day | Inhalation Noncancer Dose mg/kg-day | Inhalation ILCR | Inhalation HQ | **All Pathways Total ILCR** | **All Pathways Total HI** |
|---|---|---|---|---|---|---|---|
| **Semivolatile Organic Compounds** | | | | | | | |
| Benzo(a)anthracene | 1.12E-07 | 7.84E-09 | 2.20E-08 | 2.43E-09 | NA | **5.34E-07** | **NA** |
| Benzo(a)pyrene | 9.55E-08 | 6.67E-09 | 1.87E-08 | 2.07E-08 | NA | **4.55E-06** | **NA** |
| Benzo(b)fluoranthene | 1.20E-07 | 8.39E-09 | 2.35E-08 | 2.60E-09 | NA | **5.72E-07** | **NA** |
| Dibenz(a,h)anthracene | 7.75E-09 | 5.42E-10 | 1.52E-09 | 1.68E-09 | NA | **3.69E-07** | **NA** |
| Indeno(1,2,3-cd)pyrene | 5.43E-08 | 3.80E-09 | 1.06E-08 | 1.18E-09 | NA | **2.59E-07** | **NA** |
| **Total ILCR or HI** | | | | **2.86E-08** | **NA** | **6.28E-06** | **NA** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
mg/m$^3$ - milligram per cubic meter

## Table D-2

## Groundskeeper, Future Scenario, Exposure to Total Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| | | Incidental Ingestion | | | | Dermal Contact | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemicals of Potential Concern | EPC mg/kg | Cancer Dose mg/kg-day | Noncancer Dose mg/kg-day | ILCR | HQ | Dose Absorbed $mg/cm^2$-day | Cancer Dose mg/kg-day | Noncancer Dose mg/kg-day | ILCR | HQ |
| **Explosives** | | | | | | | | | | |
| Trinitrotoluene, 2,4,6- | 3.44E-01 | 1.20E-07 | 3.37E-07 | 3.61E-09 | 6.73E-04 | 2.20E-09 | 2.54E-08 | 7.11E-08 | 7.62E-10 | 1.42E-04 |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| Benzo(a)anthracene | 2.39E-01 | 8.35E-08 | 2.34E-07 | 6.10E-08 | NA | 6.21E-09 | 7.17E-08 | 2.01E-07 | 5.23E-08 | NA |
| Benzo(a)pyrene | 2.20E-01 | 7.69E-08 | 2.15E-07 | 5.61E-07 | NA | 5.72E-09 | 6.60E-08 | 1.85E-07 | 4.82E-07 | NA |
| Benzo(b)fluoranthene | 2.80E-01 | 9.78E-08 | 2.74E-07 | 7.14E-08 | NA | 7.28E-09 | 8.40E-08 | 2.35E-07 | 6.13E-08 | NA |
| Dibenz(a,h)anthracene | 5.43E-02 | 1.90E-08 | 5.31E-08 | 1.39E-07 | NA | 1.41E-09 | 1.63E-08 | 4.56E-08 | 1.19E-07 | NA |
| Indeno(1,2,3-cd)pyrene | 1.34E-01 | 4.68E-08 | 1.31E-07 | 3.42E-08 | NA | 3.48E-09 | 4.02E-08 | 1.12E-07 | 2.93E-08 | NA |
| **Total ILCR or HI** | | | | **8.70E-07** | **6.73E-04** | | | | **7.44E-07** | **1.42E-04** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
$mg/m^3$ - milligram per cubic meter

## Table D-2

## Groundskeeper, Future Scenario, Exposure to Total Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Chemicals of Potential Concern | Concentration in Air $C_a$ mg/m$^3$ | Inhalation Cancer Dose mg/kg-day | Inhalation Noncancer Dose mg/kg-day | Inhalation ILCR | Inhalation HQ | **All Pathways Total ILCR** | **All Pathways Total HI** |
|---|---|---|---|---|---|---|---|
| **Explosives** | | | | | | | |
| Trinitrotoluene, 2,4,6- | 3.44E-08 | 2.40E-09 | 6.73E-09 | NA | NA | **4.37E-09** | **8.15E-04** |
| **Semivolatile Organic Compounds** | | | | | | | |
| Benzo(a)anthracene | 2.39E-08 | 1.67E-09 | 4.68E-09 | 5.18E-10 | NA | **1.14E-07** | **NA** |
| Benzo(a)pyrene | 2.20E-08 | 1.54E-09 | 4.31E-09 | 4.77E-09 | NA | **1.05E-06** | **NA** |
| Benzo(b)fluoranthene | 2.80E-08 | 1.96E-09 | 5.48E-09 | 6.07E-10 | NA | **1.33E-07** | **NA** |
| Dibenz(a,h)anthracene | 5.43E-09 | 3.80E-10 | 1.06E-09 | 1.18E-09 | NA | **2.59E-07** | **NA** |
| Indeno(1,2,3-cd)pyrene | 1.34E-08 | 9.37E-10 | 2.62E-09 | 2.90E-10 | NA | **6.38E-08** | **NA** |
| **Total ILCR or HI** | | | | **7.36E-09** | **NA** | **1.62E-06** | **8.15E-04** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
mg/m$^3$ - milligram per cubic meter

**Table D-3**

**Groundskeeper, Future Scenario, Exposure to Overburden Groundwater**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | | | Dermal Contact | | | | | **All Pathways** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cancer | Noncancer | | | Dose | Cancer | Noncancer | | | | |
| Chemicals of Potential Concern | EPC mg/L | Dose mg/kg-day | Dose mg/kg-day | ILCR | HQ | Absorbed mg/cm$^2$-day | Dose mg/kg-day | Dose mg/kg-day | ILCR | HQ | **Total ILCR** | **Total HI** |
| **Inorganics** | | | | | | | | | | | | |
| Manganese | 1.63E-01 | 5.70E-04 | 1.59E-03 | NA | 3.39E-02 | 1.63E-07 | 1.88E-06 | 5.26E-06 | NA | 2.77E-03 | **NA** | **3.67E-02** |
| **Total ILCR or HI** | | | | **NA** | **3.39E-02** | | | | **NA** | **2.77E-03** | **NA** | **3.67E-02** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/L - milligram per liter
mg/cm$^2$ - milligram per square meter

**Table D-4**

**Indoor Worker, Future Scenario, Exposure to Surface Soil**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | | | | |
|---|---|---|---|---|---|---|---|
| Chemicals of Potential Concern | EPC mg/kg | Cancer Dose mg/kg-day | Noncancer Dose mg/kg-day | ILCR | HQ | **Total ILCR** | **Total HI** |
| **Semivolatile Organic Compounds** | | | | | | | |
| Benzo(a)anthracene | 1.12E+00 | 1.96E-07 | 5.49E-07 | 1.43E-07 | NA | **1.43E-07** | **NA** |
| Benzo(a)pyrene | 9.55E-01 | 1.67E-07 | 4.67E-07 | 1.22E-06 | NA | **1.22E-06** | **NA** |
| Benzo(b)fluoranthene | 1.20E+00 | 2.10E-07 | 5.88E-07 | 1.53E-07 | NA | **1.53E-07** | **NA** |
| Dibenz(a,h)anthracene | 7.75E-02 | 1.35E-08 | 3.79E-08 | 9.89E-08 | NA | **9.89E-08** | **NA** |
| Indeno(1,2,3-cd)pyrene | 5.43E-01 | 9.49E-08 | 2.66E-07 | 6.93E-08 | NA | **6.93E-08** | **NA** |
| **Total ILCR or HI** | | | | | | **1.68E-06** | **NA** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram

**Table D-5**

**Indoor Worker, Future Scenario, Exposure to Overburden Groundwater**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | | | Dermal Contact | | | | | All Pathways | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cancer | Noncancer | | | Dose | Cancer | Noncancer | | | | |
| Chemicals of Potential Concern | EPC mg/L | Dose mg/kg-day | Dose mg/kg-day | ILCR | HQ | Absorbed mg/cm$^2$-day | Dose mg/kg-day | Dose mg/kg-day | ILCR | HQ | **Total ILCR** | **Total HI** |
| **Inorganics** | | | | | | | | | | | | |
| Manganese | 1.63E-01 | 5.70E-04 | 1.59E-03 | NA | 3.39E-02 | 1.63E-07 | 1.88E-06 | 5.26E-06 | NA | 2.77E-03 | **NA** | **3.67E-02** |
| **Total ILCR or HI** | | | | **NA** | **3.39E-02** | | | | **NA** | **2.77E-03** | **NA** | **3.67E-02** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/L - milligram per liter
mg/cm$^2$ - milligram per square meter

## Table D-6

## Construction Worker, Current and Future Scenarios, Exposure to Total Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| | | Incidental Ingestion | | | | Dermal Contact | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemicals of Potential Concern | EPC mg/kg | Cancer Dose mg/kg-day | Noncancer Dose mg/kg-day | ILCR | HQ | Dose Absorbed $mg/cm^2$-day | Cancer Dose mg/kg-day | Noncancer Dose mg/kg-day | ILCR | HQ |
| **Explosives** | | | | | | | | | | |
| Trinitrotoluene, 2,4,6- | 3.44E-01 | 7.93E-09 | 1.11E-06 | 2.38E-10 | 2.22E-03 | 3.30E-09 | 7.62E-10 | 1.06E-07 | 2.28E-11 | 2.13E-04 |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| Benzo(a)anthracene | 2.39E-01 | 5.51E-09 | 7.70E-07 | 4.02E-09 | NA | 9.32E-09 | 2.15E-09 | 3.00E-07 | 1.57E-09 | NA |
| Benzo(a)pyrene | 2.20E-01 | 5.07E-09 | 7.08E-07 | 3.70E-08 | NA | 8.58E-09 | 1.98E-09 | 2.76E-07 | 1.44E-08 | NA |
| Benzo(b)fluoranthene | 2.80E-01 | 6.46E-09 | 9.02E-07 | 4.71E-09 | NA | 1.09E-08 | 2.52E-09 | 3.52E-07 | 1.84E-09 | NA |
| Dibenz(a,h)anthracene | 5.43E-02 | 1.25E-09 | 1.75E-07 | 9.14E-09 | NA | 2.12E-09 | 4.88E-10 | 6.82E-08 | 3.57E-09 | NA |
| Indeno(1,2,3-cd)pyrene | 1.34E-01 | 3.09E-09 | 4.31E-07 | 2.26E-09 | NA | 5.23E-09 | 1.21E-09 | 1.68E-07 | 8.80E-10 | NA |
| **Total ILCR or HI** | | | | **5.74E-08** | **2.22E-03** | | | | **2.23E-08** | **2.13E-04** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
$mg/m^3$ - milligram per cubic meter

## Table D-6

## Construction Worker, Current and Future Scenarios, Exposure to Total Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Chemicals of Potential Concern | Concentration in Air $C_a$ mg/m$^3$ | Inhalation Cancer Dose mg/kg-day | Inhalation Noncancer Dose mg/kg-day | Inhalation ILCR | Inhalation HQ | **All Pathways Total ILCR** | **All Pathways Total HI** |
|---|---|---|---|---|---|---|---|
| **Explosives** | | | | | | | |
| Trinitrotoluene, 2,4,6- | 1.20E-07 | 1.68E-10 | 2.35E-08 | NA | NA | **2.61E-10** | **2.43E-03** |
| **Semivolatile Organic Compounds** | | | | | | | |
| Benzo(a)anthracene | 8.37E-08 | 1.17E-10 | 1.63E-08 | 3.62E-11 | NA | **5.63E-09** | **NA** |
| Benzo(a)pyrene | 7.70E-08 | 1.08E-10 | 1.50E-08 | 3.34E-10 | NA | **5.18E-08** | **NA** |
| Benzo(b)fluoranthene | 9.80E-08 | 1.37E-10 | 1.91E-08 | 4.25E-11 | NA | **6.60E-09** | **NA** |
| Dibenz(a,h)anthracene | 1.90E-08 | 2.66E-11 | 3.71E-09 | 8.24E-11 | NA | **1.28E-08** | **NA** |
| Indeno(1,2,3-cd)pyrene | 4.69E-08 | 6.56E-11 | 9.15E-09 | 2.03E-11 | NA | **3.16E-09** | **NA** |
| **Total ILCR or HI** | | | | **5.15E-10** | **NA** | **8.03E-08** | **2.43E-03** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
mg/m$^3$ - milligram per cubic meter

## Table D-7

## On-Site Resident, Cancer Risk, Future Scenario, Exposure to Total Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| | | Incidental Ingestion | | | Dermal Contact | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chemicals of Potential Concern | EPC mg/kg | Adult Dose mg/kg-day | Child Dose mg/kg-day | Resident ILCR | Adult Dose Absorbed $mg/cm^2$-day | Adult Dose mg/kg-day | Child Dose Absorbed $mg/cm^2$-day | Child Dose mg/kg-day | Resident ILCR |
| **Explosives** | | | | | | | | | |
| Trinitrotoluene, 2,4,6- | 3.44E-01 | 1.62E-07 | 3.77E-07 | 1.62E-08 | 7.71E-10 | 2.06E-08 | 2.20E-09 | 3.38E-08 | 1.63E-09 |
| **Semivolatile Organic Compounds** | | | | | | | | | |
| Benzo(a)anthracene | 2.39E-01 | 1.12E-07 | 2.62E-07 | 2.73E-07 | 2.17E-09 | 5.82E-08 | 6.21E-09 | 9.53E-08 | 1.12E-07 |
| Benzo(a)pyrene | 2.20E-01 | 1.03E-07 | 2.41E-07 | 2.51E-06 | 2.00E-09 | 5.36E-08 | 5.72E-09 | 8.78E-08 | 1.03E-06 |
| Benzo(b)fluoranthene | 2.80E-01 | 1.32E-07 | 3.07E-07 | 3.20E-07 | 2.55E-09 | 6.82E-08 | 7.28E-09 | 1.12E-07 | 1.31E-07 |
| Dibenz(a,h)anthracene | 5.43E-02 | 2.55E-08 | 5.95E-08 | 6.21E-07 | 4.94E-10 | 1.32E-08 | 1.41E-09 | 2.17E-08 | 2.55E-07 |
| Indeno(1,2,3-cd)pyrene | 1.34E-01 | 6.29E-08 | 1.47E-07 | 1.53E-07 | 1.22E-09 | 3.26E-08 | 3.48E-09 | 5.35E-08 | 6.29E-08 |
| **Total ILCR** | | | | **3.90E-06** | | | | | **1.59E-06** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
mg/kg - milligram per kilogram
$mg/cm^2$ - milligram per square meter
$mg/m^3$ - milligram per cubic meter

## Table D-7

## On-Site Resident, Cancer Risk, Future Scenario, Exposure to Total Soil
## TNTB/WWTP1 Sewer Lines
## Plum Brook Ordnance Works, Sandusky, Ohio



| Chemicals of Potential Concern | Concentration in Air $C_a$ mg/m$^3$ | Inhalation Adult Dose mg/kg-day | Inhalation Child Dose mg/kg-day | Inhalation Resident ILCR | **All Pathways Total ILCR** |
|---|---|---|---|---|---|
| **Explosives** | | | | | |
| Trinitrotoluene, 2,4,6- | 6.78E-10 | 6.36E-11 | 3.71E-11 | NA | **1.78E-08** |
| **Semivolatile Organic Compounds** | | | | | |
| Benzo(a)anthracene | 4.71E-10 | 4.42E-11 | 2.58E-11 | 2.17E-11 | **3.85E-07** |
| Benzo(a)pyrene | 4.33E-10 | 4.07E-11 | 2.37E-11 | 2.00E-10 | **3.55E-06** |
| Benzo(b)fluoranthene | 5.52E-10 | 5.18E-11 | 3.02E-11 | 2.54E-11 | **4.51E-07** |
| Dibenz(a,h)anthracene | 1.07E-10 | 1.00E-11 | 5.86E-12 | 4.93E-11 | **8.75E-07** |
| Indeno(1,2,3-cd)pyrene | 2.64E-10 | 2.48E-11 | 1.45E-11 | 1.22E-11 | **2.16E-07** |
| **Total ILCR** | | | | **3.08E-10** | **5.49E-06** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
mg/kg - milligram per kilogram
mg/cm$^2$ - milligram per square meter
mg/m$^3$ - milligram per cubic meter

**Table D-8**

**On-Site Child Resident, Noncancer Risk, Future Scenario, Exposure to Total Soil**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | Dermal Contact | | | Concentration | Inhalation | | **All** |
|---|---|---|---|---|---|---|---|---|---|---|
| | EPC | Child Dose | Child Resident | Dose Absorbed | Child Dose | Child Resident | in Air $C_a$ | Child Dose | Child Resident | **Pathways Total** |
| Chemicals of Potential Concern | mg/kg | mg/kg-day | HQ | mg/cm$^2$-day | mg/kg-day | HQ | mg/m$^3$ | mg/kg-day | HQ | **HI** |
| **Explosives** | | | | | | | | | | |
| Trinitrotoluene, 2,4,6- | 3.44E-01 | 4.40E-06 | 8.80E-03 | 2.20E-09 | 3.94E-07 | 7.88E-04 | 6.78E-10 | 4.33E-10 | NA | **9.58E-03** |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| Benzo(a)anthracene | 2.39E-01 | 3.06E-06 | NA | 6.21E-09 | 1.11E-06 | NA | 4.71E-10 | 3.01E-10 | NA | **NA** |
| Benzo(a)pyrene | 2.20E-01 | 2.81E-06 | NA | 5.72E-09 | 1.02E-06 | NA | 4.33E-10 | 2.77E-10 | NA | **NA** |
| Benzo(b)fluoranthene | 2.80E-01 | 3.58E-06 | NA | 7.28E-09 | 1.30E-06 | NA | 5.52E-10 | 3.53E-10 | NA | **NA** |
| Dibenz(a,h)anthracene | 5.43E-02 | 6.94E-07 | NA | 1.41E-09 | 2.53E-07 | NA | 1.07E-10 | 6.84E-11 | NA | **NA** |
| Indeno(1,2,3-cd)pyrene | 1.34E-01 | 1.71E-06 | NA | 3.48E-09 | 6.24E-07 | NA | 2.64E-10 | 1.69E-10 | NA | **NA** |
| **Total HI** | | | **8.80E-03** | | | **7.88E-04** | | | **NA** | **9.58E-03** |

EPC - Exposure Point Concentration
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
mg/cm$^2$ - milligram per square meter
mg/m$^3$ - milligram per cubic meter

**Table D-9**

**On-Site Adult Resident, Noncancer Risk, Future Scenario, Exposure to Total Soil**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | Dermal Contact | | | Concentration | Inhalation | | **All** |
|---|---|---|---|---|---|---|---|---|---|---|
| | EPC | Adult Dose | Adult Resident | Dose Absorbed | Adult Dose | Adult Resident | in Air $C_a$ | Adult Dose | Adult Resident | **Pathways Total** |
| Chemicals of Potential Concern | mg/kg | mg/kg-day | HQ | $mg/cm^2$-day | mg/kg-day | HQ | $mg/m^3$ | mg/kg-day | HQ | **HI** |
| **Explosives** | | | | | | | | | | |
| Trinitrotoluene, 2,4,6- | 3.44E-01 | 4.71E-07 | 9.42E-04 | 7.71E-10 | 6.02E-08 | 1.20E-04 | 6.78E-10 | 1.86E-10 | NA | **1.06E-03** |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| Benzo(a)anthracene | 2.39E-01 | 3.27E-07 | NA | 2.17E-09 | 1.70E-07 | NA | 4.71E-10 | 1.29E-10 | NA | **NA** |
| Benzo(a)pyrene | 2.20E-01 | 3.01E-07 | NA | 2.00E-09 | 1.56E-07 | NA | 4.33E-10 | 1.19E-10 | NA | **NA** |
| Benzo(b)fluoranthene | 2.80E-01 | 3.84E-07 | NA | 2.55E-09 | 1.99E-07 | NA | 5.52E-10 | 1.51E-10 | NA | **NA** |
| Dibenz(a,h)anthracene | 5.43E-02 | 7.44E-08 | NA | 4.94E-10 | 3.86E-08 | NA | 1.07E-10 | 2.93E-11 | NA | **NA** |
| Indeno(1,2,3-cd)pyrene | 1.34E-01 | 1.84E-07 | NA | 1.22E-09 | 9.52E-08 | NA | 2.64E-10 | 7.23E-11 | NA | **NA** |
| **Total HI** | | | **9.42E-04** | | | **1.20E-04** | | | **NA** | **1.06E-03** |

EPC - Exposure Point Concentration
HQ - Hazard Quotient; HI - Hazard Index
mg/kg - milligram per kilogram
$mg/cm^2$ - milligram per square meter
$mg/m^3$ - milligram per cubic meter

**Table D-10**

**Indoor Worker, Future Scenario, Exposure to Overburden Groundwater**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | | Dermal Contact | | | | | Inhalation of VOCs | | | | **All** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Adult | Child | | Dose | Adult | Dose | Child | | Concentration | Adult | Child | | **Pathways** |
| Chemicals of Potential Concern | EPC mg/L | Dose mg/kg-day | Dose mg/kg-day | ILCR | Absorbed mg/cm$^2$-day | Dose mg/kg-day | Absorbed mg/cm$^2$-day | Dose mg/kg-day | ILCR | in Air mg/m$^3$ | Dose mg/kg-day | Dose mg/kg-day | ILCR | **Total ILCR** |
| **Inorganics** | | | | | | | | | | | | | | |
| Manganese | 1.63E-01 | 1.53E-03 | 8.93E-04 | NA | 3.26E-08 | 3.06E-06 | 5.43E-08 | 1.96E-06 | NA | NA | NA | NA | NA | **NA** |
| **Total ILCR** | | | | **NA** | | | | | **NA** | | | | **NA** | **NA** |

EPC - Exposure Point Concentration
ILCR - Incremental Lifetime Cancer Risk
mg/L - milligram per liter
mg/cm$^2$ - milligram per square meter
mg/kg - milligram per kilogram
mg/m$^3$- milligram per cubic meter

**Table D-11**

**Child On-Site Resident, Future Scenario, Noncancer Hazard from Exposure to Overburden Groundwater**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | Dermal Contact | | | Inhalation of VOCs | | | **All** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Child | | Dose | Child | | Concentration | Child | | **Pathways** |
| | EPC | Dose | | Absorbed | Dose | | in Air | Dose | | **Total** |
| Chemicals of Potential Concern | mg/L | mg/kg-day | HQ | $mg/cm^2$-day | mg/kg-day | HQ | $mg/m^3$ | mg/kg-day | HQ | **HI** |
| **Inorganics** | | | | | | | | | | |
| Manganese | 1.63E-01 | 1.04E-02 | 2.22E-01 | 5.43E-08 | 2.29E-05 | 1.21E-02 | NA | NA | NA | **2.34E-01** |
| **Total HI** | | | **2.22E-01** | | | **1.21E-02** | | | **NA** | **2.34E-01** |

EPC - Exposure Point Concentration
HQ - Hazard Quotient; HI - Hazard Index
mg/L - milligram per liter
$mg/cm^2$ - milligram per square meter
mg/kg - milligram per kilogram
$mg/m^3$- milligram per cubic meter

**Table D-12**

**Adult On-Site Resident, Future Scenario, Noncancer Hazard from Exposure to Overburden Groundwater**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| | | Incidental Ingestion | | Dermal Contact | | | Inhalation of VOCs | | | **All** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Noncancer | | Dose | Adult | | Concentration | Adult | | **Pathways** |
| Chemicals of Potential Concern | EPC mg/L | Dose mg/kg-day | HQ | Absorbed mg/cm$^2$-day | Dose mg/kg-day | HQ | in Air mg/m$^3$ | Dose mg/kg-day | HQ | **Total HI** |
| **Inorganics** | | | | | | | | | | |
| Manganese | 1.63E-01 | 4.47E-03 | 9.50E-02 | 3.26E-08 | 8.93E-06 | 4.70E-03 | NA | NA | NA | **9.97E-02** |
| **Total HI** | | | **9.50E-02** | | | **4.70E-03** | | | **NA** | **9.97E-02** |

EPC - Exposure Point Concentration
HQ - Hazard Quotient; HI - Hazard Index
mg/L - milligram per liter
mg/cm$^2$ - milligram per square meter
mg/kg - milligram per kilogram
mg/m$^3$- milligram per cubic meter

**Table D-13**

**Adult Hunter, Future Scenario, Exposure to Surface Soil**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**



| | | Incidental Ingestion | | | | Dermal Contact | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | EPC | Cancer Dose | Noncancer Dose | Adult Hunter | Adult Hunter | Dose Absorbed | Cancer Dose | Noncancer Dose | Adult Hunter | Adult Hunter |
| Chemicals of Potential Concern | mg/kg | mg/kg-day | mg/kg-day | ILCR | HQ | $mg/cm^2$-day | mg/kg-day | mg/kg-day | ILCR | HQ |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| Benzo(a)anthracene | 1.12E+00 | 2.63E-08 | 6.15E-08 | 1.92E-08 | NA | 2.92E-08 | 2.26E-08 | 5.27E-08 | 1.65E-08 | NA |
| Benzo(a)pyrene | 9.55E-01 | 2.24E-08 | 5.23E-08 | 1.64E-07 | NA | 2.48E-08 | 1.92E-08 | 4.49E-08 | 1.40E-07 | NA |
| Benzo(b)fluoranthene | 1.20E+00 | 2.82E-08 | 6.58E-08 | 2.06E-08 | NA | 3.12E-08 | 2.42E-08 | 5.65E-08 | 1.77E-08 | NA |
| Dibenz(a,h)anthracene | 7.75E-02 | 1.82E-09 | 4.25E-09 | 1.33E-08 | NA | 2.02E-09 | 1.56E-09 | 3.64E-09 | 1.14E-08 | NA |
| Indeno(1,2,3-cd)pyrene | 5.43E-01 | 1.28E-08 | 2.98E-08 | 9.31E-09 | NA | 1.41E-08 | 1.09E-08 | 2.55E-08 | 7.99E-09 | NA |
| **Total ILCR and HI** | | | | **2.26E-07** | **NA** | | | | **1.94E-07** | **NA** |

EPC - Exposure Point Concentration
HQ - Hazard Quotient; HI - Hazard Index
ILCR - Incremental Lifetime Cancer Risk
mg/kg - milligram per kilogram
$mg/cm^2$ - milligram per square meter

**Table D-13**

**Adult Hunter, Future Scenario, Exposure to Surface Soil**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**



| | Concentration in Forage $C_p$ | Concentration in Venison $C_v$ | Consumption of Venison | | | | All Pathways | |
|---|---|---|---|---|---|---|---|---|
| | | | Cancer Dose | Noncancer Dose | | | **Total** | **Total** |
| Chemicals of Potential Concern | mg/kg | mg/kg | mg/kg-day | mg/kg-day | ILCR | HQ | **ILCR** | **HI** |
| **Semivolatile Organic Compounds** | | | | | | | | |
| Benzo(a)anthracene | NA | NA | NA | NA | NA | NA | **3.57E-08** | **NA** |
| Benzo(a)pyrene | NA | NA | NA | NA | NA | NA | **3.04E-07** | **NA** |
| Benzo(b)fluoranthene | NA | NA | NA | NA | NA | NA | **3.83E-08** | **NA** |
| Dibenz(a,h)anthracene | NA | NA | NA | NA | NA | NA | **2.47E-08** | **NA** |
| Indeno(1,2,3-cd)pyrene | NA | NA | NA | NA | NA | NA | **1.73E-08** | **NA** |
| **Total ILCR and HI** | | | | | **NA** | **NA** | **4.20E-07** | **NA** |

EPC - Exposure Point Concentration
HQ - Hazard Quotient; HI - Hazard Index
ILCR - Incremental Lifetime Cancer Risk
mg/kg - milligram per kilogram
mg/cm$^2$ - milligram per square meter

**Table D-14**

**Hunter's Child, Future Scenario, Exposure to Surface Soil**
**TNTB/WWTP1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio**

| Chemicals of Potential Concern | EPC mg/kg | Concentration in Forage $C_p$ mg/kg | Concentration in Venison $C_v$ mg/kg | Consumption of Venison: Cancer Dose mg/kg-day | Consumption of Venison: Noncancer Dose mg/kg-day | ILCR | HQ | **Total ILCR** | **Total HI** |
|---|---|---|---|---|---|---|---|---|---|
| **Semivolatile Organic Compounds** | | | | | | | | | |
| Benzo(a)anthracene | 1.12E+00 | NA | NA | NA | NA | NA | NA | **NA** | **NA** |
| Benzo(a)pyrene | 9.55E-01 | NA | NA | NA | NA | NA | NA | **NA** | **NA** |
| Benzo(b)fluoranthene | 1.20E+00 | NA | NA | NA | NA | NA | NA | **NA** | **NA** |
| Dibenz(a,h)anthracene | 7.75E-02 | NA | NA | NA | NA | NA | NA | **NA** | **NA** |
| Indeno(1,2,3-cd)pyrene | 5.43E-01 | NA | NA | NA | NA | NA | NA | **NA** | **NA** |
| **Total ILCR and HI** | | | | | | **NA** | **NA** | **NA** | **NA** |

EPC - Exposure Point Concentration
HQ - Hazard Quotient; HI - Hazard Index
ILCR - Incremental Lifetime Cancer Risk
mg/kg - milligram per kilogram

# APPENDIX E

# ANALYTICAL DATA USED IN BASELINE HUMAN HEALTH RISK ASSESSMENT

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Acenaphthene | 83-32-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Acenaphthene | 83-32-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthene | 83-32-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Acenaphthene | 83-32-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthene | 83-32-9 | 0.0785 | mg/kg | 0.0375 | J/U | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | JU | 0.185 |
| Acenaphthene | 83-32-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Acenaphthylene | 208-96-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Acenaphthylene | 208-96-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthylene | 208-96-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Acenaphthylene | 208-96-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthylene | 208-96-8 | 0.577 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Acenaphthylene | 208-96-8 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Aluminum | 7429-90-5 | 5470 | mg/kg | 0.58 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 11 |
| Aluminum | 7429-90-5 | 3880 | mg/kg | 2.4 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 45 |
| Aluminum | 7429-90-5 | 6370 | mg/kg | 0.64 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 12 |
| Aluminum | 7429-90-5 | 4910 | mg/kg | 0.54 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 9.8 |
| Aluminum | 7429-90-5 | 3260 | mg/kg | 0.57 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 10 |
| Aluminum | 7429-90-5 | 5440 | mg/kg | 0.62 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 11 |
| Aluminum | 7429-90-5 | 8190 | mg/kg | 0.67 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 12 |
| Aluminum | 7429-90-5 | 6560 | mg/kg | 0.54 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 9.9 |
| Aluminum | 7429-90-5 | 5455 | mg/kg | 0.615 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 11 |
| Aluminum | 7429-90-5 | 4500 | mg/kg | 0.595 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 10.5 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.224 | mg/kg | 0.042 | | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.2 | mg/kg | 0.041 | | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.089 | mg/kg | 0.089 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.087 | mg/kg | 0.087 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.1 | mg/kg | 0.1 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.091 | mg/kg | 0.091 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.094 | mg/kg | 0.094 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.087 | mg/kg | 0.087 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.222 | mg/kg | 0.091 | | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.329 | mg/kg | 0.09 | | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.0915 | mg/kg | 0.0915 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.0915 | mg/kg | 0.0915 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Anthracene | 120-12-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Anthracene | 120-12-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Anthracene | 120-12-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Anthracene | 120-12-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Anthracene | 120-12-7 | 0.7135 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Anthracene | 120-12-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Antimony | 7440-36-0 | 0.27 | mg/kg | 0.24 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 3.2 |
| Antimony | 7440-36-0 | 1 | mg/kg | 1 | UJ | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 13 |
| Antimony | 7440-36-0 | 0.37 | mg/kg | 0.26 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 3.5 |
| Antimony | 7440-36-0 | 0.22 | mg/kg | 0.22 | UJ | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 2.9 |
| Antimony | 7440-36-0 | 0.23 | mg/kg | 0.23 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 3.1 |
| Antimony | 7440-36-0 | 0.25 | mg/kg | 0.25 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 3.4 |
| Antimony | 7440-36-0 | 0.28 | mg/kg | 0.28 | UJ | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 3.7 |
| Antimony | 7440-36-0 | 0.38 | mg/kg | 0.22 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 3 |
| Antimony | 7440-36-0 | 0.45 | mg/kg | 0.38 | UJ/J | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UB | 5.1 |
| Antimony | 7440-36-0 | 0.24 | mg/kg | 0.24 | UJUJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 3.25 |
| Aroclor 1016 | 12674-11-2 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1016 | 12674-11-2 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1016 | 12674-11-2 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1016 | 12674-11-2 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1016 | 12674-11-2 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1016 | 12674-11-2 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1016 | 12674-11-2 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1016 | 12674-11-2 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP02 | DP0104 | PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP03 | DP0106 | PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP04 | DP0108 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1221 | 11104-28-2 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP05 | DP0110 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1221 | 11104-28-2 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP07 | DP0116 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP08 | DP0118 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP09 | DP0120 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP10 | DP0122 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP01 | DP0100DP010 | PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP06 | DP0112DP011 | PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP02 | DP0104 | PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP03 | DP0106 | PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP04 | DP0108 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1232 | 11141-16-5 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP05 | DP0110 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1232 | 11141-16-5 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP07 | DP0116 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP08 | DP0118 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP09 | DP0120 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP10 | DP0122 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP01 | DP0100DP010 | PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP06 | DP0112DP011 | PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1242 | 53469-21-9 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1242 | 53469-21-9 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1242 | 53469-21-9 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1242 | 53469-21-9 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1242 | 53469-21-9 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1242 | 53469-21-9 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1242 | 53469-21-9 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1248 | 12672-29-6 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1248 | 12672-29-6 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1248 | 12672-29-6 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1248 | 12672-29-6 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1248 | 12672-29-6 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1248 | 12672-29-6 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1248 | 12672-29-6 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1254 | 11097-69-1 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1254 | 11097-69-1 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1254 | 11097-69-1 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1254 | 11097-69-1 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1254 | 11097-69-1 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1254 | 11097-69-1 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1254 | 11097-69-1 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1260 | 11096-82-5 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1260 | 11096-82-5 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1260 | 11096-82-5 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1260 | 11096-82-5 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1260 | 11096-82-5 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1260 | 11096-82-5 | 0.01935 | mg/kg | 0.00935 | J/U | TNTB-SL-DP01 | DP0100DP010 | PCB | REGFD | 20-Aug-09 | 0 | 1 | U | 0.0185 |
| Aroclor 1260 | 11096-82-5 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Arsenic | 7440-38-2 | 5 | mg/kg | 0.19 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 0.42 |
| Arsenic | 7440-38-2 | 3.7 | mg/kg | 0.8 | | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 1.8 |
| Arsenic | 7440-38-2 | 3.7 | mg/kg | 0.21 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.46 |
| Arsenic | 7440-38-2 | 3 | mg/kg | 0.18 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.39 |
| Arsenic | 7440-38-2 | 2.3 | mg/kg | 0.19 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.42 |
| Arsenic | 7440-38-2 | 3.1 | mg/kg | 0.2 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.45 |
| Arsenic | 7440-38-2 | 7.9 | mg/kg | 0.22 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.49 |
| Arsenic | 7440-38-2 | 6.4 | mg/kg | 0.18 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.4 |
| Arsenic | 7440-38-2 | 3.15 | mg/kg | 0.305 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 0.68 |
| Arsenic | 7440-38-2 | 2.95 | mg/kg | 0.195 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.435 |
| Barium | 7440-39-3 | 29.5 | mg/kg | 0.26 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 11 |
| Barium | 7440-39-3 | 11.1 | mg/kg | 1.1 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 45 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 7440-39-3 | 39 | mg/kg | 0.29 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 12 |
| Barium | 7440-39-3 | 26.2 | mg/kg | 0.25 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 9.8 |
| Barium | 7440-39-3 | 28.5 | mg/kg | 0.26 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 10 |
| Barium | 7440-39-3 | 14.8 | mg/kg | 0.28 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 11 |
| Barium | 7440-39-3 | 32.8 | mg/kg | 0.31 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 12 |
| Barium | 7440-39-3 | 19.9 | mg/kg | 0.25 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 9.9 |
| Barium | 7440-39-3 | 23.5 | mg/kg | 0.28 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 11 |
| Barium | 7440-39-3 | 16.9 | mg/kg | 0.27 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 10.5 |
| Benzo(a)anthracene | 56-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(a)anthracene | 56-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)anthracene | 56-55-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(a)anthracene | 56-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)anthracene | 56-55-3 | 1.617 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(a)anthracene | 56-55-3 | 0.0472 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(a)pyrene | 50-32-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)pyrene | 50-32-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(a)pyrene | 50-32-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)pyrene | 50-32-8 | 1.3725 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(a)pyrene | 50-32-8 | 0.0476 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.0528 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(b)fluoranthene | 205-99-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(b)fluoranthene | 205-99-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(b)fluoranthene | 205-99-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(b)fluoranthene | 205-99-2 | 1.945 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(b)fluoranthene | 205-99-2 | 0.06805 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(ghi)perylene | 191-24-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(ghi)perylene | 191-24-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(ghi)perylene | 191-24-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(ghi)perylene | 191-24-2 | 0.6485 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(ghi)perylene | 191-24-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(k)fluoranthene | 207-08-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(k)fluoranthene | 207-08-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(k)fluoranthene | 207-08-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(k)fluoranthene | 207-08-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(k)fluoranthene | 207-08-9 | 0.7265 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(k)fluoranthene | 207-08-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Benzoic acid | 65-85-0 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Benzoic acid | 65-85-0 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Benzoic acid | 65-85-0 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Benzoic acid | 65-85-0 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |
| Benzoic acid | 65-85-0 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Benzoic acid | 65-85-0 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Benzoic acid | 65-85-0 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Benzoic acid | 65-85-0 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Benzoic acid | 65-85-0 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Benzoic acid | 65-85-0 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Benzyl alcohol | 100-51-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzyl alcohol | 100-51-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzyl alcohol | 100-51-6 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzyl alcohol | 100-51-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzyl alcohol | 100-51-6 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Benzyl alcohol | 100-51-6 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Beryllium | 7440-41-7 | 0.4 | mg/kg | 0.053 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 0.26 |
| Beryllium | 7440-41-7 | 0.47 | mg/kg | 0.22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 1.1 |
| Beryllium | 7440-41-7 | 0.68 | mg/kg | 0.058 | | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.29 |
| Beryllium | 7440-41-7 | 0.49 | mg/kg | 0.049 | | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.25 |
| Beryllium | 7440-41-7 | 0.33 | mg/kg | 0.052 | | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.26 |
| Beryllium | 7440-41-7 | 0.46 | mg/kg | 0.056 | | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.28 |
| Beryllium | 7440-41-7 | 0.37 | mg/kg | 0.061 | | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.31 |
| Beryllium | 7440-41-7 | 0.4 | mg/kg | 0.049 | | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.25 |
| Beryllium | 7440-41-7 | 0.35 | mg/kg | 0.0555 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 0.28 |
| Beryllium | 7440-41-7 | 0.295 | mg/kg | 0.054 | | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.27 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.185 | mg/kg | 0.185 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Butyl benzyl phthalate | 85-68-7 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Butyl benzyl phthalate | 85-68-7 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Butyl benzyl phthalate | 85-68-7 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Butyl benzyl phthalate | 85-68-7 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Butyl benzyl phthalate | 85-68-7 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Butyl benzyl phthalate | 85-68-7 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Butyl benzyl phthalate | 85-68-7 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Butyl benzyl phthalate | 85-68-7 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Butyl benzyl phthalate | 85-68-7 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Butyl benzyl phthalate | 85-68-7 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Cadmium | 7440-43-9 | 0.265 | mg/kg | 0.265 | UJ | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | U | 0.84 |
| Cadmium | 7440-43-9 | 0.22 | mg/kg | 0.22 | UJ | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 0.89 |
| Cadmium | 7440-43-9 | 0.16 | mg/kg | 0.058 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.23 |
| Cadmium | 7440-43-9 | 0.17 | mg/kg | 0.049 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.2 |
| Cadmium | 7440-43-9 | 0.11 | mg/kg | 0.052 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.21 |
| Cadmium | 7440-43-9 | 0.056 | mg/kg | 0.056 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.23 |
| Cadmium | 7440-43-9 | 0.061 | mg/kg | 0.061 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.25 |
| Cadmium | 7440-43-9 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.2 |
| Cadmium | 7440-43-9 | 0.0555 | mg/kg | 0.0555 | UJUJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.225 |
| Cadmium | 7440-43-9 | 0.185 | mg/kg | 0.054 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | BB | 0.215 |
| Calcium | 7440-70-2 | 1170 | mg/kg | 5.3 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 260 |
| Calcium | 7440-70-2 | 2050 | mg/kg | 22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 1100 |
| Calcium | 7440-70-2 | 3610 | mg/kg | 5.8 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 290 |
| Calcium | 7440-70-2 | 3720 | mg/kg | 4.9 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 250 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 7440-70-2 | 1930 | mg/kg | 5.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 260 |
| Calcium | 7440-70-2 | 407 | mg/kg | 5.6 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 280 |
| Calcium | 7440-70-2 | 271 | mg/kg | 6.1 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 310 |
| Calcium | 7440-70-2 | 258 | mg/kg | 4.9 | | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 250 |
| Calcium | 7440-70-2 | 22105 | mg/kg | 8.2 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 420 |
| Calcium | 7440-70-2 | 1630 | mg/kg | 5.4 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 270 |
| Carbazole | 86-74-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Carbazole | 86-74-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Carbazole | 86-74-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Carbazole | 86-74-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Carbazole | 86-74-8 | 0.3451 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Carbazole | 86-74-8 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chloroaniline, 4- | 106-47-8 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chloroaniline, 4- | 106-47-8 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chloroaniline, 4- | 106-47-8 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chloroaniline, 4- | 106-47-8 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chloroaniline, 4- | 106-47-8 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chloronaphthalene, 2- | 91-58-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chloronaphthalene, 2- | 91-58-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chloronaphthalene, 2- | 91-58-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chloronaphthalene, 2- | 91-58-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chloronaphthalene, 2- | 91-58-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chlorophenol, 2- | 95-57-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chlorophenol, 2- | 95-57-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chlorophenol, 2- | 95-57-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorophenol, 2- | 95-57-8 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chlorophenol, 2- | 95-57-8 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chromium | 7440-47-3 | 8.1 | mg/kg | 0.168 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 1.1 |
| Chromium | 7440-47-3 | 6.2 | mg/kg | 0.36 | | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 2.2 |
| Chromium | 7440-47-3 | 10.2 | mg/kg | 0.092 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.58 |
| Chromium | 7440-47-3 | 8.5 | mg/kg | 0.079 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.49 |
| Chromium | 7440-47-3 | 4.4 | mg/kg | 0.083 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.52 |
| Chromium | 7440-47-3 | 8.7 | mg/kg | 0.09 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.56 |
| Chromium | 7440-47-3 | 11 | mg/kg | 0.098 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.61 |
| Chromium | 7440-47-3 | 9 | mg/kg | 0.079 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.49 |
| Chromium | 7440-47-3 | 6.9 | mg/kg | 0.179 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 1.1 |
| Chromium | 7440-47-3 | 6.55 | mg/kg | 0.0865 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.54 |
| Chrysene | 218-01-9 | 0.0403 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Chrysene | 218-01-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chrysene | 218-01-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chrysene | 218-01-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chrysene | 218-01-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chrysene | 218-01-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chrysene | 218-01-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chrysene | 218-01-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chrysene | 218-01-9 | 1.497 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Chrysene | 218-01-9 | 0.04875 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Cobalt | 7440-48-4 | 4.2 | mg/kg | 0.044 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 2.6 |
| Cobalt | 7440-48-4 | 4.1 | mg/kg | 0.18 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 11 |
| Cobalt | 7440-48-4 | 5.8 | mg/kg | 0.048 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.9 |
| Cobalt | 7440-48-4 | 4.8 | mg/kg | 0.041 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.5 |
| Cobalt | 7440-48-4 | 3 | mg/kg | 0.043 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.6 |
| Cobalt | 7440-48-4 | 6 | mg/kg | 0.047 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.8 |
| Cobalt | 7440-48-4 | 4.2 | mg/kg | 0.051 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 3.1 |
| Cobalt | 7440-48-4 | 5.8 | mg/kg | 0.041 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.5 |
| Cobalt | 7440-48-4 | 2.25 | mg/kg | 0.046 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 2.8 |
| Cobalt | 7440-48-4 | 2.9 | mg/kg | 0.045 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 2.7 |
| Copper | 7440-50-8 | 11.3 | mg/kg | 0.11 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 1.3 |
| Copper | 7440-50-8 | 4.3 | mg/kg | 0.47 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 5.6 |
| Copper | 7440-50-8 | 9.6 | mg/kg | 0.12 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.4 |
| Copper | 7440-50-8 | 8.2 | mg/kg | 0.1 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.2 |
| Copper | 7440-50-8 | 5.1 | mg/kg | 0.11 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.3 |
| Copper | 7440-50-8 | 11.6 | mg/kg | 0.12 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.4 |
| Copper | 7440-50-8 | 30.5 | mg/kg | 0.13 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.5 |
| Copper | 7440-50-8 | 20.8 | mg/kg | 0.1 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.2 |
| Copper | 7440-50-8 | 4.2 | mg/kg | 0.115 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 1.4 |
| Copper | 7440-50-8 | 4.2 | mg/kg | 0.115 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 1.35 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenz(a,h)anthracene | 53-70-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.16935 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dibenzofuran | 132-64-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dibenzofuran | 132-64-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenzofuran | 132-64-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dibenzofuran | 132-64-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenzofuran | 132-64-9 | 0.20835 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Dibenzofuran | 132-64-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.0485 | mg/kg | 0.0485 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.0495 | mg/kg | 0.0495 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.0485 | mg/kg | 0.0485 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.0495 | mg/kg | 0.0495 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.0455 | mg/kg | 0.0455 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Diethyl phthalate | 84-66-2 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Diethyl phthalate | 84-66-2 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Diethyl phthalate | 84-66-2 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Diethyl phthalate | 84-66-2 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Diethyl phthalate | 84-66-2 | 0.185 | mg/kg | 0.185 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Dimethyl phthalate | 131-11-3 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Dimethyl phthalate | 131-11-3 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Dimethyl phthalate | 131-11-3 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Dimethyl phthalate | 131-11-3 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Dimethyl phthalate | 131-11-3 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Dimethyl phthalate | 131-11-3 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Dimethyl phthalate | 131-11-3 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Dimethyl phthalate | 131-11-3 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Dimethyl phthalate | 131-11-3 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Dimethyl phthalate | 131-11-3 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Di-n-butyl phthalate | 84-74-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-butyl phthalate | 84-74-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-butyl phthalate | 84-74-2 | 0.15 | mg/kg | 0.079 | J | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | J | 0.4 |
| Di-n-butyl phthalate | 84-74-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Di-n-butyl phthalate | 84-74-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-butyl phthalate | 84-74-2 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Di-n-butyl phthalate | 84-74-2 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Di-n-butyl phthalate | 84-74-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-butyl phthalate | 84-74-2 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Di-n-butyl phthalate | 84-74-2 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.0445 | mg/kg | 0.0445 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0517 | mg/kg | 0.05 | J | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | J | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0505 | mg/kg | 0.0505 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.05 | mg/kg | 0.05 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.0445 | mg/kg | 0.0445 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Di-n-octyl phthalate | 117-84-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-octyl phthalate | 117-84-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-octyl phthalate | 117-84-0 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Di-n-octyl phthalate | 117-84-0 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Di-n-octyl phthalate | 117-84-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-octyl phthalate | 117-84-0 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Di-n-octyl phthalate | 117-84-0 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Di-n-octyl phthalate | 117-84-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-octyl phthalate | 117-84-0 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Di-n-octyl phthalate | 117-84-0 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Fluoranthene | 206-44-0 | 0.0763 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Fluoranthene | 206-44-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Fluoranthene | 206-44-0 | 0.044 | mg/kg | 0.039 | J | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | J | 0.19 |
| Fluoranthene | 206-44-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Fluoranthene | 206-44-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Fluoranthene | 206-44-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Fluoranthene | 206-44-0 | 4.165 | mg/kg | 0.0565 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.28 |
| Fluoranthene | 206-44-0 | 0.0909 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Fluorene | 86-73-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Fluorene | 86-73-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Fluorene | 86-73-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Fluorene | 86-73-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Fluorene | 86-73-7 | 0.42435 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Fluorene | 86-73-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachlorobenzene | 118-74-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorobenzene | 118-74-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachlorobenzene | 118-74-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexachlorobenzene | 118-74-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachlorobenzene | 118-74-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachlorobutadiene | 87-68-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorobutadiene | 87-68-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachlorobutadiene | 87-68-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorobutadiene | 87-68-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachlorobutadiene | 87-68-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachloroethane | 67-72-1 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachloroethane | 67-72-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachloroethane | 67-72-1 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachloroethane | 67-72-1 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachloroethane | 67-72-1 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachloroethane | 67-72-1 | 0.0455 | mg/kg | 0.0455 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| HMX | 2691-41-0 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.082 | mg/kg | 0.082 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| HMX | 2691-41-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| HMX | 2691-41-0 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| HMX | 2691-41-0 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.7755 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.0386 | mg/kg | 0.038 | J/U | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JU | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Iron | 7439-89-6 | 12300 | mg/kg | 1.2 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 5.3 |
| Iron | 7439-89-6 | 10900 | mg/kg | 5.1 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 22 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 7439-89-6 | 11200 | mg/kg | 1.3 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.8 |
| Iron | 7439-89-6 | 9890 | mg/kg | 1.1 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 4.9 |
| Iron | 7439-89-6 | 9040 | mg/kg | 1.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.2 |
| Iron | 7439-89-6 | 11400 | mg/kg | 1.3 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 5.6 |
| Iron | 7439-89-6 | 18500 | mg/kg | 1.4 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 6.1 |
| Iron | 7439-89-6 | 15700 | mg/kg | 1.1 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 4.9 |
| Iron | 7439-89-6 | 7465 | mg/kg | 1.3 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 5.55 |
| Iron | 7439-89-6 | 8095 | mg/kg | 1.25 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 5.4 |
| Isophorone | 78-59-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Isophorone | 78-59-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Isophorone | 78-59-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Isophorone | 78-59-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Isophorone | 78-59-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Isophorone | 78-59-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Lead | 7439-92-1 | 7.7 | mg/kg | 0.11 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 5.3 |
| Lead | 7439-92-1 | 4.3 | mg/kg | 0.45 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 22 |
| Lead | 7439-92-1 | 9.8 | mg/kg | 0.12 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.8 |
| Lead | 7439-92-1 | 7.6 | mg/kg | 0.098 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 4.9 |
| Lead | 7439-92-1 | 7.2 | mg/kg | 0.1 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.2 |
| Lead | 7439-92-1 | 7.3 | mg/kg | 0.11 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 5.6 |
| Lead | 7439-92-1 | 13.3 | mg/kg | 0.12 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 6.1 |
| Lead | 7439-92-1 | 11.6 | mg/kg | 0.099 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 4.9 |
| Lead | 7439-92-1 | 6.55 | mg/kg | 0.17 | J | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | B | 8.2 |
| Lead | 7439-92-1 | 12.1 | mg/kg | 0.105 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 5.4 |
| Magnesium | 7439-95-4 | 728 | mg/kg | 5.3 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 260 |
| Magnesium | 7439-95-4 | 832 | mg/kg | 22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 1100 |
| Magnesium | 7439-95-4 | 1160 | mg/kg | 5.8 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 290 |
| Magnesium | 7439-95-4 | 1050 | mg/kg | 4.9 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 250 |
| Magnesium | 7439-95-4 | 831 | mg/kg | 5.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 260 |
| Magnesium | 7439-95-4 | 533 | mg/kg | 5.6 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 280 |
| Magnesium | 7439-95-4 | 544 | mg/kg | 6.1 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 310 |
| Magnesium | 7439-95-4 | 574 | mg/kg | 4.9 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 250 |
| Magnesium | 7439-95-4 | 3015 | mg/kg | 5.55 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 280 |
| Magnesium | 7439-95-4 | 695.5 | mg/kg | 5.4 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 270 |
| Manganese | 7439-96-5 | 113 | mg/kg | 0.026 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 0.79 |
| Manganese | 7439-96-5 | 206 | mg/kg | 0.11 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 3.3 |
| Manganese | 7439-96-5 | 130 | mg/kg | 0.029 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.87 |
| Manganese | 7439-96-5 | 102 | mg/kg | 0.025 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.74 |
| Manganese | 7439-96-5 | 673 | mg/kg | 0.13 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 3.9 |
| Manganese | 7439-96-5 | 114 | mg/kg | 0.028 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.85 |
| Manganese | 7439-96-5 | 24.1 | mg/kg | 0.031 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.92 |
| Manganese | 7439-96-5 | 79.8 | mg/kg | 0.025 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.74 |
| Manganese | 7439-96-5 | 134.5 | mg/kg | 0.028 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 0.84 |
| Manganese | 7439-96-5 | 140.5 | mg/kg | 0.027 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.81 |
| Mercury | 7439-97-6 | 0.031 | mg/kg | 0.012 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 0.081 |
| Mercury | 7439-97-6 | 0.022 | mg/kg | 0.013 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 0.09 |
| Mercury | 7439-97-6 | 0.035 | mg/kg | 0.014 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.097 |
| Mercury | 7439-97-6 | 0.037 | mg/kg | 0.012 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.086 |
| Mercury | 7439-97-6 | 0.018 | mg/kg | 0.011 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.078 |
| Mercury | 7439-97-6 | 0.041 | mg/kg | 0.014 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 0.096 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 7439-97-6 | 0.034 | mg/kg | 0.015 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 0.1 |
| Mercury | 7439-97-6 | 0.05 | mg/kg | 0.012 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 0.086 |
| Mercury | 7439-97-6 | 0.0255 | mg/kg | 0.0125 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 0.087 |
| Mercury | 7439-97-6 | 0.042 | mg/kg | 0.0135 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | BB | 0.094 |
| Methylnaphthalene, 2- | 91-57-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Methylnaphthalene, 2- | 91-57-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Methylnaphthalene, 2- | 91-57-6 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Methylnaphthalene, 2- | 91-57-6 | 0.0658 | mg/kg | 0.036 | J | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | J | 0.18 |
| Methylnaphthalene, 2- | 91-57-6 | 0.04285 | mg/kg | 0.0375 | J/U | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | JU | 0.185 |
| Methylnaphthalene, 2- | 91-57-6 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Methylphenol, 2- | 95-48-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Methylphenol, 2- | 95-48-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Methylphenol, 2- | 95-48-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Methylphenol, 2- | 95-48-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Methylphenol, 2- | 95-48-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Naphthalene | 91-20-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Naphthalene | 91-20-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Naphthalene | 91-20-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Naphthalene | 91-20-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Naphthalene | 91-20-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Naphthalene | 91-20-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Nickel | 7440-02-0 | 9.2 | mg/kg | 0.12 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 2.1 |
| Nickel | 7440-02-0 | 7.6 | mg/kg | 0.51 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 8.9 |
| Nickel | 7440-02-0 | 16.2 | mg/kg | 0.13 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.3 |
| Nickel | 7440-02-0 | 9.9 | mg/kg | 0.11 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2 |
| Nickel | 7440-02-0 | 8.5 | mg/kg | 0.12 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.1 |
| Nickel | 7440-02-0 | 14.8 | mg/kg | 0.13 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.3 |
| Nickel | 7440-02-0 | 14.5 | mg/kg | 0.14 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.5 |
| Nickel | 7440-02-0 | 17.4 | mg/kg | 0.11 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2 |
| Nickel | 7440-02-0 | 5.05 | mg/kg | 0.13 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 2.25 |
| Nickel | 7440-02-0 | 5.6 | mg/kg | 0.125 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 2.15 |
| Nitroaniline, 2- | 88-74-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 2- | 88-74-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 2- | 88-74-4 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Nitroaniline, 2- | 88-74-4 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Nitroaniline, 2- | 88-74-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 2- | 88-74-4 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Nitroaniline, 2- | 88-74-4 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Nitroaniline, 2- | 88-74-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 2- | 88-74-4 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Nitroaniline, 2- | 88-74-4 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitroaniline, 3- | 99-09-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 3- | 99-09-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 3- | 99-09-2 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Nitroaniline, 3- | 99-09-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Nitroaniline, 3- | 99-09-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 3- | 99-09-2 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Nitroaniline, 3- | 99-09-2 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Nitroaniline, 3- | 99-09-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 3- | 99-09-2 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Nitroaniline, 3- | 99-09-2 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Nitroaniline, 4- | 100-01-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 4- | 100-01-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 4- | 100-01-6 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Nitroaniline, 4- | 100-01-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Nitroaniline, 4- | 100-01-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 4- | 100-01-6 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Nitroaniline, 4- | 100-01-6 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Nitroaniline, 4- | 100-01-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 4- | 100-01-6 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Nitroaniline, 4- | 100-01-6 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Nitrobenzene | 98-95-3 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Nitrobenzene | 98-95-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Nitrobenzene | 98-95-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.046 | mg/kg | 0.046 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGREG | 20-Aug-09 | 0 | 1 | UU | 0.175 |
| Nitrobenzene | 98-95-3 | 0.0465 | mg/kg | 0.0465 | UU | TNTB-SL-DP01 | DP0101DP010 | SEMIVOLATILES | FDFD | 20-Aug-09 | 0 | 1 | UU | 0.175 |
| Nitrobenzene | 98-95-3 | 0.0485 | mg/kg | 0.0485 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGREG | 24-Aug-09 | 0 | 1 | UU | 0.185 |
| Nitrobenzene | 98-95-3 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP06 | DP0113DP011 | SEMIVOLATILES | FDFD | 24-Aug-09 | 0 | 1 | UU | 0.175 |
| Nitrophenol, 2- | 88-75-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Nitrophenol, 2- | 88-75-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrophenol, 2- | 88-75-5 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Nitrophenol, 2- | 88-75-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrophenol, 2- | 88-75-5 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Nitrophenol, 2- | 88-75-5 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Nitrophenol, 4- | 100-02-7 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Nitrophenol, 4- | 100-02-7 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Nitrophenol, 4- | 100-02-7 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Nitrophenol, 4- | 100-02-7 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrophenol, 4- | 100-02-7 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Nitrophenol, 4- | 100-02-7 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Nitrophenol, 4- | 100-02-7 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Nitrophenol, 4- | 100-02-7 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Nitrophenol, 4- | 100-02-7 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Nitrophenol, 4- | 100-02-7 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Nitrotoluene, 2- | 88-72-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Nitrotoluene, 3- | 99-08-1 | 0.071 | mg/kg | 0.071 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.059 | mg/kg | 0.059 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Nitrotoluene, 4- | 99-99-0 | 0.0525 | mg/kg | 0.0525 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n-Nitrosodiphenylamine | 86-30-6 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Pentachlorophenol | 87-86-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Pentachlorophenol | 87-86-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Pentachlorophenol | 87-86-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Pentachlorophenol | 87-86-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |
| Pentachlorophenol | 87-86-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Pentachlorophenol | 87-86-5 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Pentachlorophenol | 87-86-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Pentachlorophenol | 87-86-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Pentachlorophenol | 87-86-5 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Pentachlorophenol | 87-86-5 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Phenanthrene | 85-01-8 | 0.0504 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Phenanthrene | 85-01-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Phenanthrene | 85-01-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Phenanthrene | 85-01-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Phenanthrene | 85-01-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Phenanthrene | 85-01-8 | 3.2265 | mg/kg | 0.0565 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.28 |
| Phenanthrene | 85-01-8 | 0.0392 | mg/kg | 0.038 | J/U | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JU | 0.19 |
| Phenol | 108-95-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Phenol | 108-95-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Phenol | 108-95-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Phenol | 108-95-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Phenol | 108-95-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Phenol | 108-95-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Potassium | 7440-09-7 | 420 | mg/kg | 5.3 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 530 |
| Potassium | 7440-09-7 | 382 | mg/kg | 22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 2200 |
| Potassium | 7440-09-7 | 549 | mg/kg | 5.8 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 580 |
| Potassium | 7440-09-7 | 421 | mg/kg | 4.9 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 490 |
| Potassium | 7440-09-7 | 242 | mg/kg | 5.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 520 |
| Potassium | 7440-09-7 | 225 | mg/kg | 5.6 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 560 |
| Potassium | 7440-09-7 | 462 | mg/kg | 6.1 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 610 |
| Potassium | 7440-09-7 | 414 | mg/kg | 4.9 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 490 |
| Potassium | 7440-09-7 | 392 | mg/kg | 5.55 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 555 |
| Potassium | 7440-09-7 | 350.5 | mg/kg | 5.4 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | BB | 540 |
| Pyrene | 129-00-0 | 0.0569 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Pyrene | 129-00-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Pyrene | 129-00-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Pyrene | 129-00-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Pyrene | 129-00-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Pyrene | 129-00-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Pyrene | 129-00-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Pyrene | 129-00-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Pyrene | 129-00-0 | 2.84 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Pyrene | 129-00-0 | 0.0695 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| RDX | 121-82-4 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| RDX | 121-82-4 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RDX | 121-82-4 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| RDX | 121-82-4 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| RDX | 121-82-4 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| RDX | 121-82-4 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| RDX | 121-82-4 | 0.072 | mg/kg | 0.072 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Selenium | 7782-49-2 | 0.68 | mg/kg | 0.16 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 5.3 |
| Selenium | 7782-49-2 | 0.69 | mg/kg | 0.69 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 22 |
| Selenium | 7782-49-2 | 0.39 | mg/kg | 0.18 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 5.8 |
| Selenium | 7782-49-2 | 0.28 | mg/kg | 0.15 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 4.9 |
| Selenium | 7782-49-2 | 0.16 | mg/kg | 0.16 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 5.2 |
| Selenium | 7782-49-2 | 0.27 | mg/kg | 0.18 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 5.6 |
| Selenium | 7782-49-2 | 0.61 | mg/kg | 0.19 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 6.1 |
| Selenium | 7782-49-2 | 0.49 | mg/kg | 0.15 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 4.9 |
| Selenium | 7782-49-2 | 0.63 | mg/kg | 0.26 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 8.2 |
| Selenium | 7782-49-2 | 0.255 | mg/kg | 0.165 | UJ/J | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UB | 5.4 |
| Silver | 7440-22-4 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | U | 0.53 |
| Silver | 7440-22-4 | 0.27 | mg/kg | 0.27 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 2.2 |
| Silver | 7440-22-4 | 0.069 | mg/kg | 0.069 | UJ | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.58 |
| Silver | 7440-22-4 | 0.059 | mg/kg | 0.059 | UJ | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.49 |
| Silver | 7440-22-4 | 0.062 | mg/kg | 0.062 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.52 |
| Silver | 7440-22-4 | 0.068 | mg/kg | 0.068 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.56 |
| Silver | 7440-22-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.61 |
| Silver | 7440-22-4 | 0.059 | mg/kg | 0.059 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.49 |
| Silver | 7440-22-4 | 0.067 | mg/kg | 0.067 | UU | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.555 |
| Silver | 7440-22-4 | 0.065 | mg/kg | 0.065 | UJUJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.54 |
| Sodium | 7440-23-5 | 155 | mg/kg | 26 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 530 |
| Sodium | 7440-23-5 | 110 | mg/kg | 110 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 2200 |
| Sodium | 7440-23-5 | 29 | mg/kg | 29 | U | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 580 |
| Sodium | 7440-23-5 | 25 | mg/kg | 25 | U | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 490 |
| Sodium | 7440-23-5 | 26 | mg/kg | 26 | U | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 520 |
| Sodium | 7440-23-5 | 28 | mg/kg | 28 | U | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 560 |
| Sodium | 7440-23-5 | 31 | mg/kg | 31 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 610 |
| Sodium | 7440-23-5 | 25 | mg/kg | 25 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 490 |
| Sodium | 7440-23-5 | 150.5 | mg/kg | 28 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 555 |
| Sodium | 7440-23-5 | 27 | mg/kg | 27 | UU | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 540 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Tetryl | 479-45-8 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.0425 | mg/kg | 0.0425 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Thallium | 7440-28-0 | 0.24 | mg/kg | 0.18 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 0.53 |
| Thallium | 7440-28-0 | 0.76 | mg/kg | 0.76 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 2.2 |
| Thallium | 7440-28-0 | 0.2 | mg/kg | 0.2 | UJ | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.58 |
| Thallium | 7440-28-0 | 0.85 | mg/kg | 0.85 | UJ | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 2 |
| Thallium | 7440-28-0 | 0.9 | mg/kg | 0.9 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 2.1 |
| Thallium | 7440-28-0 | 3.8 | mg/kg | 3.8 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 5.6 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 7440-28-0 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.61 |
| Thallium | 7440-28-0 | 1.7 | mg/kg | 1.7 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 2 |
| Thallium | 7440-28-0 | 0.57 | mg/kg | 0.57 | UU | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UU | 1.42 |
| Thallium | 7440-28-0 | 3.7 | mg/kg | 3.7 | UJUJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 5.4 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.179 | mg/kg | 0.042 | | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.908 | mg/kg | 0.041 | | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |

**Table E-1**
**Surface Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vanadium | 7440-62-2 | 16.7 | mg/kg | 0.035 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 2.6 |
| Vanadium | 7440-62-2 | 19.1 | mg/kg | 0.15 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 11 |
| Vanadium | 7440-62-2 | 16.4 | mg/kg | 0.038 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.9 |
| Vanadium | 7440-62-2 | 15.4 | mg/kg | 0.032 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.5 |
| Vanadium | 7440-62-2 | 7.8 | mg/kg | 0.034 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.6 |
| Vanadium | 7440-62-2 | 17.4 | mg/kg | 0.037 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.8 |
| Vanadium | 7440-62-2 | 24.2 | mg/kg | 0.04 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 3.1 |
| Vanadium | 7440-62-2 | 19.4 | mg/kg | 0.033 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.5 |
| Vanadium | 7440-62-2 | 14.1 | mg/kg | 0.037 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 2.8 |
| Vanadium | 7440-62-2 | 13.35 | mg/kg | 0.0355 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 2.7 |
| Zinc | 7440-66-6 | 19 | mg/kg | 0.2 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 1.1 |
| Zinc | 7440-66-6 | 20.3 | mg/kg | 0.85 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 4.5 |
| Zinc | 7440-66-6 | 40.2 | mg/kg | 0.22 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.2 |
| Zinc | 7440-66-6 | 38.2 | mg/kg | 0.19 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.98 |
| Zinc | 7440-66-6 | 30.5 | mg/kg | 0.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1 |
| Zinc | 7440-66-6 | 25.9 | mg/kg | 0.21 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.1 |
| Zinc | 7440-66-6 | 14.1 | mg/kg | 0.23 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.2 |
| Zinc | 7440-66-6 | 22.9 | mg/kg | 0.19 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.99 |
| Zinc | 7440-66-6 | 22.35 | mg/kg | 0.215 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 1.1 |
| Zinc | 7440-66-6 | 60.85 | mg/kg | 0.205 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 1.05 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Acenaphthene | 83-32-9 | 0.0785 | mg/kg | 0.0375 | J/U | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | JU | 0.185 |
| Acenaphthene | 83-32-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Acenaphthene | 83-32-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Acenaphthene | 83-32-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Acenaphthene | 83-32-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Acenaphthene | 83-32-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Acenaphthene | 83-32-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Acenaphthene | 83-32-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Acenaphthene | 83-32-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthene | 83-32-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Acenaphthene | 83-32-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Acenaphthene | 83-32-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Acenaphthene | 83-32-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthene | 83-32-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Acenaphthene | 83-32-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Acenaphthylene | 208-96-8 | 0.577 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Acenaphthylene | 208-96-8 | 0.0491 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Acenaphthylene | 208-96-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 208-96-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Acenaphthylene | 208-96-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Acenaphthylene | 208-96-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Acenaphthylene | 208-96-8 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Acenaphthylene | 208-96-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Acenaphthylene | 208-96-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthylene | 208-96-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Acenaphthylene | 208-96-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Acenaphthylene | 208-96-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Acenaphthylene | 208-96-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Acenaphthylene | 208-96-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Acenaphthylene | 208-96-8 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Aluminum | 7429-90-5 | 5455 | mg/kg | 0.615 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 11 |
| Aluminum | 7429-90-5 | 3160 | mg/kg | 0.64 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 12 |
| Aluminum | 7429-90-5 | 5470 | mg/kg | 0.58 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 11 |
| Aluminum | 7429-90-5 | 2130 | mg/kg | 0.63 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 12 |
| Aluminum | 7429-90-5 | 3880 | mg/kg | 2.4 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 45 |
| Aluminum | 7429-90-5 | 3210 | mg/kg | 0.69 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 13 |
| Aluminum | 7429-90-5 | 6370 | mg/kg | 0.64 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 12 |
| Aluminum | 7429-90-5 | 8570 | mg/kg | 0.57 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 10 |
| Aluminum | 7429-90-5 | 4910 | mg/kg | 0.54 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 9.8 |
| Aluminum | 7429-90-5 | 7820 | mg/kg | 0.51 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 9.3 |
| Aluminum | 7429-90-5 | 4500 | mg/kg | 0.595 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 10.5 |
| Aluminum | 7429-90-5 | 2090 | mg/kg | 0.63 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 12 |
| Aluminum | 7429-90-5 | 3260 | mg/kg | 0.57 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 10 |
| Aluminum | 7429-90-5 | 4040 | mg/kg | 1.1 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 20 |
| Aluminum | 7429-90-5 | 5440 | mg/kg | 0.62 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 11 |
| Aluminum | 7429-90-5 | 6160 | mg/kg | 1.1 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 20 |
| Aluminum | 7429-90-5 | 8190 | mg/kg | 0.67 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 12 |
| Aluminum | 7429-90-5 | 6600 | mg/kg | 0.53 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 9.7 |
| Aluminum | 7429-90-5 | 6560 | mg/kg | 0.54 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 9.9 |
| Aluminum | 7429-90-5 | 6710 | mg/kg | 0.6 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 11 |
| Aluminum | 7429-90-5 | 2820 | mg/kg | 0.63 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 11 |
| Aluminum | 7429-90-5 | 4460 | mg/kg | 0.63 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 11 |
| Aluminum | 7429-90-5 | 6770 | mg/kg | 0.59 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 11 |
| Aluminum | 7429-90-5 | 5955 | mg/kg | 0.545 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 10.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.104 | mg/kg | 0.043 | J | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | J | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.224 | mg/kg | 0.042 | | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.278 | mg/kg | 0.041 | | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.2 | mg/kg | 0.041 | | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.0637 | mg/kg | 0.042 | J | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | J | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 1.2 | mg/kg | 0.038 | | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.182 | mg/kg | 0.039 | | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.184 | mg/kg | 0.043 | | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.035 | mg/kg | 0.035 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.0405 | mg/kg | 0.0405 | UJU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.0915 | mg/kg | 0.0915 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.092 | mg/kg | 0.092 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.089 | mg/kg | 0.089 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.089 | mg/kg | 0.089 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.087 | mg/kg | 0.087 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.145 | mg/kg | 0.095 | J | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | J | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.1 | mg/kg | 0.1 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.1 | mg/kg | 0.1 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.091 | mg/kg | 0.091 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.0915 | mg/kg | 0.0915 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.094 | mg/kg | 0.094 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.088 | mg/kg | 0.088 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.087 | mg/kg | 0.087 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.097 | mg/kg | 0.097 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.222 | mg/kg | 0.091 | | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.336 | mg/kg | 0.09 | | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.329 | mg/kg | 0.09 | | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.092 | mg/kg | 0.092 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.082 | mg/kg | 0.082 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.088 | mg/kg | 0.088 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.0915 | mg/kg | 0.0915 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 1.05 | mg/kg | 0.083 | | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.21 | mg/kg | 0.085 | | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.17 | mg/kg | 0.095 | | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.0885 | mg/kg | 0.0885 | UJU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.092 | mg/kg | 0.092 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.092 | mg/kg | 0.092 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.091 | mg/kg | 0.091 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.094 | mg/kg | 0.094 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.094 | mg/kg | 0.094 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.082 | mg/kg | 0.082 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.087 | mg/kg | 0.087 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.094 | mg/kg | 0.094 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.1 | mg/kg | 0.1 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Anthracene | 120-12-7 | 0.7135 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Anthracene | 120-12-7 | 0.044 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Anthracene | 120-12-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Anthracene | 120-12-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Anthracene | 120-12-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Anthracene | 120-12-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Anthracene | 120-12-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Anthracene | 120-12-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Anthracene | 120-12-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Anthracene | 120-12-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Anthracene | 120-12-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Anthracene | 120-12-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Anthracene | 120-12-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Anthracene | 120-12-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Anthracene | 120-12-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Anthracene | 120-12-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Anthracene | 120-12-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Anthracene | 120-12-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Anthracene | 120-12-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Anthracene | 120-12-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Anthracene | 120-12-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 7440-36-0 | 0.45 | mg/kg | 0.38 | UJ/J | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UB | 5.1 |
| Antimony | 7440-36-0 | 0.39 | mg/kg | 0.26 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 3.5 |
| Antimony | 7440-36-0 | 0.27 | mg/kg | 0.24 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 3.2 |
| Antimony | 7440-36-0 | 0.52 | mg/kg | 0.52 | UJ | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 6.9 |
| Antimony | 7440-36-0 | 1 | mg/kg | 1 | UJ | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 13 |
| Antimony | 7440-36-0 | 0.56 | mg/kg | 0.56 | UJ | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | U | 7.5 |
| Antimony | 7440-36-0 | 0.37 | mg/kg | 0.26 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 3.5 |
| Antimony | 7440-36-0 | 0.51 | mg/kg | 0.23 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | B | 3.1 |
| Antimony | 7440-36-0 | 0.22 | mg/kg | 0.22 | UJ | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 2.9 |
| Antimony | 7440-36-0 | 0.59 | mg/kg | 0.42 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | B | 5.6 |
| Antimony | 7440-36-0 | 0.24 | mg/kg | 0.24 | UJUJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 3.25 |
| Antimony | 7440-36-0 | 0.52 | mg/kg | 0.52 | UJ | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | U | 6.9 |
| Antimony | 7440-36-0 | 0.23 | mg/kg | 0.23 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 3.1 |
| Antimony | 7440-36-0 | 0.44 | mg/kg | 0.44 | UJ | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | U | 5.9 |
| Antimony | 7440-36-0 | 0.25 | mg/kg | 0.25 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 3.4 |
| Antimony | 7440-36-0 | 0.45 | mg/kg | 0.45 | UJ | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 6 |
| Antimony | 7440-36-0 | 0.28 | mg/kg | 0.28 | UJ | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 3.7 |
| Antimony | 7440-36-0 | 1.9 | mg/kg | 0.44 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 5.8 |
| Antimony | 7440-36-0 | 0.38 | mg/kg | 0.22 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 3 |
| Antimony | 7440-36-0 | 0.43 | mg/kg | 0.25 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | B | 3.3 |
| Antimony | 7440-36-0 | 0.26 | mg/kg | 0.26 | UJ | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 3.4 |
| Antimony | 7440-36-0 | 0.57 | mg/kg | 0.51 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 6.9 |
| Antimony | 7440-36-0 | 0.49 | mg/kg | 0.24 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | B | 3.2 |
| Antimony | 7440-36-0 | 0.335 | mg/kg | 0.225 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | BB | 3 |
| Aroclor 1016 | 12674-11-2 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PEST/PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP01 | DP0103 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1016 | 12674-11-2 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PEST/PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1016 | 12674-11-2 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP02 | DP0105 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1016 | 12674-11-2 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PEST/PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP03 | DP0107 | PCB | REG | 21-Aug-09 | 8 | 10 | U | 0.021 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1016 | 12674-11-2 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP04 | DP0109 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1016 | 12674-11-2 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP05 | DP0111 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PEST/PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP06 | DP0115 | PCB | REG | 24-Aug-09 | 9 | 10 | U | 0.021 |
| Aroclor 1016 | 12674-11-2 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1016 | 12674-11-2 | 0.0088 | mg/kg | 0.0088 | U | TNTB-SL-DP07 | DP0117 | PCB | REG | 24-Aug-09 | 4 | 6 | U | 0.018 |
| Aroclor 1016 | 12674-11-2 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP08 | DP0119 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.021 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1016 | 12674-11-2 | 0.0095 | mg/kg | 0.0095 | U | TNTB-SL-DP09 | DP0121 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1016 | 12674-11-2 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP10 | DP0123 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP11 | DP0124 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1016 | 12674-11-2 | 0.0096 | mg/kg | 0.0096 | U | TNTB-SL-DP12 | DP0125 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP13 | DP0126 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1016 | 12674-11-2 | 0.00925 | mg/kg | 0.00925 | UU | TNTB-SL-DP14 | DP0127DP013 | PCB | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.0185 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP01 | DP0100DP010 | PEST/PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1221 | 11104-28-2 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP01 | DP0103 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP02 | DP0104 | PEST/PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1221 | 11104-28-2 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP02 | DP0105 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP03 | DP0106 | PEST/PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP03 | DP0107 | PCB | REG | 21-Aug-09 | 8 | 10 | U | 0.021 |
| Aroclor 1221 | 11104-28-2 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP04 | DP0108 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP04 | DP0109 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP05 | DP0110 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP05 | DP0111 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP06 | DP0112DP011 | PEST/PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP06 | DP0115 | PCB | REG | 24-Aug-09 | 9 | 10 | U | 0.021 |
| Aroclor 1221 | 11104-28-2 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP07 | DP0116 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1221 | 11104-28-2 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP07 | DP0117 | PCB | REG | 24-Aug-09 | 4 | 6 | U | 0.018 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP08 | DP0118 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP08 | DP0119 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.021 |
| Aroclor 1221 | 11104-28-2 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP09 | DP0120 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP09 | DP0121 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP10 | DP0122 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP10 | DP0123 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP11 | DP0124 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP12 | DP0125 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP13 | DP0126 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1221 | 11104-28-2 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP14 | DP0127DP013 | PCB | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.0185 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP01 | DP0100DP010 | PEST/PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1232 | 11141-16-5 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP01 | DP0103 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP02 | DP0104 | PEST/PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1232 | 11141-16-5 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP02 | DP0105 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP03 | DP0106 | PEST/PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP03 | DP0107 | PCB | REG | 21-Aug-09 | 8 | 10 | U | 0.021 |
| Aroclor 1232 | 11141-16-5 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP04 | DP0108 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP04 | DP0109 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP05 | DP0110 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP05 | DP0111 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP06 | DP0112DP011 | PEST/PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP06 | DP0115 | PCB | REG | 24-Aug-09 | 9 | 10 | U | 0.021 |
| Aroclor 1232 | 11141-16-5 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP07 | DP0116 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1232 | 11141-16-5 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP07 | DP0117 | PCB | REG | 24-Aug-09 | 4 | 6 | U | 0.018 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP08 | DP0118 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP08 | DP0119 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.021 |
| Aroclor 1232 | 11141-16-5 | 0.017 | mg/kg | 0.017 | U | TNTB-SL-DP09 | DP0120 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP09 | DP0121 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP10 | DP0122 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP10 | DP0123 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.016 | mg/kg | 0.016 | U | TNTB-SL-DP11 | DP0124 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP12 | DP0125 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP13 | DP0126 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1232 | 11141-16-5 | 0.015 | mg/kg | 0.015 | UU | TNTB-SL-DP14 | DP0127DP013 | PCB | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.0185 |
| Aroclor 1242 | 53469-21-9 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PEST/PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP01 | DP0103 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1242 | 53469-21-9 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PEST/PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1242 | 53469-21-9 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP02 | DP0105 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1242 | 53469-21-9 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PEST/PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP03 | DP0107 | PCB | REG | 21-Aug-09 | 8 | 10 | U | 0.021 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1242 | 53469-21-9 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP04 | DP0109 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1242 | 53469-21-9 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1242 | 53469-21-9 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP05 | DP0111 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PEST/PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP06 | DP0115 | PCB | REG | 24-Aug-09 | 9 | 10 | U | 0.021 |
| Aroclor 1242 | 53469-21-9 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1242 | 53469-21-9 | 0.0088 | mg/kg | 0.0088 | U | TNTB-SL-DP07 | DP0117 | PCB | REG | 24-Aug-09 | 4 | 6 | U | 0.018 |
| Aroclor 1242 | 53469-21-9 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP08 | DP0119 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.021 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1242 | 53469-21-9 | 0.0095 | mg/kg | 0.0095 | U | TNTB-SL-DP09 | DP0121 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1242 | 53469-21-9 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP10 | DP0123 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP11 | DP0124 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1242 | 53469-21-9 | 0.0096 | mg/kg | 0.0096 | U | TNTB-SL-DP12 | DP0125 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP13 | DP0126 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1242 | 53469-21-9 | 0.00925 | mg/kg | 0.00925 | UU | TNTB-SL-DP14 | DP0127DP013 | PCB | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.0185 |
| Aroclor 1248 | 12672-29-6 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PEST/PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP01 | DP0103 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1248 | 12672-29-6 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PEST/PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1248 | 12672-29-6 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP02 | DP0105 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1248 | 12672-29-6 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PEST/PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP03 | DP0107 | PCB | REG | 21-Aug-09 | 8 | 10 | U | 0.021 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1248 | 12672-29-6 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP04 | DP0109 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1248 | 12672-29-6 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP05 | DP0111 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PEST/PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP06 | DP0115 | PCB | REG | 24-Aug-09 | 9 | 10 | U | 0.021 |
| Aroclor 1248 | 12672-29-6 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1248 | 12672-29-6 | 0.0088 | mg/kg | 0.0088 | U | TNTB-SL-DP07 | DP0117 | PCB | REG | 24-Aug-09 | 4 | 6 | U | 0.018 |
| Aroclor 1248 | 12672-29-6 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP08 | DP0119 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.021 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1248 | 12672-29-6 | 0.0095 | mg/kg | 0.0095 | U | TNTB-SL-DP09 | DP0121 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1248 | 12672-29-6 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP10 | DP0123 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP11 | DP0124 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1248 | 12672-29-6 | 0.0096 | mg/kg | 0.0096 | U | TNTB-SL-DP12 | DP0125 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP13 | DP0126 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1248 | 12672-29-6 | 0.00925 | mg/kg | 0.00925 | UU | TNTB-SL-DP14 | DP0127DP013 | PCB | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.0185 |
| Aroclor 1254 | 11097-69-1 | 0.00935 | mg/kg | 0.00935 | UU | TNTB-SL-DP01 | DP0100DP010 | PEST/PCB | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.0185 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP01 | DP0103 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1254 | 11097-69-1 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PEST/PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1254 | 11097-69-1 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP02 | DP0105 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1254 | 11097-69-1 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PEST/PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP03 | DP0107 | PCB | REG | 21-Aug-09 | 8 | 10 | U | 0.021 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1254 | 11097-69-1 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP04 | DP0109 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1254 | 11097-69-1 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP05 | DP0111 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PEST/PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP06 | DP0115 | PCB | REG | 24-Aug-09 | 9 | 10 | U | 0.021 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1254 | 11097-69-1 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1254 | 11097-69-1 | 0.0088 | mg/kg | 0.0088 | U | TNTB-SL-DP07 | DP0117 | PCB | REG | 24-Aug-09 | 4 | 6 | U | 0.018 |
| Aroclor 1254 | 11097-69-1 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP08 | DP0119 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.021 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1254 | 11097-69-1 | 0.0095 | mg/kg | 0.0095 | U | TNTB-SL-DP09 | DP0121 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1254 | 11097-69-1 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP10 | DP0123 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP11 | DP0124 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1254 | 11097-69-1 | 0.0096 | mg/kg | 0.0096 | U | TNTB-SL-DP12 | DP0125 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP13 | DP0126 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1254 | 11097-69-1 | 0.00925 | mg/kg | 0.00925 | UU | TNTB-SL-DP14 | DP0127DP013 | PCB | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.0185 |
| Aroclor 1260 | 11096-82-5 | 0.01935 | mg/kg | 0.00935 | J/U | TNTB-SL-DP01 | DP0100DP010 | PEST/PCB | REGFD | 20-Aug-09 | 0 | 1 | U | 0.0185 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP01 | DP0103 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1260 | 11096-82-5 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP02 | DP0104 | PEST/PCB | REG | 20-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1260 | 11096-82-5 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP02 | DP0105 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1260 | 11096-82-5 | 0.0093 | mg/kg | 0.0093 | U | TNTB-SL-DP03 | DP0106 | PEST/PCB | REG | 21-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP03 | DP0107 | PCB | REG | 21-Aug-09 | 8 | 10 | U | 0.021 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP04 | DP0108 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1260 | 11096-82-5 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP04 | DP0109 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.0099 | mg/kg | 0.0099 | U | TNTB-SL-DP05 | DP0110 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.02 |
| Aroclor 1260 | 11096-82-5 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP05 | DP0111 | PCB | REG | 24-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.0094 | mg/kg | 0.0094 | UU | TNTB-SL-DP06 | DP0112DP011 | PEST/PCB | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP06 | DP0115 | PCB | REG | 24-Aug-09 | 9 | 10 | U | 0.021 |
| Aroclor 1260 | 11096-82-5 | 0.009 | mg/kg | 0.009 | U | TNTB-SL-DP07 | DP0116 | PEST/PCB | REG | 24-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1260 | 11096-82-5 | 0.0088 | mg/kg | 0.0088 | U | TNTB-SL-DP07 | DP0117 | PCB | REG | 24-Aug-09 | 4 | 6 | U | 0.018 |
| Aroclor 1260 | 11096-82-5 | 0.0097 | mg/kg | 0.0097 | U | TNTB-SL-DP08 | DP0118 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP08 | DP0119 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.021 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP09 | DP0120 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.021 |
| Aroclor 1260 | 11096-82-5 | 0.0095 | mg/kg | 0.0095 | U | TNTB-SL-DP09 | DP0121 | PCB | REG | 25-Aug-09 | 2 | 4 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.0092 | mg/kg | 0.0092 | U | TNTB-SL-DP10 | DP0122 | PEST/PCB | REG | 25-Aug-09 | 0 | 1 | U | 0.018 |
| Aroclor 1260 | 11096-82-5 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP10 | DP0123 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.01 | mg/kg | 0.01 | U | TNTB-SL-DP11 | DP0124 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.02 |
| Aroclor 1260 | 11096-82-5 | 0.0096 | mg/kg | 0.0096 | U | TNTB-SL-DP12 | DP0125 | PCB | REG | 20-Aug-09 | 8 | 10 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.0094 | mg/kg | 0.0094 | U | TNTB-SL-DP13 | DP0126 | PCB | REG | 25-Aug-09 | 2 | 3.5 | U | 0.019 |
| Aroclor 1260 | 11096-82-5 | 0.00925 | mg/kg | 0.00925 | UU | TNTB-SL-DP14 | DP0127DP013 | PCB | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.0185 |
| Arsenic | 7440-38-2 | 3.15 | mg/kg | 0.305 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 0.68 |
| Arsenic | 7440-38-2 | 3.9 | mg/kg | 0.21 | | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.47 |
| Arsenic | 7440-38-2 | 5 | mg/kg | 0.19 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 0.42 |
| Arsenic | 7440-38-2 | 1.1 | mg/kg | 0.42 | | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.92 |
| Arsenic | 7440-38-2 | 3.7 | mg/kg | 0.8 | | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 1.8 |
| Arsenic | 7440-38-2 | 3.9 | mg/kg | 0.45 | | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 1 |
| Arsenic | 7440-38-2 | 3.7 | mg/kg | 0.21 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.46 |
| Arsenic | 7440-38-2 | 11.8 | mg/kg | 0.19 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.42 |
| Arsenic | 7440-38-2 | 3 | mg/kg | 0.18 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.39 |
| Arsenic | 7440-38-2 | 12 | mg/kg | 0.34 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.74 |
| Arsenic | 7440-38-2 | 2.95 | mg/kg | 0.195 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.435 |
| Arsenic | 7440-38-2 | 3.3 | mg/kg | 0.42 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 0.92 |
| Arsenic | 7440-38-2 | 2.3 | mg/kg | 0.19 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.42 |
| Arsenic | 7440-38-2 | 3.5 | mg/kg | 0.35 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 0.78 |
| Arsenic | 7440-38-2 | 3.1 | mg/kg | 0.2 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.45 |
| Arsenic | 7440-38-2 | 2.4 | mg/kg | 0.36 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 0.8 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 7440-38-2 | 7.9 | mg/kg | 0.22 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.49 |
| Arsenic | 7440-38-2 | 15.3 | mg/kg | 0.35 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 0.77 |
| Arsenic | 7440-38-2 | 6.4 | mg/kg | 0.18 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.4 |
| Arsenic | 7440-38-2 | 12.8 | mg/kg | 0.2 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.44 |
| Arsenic | 7440-38-2 | 1.5 | mg/kg | 0.21 | | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.46 |
| Arsenic | 7440-38-2 | 10.3 | mg/kg | 0.41 | | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.92 |
| Arsenic | 7440-38-2 | 11.7 | mg/kg | 0.19 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.43 |
| Arsenic | 7440-38-2 | 6.45 | mg/kg | 0.18 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 0.395 |
| Barium | 7440-39-3 | 23.5 | mg/kg | 0.28 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 11 |
| Barium | 7440-39-3 | 13.3 | mg/kg | 0.29 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 12 |
| Barium | 7440-39-3 | 29.5 | mg/kg | 0.26 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 11 |
| Barium | 7440-39-3 | 7.4 | mg/kg | 0.29 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 12 |
| Barium | 7440-39-3 | 11.1 | mg/kg | 1.1 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 45 |
| Barium | 7440-39-3 | 16 | mg/kg | 0.31 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 13 |
| Barium | 7440-39-3 | 39 | mg/kg | 0.29 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 12 |
| Barium | 7440-39-3 | 23.7 | mg/kg | 0.26 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 10 |
| Barium | 7440-39-3 | 26.2 | mg/kg | 0.25 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 9.8 |
| Barium | 7440-39-3 | 31.3 | mg/kg | 0.23 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 9.3 |
| Barium | 7440-39-3 | 16.9 | mg/kg | 0.27 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 10.5 |
| Barium | 7440-39-3 | 6.3 | mg/kg | 0.29 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | B | 12 |
| Barium | 7440-39-3 | 28.5 | mg/kg | 0.26 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 10 |
| Barium | 7440-39-3 | 46.8 | mg/kg | 0.49 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 20 |
| Barium | 7440-39-3 | 14.8 | mg/kg | 0.28 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 11 |
| Barium | 7440-39-3 | 19.2 | mg/kg | 0.5 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 20 |
| Barium | 7440-39-3 | 32.8 | mg/kg | 0.31 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 12 |
| Barium | 7440-39-3 | 24.2 | mg/kg | 0.24 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 9.7 |
| Barium | 7440-39-3 | 19.9 | mg/kg | 0.25 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 9.9 |
| Barium | 7440-39-3 | 19.4 | mg/kg | 0.27 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 11 |
| Barium | 7440-39-3 | 8.1 | mg/kg | 0.29 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 11 |
| Barium | 7440-39-3 | 21.1 | mg/kg | 0.29 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 11 |
| Barium | 7440-39-3 | 14.2 | mg/kg | 0.27 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 11 |
| Barium | 7440-39-3 | 19.4 | mg/kg | 0.245 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 10.15 |
| Benzo(a)anthracene | 56-55-3 | 1.617 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(a)anthracene | 56-55-3 | 0.151 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Benzo(a)anthracene | 56-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Benzo(a)anthracene | 56-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Benzo(a)anthracene | 56-55-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(a)anthracene | 56-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Benzo(a)anthracene | 56-55-3 | 0.0472 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Benzo(a)anthracene | 56-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)anthracene | 56-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Benzo(a)anthracene | 56-55-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Benzo(a)anthracene | 56-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(a)anthracene | 56-55-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)anthracene | 56-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene | 56-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.0413 | mg/kg | 0.039 | J | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(a)anthracene | 56-55-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 1.3725 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(a)pyrene | 50-32-8 | 0.13 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Benzo(a)pyrene | 50-32-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Benzo(a)pyrene | 50-32-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Benzo(a)pyrene | 50-32-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(a)pyrene | 50-32-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Benzo(a)pyrene | 50-32-8 | 0.0476 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Benzo(a)pyrene | 50-32-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)pyrene | 50-32-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Benzo(a)pyrene | 50-32-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Benzo(a)pyrene | 50-32-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(a)pyrene | 50-32-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(a)pyrene | 50-32-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(a)pyrene | 50-32-8 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 1.945 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(b)fluoranthene | 205-99-2 | 0.183 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Benzo(b)fluoranthene | 205-99-2 | 0.0528 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Benzo(b)fluoranthene | 205-99-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Benzo(b)fluoranthene | 205-99-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(b)fluoranthene | 205-99-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Benzo(b)fluoranthene | 205-99-2 | 0.06805 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Benzo(b)fluoranthene | 205-99-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(b)fluoranthene | 205-99-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Benzo(b)fluoranthene | 205-99-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Benzo(b)fluoranthene | 205-99-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(b)fluoranthene | 205-99-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(b)fluoranthene | 205-99-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.045 | mg/kg | 0.039 | J | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(b)fluoranthene | 205-99-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(ghi)perylene | 191-24-2 | 0.6485 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(ghi)perylene | 191-24-2 | 0.0568 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Benzo(ghi)perylene | 191-24-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Benzo(ghi)perylene | 191-24-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Benzo(ghi)perylene | 191-24-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(ghi)perylene | 191-24-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Benzo(ghi)perylene | 191-24-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Benzo(ghi)perylene | 191-24-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(ghi)perylene | 191-24-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Benzo(ghi)perylene | 191-24-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Benzo(ghi)perylene | 191-24-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(ghi)perylene | 191-24-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(ghi)perylene | 191-24-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(ghi)perylene | 191-24-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.7265 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Benzo(k)fluoranthene | 207-08-9 | 0.07 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Benzo(k)fluoranthene | 207-08-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Benzo(k)fluoranthene | 207-08-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Benzo(k)fluoranthene | 207-08-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzo(k)fluoranthene | 207-08-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Benzo(k)fluoranthene | 207-08-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Benzo(k)fluoranthene | 207-08-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(k)fluoranthene | 207-08-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Benzo(k)fluoranthene | 207-08-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Benzo(k)fluoranthene | 207-08-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzo(k)fluoranthene | 207-08-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzo(k)fluoranthene | 207-08-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzo(k)fluoranthene | 207-08-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Benzoic acid | 65-85-0 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Benzoic acid | 65-85-0 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |
| Benzoic acid | 65-85-0 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Benzoic acid | 65-85-0 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzoic acid | 65-85-0 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Benzoic acid | 65-85-0 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 1.1 |
| Benzoic acid | 65-85-0 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Benzoic acid | 65-85-0 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.97 |
| Benzoic acid | 65-85-0 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |
| Benzoic acid | 65-85-0 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.92 |
| Benzoic acid | 65-85-0 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Benzoic acid | 65-85-0 | 0.42 | mg/kg | 0.42 | UJ | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 1 |
| Benzoic acid | 65-85-0 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Benzoic acid | 65-85-0 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.89 |
| Benzoic acid | 65-85-0 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Benzoic acid | 65-85-0 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 1 |
| Benzoic acid | 65-85-0 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Benzoic acid | 65-85-0 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.95 |
| Benzoic acid | 65-85-0 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Benzoic acid | 65-85-0 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.94 |
| Benzoic acid | 65-85-0 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Benzoic acid | 65-85-0 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Benzoic acid | 65-85-0 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.93 |
| Benzoic acid | 65-85-0 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.95 |
| Benzyl alcohol | 100-51-6 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Benzyl alcohol | 100-51-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Benzyl alcohol | 100-51-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Benzyl alcohol | 100-51-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Benzyl alcohol | 100-51-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Benzyl alcohol | 100-51-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Benzyl alcohol | 100-51-6 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Benzyl alcohol | 100-51-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Benzyl alcohol | 100-51-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Benzyl alcohol | 100-51-6 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Benzyl alcohol | 100-51-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Benzyl alcohol | 100-51-6 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Benzyl alcohol | 100-51-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Benzyl alcohol | 100-51-6 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Beryllium | 7440-41-7 | 0.35 | mg/kg | 0.0555 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 0.28 |
| Beryllium | 7440-41-7 | 0.23 | mg/kg | 0.059 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 0.29 |
| Beryllium | 7440-41-7 | 0.4 | mg/kg | 0.053 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 0.26 |
| Beryllium | 7440-41-7 | 0.19 | mg/kg | 0.058 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 0.29 |
| Beryllium | 7440-41-7 | 0.47 | mg/kg | 0.22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 1.1 |
| Beryllium | 7440-41-7 | 0.24 | mg/kg | 0.063 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | B | 0.31 |
| Beryllium | 7440-41-7 | 0.68 | mg/kg | 0.058 | | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.29 |
| Beryllium | 7440-41-7 | 0.51 | mg/kg | 0.052 | | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.26 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7440-41-7 | 0.49 | mg/kg | 0.049 | | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.25 |
| Beryllium | 7440-41-7 | 0.48 | mg/kg | 0.047 | | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.23 |
| Beryllium | 7440-41-7 | 0.295 | mg/kg | 0.054 | | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.27 |
| Beryllium | 7440-41-7 | 0.18 | mg/kg | 0.058 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | B | 0.29 |
| Beryllium | 7440-41-7 | 0.33 | mg/kg | 0.052 | | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.26 |
| Beryllium | 7440-41-7 | 0.42 | mg/kg | 0.098 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | B | 0.49 |
| Beryllium | 7440-41-7 | 0.46 | mg/kg | 0.056 | | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.28 |
| Beryllium | 7440-41-7 | 0.71 | mg/kg | 0.1 | | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 0.5 |
| Beryllium | 7440-41-7 | 0.37 | mg/kg | 0.061 | | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.31 |
| Beryllium | 7440-41-7 | 0.35 | mg/kg | 0.048 | | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 0.24 |
| Beryllium | 7440-41-7 | 0.4 | mg/kg | 0.049 | | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.25 |
| Beryllium | 7440-41-7 | 0.71 | mg/kg | 0.055 | | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.27 |
| Beryllium | 7440-41-7 | 0.23 | mg/kg | 0.057 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 0.29 |
| Beryllium | 7440-41-7 | 0.3 | mg/kg | 0.057 | | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.29 |
| Beryllium | 7440-41-7 | 0.81 | mg/kg | 0.054 | | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.27 |
| Beryllium | 7440-41-7 | 0.62 | mg/kg | 0.0495 | | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 0.245 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroethyl)ether | 111-44-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.185 | mg/kg | 0.185 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.19 | mg/kg | 0.19 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Butyl benzyl phthalate | 85-68-7 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Butyl benzyl phthalate | 85-68-7 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Butyl benzyl phthalate | 85-68-7 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Butyl benzyl phthalate | 85-68-7 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Butyl benzyl phthalate | 85-68-7 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Butyl benzyl phthalate | 85-68-7 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Butyl benzyl phthalate | 85-68-7 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Butyl benzyl phthalate | 85-68-7 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Butyl benzyl phthalate | 85-68-7 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Butyl benzyl phthalate | 85-68-7 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Butyl benzyl phthalate | 85-68-7 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Butyl benzyl phthalate | 85-68-7 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Butyl benzyl phthalate | 85-68-7 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Butyl benzyl phthalate | 85-68-7 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Butyl benzyl phthalate | 85-68-7 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Butyl benzyl phthalate | 85-68-7 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Butyl benzyl phthalate | 85-68-7 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Butyl benzyl phthalate | 85-68-7 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Butyl benzyl phthalate | 85-68-7 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Butyl benzyl phthalate | 85-68-7 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Butyl benzyl phthalate | 85-68-7 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Butyl benzyl phthalate | 85-68-7 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Butyl benzyl phthalate | 85-68-7 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Butyl benzyl phthalate | 85-68-7 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Cadmium | 7440-43-9 | 0.0555 | mg/kg | 0.0555 | UJUJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.225 |
| Cadmium | 7440-43-9 | 0.059 | mg/kg | 0.059 | UJ | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.23 |
| Cadmium | 7440-43-9 | 0.265 | mg/kg | 0.265 | UJ | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | U | 0.84 |
| Cadmium | 7440-43-9 | 0.058 | mg/kg | 0.058 | UJ | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.23 |
| Cadmium | 7440-43-9 | 0.22 | mg/kg | 0.22 | UJ | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 0.89 |
| Cadmium | 7440-43-9 | 0.063 | mg/kg | 0.063 | UJ | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | U | 0.25 |
| Cadmium | 7440-43-9 | 0.16 | mg/kg | 0.058 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.23 |
| Cadmium | 7440-43-9 | 0.24 | mg/kg | 0.052 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.21 |
| Cadmium | 7440-43-9 | 0.17 | mg/kg | 0.049 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.2 |
| Cadmium | 7440-43-9 | 0.19 | mg/kg | 0.047 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.19 |
| Cadmium | 7440-43-9 | 0.185 | mg/kg | 0.054 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | BB | 0.215 |
| Cadmium | 7440-43-9 | 0.085 | mg/kg | 0.058 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | B | 0.23 |
| Cadmium | 7440-43-9 | 0.11 | mg/kg | 0.052 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.21 |
| Cadmium | 7440-43-9 | 0.098 | mg/kg | 0.098 | UJ | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | U | 0.39 |
| Cadmium | 7440-43-9 | 0.056 | mg/kg | 0.056 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.23 |
| Cadmium | 7440-43-9 | 0.1 | mg/kg | 0.1 | UJ | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 0.4 |
| Cadmium | 7440-43-9 | 0.061 | mg/kg | 0.061 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.25 |
| Cadmium | 7440-43-9 | 0.97 | mg/kg | 0.97 | U | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 1.6 |
| Cadmium | 7440-43-9 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.2 |
| Cadmium | 7440-43-9 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 0.22 |
| Cadmium | 7440-43-9 | 0.057 | mg/kg | 0.057 | UJ | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.23 |
| Cadmium | 7440-43-9 | 0.057 | mg/kg | 0.057 | UJ | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.23 |
| Cadmium | 7440-43-9 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 0.22 |
| Cadmium | 7440-43-9 | 0.0495 | mg/kg | 0.0495 | UU | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.2 |
| Calcium | 7440-70-2 | 22105 | mg/kg | 8.2 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 420 |
| Calcium | 7440-70-2 | 26200 | mg/kg | 5.9 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 290 |
| Calcium | 7440-70-2 | 1170 | mg/kg | 5.3 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 260 |
| Calcium | 7440-70-2 | 35700 | mg/kg | 12 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 580 |
| Calcium | 7440-70-2 | 2050 | mg/kg | 22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 1100 |
| Calcium | 7440-70-2 | 47200 | mg/kg | 13 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 630 |
| Calcium | 7440-70-2 | 3610 | mg/kg | 5.8 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 290 |
| Calcium | 7440-70-2 | 25300 | mg/kg | 5.2 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 260 |
| Calcium | 7440-70-2 | 3720 | mg/kg | 4.9 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 250 |
| Calcium | 7440-70-2 | 45100 | mg/kg | 9.3 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 470 |
| Calcium | 7440-70-2 | 1630 | mg/kg | 5.4 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 270 |
| Calcium | 7440-70-2 | 43200 | mg/kg | 12 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 580 |
| Calcium | 7440-70-2 | 1930 | mg/kg | 5.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 260 |
| Calcium | 7440-70-2 | 3050 | mg/kg | 9.8 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 490 |
| Calcium | 7440-70-2 | 407 | mg/kg | 5.6 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 280 |
| Calcium | 7440-70-2 | 573 | mg/kg | 10 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 500 |
| Calcium | 7440-70-2 | 271 | mg/kg | 6.1 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 310 |
| Calcium | 7440-70-2 | 168 | mg/kg | 4.8 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 240 |
| Calcium | 7440-70-2 | 258 | mg/kg | 4.9 | | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 250 |
| Calcium | 7440-70-2 | 126 | mg/kg | 5.5 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | B | 270 |
| Calcium | 7440-70-2 | 17000 | mg/kg | 5.7 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 290 |
| Calcium | 7440-70-2 | 33800 | mg/kg | 11 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 570 |
| Calcium | 7440-70-2 | 449 | mg/kg | 5.4 | | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 270 |
| Calcium | 7440-70-2 | 564.5 | mg/kg | 4.95 | | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 245 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbazole | 86-74-8 | 0.3451 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Carbazole | 86-74-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Carbazole | 86-74-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Carbazole | 86-74-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Carbazole | 86-74-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Carbazole | 86-74-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Carbazole | 86-74-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Carbazole | 86-74-8 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Carbazole | 86-74-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Carbazole | 86-74-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Carbazole | 86-74-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Carbazole | 86-74-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Carbazole | 86-74-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Carbazole | 86-74-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Carbazole | 86-74-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Carbazole | 86-74-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Carbazole | 86-74-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Carbazole | 86-74-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Carbazole | 86-74-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Carbazole | 86-74-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Carbazole | 86-74-8 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chloroaniline, 4- | 106-47-8 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chloroaniline, 4- | 106-47-8 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloroaniline, 4- | 106-47-8 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Chloroaniline, 4- | 106-47-8 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chloroaniline, 4- | 106-47-8 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Chloroaniline, 4- | 106-47-8 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Chloroaniline, 4- | 106-47-8 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chloroaniline, 4- | 106-47-8 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Chloroaniline, 4- | 106-47-8 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Chloroaniline, 4- | 106-47-8 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chloroaniline, 4- | 106-47-8 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chloroaniline, 4- | 106-47-8 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chloroaniline, 4- | 106-47-8 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chloronaphthalene, 2- | 91-58-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chloronaphthalene, 2- | 91-58-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chloronaphthalene, 2- | 91-58-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Chloronaphthalene, 2- | 91-58-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chloronaphthalene, 2- | 91-58-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Chloronaphthalene, 2- | 91-58-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Chloronaphthalene, 2- | 91-58-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chloronaphthalene, 2- | 91-58-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Chloronaphthalene, 2- | 91-58-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Chloronaphthalene, 2- | 91-58-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chloronaphthalene, 2- | 91-58-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chloronaphthalene, 2- | 91-58-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chloronaphthalene, 2- | 91-58-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chlorophenol, 2- | 95-57-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chlorophenol, 2- | 95-57-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chlorophenol, 2- | 95-57-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Chlorophenol, 2- | 95-57-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chlorophenol, 2- | 95-57-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorophenol, 2- | 95-57-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Chlorophenol, 2- | 95-57-8 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Chlorophenol, 2- | 95-57-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chlorophenol, 2- | 95-57-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Chlorophenol, 2- | 95-57-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Chlorophenol, 2- | 95-57-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chlorophenol, 2- | 95-57-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chlorophenol, 2- | 95-57-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chlorophenol, 2- | 95-57-8 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Chromium | 7440-47-3 | 6.9 | mg/kg | 0.179 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 1.1 |
| Chromium | 7440-47-3 | 5.4 | mg/kg | 0.188 | | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.2 |
| Chromium | 7440-47-3 | 8.1 | mg/kg | 0.168 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 1.1 |
| Chromium | 7440-47-3 | 4.7 | mg/kg | 0.184 | | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.2 |
| Chromium | 7440-47-3 | 6.2 | mg/kg | 0.36 | | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 2.2 |
| Chromium | 7440-47-3 | 5.6 | mg/kg | 0.2 | | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 1.3 |
| Chromium | 7440-47-3 | 10.2 | mg/kg | 0.092 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.58 |
| Chromium | 7440-47-3 | 13.8 | mg/kg | 0.083 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.52 |
| Chromium | 7440-47-3 | 8.5 | mg/kg | 0.079 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.49 |
| Chromium | 7440-47-3 | 13.1 | mg/kg | 0.074 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.47 |
| Chromium | 7440-47-3 | 6.55 | mg/kg | 0.0865 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.54 |
| Chromium | 7440-47-3 | 4.4 | mg/kg | 0.092 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 0.58 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 7440-47-3 | 4.4 | mg/kg | 0.083 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.52 |
| Chromium | 7440-47-3 | 6.1 | mg/kg | 0.16 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 0.98 |
| Chromium | 7440-47-3 | 8.7 | mg/kg | 0.09 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.56 |
| Chromium | 7440-47-3 | 8.3 | mg/kg | 0.16 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 1 |
| Chromium | 7440-47-3 | 11 | mg/kg | 0.098 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.61 |
| Chromium | 7440-47-3 | 11.9 | mg/kg | 0.077 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 0.48 |
| Chromium | 7440-47-3 | 9 | mg/kg | 0.079 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.49 |
| Chromium | 7440-47-3 | 9.7 | mg/kg | 0.087 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.55 |
| Chromium | 7440-47-3 | 6.2 | mg/kg | 0.182 | | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.1 |
| Chromium | 7440-47-3 | 6.2 | mg/kg | 0.184 | | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.1 |
| Chromium | 7440-47-3 | 10.1 | mg/kg | 0.086 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.54 |
| Chromium | 7440-47-3 | 9.5 | mg/kg | 0.0795 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 0.495 |
| Chrysene | 218-01-9 | 1.497 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Chrysene | 218-01-9 | 0.132 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Chrysene | 218-01-9 | 0.0403 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Chrysene | 218-01-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Chrysene | 218-01-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Chrysene | 218-01-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Chrysene | 218-01-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Chrysene | 218-01-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Chrysene | 218-01-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Chrysene | 218-01-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Chrysene | 218-01-9 | 0.04875 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Chrysene | 218-01-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Chrysene | 218-01-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Chrysene | 218-01-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Chrysene | 218-01-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Chrysene | 218-01-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Chrysene | 218-01-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Chrysene | 218-01-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Chrysene | 218-01-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Chrysene | 218-01-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chrysene | 218-01-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chrysene | 218-01-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Chrysene | 218-01-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Chrysene | 218-01-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Cobalt | 7440-48-4 | 2.25 | mg/kg | 0.046 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 2.8 |
| Cobalt | 7440-48-4 | 3.2 | mg/kg | 0.049 | | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.9 |
| Cobalt | 7440-48-4 | 4.2 | mg/kg | 0.044 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 2.6 |
| Cobalt | 7440-48-4 | 2.3 | mg/kg | 0.048 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 2.9 |
| Cobalt | 7440-48-4 | 4.1 | mg/kg | 0.18 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 11 |
| Cobalt | 7440-48-4 | 3 | mg/kg | 0.052 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | B | 3.1 |
| Cobalt | 7440-48-4 | 5.8 | mg/kg | 0.048 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.9 |
| Cobalt | 7440-48-4 | 13.1 | mg/kg | 0.043 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 2.6 |
| Cobalt | 7440-48-4 | 4.8 | mg/kg | 0.041 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.5 |
| Cobalt | 7440-48-4 | 11.5 | mg/kg | 0.039 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 2.3 |
| Cobalt | 7440-48-4 | 2.9 | mg/kg | 0.045 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 2.7 |
| Cobalt | 7440-48-4 | 3.3 | mg/kg | 0.048 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 2.9 |
| Cobalt | 7440-48-4 | 3 | mg/kg | 0.043 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.6 |
| Cobalt | 7440-48-4 | 4.6 | mg/kg | 0.081 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | B | 4.9 |
| Cobalt | 7440-48-4 | 6 | mg/kg | 0.047 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.8 |
| Cobalt | 7440-48-4 | 3.8 | mg/kg | 0.083 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 5 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cobalt | 7440-48-4 | 4.2 | mg/kg | 0.051 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 3.1 |
| Cobalt | 7440-48-4 | 2.9 | mg/kg | 0.04 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 2.4 |
| Cobalt | 7440-48-4 | 5.8 | mg/kg | 0.041 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.5 |
| Cobalt | 7440-48-4 | 9.9 | mg/kg | 0.045 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 2.7 |
| Cobalt | 7440-48-4 | 2.5 | mg/kg | 0.047 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 2.9 |
| Cobalt | 7440-48-4 | 5.3 | mg/kg | 0.047 | | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.9 |
| Cobalt | 7440-48-4 | 13.8 | mg/kg | 0.045 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 2.7 |
| Cobalt | 7440-48-4 | 10 | mg/kg | 0.041 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 2.45 |
| Copper | 7440-50-8 | 4.2 | mg/kg | 0.115 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 1.4 |
| Copper | 7440-50-8 | 6.3 | mg/kg | 0.12 | | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.5 |
| Copper | 7440-50-8 | 11.3 | mg/kg | 0.11 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 1.3 |
| Copper | 7440-50-8 | 3.8 | mg/kg | 0.12 | | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.4 |
| Copper | 7440-50-8 | 4.3 | mg/kg | 0.47 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 5.6 |
| Copper | 7440-50-8 | 6.1 | mg/kg | 0.13 | | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 1.6 |
| Copper | 7440-50-8 | 9.6 | mg/kg | 0.12 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.4 |
| Copper | 7440-50-8 | 30.2 | mg/kg | 0.11 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 1.3 |
| Copper | 7440-50-8 | 8.2 | mg/kg | 0.1 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.2 |
| Copper | 7440-50-8 | 21 | mg/kg | 0.098 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 1.2 |
| Copper | 7440-50-8 | 4.2 | mg/kg | 0.115 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 1.35 |
| Copper | 7440-50-8 | 4.5 | mg/kg | 0.12 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 1.4 |
| Copper | 7440-50-8 | 5.1 | mg/kg | 0.11 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.3 |
| Copper | 7440-50-8 | 8.7 | mg/kg | 0.21 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 2.5 |
| Copper | 7440-50-8 | 11.6 | mg/kg | 0.12 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.4 |
| Copper | 7440-50-8 | 7.3 | mg/kg | 0.21 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 2.5 |
| Copper | 7440-50-8 | 30.5 | mg/kg | 0.13 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.5 |
| Copper | 7440-50-8 | 46.4 | mg/kg | 0.1 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 1.2 |
| Copper | 7440-50-8 | 20.8 | mg/kg | 0.1 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.2 |
| Copper | 7440-50-8 | 42.8 | mg/kg | 0.11 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 1.4 |
| Copper | 7440-50-8 | 3.7 | mg/kg | 0.12 | | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.4 |
| Copper | 7440-50-8 | 12.4 | mg/kg | 0.12 | | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.4 |
| Copper | 7440-50-8 | 33.4 | mg/kg | 0.11 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 1.3 |
| Copper | 7440-50-8 | 26.05 | mg/kg | 0.1035 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 1.25 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.16935 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenz(a,h)anthracene | 53-70-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dibenz(a,h)anthracene | 53-70-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Dibenzofuran | 132-64-9 | 0.20835 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Dibenzofuran | 132-64-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dibenzofuran | 132-64-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dibenzofuran | 132-64-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dibenzofuran | 132-64-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dibenzofuran | 132-64-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dibenzofuran | 132-64-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dibenzofuran | 132-64-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Dibenzofuran | 132-64-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenzofuran | 132-64-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dibenzofuran | 132-64-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dibenzofuran | 132-64-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dibenzofuran | 132-64-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dibenzofuran | 132-64-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dibenzofuran | 132-64-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.0485 | mg/kg | 0.0485 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.0495 | mg/kg | 0.0495 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.0495 | mg/kg | 0.0495 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorobenzene, 1,3- | 541-73-1 | 0.0485 | mg/kg | 0.0485 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.0495 | mg/kg | 0.0495 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.0495 | mg/kg | 0.0495 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.0455 | mg/kg | 0.0455 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.0455 | mg/kg | 0.0455 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dichlorophenol, 2,4- | 120-83-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Diethyl phthalate | 84-66-2 | 0.185 | mg/kg | 0.185 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Diethyl phthalate | 84-66-2 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Diethyl phthalate | 84-66-2 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Diethyl phthalate | 84-66-2 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Diethyl phthalate | 84-66-2 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Diethyl phthalate | 84-66-2 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Diethyl phthalate | 84-66-2 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Diethyl phthalate | 84-66-2 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Diethyl phthalate | 84-66-2 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Diethyl phthalate | 84-66-2 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Diethyl phthalate | 84-66-2 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Diethyl phthalate | 84-66-2 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Diethyl phthalate | 84-66-2 | 0.19 | mg/kg | 0.19 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Dimethyl phthalate | 131-11-3 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Dimethyl phthalate | 131-11-3 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Dimethyl phthalate | 131-11-3 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Dimethyl phthalate | 131-11-3 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Dimethyl phthalate | 131-11-3 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Dimethyl phthalate | 131-11-3 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Dimethyl phthalate | 131-11-3 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Dimethyl phthalate | 131-11-3 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Dimethyl phthalate | 131-11-3 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Dimethyl phthalate | 131-11-3 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Dimethyl phthalate | 131-11-3 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Dimethyl phthalate | 131-11-3 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Dimethyl phthalate | 131-11-3 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Dimethyl phthalate | 131-11-3 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Dimethyl phthalate | 131-11-3 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Dimethyl phthalate | 131-11-3 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Dimethyl phthalate | 131-11-3 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Dimethyl phthalate | 131-11-3 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Dimethyl phthalate | 131-11-3 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Dimethyl phthalate | 131-11-3 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Dimethyl phthalate | 131-11-3 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Dimethyl phthalate | 131-11-3 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Dimethyl phthalate | 131-11-3 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Dimethyl phthalate | 131-11-3 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimethylphenol, 2,4- | 105-67-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dimethylphenol, 2,4- | 105-67-9 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Di-n-butyl phthalate | 84-74-2 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Di-n-butyl phthalate | 84-74-2 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Di-n-butyl phthalate | 84-74-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-butyl phthalate | 84-74-2 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Di-n-butyl phthalate | 84-74-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-butyl phthalate | 84-74-2 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Di-n-butyl phthalate | 84-74-2 | 0.15 | mg/kg | 0.079 | J | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | J | 0.4 |
| Di-n-butyl phthalate | 84-74-2 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Di-n-butyl phthalate | 84-74-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Di-n-butyl phthalate | 84-74-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Di-n-butyl phthalate | 84-74-2 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Di-n-butyl phthalate | 84-74-2 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Di-n-butyl phthalate | 84-74-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-butyl phthalate | 84-74-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Di-n-butyl phthalate | 84-74-2 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Di-n-butyl phthalate | 84-74-2 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Di-n-butyl phthalate | 84-74-2 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Di-n-butyl phthalate | 84-74-2 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Di-n-butyl phthalate | 84-74-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-butyl phthalate | 84-74-2 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Di-n-butyl phthalate | 84-74-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Di-n-butyl phthalate | 84-74-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Di-n-butyl phthalate | 84-74-2 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Di-n-butyl phthalate | 84-74-2 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.14 | mg/kg | 0.14 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | UJ | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.11 | mg/kg | 0.11 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.13 | mg/kg | 0.13 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.12 | mg/kg | 0.12 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.0445 | mg/kg | 0.0445 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.0445 | mg/kg | 0.0445 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.043 | mg/kg | 0.043 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinitrophenol, 2,4- | 51-28-5 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 1.1 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.97 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.92 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.42 | mg/kg | 0.42 | UJ | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 1 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.89 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 1 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.95 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.94 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.93 |
| Dinitrophenol, 2,4- | 51-28-5 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.95 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.05 | mg/kg | 0.05 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.056 | mg/kg | 0.056 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0505 | mg/kg | 0.0505 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0517 | mg/kg | 0.05 | J | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | J | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0827 | mg/kg | 0.05 | J | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | J | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0846 | mg/kg | 0.045 | J | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | J | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0505 | mg/kg | 0.0505 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.173 | mg/kg | 0.046 | | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.049 | mg/kg | 0.049 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.0505 | mg/kg | 0.0505 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrotoluene, 2,4- exp | 121-14-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinitrotoluene, 2,6- | 606-20-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.0445 | mg/kg | 0.0445 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.098 | mg/kg | 0.039 | J | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | J | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.0445 | mg/kg | 0.0445 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.101 | mg/kg | 0.04 | J | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | J | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.043 | mg/kg | 0.043 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Dinitrotoluene, 2,6- exp | 606-20-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Di-n-octyl phthalate | 117-84-0 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Di-n-octyl phthalate | 117-84-0 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Di-n-octyl phthalate | 117-84-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-octyl phthalate | 117-84-0 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Di-n-octyl phthalate | 117-84-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Di-n-octyl phthalate | 117-84-0 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Di-n-octyl phthalate | 117-84-0 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Di-n-octyl phthalate | 117-84-0 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Di-n-octyl phthalate | 117-84-0 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Di-n-octyl phthalate | 117-84-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Di-n-octyl phthalate | 117-84-0 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Di-n-octyl phthalate | 117-84-0 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Di-n-octyl phthalate | 117-84-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-octyl phthalate | 117-84-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Di-n-octyl phthalate | 117-84-0 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Di-n-octyl phthalate | 117-84-0 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Di-n-octyl phthalate | 117-84-0 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Di-n-octyl phthalate | 117-84-0 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Di-n-octyl phthalate | 117-84-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Di-n-octyl phthalate | 117-84-0 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Di-n-octyl phthalate | 117-84-0 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Di-n-octyl phthalate | 117-84-0 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Di-n-octyl phthalate | 117-84-0 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Di-n-octyl phthalate | 117-84-0 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Fluoranthene | 206-44-0 | 4.165 | mg/kg | 0.0565 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.28 |
| Fluoranthene | 206-44-0 | 0.351 | mg/kg | 0.04 | | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | | 0.2 |
| Fluoranthene | 206-44-0 | 0.0763 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Fluoranthene | 206-44-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Fluoranthene | 206-44-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Fluoranthene | 206-44-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Fluoranthene | 206-44-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.044 | mg/kg | 0.039 | J | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | J | 0.19 |
| Fluoranthene | 206-44-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Fluoranthene | 206-44-0 | 0.0909 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Fluoranthene | 206-44-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Fluoranthene | 206-44-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Fluoranthene | 206-44-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Fluoranthene | 206-44-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Fluoranthene | 206-44-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Fluoranthene | 206-44-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Fluoranthene | 206-44-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.117 | mg/kg | 0.039 | J | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.19 |
| Fluoranthene | 206-44-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Fluoranthene | 206-44-0 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluorene | 86-73-7 | 0.42435 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | J | 0.185 |
| Fluorene | 86-73-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Fluorene | 86-73-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Fluorene | 86-73-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Fluorene | 86-73-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Fluorene | 86-73-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Fluorene | 86-73-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Fluorene | 86-73-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Fluorene | 86-73-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Fluorene | 86-73-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Fluorene | 86-73-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Fluorene | 86-73-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Fluorene | 86-73-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Fluorene | 86-73-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Fluorene | 86-73-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Fluorene | 86-73-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Fluorene | 86-73-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Fluorene | 86-73-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Fluorene | 86-73-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Fluorene | 86-73-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Fluorene | 86-73-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachlorobenzene | 118-74-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Hexachlorobenzene | 118-74-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Hexachlorobenzene | 118-74-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Hexachlorobenzene | 118-74-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachlorobenzene | 118-74-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Hexachlorobenzene | 118-74-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Hexachlorobenzene | 118-74-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorobenzene | 118-74-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Hexachlorobenzene | 118-74-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Hexachlorobenzene | 118-74-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachlorobenzene | 118-74-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorobenzene | 118-74-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachlorobenzene | 118-74-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachlorobutadiene | 87-68-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Hexachlorobutadiene | 87-68-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexachlorobutadiene | 87-68-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Hexachlorobutadiene | 87-68-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachlorobutadiene | 87-68-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Hexachlorobutadiene | 87-68-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Hexachlorobutadiene | 87-68-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorobutadiene | 87-68-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Hexachlorobutadiene | 87-68-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Hexachlorobutadiene | 87-68-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachlorobutadiene | 87-68-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorobutadiene | 87-68-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachlorobutadiene | 87-68-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Hexachloroethane | 67-72-1 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Hexachloroethane | 67-72-1 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Hexachloroethane | 67-72-1 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Hexachloroethane | 67-72-1 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Hexachloroethane | 67-72-1 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Hexachloroethane | 67-72-1 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 67-72-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Hexachloroethane | 67-72-1 | 0.0455 | mg/kg | 0.0455 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Hexachloroethane | 67-72-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Hexachloroethane | 67-72-1 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachloroethane | 67-72-1 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Hexachloroethane | 67-72-1 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Hexachloroethane | 67-72-1 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Hexachloroethane | 67-72-1 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Hexachloroethane | 67-72-1 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Hexachloroethane | 67-72-1 | 0.0455 | mg/kg | 0.0455 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| HMX | 2691-41-0 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| HMX | 2691-41-0 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| HMX | 2691-41-0 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| HMX | 2691-41-0 | 0.082 | mg/kg | 0.082 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| HMX | 2691-41-0 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| HMX | 2691-41-0 | 0.066 | mg/kg | 0.066 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| HMX | 2691-41-0 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| HMX | 2691-41-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| HMX | 2691-41-0 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| HMX | 2691-41-0 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| HMX | 2691-41-0 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| HMX | 2691-41-0 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| HMX | 2691-41-0 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| HMX | 2691-41-0 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| HMX | 2691-41-0 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| HMX | 2691-41-0 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| HMX | 2691-41-0 | 0.0725 | mg/kg | 0.0725 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| HMX | 2691-41-0 | 0.066 | mg/kg | 0.066 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |
| HMX | 2691-41-0 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| HMX | 2691-41-0 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| HMX | 2691-41-0 | 0.066 | mg/kg | 0.066 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| HMX | 2691-41-0 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| HMX | 2691-41-0 | 0.06 | mg/kg | 0.06 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| HMX | 2691-41-0 | 0.07 | mg/kg | 0.07 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| HMX | 2691-41-0 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| HMX | 2691-41-0 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| HMX | 2691-41-0 | 0.0725 | mg/kg | 0.0725 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| HMX | 2691-41-0 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| HMX | 2691-41-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HMX | 2691-41-0 | 0.066 | mg/kg | 0.066 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| HMX | 2691-41-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| HMX | 2691-41-0 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| HMX | 2691-41-0 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| HMX | 2691-41-0 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| HMX | 2691-41-0 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| HMX | 2691-41-0 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| HMX | 2691-41-0 | 0.062 | mg/kg | 0.062 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.7755 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.0668 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.0386 | mg/kg | 0.038 | J/U | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JU | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Iron | 7439-89-6 | 7465 | mg/kg | 1.3 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 5.55 |
| Iron | 7439-89-6 | 5950 | mg/kg | 1.3 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 5.9 |
| Iron | 7439-89-6 | 12300 | mg/kg | 1.2 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 5.3 |
| Iron | 7439-89-6 | 4220 | mg/kg | 1.3 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 5.8 |
| Iron | 7439-89-6 | 10900 | mg/kg | 5.1 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 22 |
| Iron | 7439-89-6 | 6720 | mg/kg | 1.4 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 6.3 |
| Iron | 7439-89-6 | 11200 | mg/kg | 1.3 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.8 |
| Iron | 7439-89-6 | 23300 | mg/kg | 1.2 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 5.2 |
| Iron | 7439-89-6 | 9890 | mg/kg | 1.1 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 4.9 |
| Iron | 7439-89-6 | 22300 | mg/kg | 1.1 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 4.7 |
| Iron | 7439-89-6 | 8095 | mg/kg | 1.25 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 5.4 |
| Iron | 7439-89-6 | 4590 | mg/kg | 1.3 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 5.8 |
| Iron | 7439-89-6 | 9040 | mg/kg | 1.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.2 |
| Iron | 7439-89-6 | 16300 | mg/kg | 2.3 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 9.8 |
| Iron | 7439-89-6 | 11400 | mg/kg | 1.3 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 5.6 |
| Iron | 7439-89-6 | 8760 | mg/kg | 2.3 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 10 |
| Iron | 7439-89-6 | 18500 | mg/kg | 1.4 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 6.1 |
| Iron | 7439-89-6 | 45200 | mg/kg | 2.2 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 9.7 |
| Iron | 7439-89-6 | 15700 | mg/kg | 1.1 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 4.9 |
| Iron | 7439-89-6 | 24700 | mg/kg | 1.3 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 5.5 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 7439-89-6 | 5520 | mg/kg | 1.3 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 5.7 |
| Iron | 7439-89-6 | 10300 | mg/kg | 1.3 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 5.7 |
| Iron | 7439-89-6 | 27000 | mg/kg | 1.2 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 5.4 |
| Iron | 7439-89-6 | 19600 | mg/kg | 1.15 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 4.95 |
| Isophorone | 78-59-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Isophorone | 78-59-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Isophorone | 78-59-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Isophorone | 78-59-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Isophorone | 78-59-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Isophorone | 78-59-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Isophorone | 78-59-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Isophorone | 78-59-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Isophorone | 78-59-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Isophorone | 78-59-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Isophorone | 78-59-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Isophorone | 78-59-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Isophorone | 78-59-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Isophorone | 78-59-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Isophorone | 78-59-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Isophorone | 78-59-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Isophorone | 78-59-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Isophorone | 78-59-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Isophorone | 78-59-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Isophorone | 78-59-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Isophorone | 78-59-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Lead | 7439-92-1 | 6.55 | mg/kg | 0.17 | J | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | B | 8.2 |
| Lead | 7439-92-1 | 3.1 | mg/kg | 0.12 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 5.9 |
| Lead | 7439-92-1 | 7.7 | mg/kg | 0.11 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 5.3 |
| Lead | 7439-92-1 | 2.3 | mg/kg | 0.23 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 12 |
| Lead | 7439-92-1 | 4.3 | mg/kg | 0.45 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 22 |
| Lead | 7439-92-1 | 3.9 | mg/kg | 0.25 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | B | 13 |
| Lead | 7439-92-1 | 9.8 | mg/kg | 0.12 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.8 |
| Lead | 7439-92-1 | 17.7 | mg/kg | 0.1 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 5.2 |
| Lead | 7439-92-1 | 7.6 | mg/kg | 0.098 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 4.9 |
| Lead | 7439-92-1 | 11.6 | mg/kg | 0.19 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 9.3 |
| Lead | 7439-92-1 | 12.1 | mg/kg | 0.105 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 5.4 |
| Lead | 7439-92-1 | 3.2 | mg/kg | 0.23 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | B | 12 |
| Lead | 7439-92-1 | 7.2 | mg/kg | 0.1 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 5.2 |
| Lead | 7439-92-1 | 9.3 | mg/kg | 0.2 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | B | 9.8 |
| Lead | 7439-92-1 | 7.3 | mg/kg | 0.11 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 5.6 |
| Lead | 7439-92-1 | 7.1 | mg/kg | 0.2 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 10 |
| Lead | 7439-92-1 | 13.3 | mg/kg | 0.12 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 6.1 |
| Lead | 7439-92-1 | 15.8 | mg/kg | 0.19 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 9.7 |
| Lead | 7439-92-1 | 11.6 | mg/kg | 0.099 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 4.9 |
| Lead | 7439-92-1 | 15.2 | mg/kg | 0.11 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 5.5 |
| Lead | 7439-92-1 | 3.2 | mg/kg | 0.11 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 5.7 |
| Lead | 7439-92-1 | 6.3 | mg/kg | 0.23 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 11 |
| Lead | 7439-92-1 | 11.8 | mg/kg | 0.11 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 5.4 |
| Lead | 7439-92-1 | 11.55 | mg/kg | 0.1015 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 4.95 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 7439-95-4 | 3015 | mg/kg | 5.55 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 280 |
| Magnesium | 7439-95-4 | 7980 | mg/kg | 5.9 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 290 |
| Magnesium | 7439-95-4 | 728 | mg/kg | 5.3 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 260 |
| Magnesium | 7439-95-4 | 8870 | mg/kg | 5.8 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 290 |
| Magnesium | 7439-95-4 | 832 | mg/kg | 22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 1100 |
| Magnesium | 7439-95-4 | 13300 | mg/kg | 6.3 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 310 |
| Magnesium | 7439-95-4 | 1160 | mg/kg | 5.8 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 290 |
| Magnesium | 7439-95-4 | 8200 | mg/kg | 5.2 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 260 |
| Magnesium | 7439-95-4 | 1050 | mg/kg | 4.9 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 250 |
| Magnesium | 7439-95-4 | 7800 | mg/kg | 4.7 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 230 |
| Magnesium | 7439-95-4 | 695.5 | mg/kg | 5.4 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 270 |
| Magnesium | 7439-95-4 | 8240 | mg/kg | 5.8 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 290 |
| Magnesium | 7439-95-4 | 831 | mg/kg | 5.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 260 |
| Magnesium | 7439-95-4 | 1230 | mg/kg | 9.8 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 490 |
| Magnesium | 7439-95-4 | 533 | mg/kg | 5.6 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 280 |
| Magnesium | 7439-95-4 | 548 | mg/kg | 10 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 500 |
| Magnesium | 7439-95-4 | 544 | mg/kg | 6.1 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 310 |
| Magnesium | 7439-95-4 | 306 | mg/kg | 4.8 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 240 |
| Magnesium | 7439-95-4 | 574 | mg/kg | 4.9 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 250 |
| Magnesium | 7439-95-4 | 916 | mg/kg | 5.5 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 270 |
| Magnesium | 7439-95-4 | 4990 | mg/kg | 5.7 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 290 |
| Magnesium | 7439-95-4 | 8360 | mg/kg | 5.7 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 290 |
| Magnesium | 7439-95-4 | 715 | mg/kg | 5.4 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 270 |
| Magnesium | 7439-95-4 | 777.5 | mg/kg | 4.95 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 245 |
| Manganese | 7439-96-5 | 134.5 | mg/kg | 0.028 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 0.84 |
| Manganese | 7439-96-5 | 140 | mg/kg | 0.029 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.88 |
| Manganese | 7439-96-5 | 113 | mg/kg | 0.026 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 0.79 |
| Manganese | 7439-96-5 | 136 | mg/kg | 0.029 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.86 |
| Manganese | 7439-96-5 | 206 | mg/kg | 0.11 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 3.3 |
| Manganese | 7439-96-5 | 172 | mg/kg | 0.031 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 0.94 |
| Manganese | 7439-96-5 | 130 | mg/kg | 0.029 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.87 |
| Manganese | 7439-96-5 | 371 | mg/kg | 0.1 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 3.1 |
| Manganese | 7439-96-5 | 102 | mg/kg | 0.025 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.74 |
| Manganese | 7439-96-5 | 458 | mg/kg | 0.093 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 2.8 |
| Manganese | 7439-96-5 | 140.5 | mg/kg | 0.027 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 0.81 |
| Manganese | 7439-96-5 | 139 | mg/kg | 0.029 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 0.86 |
| Manganese | 7439-96-5 | 673 | mg/kg | 0.13 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 3.9 |
| Manganese | 7439-96-5 | 1040 | mg/kg | 0.25 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 7.4 |
| Manganese | 7439-96-5 | 114 | mg/kg | 0.028 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.85 |
| Manganese | 7439-96-5 | 48.7 | mg/kg | 0.05 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 1.5 |
| Manganese | 7439-96-5 | 24.1 | mg/kg | 0.031 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.92 |
| Manganese | 7439-96-5 | 10.1 | mg/kg | 0.048 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 1.5 |
| Manganese | 7439-96-5 | 79.8 | mg/kg | 0.025 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.74 |
| Manganese | 7439-96-5 | 58.7 | mg/kg | 0.027 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.82 |
| Manganese | 7439-96-5 | 138 | mg/kg | 0.029 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.86 |
| Manganese | 7439-96-5 | 184 | mg/kg | 0.029 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 0.86 |
| Manganese | 7439-96-5 | 94.8 | mg/kg | 0.027 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 0.81 |
| Manganese | 7439-96-5 | 93.6 | mg/kg | 0.0245 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 0.745 |
| Mercury | 7439-97-6 | 0.0255 | mg/kg | 0.0125 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 0.087 |
| Mercury | 7439-97-6 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.1 |
| Mercury | 7439-97-6 | 0.031 | mg/kg | 0.012 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 0.081 |
| Mercury | 7439-97-6 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.098 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 7439-97-6 | 0.022 | mg/kg | 0.013 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 0.09 |
| Mercury | 7439-97-6 | 0.015 | mg/kg | 0.015 | U | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | U | 0.11 |
| Mercury | 7439-97-6 | 0.035 | mg/kg | 0.014 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.097 |
| Mercury | 7439-97-6 | 0.013 | mg/kg | 0.013 | U | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | U | 0.091 |
| Mercury | 7439-97-6 | 0.037 | mg/kg | 0.012 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.086 |
| Mercury | 7439-97-6 | 0.013 | mg/kg | 0.013 | U | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | U | 0.091 |
| Mercury | 7439-97-6 | 0.042 | mg/kg | 0.0135 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | BB | 0.094 |
| Mercury | 7439-97-6 | 0.013 | mg/kg | 0.013 | U | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | U | 0.093 |
| Mercury | 7439-97-6 | 0.018 | mg/kg | 0.011 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 0.078 |
| Mercury | 7439-97-6 | 0.03 | mg/kg | 0.011 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | B | 0.077 |
| Mercury | 7439-97-6 | 0.041 | mg/kg | 0.014 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 0.096 |
| Mercury | 7439-97-6 | 0.038 | mg/kg | 0.014 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 0.1 |
| Mercury | 7439-97-6 | 0.034 | mg/kg | 0.015 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 0.1 |
| Mercury | 7439-97-6 | 0.05 | mg/kg | 0.012 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 0.086 |
| Mercury | 7439-97-6 | 0.078 | mg/kg | 0.012 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | B | 0.083 |
| Mercury | 7439-97-6 | 0.014 | mg/kg | 0.014 | U | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.1 |
| Mercury | 7439-97-6 | 0.018 | mg/kg | 0.014 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 0.096 |
| Mercury | 7439-97-6 | 0.034 | mg/kg | 0.014 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | B | 0.094 |
| Mercury | 7439-97-6 | 0.0425 | mg/kg | 0.0125 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | BB | 0.086 |
| Methylnaphthalene, 2- | 91-57-6 | 0.04285 | mg/kg | 0.0375 | J/U | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | JU | 0.185 |
| Methylnaphthalene, 2- | 91-57-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Methylnaphthalene, 2- | 91-57-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Methylnaphthalene, 2- | 91-57-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Methylnaphthalene, 2- | 91-57-6 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Methylnaphthalene, 2- | 91-57-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Methylnaphthalene, 2- | 91-57-6 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Methylnaphthalene, 2- | 91-57-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Methylnaphthalene, 2- | 91-57-6 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Methylnaphthalene, 2- | 91-57-6 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Methylnaphthalene, 2- | 91-57-6 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Methylnaphthalene, 2- | 91-57-6 | 0.259 | mg/kg | 0.038 | | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.0658 | mg/kg | 0.036 | J | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | J | 0.18 |
| Methylnaphthalene, 2- | 91-57-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Methylnaphthalene, 2- | 91-57-6 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Methylphenol, 2- | 95-48-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Methylphenol, 2- | 95-48-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Methylphenol, 2- | 95-48-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Methylphenol, 2- | 95-48-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Methylphenol, 2- | 95-48-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Methylphenol, 2- | 95-48-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Methylphenol, 2- | 95-48-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Methylphenol, 2- | 95-48-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Methylphenol, 2- | 95-48-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Methylphenol, 2- | 95-48-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Methylphenol, 2- | 95-48-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Methylphenol, 2- | 95-48-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Methylphenol, 2- | 95-48-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Methylphenol, 2- | 95-48-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Naphthalene | 91-20-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Naphthalene | 91-20-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Naphthalene | 91-20-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Naphthalene | 91-20-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Naphthalene | 91-20-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Naphthalene | 91-20-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Naphthalene | 91-20-3 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Naphthalene | 91-20-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Naphthalene | 91-20-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Naphthalene | 91-20-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Naphthalene | 91-20-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Naphthalene | 91-20-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Naphthalene | 91-20-3 | 0.0765 | mg/kg | 0.038 | J | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | J | 0.19 |
| Naphthalene | 91-20-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Naphthalene | 91-20-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Naphthalene | 91-20-3 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Nickel | 7440-02-0 | 5.05 | mg/kg | 0.13 | | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 2.25 |
| Nickel | 7440-02-0 | 8.2 | mg/kg | 0.13 | | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.3 |
| Nickel | 7440-02-0 | 9.2 | mg/kg | 0.12 | | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 2.1 |
| Nickel | 7440-02-0 | 5.1 | mg/kg | 0.13 | | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.3 |
| Nickel | 7440-02-0 | 7.6 | mg/kg | 0.51 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 8.9 |
| Nickel | 7440-02-0 | 7.7 | mg/kg | 0.14 | | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 2.5 |
| Nickel | 7440-02-0 | 16.2 | mg/kg | 0.13 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.3 |
| Nickel | 7440-02-0 | 34.4 | mg/kg | 0.12 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 2.1 |
| Nickel | 7440-02-0 | 9.9 | mg/kg | 0.11 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2 |
| Nickel | 7440-02-0 | 29 | mg/kg | 0.11 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 1.9 |
| Nickel | 7440-02-0 | 5.6 | mg/kg | 0.125 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 2.15 |
| Nickel | 7440-02-0 | 7.5 | mg/kg | 0.13 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 2.3 |
| Nickel | 7440-02-0 | 8.5 | mg/kg | 0.12 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.1 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nickel | 7440-02-0 | 19 | mg/kg | 0.23 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 3.9 |
| Nickel | 7440-02-0 | 14.8 | mg/kg | 0.13 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.3 |
| Nickel | 7440-02-0 | 17.8 | mg/kg | 0.23 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 4 |
| Nickel | 7440-02-0 | 14.5 | mg/kg | 0.14 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.5 |
| Nickel | 7440-02-0 | 12.7 | mg/kg | 0.11 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 1.9 |
| Nickel | 7440-02-0 | 17.4 | mg/kg | 0.11 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2 |
| Nickel | 7440-02-0 | 22.8 | mg/kg | 0.13 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 2.2 |
| Nickel | 7440-02-0 | 5.5 | mg/kg | 0.13 | | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.3 |
| Nickel | 7440-02-0 | 14.4 | mg/kg | 0.13 | | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.3 |
| Nickel | 7440-02-0 | 23.8 | mg/kg | 0.12 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 2.2 |
| Nickel | 7440-02-0 | 17.05 | mg/kg | 0.115 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 2 |
| Nitroaniline, 2- | 88-74-4 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Nitroaniline, 2- | 88-74-4 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Nitroaniline, 2- | 88-74-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 2- | 88-74-4 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Nitroaniline, 2- | 88-74-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 2- | 88-74-4 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Nitroaniline, 2- | 88-74-4 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Nitroaniline, 2- | 88-74-4 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 2- | 88-74-4 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Nitroaniline, 2- | 88-74-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Nitroaniline, 2- | 88-74-4 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Nitroaniline, 2- | 88-74-4 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Nitroaniline, 2- | 88-74-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 2- | 88-74-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Nitroaniline, 2- | 88-74-4 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Nitroaniline, 2- | 88-74-4 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Nitroaniline, 2- | 88-74-4 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Nitroaniline, 2- | 88-74-4 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Nitroaniline, 2- | 88-74-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 2- | 88-74-4 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Nitroaniline, 2- | 88-74-4 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 2- | 88-74-4 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 2- | 88-74-4 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Nitroaniline, 2- | 88-74-4 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Nitroaniline, 3- | 99-09-2 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Nitroaniline, 3- | 99-09-2 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Nitroaniline, 3- | 99-09-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 3- | 99-09-2 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Nitroaniline, 3- | 99-09-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 3- | 99-09-2 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Nitroaniline, 3- | 99-09-2 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Nitroaniline, 3- | 99-09-2 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 3- | 99-09-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Nitroaniline, 3- | 99-09-2 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Nitroaniline, 3- | 99-09-2 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Nitroaniline, 3- | 99-09-2 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Nitroaniline, 3- | 99-09-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 3- | 99-09-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Nitroaniline, 3- | 99-09-2 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Nitroaniline, 3- | 99-09-2 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Nitroaniline, 3- | 99-09-2 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitroaniline, 3- | 99-09-2 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Nitroaniline, 3- | 99-09-2 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 3- | 99-09-2 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Nitroaniline, 3- | 99-09-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 3- | 99-09-2 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 3- | 99-09-2 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Nitroaniline, 3- | 99-09-2 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Nitroaniline, 4- | 100-01-6 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.375 |
| Nitroaniline, 4- | 100-01-6 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Nitroaniline, 4- | 100-01-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 4- | 100-01-6 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.4 |
| Nitroaniline, 4- | 100-01-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.37 |
| Nitroaniline, 4- | 100-01-6 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.42 |
| Nitroaniline, 4- | 100-01-6 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.4 |
| Nitroaniline, 4- | 100-01-6 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 4- | 100-01-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.39 |
| Nitroaniline, 4- | 100-01-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.37 |
| Nitroaniline, 4- | 100-01-6 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.38 |
| Nitroaniline, 4- | 100-01-6 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.42 |
| Nitroaniline, 4- | 100-01-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 4- | 100-01-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.36 |
| Nitroaniline, 4- | 100-01-6 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.38 |
| Nitroaniline, 4- | 100-01-6 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.42 |
| Nitroaniline, 4- | 100-01-6 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.42 |
| Nitroaniline, 4- | 100-01-6 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.38 |
| Nitroaniline, 4- | 100-01-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.36 |
| Nitroaniline, 4- | 100-01-6 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Nitroaniline, 4- | 100-01-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 4- | 100-01-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.39 |
| Nitroaniline, 4- | 100-01-6 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.37 |
| Nitroaniline, 4- | 100-01-6 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.375 |
| Nitrobenzene | 98-95-3 | 0.046 | mg/kg | 0.046 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVESSEMIVOL | REGREG | 20-Aug-09 | 0 | 1 | UU | 0.175 |
| Nitrobenzene | 98-95-3 | 0.0465 | mg/kg | 0.0465 | UU | TNTB-SL-DP01 | DP0101DP010 | EXPLOSIVESSEMIVOL | FDFD | 20-Aug-09 | 0 | 1 | UU | 0.175 |
| Nitrobenzene | 98-95-3 | 0.056 | mg/kg | 0.056 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Nitrobenzene | 98-95-3 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Nitrobenzene | 98-95-3 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Nitrobenzene | 98-95-3 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Nitrobenzene | 98-95-3 | 0.061 | mg/kg | 0.061 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.0485 | mg/kg | 0.0485 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVESSEMIVOL | REGREG | 24-Aug-09 | 0 | 1 | UU | 0.185 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrobenzene | 98-95-3 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP06 | DP0113DP011 | EXPLOSIVESSEMIVOL | FDFD | 24-Aug-09 | 0 | 1 | UU | 0.175 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Nitrobenzene | 98-95-3 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.059 | mg/kg | 0.059 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Nitrobenzene | 98-95-3 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Nitrobenzene | 98-95-3 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.056 | mg/kg | 0.056 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Nitrobenzene | 98-95-3 | 0.048 | mg/kg | 0.048 | UU | TNTB-SL-DP14 | DP0127DP012 | SEMIVOLATILES | REGREG | 25-Aug-09 | 2 | 3.5 | UU | 0.185 |
| Nitrobenzene | 98-95-3 | 0.045 | mg/kg | 0.045 | UU | TNTB-SL-DP14 | DP0130DP013 | SEMIVOLATILES | FDFD | 25-Aug-09 | 2 | 3.5 | UU | 0.175 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Nitrobenzene | 98-95-3 | 0.0535 | mg/kg | 0.0535 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.056 | mg/kg | 0.056 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.0555 | mg/kg | 0.0555 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Nitrobenzene | 98-95-3 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Nitrobenzene | 98-95-3 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrobenzene | 98-95-3 | 0.061 | mg/kg | 0.061 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Nitrobenzene | 98-95-3 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrobenzene | 98-95-3 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Nitrophenol, 2- | 88-75-5 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Nitrophenol, 2- | 88-75-5 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Nitrophenol, 2- | 88-75-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Nitrophenol, 2- | 88-75-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrophenol, 2- | 88-75-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Nitrophenol, 2- | 88-75-5 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Nitrophenol, 2- | 88-75-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Nitrophenol, 2- | 88-75-5 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Nitrophenol, 2- | 88-75-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrophenol, 2- | 88-75-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Nitrophenol, 2- | 88-75-5 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Nitrophenol, 2- | 88-75-5 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Nitrophenol, 2- | 88-75-5 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Nitrophenol, 2- | 88-75-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Nitrophenol, 2- | 88-75-5 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Nitrophenol, 4- | 100-02-7 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Nitrophenol, 4- | 100-02-7 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |
| Nitrophenol, 4- | 100-02-7 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Nitrophenol, 4- | 100-02-7 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |
| Nitrophenol, 4- | 100-02-7 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Nitrophenol, 4- | 100-02-7 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 1.1 |
| Nitrophenol, 4- | 100-02-7 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Nitrophenol, 4- | 100-02-7 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.97 |
| Nitrophenol, 4- | 100-02-7 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |
| Nitrophenol, 4- | 100-02-7 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.92 |
| Nitrophenol, 4- | 100-02-7 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Nitrophenol, 4- | 100-02-7 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 1 |
| Nitrophenol, 4- | 100-02-7 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Nitrophenol, 4- | 100-02-7 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.89 |
| Nitrophenol, 4- | 100-02-7 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Nitrophenol, 4- | 100-02-7 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 1 |
| Nitrophenol, 4- | 100-02-7 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Nitrophenol, 4- | 100-02-7 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.95 |
| Nitrophenol, 4- | 100-02-7 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Nitrophenol, 4- | 100-02-7 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.94 |
| Nitrophenol, 4- | 100-02-7 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Nitrophenol, 4- | 100-02-7 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Nitrophenol, 4- | 100-02-7 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.93 |
| Nitrophenol, 4- | 100-02-7 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.95 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrotoluene, 2- | 88-72-2 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.035 | mg/kg | 0.035 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Nitrotoluene, 2- | 88-72-2 | 0.0405 | mg/kg | 0.0405 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Nitrotoluene, 2- | 88-72-2 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 2- | 88-72-2 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Nitrotoluene, 2- | 88-72-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 2- | 88-72-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Nitrotoluene, 3- | 99-08-1 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrotoluene, 3- | 99-08-1 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.071 | mg/kg | 0.071 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.062 | mg/kg | 0.062 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.0705 | mg/kg | 0.0705 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.066 | mg/kg | 0.066 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.059 | mg/kg | 0.059 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Nitrotoluene, 3- | 99-08-1 | 0.068 | mg/kg | 0.068 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.071 | mg/kg | 0.071 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Nitrotoluene, 3- | 99-08-1 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 3- | 99-08-1 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Nitrotoluene, 3- | 99-08-1 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 3- | 99-08-1 | 0.06 | mg/kg | 0.06 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Nitrotoluene, 4- | 99-99-0 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.059 | mg/kg | 0.059 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Nitrotoluene, 4- | 99-99-0 | 0.058 | mg/kg | 0.058 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.0525 | mg/kg | 0.0525 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.055 | mg/kg | 0.055 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.051 | mg/kg | 0.051 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.0525 | mg/kg | 0.0525 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrotoluene, 4- | 99-99-0 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Nitrotoluene, 4- | 99-99-0 | 0.05 | mg/kg | 0.05 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.0525 | mg/kg | 0.0525 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.052 | mg/kg | 0.052 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.053 | mg/kg | 0.053 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Nitrotoluene, 4- | 99-99-0 | 0.054 | mg/kg | 0.054 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Nitrotoluene, 4- | 99-99-0 | 0.057 | mg/kg | 0.057 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Nitrotoluene, 4- | 99-99-0 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Nitrotoluene, 4- | 99-99-0 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.075 | mg/kg | 0.075 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.08 | mg/kg | 0.08 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.085 | mg/kg | 0.085 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n-Nitrosodiphenylamine | 86-30-6 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.0765 | mg/kg | 0.0765 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.083 | mg/kg | 0.083 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.077 | mg/kg | 0.077 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.084 | mg/kg | 0.084 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| n-Nitrosodiphenylamine | 86-30-6 | 0.076 | mg/kg | 0.076 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Pentachlorophenol | 87-86-5 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.935 |
| Pentachlorophenol | 87-86-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |
| Pentachlorophenol | 87-86-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.93 |
| Pentachlorophenol | 87-86-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 1 |
| Pentachlorophenol | 87-86-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.93 |
| Pentachlorophenol | 87-86-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 1.1 |
| Pentachlorophenol | 87-86-5 | 0.4 | mg/kg | 0.4 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.99 |
| Pentachlorophenol | 87-86-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.97 |
| Pentachlorophenol | 87-86-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.97 |
| Pentachlorophenol | 87-86-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.92 |
| Pentachlorophenol | 87-86-5 | 0.38 | mg/kg | 0.38 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.95 |
| Pentachlorophenol | 87-86-5 | 0.42 | mg/kg | 0.42 | UJ | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 1 |
| Pentachlorophenol | 87-86-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.9 |
| Pentachlorophenol | 87-86-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.89 |
| Pentachlorophenol | 87-86-5 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.96 |
| Pentachlorophenol | 87-86-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 1 |
| Pentachlorophenol | 87-86-5 | 0.42 | mg/kg | 0.42 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 1.1 |
| Pentachlorophenol | 87-86-5 | 0.38 | mg/kg | 0.38 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.95 |
| Pentachlorophenol | 87-86-5 | 0.36 | mg/kg | 0.36 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.9 |
| Pentachlorophenol | 87-86-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.94 |
| Pentachlorophenol | 87-86-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Pentachlorophenol | 87-86-5 | 0.39 | mg/kg | 0.39 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.97 |
| Pentachlorophenol | 87-86-5 | 0.37 | mg/kg | 0.37 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.93 |
| Pentachlorophenol | 87-86-5 | 0.375 | mg/kg | 0.375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.95 |
| Phenanthrene | 85-01-8 | 3.2265 | mg/kg | 0.0565 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.28 |
| Phenanthrene | 85-01-8 | 0.105 | mg/kg | 0.04 | J | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.2 |
| Phenanthrene | 85-01-8 | 0.0504 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Phenanthrene | 85-01-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Phenanthrene | 85-01-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Phenanthrene | 85-01-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Phenanthrene | 85-01-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.0424 | mg/kg | 0.037 | J | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | J | 0.18 |
| Phenanthrene | 85-01-8 | 0.0392 | mg/kg | 0.038 | J/U | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JU | 0.19 |
| Phenanthrene | 85-01-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Phenanthrene | 85-01-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenanthrene | 85-01-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Phenanthrene | 85-01-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Phenanthrene | 85-01-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Phenanthrene | 85-01-8 | 0.124 | mg/kg | 0.038 | J | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | J | 0.19 |
| Phenanthrene | 85-01-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Phenanthrene | 85-01-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.132 | mg/kg | 0.039 | J | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.19 |
| Phenanthrene | 85-01-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Phenanthrene | 85-01-8 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Phenol | 108-95-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Phenol | 108-95-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Phenol | 108-95-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Phenol | 108-95-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Phenol | 108-95-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Phenol | 108-95-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Phenol | 108-95-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Phenol | 108-95-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Phenol | 108-95-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Phenol | 108-95-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Phenol | 108-95-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Phenol | 108-95-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Phenol | 108-95-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Phenol | 108-95-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Phenol | 108-95-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Phenol | 108-95-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Phenol | 108-95-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Phenol | 108-95-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Phenol | 108-95-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Phenol | 108-95-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Phenol | 108-95-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Potassium | 7440-09-7 | 392 | mg/kg | 5.55 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 555 |
| Potassium | 7440-09-7 | 861 | mg/kg | 5.9 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 590 |
| Potassium | 7440-09-7 | 420 | mg/kg | 5.3 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 530 |
| Potassium | 7440-09-7 | 523 | mg/kg | 5.8 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 580 |
| Potassium | 7440-09-7 | 382 | mg/kg | 22 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | B | 2200 |
| Potassium | 7440-09-7 | 999 | mg/kg | 6.3 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 630 |
| Potassium | 7440-09-7 | 549 | mg/kg | 5.8 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 580 |
| Potassium | 7440-09-7 | 1790 | mg/kg | 5.2 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 520 |
| Potassium | 7440-09-7 | 421 | mg/kg | 4.9 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 490 |
| Potassium | 7440-09-7 | 1980 | mg/kg | 4.7 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 470 |
| Potassium | 7440-09-7 | 350.5 | mg/kg | 5.4 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | BB | 540 |
| Potassium | 7440-09-7 | 678 | mg/kg | 5.8 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 580 |
| Potassium | 7440-09-7 | 242 | mg/kg | 5.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 520 |
| Potassium | 7440-09-7 | 349 | mg/kg | 9.8 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | B | 980 |
| Potassium | 7440-09-7 | 225 | mg/kg | 5.6 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 560 |
| Potassium | 7440-09-7 | 165 | mg/kg | 10 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 1000 |
| Potassium | 7440-09-7 | 462 | mg/kg | 6.1 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 610 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 7440-09-7 | 720 | mg/kg | 4.8 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 480 |
| Potassium | 7440-09-7 | 414 | mg/kg | 4.9 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 490 |
| Potassium | 7440-09-7 | 740 | mg/kg | 5.5 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 550 |
| Potassium | 7440-09-7 | 515 | mg/kg | 5.7 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 570 |
| Potassium | 7440-09-7 | 1380 | mg/kg | 5.7 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 570 |
| Potassium | 7440-09-7 | 601 | mg/kg | 5.4 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 540 |
| Potassium | 7440-09-7 | 566.5 | mg/kg | 4.95 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 495 |
| Pyrene | 129-00-0 | 2.84 | mg/kg | 0.0375 | JJ | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | | 0.185 |
| Pyrene | 129-00-0 | 0.257 | mg/kg | 0.04 | | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | | 0.2 |
| Pyrene | 129-00-0 | 0.0569 | mg/kg | 0.037 | J | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | J | 0.19 |
| Pyrene | 129-00-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Pyrene | 129-00-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Pyrene | 129-00-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Pyrene | 129-00-0 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Pyrene | 129-00-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Pyrene | 129-00-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Pyrene | 129-00-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Pyrene | 129-00-0 | 0.0695 | mg/kg | 0.038 | JJ | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | JJ | 0.19 |
| Pyrene | 129-00-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Pyrene | 129-00-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Pyrene | 129-00-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Pyrene | 129-00-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Pyrene | 129-00-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Pyrene | 129-00-0 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Pyrene | 129-00-0 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Pyrene | 129-00-0 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Pyrene | 129-00-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Pyrene | 129-00-0 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Pyrene | 129-00-0 | 0.0757 | mg/kg | 0.039 | J | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | J | 0.19 |
| Pyrene | 129-00-0 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Pyrene | 129-00-0 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| RDX | 121-82-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| RDX | 121-82-4 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| RDX | 121-82-4 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| RDX | 121-82-4 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| RDX | 121-82-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| RDX | 121-82-4 | 0.081 | mg/kg | 0.081 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| RDX | 121-82-4 | 0.079 | mg/kg | 0.079 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| RDX | 121-82-4 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| RDX | 121-82-4 | 0.072 | mg/kg | 0.072 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| RDX | 121-82-4 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| RDX | 121-82-4 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| RDX | 121-82-4 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| RDX | 121-82-4 | 0.068 | mg/kg | 0.068 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| RDX | 121-82-4 | 0.076 | mg/kg | 0.076 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| RDX | 121-82-4 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| RDX | 121-82-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| RDX | 121-82-4 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RDX | 121-82-4 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| RDX | 121-82-4 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| RDX | 121-82-4 | 0.0715 | mg/kg | 0.0715 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| RDX | 121-82-4 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |
| RDX | 121-82-4 | 0.066 | mg/kg | 0.066 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| RDX | 121-82-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| RDX | 121-82-4 | 0.066 | mg/kg | 0.066 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| RDX | 121-82-4 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| RDX | 121-82-4 | 0.059 | mg/kg | 0.059 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| RDX | 121-82-4 | 0.069 | mg/kg | 0.069 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| RDX | 121-82-4 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| RDX | 121-82-4 | 0.072 | mg/kg | 0.072 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| RDX | 121-82-4 | 0.0715 | mg/kg | 0.0715 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| RDX | 121-82-4 | 0.071 | mg/kg | 0.071 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| RDX | 121-82-4 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| RDX | 121-82-4 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| RDX | 121-82-4 | 0.073 | mg/kg | 0.073 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| RDX | 121-82-4 | 0.064 | mg/kg | 0.064 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| RDX | 121-82-4 | 0.067 | mg/kg | 0.067 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| RDX | 121-82-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| RDX | 121-82-4 | 0.078 | mg/kg | 0.078 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| RDX | 121-82-4 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| RDX | 121-82-4 | 0.061 | mg/kg | 0.061 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Selenium | 7782-49-2 | 0.63 | mg/kg | 0.26 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 8.2 |
| Selenium | 7782-49-2 | 0.51 | mg/kg | 0.18 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 5.9 |
| Selenium | 7782-49-2 | 0.68 | mg/kg | 0.16 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 5.3 |
| Selenium | 7782-49-2 | 0.67 | mg/kg | 0.36 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 12 |
| Selenium | 7782-49-2 | 0.69 | mg/kg | 0.69 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 22 |
| Selenium | 7782-49-2 | 0.59 | mg/kg | 0.39 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | B | 13 |
| Selenium | 7782-49-2 | 0.39 | mg/kg | 0.18 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 5.8 |
| Selenium | 7782-49-2 | 0.16 | mg/kg | 0.16 | UJ | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | U | 5.2 |
| Selenium | 7782-49-2 | 0.28 | mg/kg | 0.15 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | B | 4.9 |
| Selenium | 7782-49-2 | 0.29 | mg/kg | 0.29 | UJ | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | U | 9.3 |
| Selenium | 7782-49-2 | 0.255 | mg/kg | 0.165 | UJ/J | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UB | 5.4 |
| Selenium | 7782-49-2 | 0.36 | mg/kg | 0.36 | UJ | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | U | 12 |
| Selenium | 7782-49-2 | 0.16 | mg/kg | 0.16 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 5.2 |
| Selenium | 7782-49-2 | 0.3 | mg/kg | 0.3 | UJ | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | U | 9.8 |
| Selenium | 7782-49-2 | 0.27 | mg/kg | 0.18 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 5.6 |
| Selenium | 7782-49-2 | 0.32 | mg/kg | 0.31 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 10 |
| Selenium | 7782-49-2 | 0.61 | mg/kg | 0.19 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 6.1 |
| Selenium | 7782-49-2 | 2.3 | mg/kg | 0.3 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 9.7 |
| Selenium | 7782-49-2 | 0.49 | mg/kg | 0.15 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | B | 4.9 |
| Selenium | 7782-49-2 | 0.4 | mg/kg | 0.17 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | B | 5.5 |
| Selenium | 7782-49-2 | 0.49 | mg/kg | 0.18 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 5.7 |
| Selenium | 7782-49-2 | 0.46 | mg/kg | 0.35 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 11 |
| Selenium | 7782-49-2 | 0.39 | mg/kg | 0.17 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | B | 5.4 |
| Selenium | 7782-49-2 | 0.25 | mg/kg | 0.15 | UJ/J | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | UB | 4.95 |
| Silver | 7440-22-4 | 0.067 | mg/kg | 0.067 | UU | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.555 |
| Silver | 7440-22-4 | 0.07 | mg/kg | 0.07 | U | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.59 |
| Silver | 7440-22-4 | 0.063 | mg/kg | 0.063 | U | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | U | 0.53 |
| Silver | 7440-22-4 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.58 |
| Silver | 7440-22-4 | 0.27 | mg/kg | 0.27 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 2.2 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Silver | 7440-22-4 | 0.075 | mg/kg | 0.075 | U | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | U | 0.63 |
| Silver | 7440-22-4 | 0.069 | mg/kg | 0.069 | UJ | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.58 |
| Silver | 7440-22-4 | 0.063 | mg/kg | 0.063 | UJ | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | U | 0.52 |
| Silver | 7440-22-4 | 0.059 | mg/kg | 0.059 | UJ | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.49 |
| Silver | 7440-22-4 | 0.056 | mg/kg | 0.056 | UJ | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | U | 0.47 |
| Silver | 7440-22-4 | 0.065 | mg/kg | 0.065 | UJUJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.54 |
| Silver | 7440-22-4 | 0.069 | mg/kg | 0.069 | UJ | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | U | 0.58 |
| Silver | 7440-22-4 | 0.062 | mg/kg | 0.062 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.52 |
| Silver | 7440-22-4 | 0.12 | mg/kg | 0.12 | UJ | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | U | 0.98 |
| Silver | 7440-22-4 | 0.068 | mg/kg | 0.068 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.56 |
| Silver | 7440-22-4 | 0.12 | mg/kg | 0.12 | UJ | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 1 |
| Silver | 7440-22-4 | 0.074 | mg/kg | 0.074 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.61 |
| Silver | 7440-22-4 | 0.11 | mg/kg | 0.058 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | B | 0.48 |
| Silver | 7440-22-4 | 0.059 | mg/kg | 0.059 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.49 |
| Silver | 7440-22-4 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 0.55 |
| Silver | 7440-22-4 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.57 |
| Silver | 7440-22-4 | 0.069 | mg/kg | 0.069 | U | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.57 |
| Silver | 7440-22-4 | 0.065 | mg/kg | 0.065 | U | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 0.54 |
| Silver | 7440-22-4 | 0.06 | mg/kg | 0.06 | UU | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.495 |
| Sodium | 7440-23-5 | 150.5 | mg/kg | 28 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | BB | 555 |
| Sodium | 7440-23-5 | 195 | mg/kg | 29 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 590 |
| Sodium | 7440-23-5 | 155 | mg/kg | 26 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 530 |
| Sodium | 7440-23-5 | 254 | mg/kg | 29 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 580 |
| Sodium | 7440-23-5 | 110 | mg/kg | 110 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 2200 |
| Sodium | 7440-23-5 | 227 | mg/kg | 31 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | B | 630 |
| Sodium | 7440-23-5 | 29 | mg/kg | 29 | U | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 580 |
| Sodium | 7440-23-5 | 125 | mg/kg | 26 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | B | 520 |
| Sodium | 7440-23-5 | 25 | mg/kg | 25 | U | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 490 |
| Sodium | 7440-23-5 | 166 | mg/kg | 23 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | B | 470 |
| Sodium | 7440-23-5 | 27 | mg/kg | 27 | UU | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 540 |
| Sodium | 7440-23-5 | 119 | mg/kg | 29 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | B | 580 |
| Sodium | 7440-23-5 | 26 | mg/kg | 26 | U | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 520 |
| Sodium | 7440-23-5 | 49 | mg/kg | 49 | U | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | U | 980 |
| Sodium | 7440-23-5 | 28 | mg/kg | 28 | U | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 560 |
| Sodium | 7440-23-5 | 50 | mg/kg | 50 | U | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 1000 |
| Sodium | 7440-23-5 | 31 | mg/kg | 31 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 610 |
| Sodium | 7440-23-5 | 24 | mg/kg | 24 | U | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 480 |
| Sodium | 7440-23-5 | 25 | mg/kg | 25 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 490 |
| Sodium | 7440-23-5 | 27 | mg/kg | 27 | U | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 550 |
| Sodium | 7440-23-5 | 234 | mg/kg | 29 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 570 |
| Sodium | 7440-23-5 | 225 | mg/kg | 29 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | B | 570 |
| Sodium | 7440-23-5 | 27 | mg/kg | 27 | U | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 540 |
| Sodium | 7440-23-5 | 24.5 | mg/kg | 24.5 | UU | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 495 |
| Tetryl | 479-45-8 | 0.0425 | mg/kg | 0.0425 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Tetryl | 479-45-8 | 0.049 | mg/kg | 0.049 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Tetryl | 479-45-8 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetryl | 479-45-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Tetryl | 479-45-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Tetryl | 479-45-8 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.17 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Tetryl | 479-45-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Tetryl | 479-45-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Tetryl | 479-45-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.15 |
| Tetryl | 479-45-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Tetryl | 479-45-8 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Tetryl | 479-45-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Tetryl | 479-45-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Tetryl | 479-45-8 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Tetryl | 479-45-8 | 0.041 | mg/kg | 0.041 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Tetryl | 479-45-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Tetryl | 479-45-8 | 0.043 | mg/kg | 0.043 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Tetryl | 479-45-8 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Tetryl | 479-45-8 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Tetryl | 479-45-8 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Tetryl | 479-45-8 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Tetryl | 479-45-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Tetryl | 479-45-8 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Tetryl | 479-45-8 | 0.044 | mg/kg | 0.044 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Tetryl | 479-45-8 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Tetryl | 479-45-8 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Tetryl | 479-45-8 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Thallium | 7440-28-0 | 0.57 | mg/kg | 0.57 | UU | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | UU | 1.42 |
| Thallium | 7440-28-0 | 0.2 | mg/kg | 0.2 | U | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.59 |
| Thallium | 7440-28-0 | 0.24 | mg/kg | 0.18 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | B | 0.53 |
| Thallium | 7440-28-0 | 0.8 | mg/kg | 0.8 | U | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 2.3 |
| Thallium | 7440-28-0 | 0.76 | mg/kg | 0.76 | U | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | U | 2.2 |
| Thallium | 7440-28-0 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | U | 0.63 |
| Thallium | 7440-28-0 | 0.2 | mg/kg | 0.2 | UJ | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 0.58 |
| Thallium | 7440-28-0 | 0.42 | mg/kg | 0.18 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | B | 0.52 |
| Thallium | 7440-28-0 | 0.85 | mg/kg | 0.85 | UJ | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 2 |
| Thallium | 7440-28-0 | 0.51 | mg/kg | 0.16 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.47 |
| Thallium | 7440-28-0 | 3.7 | mg/kg | 3.7 | UJUJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | UU | 5.4 |
| Thallium | 7440-28-0 | 2 | mg/kg | 2 | UJ | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | U | 5.8 |
| Thallium | 7440-28-0 | 0.9 | mg/kg | 0.9 | UJ | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | U | 2.1 |
| Thallium | 7440-28-0 | 0.33 | mg/kg | 0.33 | UJ | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | U | 0.98 |
| Thallium | 7440-28-0 | 3.8 | mg/kg | 3.8 | UJ | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 5.6 |
| Thallium | 7440-28-0 | 3.4 | mg/kg | 3.4 | UJ | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 5 |
| Thallium | 7440-28-0 | 0.21 | mg/kg | 0.21 | U | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 0.61 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 7440-28-0 | 1.7 | mg/kg | 1.7 | U | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | U | 3.9 |
| Thallium | 7440-28-0 | 1.7 | mg/kg | 1.7 | U | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | U | 2 |
| Thallium | 7440-28-0 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 0.55 |
| Thallium | 7440-28-0 | 1.9 | mg/kg | 1.9 | U | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 2.9 |
| Thallium | 7440-28-0 | 0.19 | mg/kg | 0.19 | U | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | U | 0.57 |
| Thallium | 7440-28-0 | 0.18 | mg/kg | 0.18 | U | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | U | 0.54 |
| Thallium | 7440-28-0 | 0.53 | mg/kg | 0.53 | UU | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 1.28 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP01 | DP0100DP010 | SEMIVOLATILES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.185 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP01 | DP0103 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP02 | DP0104 | SEMIVOLATILES | REG | 20-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP02 | DP0105 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.2 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP03 | DP0106 | SEMIVOLATILES | REG | 21-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP03 | DP0107 | SEMIVOLATILES | REG | 21-Aug-09 | 8 | 10 | U | 0.21 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP04 | DP0108 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.2 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP04 | DP0109 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP05 | DP0110 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP05 | DP0111 | SEMIVOLATILES | REG | 24-Aug-09 | 8 | 10 | U | 0.18 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.038 | mg/kg | 0.038 | UU | TNTB-SL-DP06 | DP0112DP011 | SEMIVOLATILES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP06 | DP0115 | SEMIVOLATILES | REG | 24-Aug-09 | 9 | 10 | U | 0.21 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0116 | SEMIVOLATILES | REG | 24-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP07 | DP0117 | SEMIVOLATILES | REG | 24-Aug-09 | 4 | 6 | U | 0.18 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP08 | DP0118 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP08 | DP0119 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.21 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.21 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP09 | DP0121 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 4 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-DP10 | DP0122 | SEMIVOLATILES | REG | 25-Aug-09 | 0 | 1 | U | 0.18 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP10 | DP0123 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP11 | DP0124 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-DP12 | DP0125 | SEMIVOLATILES | REG | 20-Aug-09 | 8 | 10 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP13 | DP0126 | SEMIVOLATILES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.19 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.0375 | mg/kg | 0.0375 | UU | TNTB-SL-DP14 | DP0127DP013 | SEMIVOLATILES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.19 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.0534 | mg/kg | 0.041 | J | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | J | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.101 | mg/kg | 0.041 | J | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | J | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.0739 | mg/kg | 0.038 | J | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | J | 0.15 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.035 | mg/kg | 0.035 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.0405 | mg/kg | 0.0405 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.036 | mg/kg | 0.036 | U | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.14 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP01 | DP0100DP010 | EXPLOSIVES | REGFD | 20-Aug-09 | 0 | 1 | UU | 0.165 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP01 | DP0103 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0104 | EXPLOSIVES | REG | 20-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.041 | mg/kg | 0.041 | U | TNTB-SL-DP02 | DP0105 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP03 | DP0106 | EXPLOSIVES | REG | 21-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.192 | mg/kg | 0.043 | | TNTB-SL-DP03 | DP0107 | EXPLOSIVES | REG | 21-Aug-09 | 8 | 10 | | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.048 | mg/kg | 0.048 | U | TNTB-SL-DP04 | DP0108 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.19 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.047 | mg/kg | 0.047 | U | TNTB-SL-DP04 | DP0109 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.19 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-DP05 | DP0110 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP05 | DP0111 | EXPLOSIVES | REG | 24-Aug-09 | 8 | 10 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP06 | DP0112DP011 | EXPLOSIVES | REGFD | 24-Aug-09 | 0 | 1 | UU | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP06 | DP0115 | EXPLOSIVES | REG | 24-Aug-09 | 9 | 10 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-DP07 | DP0116 | EXPLOSIVES | REG | 24-Aug-09 | 0 | 1 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP07 | DP0117 | EXPLOSIVES | REG | 24-Aug-09 | 4 | 6 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP08 | DP0118 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.045 | mg/kg | 0.045 | U | TNTB-SL-DP08 | DP0119 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | U | 0.18 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.179 | mg/kg | 0.042 | | TNTB-SL-DP09 | DP0120 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 1.02 | mg/kg | 0.041 | | TNTB-SL-DP09 | DP0121 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 4 | | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.908 | mg/kg | 0.041 | | TNTB-SL-DP10 | DP0122 | EXPLOSIVES | REG | 25-Aug-09 | 0 | 1 | | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.065 | mg/kg | 0.042 | J | TNTB-SL-DP10 | DP0123 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | J | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-DP11 | DP0124 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.037 | mg/kg | 0.037 | U | TNTB-SL-DP12 | DP0125 | EXPLOSIVES | REG | 20-Aug-09 | 8 | 10 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-DP13 | DP0126 | EXPLOSIVES | REG | 25-Aug-09 | 2 | 3.5 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-DP14 | DP0127DP013 | EXPLOSIVES | REGFD | 25-Aug-09 | 2 | 3.5 | UU | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 3.65 | mg/kg | 0.038 | | TNTB-SL-TP01 | SL0085 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP02 | SL0086 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.064 | mg/kg | 0.043 | J | TNTB-SL-TP03 | SL0087 | EXPLOSIVES | REG | 28-Jul-09 | 2 | 3 | J | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.039 | mg/kg | 0.039 | U | TNTB-SL-TP04 | SL0088 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP05 | SL0089 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.035 | mg/kg | 0.035 | U | TNTB-SL-TP06 | SL0090 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.14 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.0405 | mg/kg | 0.0405 | UU | TNTB-SL-TP07 | SL0091SL0092 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP08 | SL0094 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP09 | SL0095 | EXPLOSIVES | REG | 29-Jul-09 | 2 | 3 | U | 0.17 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | UU | TNTB-SL-TP10 | SL0096SL0097 | EXPLOSIVES | AVGD | 29-Jul-09 | 2 | 3 | UU | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.042 | mg/kg | 0.042 | U | TNTB-SL-TP11 | SL0099 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP12 | SL0100 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP13 | SL0101 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP14 | SL0102 | EXPLOSIVES | REG | 29-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.038 | mg/kg | 0.038 | U | TNTB-SL-TP15 | SL0103 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.04 | mg/kg | 0.04 | U | TNTB-SL-TP16 | SL0104 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.16 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.043 | mg/kg | 0.043 | U | TNTB-SL-TP17 | SL0105 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.17 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.046 | mg/kg | 0.046 | U | TNTB-SL-TP18 | SL0106 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.18 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.15 | mg/kg | 0.15 | U | TNTB-SL-TP19 | SL0107 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | U | 0.15 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.0991 | mg/kg | 0.036 | J | TNTB-SL-TP20 | SL0108 | EXPLOSIVES | REG | 30-Jul-09 | 1.5 | 2 | J | 0.14 |
| Vanadium | 7440-62-2 | 14.1 | mg/kg | 0.037 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 2.8 |
| Vanadium | 7440-62-2 | 10.5 | mg/kg | 0.039 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.9 |
| Vanadium | 7440-62-2 | 16.7 | mg/kg | 0.035 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 2.6 |
| Vanadium | 7440-62-2 | 7.9 | mg/kg | 0.038 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.9 |
| Vanadium | 7440-62-2 | 19.1 | mg/kg | 0.15 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 11 |
| Vanadium | 7440-62-2 | 10.1 | mg/kg | 0.041 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 3.1 |
| Vanadium | 7440-62-2 | 16.4 | mg/kg | 0.038 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.9 |
| Vanadium | 7440-62-2 | 14.1 | mg/kg | 0.034 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 2.6 |
| Vanadium | 7440-62-2 | 15.4 | mg/kg | 0.032 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.5 |
| Vanadium | 7440-62-2 | 12.3 | mg/kg | 0.031 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 2.3 |
| Vanadium | 7440-62-2 | 13.35 | mg/kg | 0.0355 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 2.7 |
| Vanadium | 7440-62-2 | 6.4 | mg/kg | 0.038 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 2.9 |
| Vanadium | 7440-62-2 | 7.8 | mg/kg | 0.034 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 2.6 |
| Vanadium | 7440-62-2 | 11.4 | mg/kg | 0.065 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 4.9 |
| Vanadium | 7440-62-2 | 17.4 | mg/kg | 0.037 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.8 |
| Vanadium | 7440-62-2 | 15.6 | mg/kg | 0.066 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 5 |
| Vanadium | 7440-62-2 | 24.2 | mg/kg | 0.04 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 3.1 |
| Vanadium | 7440-62-2 | 25.5 | mg/kg | 0.064 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 4.8 |
| Vanadium | 7440-62-2 | 19.4 | mg/kg | 0.033 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 2.5 |
| Vanadium | 7440-62-2 | 22.9 | mg/kg | 0.036 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 2.7 |
| Vanadium | 7440-62-2 | 11.3 | mg/kg | 0.038 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.9 |
| Vanadium | 7440-62-2 | 10 | mg/kg | 0.038 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 2.9 |
| Vanadium | 7440-62-2 | 27.5 | mg/kg | 0.036 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 2.7 |
| Vanadium | 7440-62-2 | 20.75 | mg/kg | 0.033 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 2.45 |
| Zinc | 7440-66-6 | 22.35 | mg/kg | 0.215 | JJ | TNTB-SL-DP01 | DP0100DP010 | METALS | REGFD | 20-Aug-09 | 0 | 1 | | 1.1 |
| Zinc | 7440-66-6 | 20.9 | mg/kg | 0.22 | J | TNTB-SL-DP01 | DP0103 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.2 |
| Zinc | 7440-66-6 | 19 | mg/kg | 0.2 | J | TNTB-SL-DP02 | DP0104 | METALS | REG | 20-Aug-09 | 0 | 1 | | 1.1 |
| Zinc | 7440-66-6 | 14.4 | mg/kg | 0.22 | J | TNTB-SL-DP02 | DP0105 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.2 |
| Zinc | 7440-66-6 | 20.3 | mg/kg | 0.85 | J | TNTB-SL-DP03 | DP0106 | METALS | REG | 21-Aug-09 | 0 | 1 | | 4.5 |
| Zinc | 7440-66-6 | 21.5 | mg/kg | 0.24 | J | TNTB-SL-DP03 | DP0107 | METALS | REG | 21-Aug-09 | 8 | 10 | | 1.3 |
| Zinc | 7440-66-6 | 40.2 | mg/kg | 0.22 | J | TNTB-SL-DP04 | DP0108 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1.2 |
| Zinc | 7440-66-6 | 65.2 | mg/kg | 0.2 | J | TNTB-SL-DP04 | DP0109 | METALS | REG | 24-Aug-09 | 8 | 10 | | 1 |
| Zinc | 7440-66-6 | 38.2 | mg/kg | 0.19 | J | TNTB-SL-DP05 | DP0110 | METALS | REG | 24-Aug-09 | 0 | 1 | | 0.98 |
| Zinc | 7440-66-6 | 45.5 | mg/kg | 0.18 | J | TNTB-SL-DP05 | DP0111 | METALS | REG | 24-Aug-09 | 8 | 10 | | 0.93 |
| Zinc | 7440-66-6 | 60.85 | mg/kg | 0.205 | JJ | TNTB-SL-DP06 | DP0112DP011 | METALS | REGFD | 24-Aug-09 | 0 | 1 | | 1.05 |
| Zinc | 7440-66-6 | 17.1 | mg/kg | 0.22 | J | TNTB-SL-DP06 | DP0115 | METALS | REG | 24-Aug-09 | 9 | 10 | | 1.2 |
| Zinc | 7440-66-6 | 30.5 | mg/kg | 0.2 | J | TNTB-SL-DP07 | DP0116 | METALS | REG | 24-Aug-09 | 0 | 1 | | 1 |
| Zinc | 7440-66-6 | 55.3 | mg/kg | 0.37 | J | TNTB-SL-DP07 | DP0117 | METALS | REG | 24-Aug-09 | 4 | 6 | | 2 |
| Zinc | 7440-66-6 | 25.9 | mg/kg | 0.21 | J | TNTB-SL-DP08 | DP0118 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.1 |
| Zinc | 7440-66-6 | 29.9 | mg/kg | 0.38 | J | TNTB-SL-DP08 | DP0119 | METALS | REG | 25-Aug-09 | 2 | 4 | | 2 |
| Zinc | 7440-66-6 | 14.1 | mg/kg | 0.23 | J | TNTB-SL-DP09 | DP0120 | METALS | REG | 25-Aug-09 | 0 | 1 | | 1.2 |

**Table E-2**
**Total Soil Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RESULT | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | LAB_QUAL | REPORT_LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zinc | 7440-66-6 | 9.3 | mg/kg | 0.18 | J | TNTB-SL-DP09 | DP0121 | METALS | REG | 25-Aug-09 | 2 | 4 | | 0.97 |
| Zinc | 7440-66-6 | 22.9 | mg/kg | 0.19 | J | TNTB-SL-DP10 | DP0122 | METALS | REG | 25-Aug-09 | 0 | 1 | | 0.99 |
| Zinc | 7440-66-6 | 54.8 | mg/kg | 0.21 | J | TNTB-SL-DP10 | DP0123 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 1.1 |
| Zinc | 7440-66-6 | 15.8 | mg/kg | 0.22 | J | TNTB-SL-DP11 | DP0124 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.1 |
| Zinc | 7440-66-6 | 67.6 | mg/kg | 0.22 | J | TNTB-SL-DP12 | DP0125 | METALS | REG | 20-Aug-09 | 8 | 10 | | 1.1 |
| Zinc | 7440-66-6 | 31.9 | mg/kg | 0.2 | J | TNTB-SL-DP13 | DP0126 | METALS | REG | 25-Aug-09 | 2 | 3.5 | | 1.1 |
| Zinc | 7440-66-6 | 26.3 | mg/kg | 0.19 | JJ | TNTB-SL-DP14 | DP0127DP013 | METALS | REGFD | 25-Aug-09 | 2 | 3.5 | | 1.015 |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate-Nitrite | 10-28-6 | 230 | ug/L | 30 | | 1SLB-MW01 | SL3100 | GEN CHEMISTRY | | REG | 18-Nov-09 | 0 | 0 | 100 | N |
| Nitrate-Nitrite | 10-28-6 | 44 | ug/L | 30 | J | 1SLB-MW02 | SL3101 | GEN CHEMISTRY | B | REG | 17-Nov-09 | 0 | 0 | 100 | N |
| Nitrate-Nitrite | 10-28-6 | 14 | ug/L | 100 | J | 1SLB-MW01 | SL3102 | GEN CHEMISTRY | B | REG | 4-May-10 | 0 | 0 | 100 | N |
| Nitrate-Nitrite | 10-28-6 | 100 | ug/L | 100 | U | 1SLB-MW02 | SL3103 | GEN CHEMISTRY | UB | REG | 4-May-10 | 0 | 0 | 100 | N |
| Potassium | 7440-09-7 | 11100 | ug/L | 100 | | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 10000 | N |
| Potassium | 7440-09-7 | 1260 | ug/L | 100 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 10000 | N |
| Potassium | 7440-09-7 | 1520 | ug/L | 500 | J | 1SLB-MW01 | SL3102 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | N |
| Potassium | 7440-09-7 | 855 | ug/L | 500 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | N |
| Potassium-fil | 7440-09-7 | 12100 | ug/L | 100 | J | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 10000 | Y |
| Potassium-fil | 7440-09-7 | 1600 | ug/L | 500 | J | 1SLB-MW01 | SL3102 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | Y |
| Potassium-fil | 7440-09-7 | 834 | ug/L | 500 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | Y |
| Nitroaniline, 4- | 100-01-6 | 1.9 | ug/L | 1.9 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 9.5 | N |
| Nitroaniline, 4- | 100-01-6 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 9.5 | N |
| Nitroaniline, 4- | 100-01-6 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Nitroaniline, 4- | 100-01-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Nitrophenol, 4- | 100-02-7 | 9.5 | ug/L | 9.5 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 24 | N |
| Nitrophenol, 4- | 100-02-7 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 24 | N |
| Nitrophenol, 4- | 100-02-7 | 9.8 | ug/L | 9.8 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 25 | N |
| Nitrophenol, 4- | 100-02-7 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 24 | N |
| Ethylbenzene | 100-41-4 | 0.43 | ug/L | 0.43 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Ethylbenzene | 100-41-4 | 0.43 | ug/L | 0.43 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Ethylbenzene | 100-41-4 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Ethylbenzene | 100-41-4 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Styrene | 100-42-5 | 0.36 | ug/L | 0.36 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Styrene | 100-42-5 | 0.36 | ug/L | 0.36 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Styrene | 100-42-5 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Styrene | 100-42-5 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Benzyl alcohol | 100-51-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Benzyl alcohol | 100-51-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Benzyl alcohol | 100-51-6 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Benzyl alcohol | 100-51-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichloropropene, cis-1,3- | 10061-01-5 | 0.21 | ug/L | 0.21 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dichloropropene, cis-1,3- | 10061-01-5 | 0.21 | ug/L | 0.21 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloropropene, cis-1,3- | 10061-01-5 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloropropene, cis-1,3- | 10061-01-5 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloropropene, trans-1,3- | 10061-02-6 | 0.21 | ug/L | 0.21 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dichloropropene, trans-1,3- | 10061-02-6 | 0.21 | ug/L | 0.21 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloropropene, trans-1,3- | 10061-02-6 | 0.22 | ug/L | 0.22 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloropropene, trans-1,3- | 10061-02-6 | 0.22 | ug/L | 0.22 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Bromophenyl phenyl ether, 4- | 101-55-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dimethylphenol, 2,4- | 105-67-9 | 1.1 | ug/L | 1.1 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dimethylphenol, 2,4- | 105-67-9 | 1.1 | ug/L | 1.1 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dimethylphenol, 2,4- | 105-67-9 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dimethylphenol, 2,4- | 105-67-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dichlorobenzene, 1,4- | 106-46-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Chloroaniline, 4- | 106-47-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Chloroaniline, 4- | 106-47-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Chloroaniline, 4- | 106-47-8 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Chloroaniline, 4- | 106-47-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichloroethane, 1,2- | 107-06-2 | 0.34 | ug/L | 0.34 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichloroethane, 1,2- | 107-06-2 | 0.34 | ug/L | 0.34 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethane, 1,2- | 107-06-2 | 0.33 | ug/L | 0.33 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethane, 1,2- | 107-06-2 | 0.33 | ug/L | 0.33 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Methyl-2-pentanone, 4- | 108-10-1 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 5 | N |
| Methyl-2-pentanone, 4- | 108-10-1 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 5 | N |
| Methyl-2-pentanone, 4- | 108-10-1 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Methyl-2-pentanone, 4- | 108-10-1 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Toluene | 108-88-3 | 0.35 | ug/L | 0.35 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Toluene | 108-88-3 | 0.35 | ug/L | 0.35 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Toluene | 108-88-3 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Toluene | 108-88-3 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Chlorobenzene | 108-90-7 | 0.22 | ug/L | 0.22 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Chlorobenzene | 108-90-7 | 0.22 | ug/L | 0.22 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Chlorobenzene | 108-90-7 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Chlorobenzene | 108-90-7 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Phenol | 108-95-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Phenol | 108-95-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Phenol | 108-95-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Phenol | 108-95-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Bis(2-chloroethyl)ether | 111-44-4 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Bis(2-chloroethoxy)methane | 111-91-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.9 | ug/L | 1.9 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Di-n-octyl phthalate | 117-84-0 | 1.4 | ug/L | 1.4 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Di-n-octyl phthalate | 117-84-0 | 1.4 | ug/L | 1.4 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Di-n-octyl phthalate | 117-84-0 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Di-n-octyl phthalate | 117-84-0 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Hexachlorobenzene | 118-74-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachlorobenzene | 118-74-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachlorobenzene | 118-74-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Hexachlorobenzene | 118-74-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.068 | ug/L | 0.068 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.067 | ug/L | 0.067 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.052 | ug/L | 0.052 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 0.05 | ug/L | 0.05 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Anthracene | 120-12-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Anthracene | 120-12-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Anthracene | 120-12-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Anthracene | 120-12-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichlorophenol, 2,4- | 120-83-2 | 1.2 | ug/L | 1.2 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorophenol, 2,4- | 120-83-2 | 1.2 | ug/L | 1.2 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dichlorophenol, 2,4- | 120-83-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dichlorophenol, 2,4- | 120-83-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.064 | ug/L | 0.064 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.063 | ug/L | 0.063 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.05 | ug/L | 0.05 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.049 | ug/L | 0.049 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Dinitrotoluene, 2,4- | 121-14-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| RDX | 121-82-4 | 0.074 | ug/L | 0.074 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| RDX | 121-82-4 | 0.073 | ug/L | 0.073 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| RDX | 121-82-4 | 0.069 | ug/L | 0.069 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| RDX | 121-82-4 | 0.067 | ug/L | 0.067 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Dibromochloromethane | 124-48-1 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dibromochloromethane | 124-48-1 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dibromochloromethane | 124-48-1 | 0.33 | ug/L | 0.33 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dibromochloromethane | 124-48-1 | 0.33 | ug/L | 0.33 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Tetrachloroethene | 127-18-4 | 0.22 | ug/L | 0.22 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Tetrachloroethene | 127-18-4 | 0.22 | ug/L | 0.22 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Tetrachloroethene | 127-18-4 | 0.44 | ug/L | 0.44 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Tetrachloroethene | 127-18-4 | 0.44 | ug/L | 0.44 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Pyrene | 129-00-0 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Pyrene | 129-00-0 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Pyrene | 129-00-0 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Pyrene | 129-00-0 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dimethyl phthalate | 131-11-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dimethyl phthalate | 131-11-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dimethyl phthalate | 131-11-3 | 1.1 | ug/L | 1.1 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dimethyl phthalate | 131-11-3 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dibenzofuran | 132-64-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dibenzofuran | 132-64-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dibenzofuran | 132-64-9 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dibenzofuran | 132-64-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Xylenes, total | 1330-20-7 | 1.2 | ug/L | 1.2 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 3 | N |
| Xylenes, total | 1330-20-7 | 1.2 | ug/L | 1.2 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 3 | N |
| Xylenes, total | 1330-20-7 | 0.54 | ug/L | 0.54 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 3 | N |
| Xylenes, total | 1330-20-7 | 0.54 | ug/L | 0.54 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 3 | N |
| Sulfate | 14808-79-8 | 60400 | ug/L | 1000 | | 1SLB-MW01 | SL3100 | GEN CHEMISTRY | | REG | 18-Nov-09 | 0 | 0 | 2000 | N |
| Sulfate | 14808-79-8 | 21900 | ug/L | 1000 | | 1SLB-MW02 | SL3101 | GEN CHEMISTRY | | REG | 17-Nov-09 | 0 | 0 | 2000 | N |
| Sulfate | 14808-79-8 | 61400 | ug/L | 1000 | | 1SLB-MW01 | SL3102 | GEN CHEMISTRY | | REG | 4-May-10 | 0 | 0 | 2000 | N |
| Sulfate | 14808-79-8 | 18900 | ug/L | 1000 | J | 1SLB-MW02 | SL3103 | GEN CHEMISTRY | | REG | 4-May-10 | 0 | 0 | 2000 | N |
| Dichloroethene, cis-1,2- | 156-59-2 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethene, cis-1,2- | 156-59-2 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethene, cis-1,2- | 156-59-2 | 0.32 | ug/L | 0.32 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethene, cis-1,2- | 156-59-2 | 0.32 | ug/L | 0.32 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethene, trans-1,2- | 156-60-5 | 0.45 | ug/L | 0.45 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethene, trans-1,2- | 156-60-5 | 0.45 | ug/L | 0.45 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethene, trans-1,2- | 156-60-5 | 0.34 | ug/L | 0.34 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethene, trans-1,2- | 156-60-5 | 0.34 | ug/L | 0.34 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Chloride | 16887-00-6 | 18100 | ug/L | 1000 | | 1SLB-MW01 | SL3100 | GEN CHEMISTRY | | REG | 18-Nov-09 | 0 | 0 | 2000 | N |
| Chloride | 16887-00-6 | 5400 | ug/L | 1000 | | 1SLB-MW02 | SL3101 | GEN CHEMISTRY | | REG | 17-Nov-09 | 0 | 0 | 2000 | N |
| Chloride | 16887-00-6 | 6700 | ug/L | 1000 | | 1SLB-MW01 | SL3102 | GEN CHEMISTRY | | REG | 4-May-10 | 0 | 0 | 2000 | N |
| Chloride | 16887-00-6 | 4400 | ug/L | 1000 | J | 1SLB-MW02 | SL3103 | GEN CHEMISTRY | | REG | 4-May-10 | 0 | 0 | 2000 | N |
| Benzo(ghi)perylene | 191-24-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(ghi)perylene | 191-24-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(ghi)perylene | 191-24-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Benzo(ghi)perylene | 191-24-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.049 | ug/L | 0.049 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.049 | ug/L | 0.049 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.082 | ug/L | 0.082 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Amino-2,6-dinitrotoluene, 4- | 19406-51-0 | 0.08 | ug/L | 0.08 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Benzo(b)fluoranthene | 205-99-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(b)fluoranthene | 205-99-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(b)fluoranthene | 205-99-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Benzo(b)fluoranthene | 205-99-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Fluoranthene | 206-44-0 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Fluoranthene | 206-44-0 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Fluoranthene | 206-44-0 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Fluoranthene | 206-44-0 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Benzo(k)fluoranthene | 207-08-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(k)fluoranthene | 207-08-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(k)fluoranthene | 207-08-9 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Benzo(k)fluoranthene | 207-08-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Acenaphthylene | 208-96-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Acenaphthylene | 208-96-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Acenaphthylene | 208-96-8 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Acenaphthylene | 208-96-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Chrysene | 218-01-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Chrysene | 218-01-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Chrysene | 218-01-9 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Chrysene | 218-01-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| HMX | 2691-41-0 | 0.11 | ug/L | 0.11 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| HMX | 2691-41-0 | 0.11 | ug/L | 0.11 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| HMX | 2691-41-0 | 0.059 | ug/L | 0.059 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| HMX | 2691-41-0 | 0.057 | ug/L | 0.057 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.075 | ug/L | 0.075 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.075 | ug/L | 0.075 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.091 | ug/L | 0.091 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Amino-4,6-dinitrotoluene, 2- | 35572-78-2 | 0.088 | ug/L | 0.088 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Tetryl | 479-45-8 | 0.076 | ug/L | 0.076 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Tetryl | 479-45-8 | 0.076 | ug/L | 0.076 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Tetryl | 479-45-8 | 0.051 | ug/L | 0.051 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Tetryl | 479-45-8 | 0.05 | ug/L | 0.05 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Benzo(a)pyrene | 50-32-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(a)pyrene | 50-32-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(a)pyrene | 50-32-8 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Benzo(a)pyrene | 50-32-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dinitrophenol, 2,4- | 51-28-5 | 9.5 | ug/L | 9.5 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 24 | N |
| Dinitrophenol, 2,4- | 51-28-5 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 24 | N |
| Dinitrophenol, 2,4- | 51-28-5 | 9.8 | ug/L | 9.8 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 25 | N |
| Dinitrophenol, 2,4- | 51-28-5 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 24 | N |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 3.8 | ug/L | 3.8 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 9.5 | N |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 3.8 | ug/L | 3.8 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 9.5 | N |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 9.8 | N |
| Dinitro-2-methylphenol, 4,6- | 534-52-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 9.5 | N |
| Dibenz(a,h)anthracene | 53-70-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenz(a,h)anthracene | 53-70-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dibenz(a,h)anthracene | 53-70-3 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dibenz(a,h)anthracene | 53-70-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dichlorobenzene, 1,3- | 541-73-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Carbon tetrachloride | 56-23-5 | 0.22 | ug/L | 0.22 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Carbon tetrachloride | 56-23-5 | 0.22 | ug/L | 0.22 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Carbon tetrachloride | 56-23-5 | 0.34 | ug/L | 0.34 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Carbon tetrachloride | 56-23-5 | 0.34 | ug/L | 0.34 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Benzo(a)anthracene | 56-55-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(a)anthracene | 56-55-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Benzo(a)anthracene | 56-55-3 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Benzo(a)anthracene | 56-55-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Cyanide, total | 57-12-5 | 5 | ug/L | 5 | U | 1SLB-MW01 | SL3102 | GEN CHEMISTRY | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Cyanide, total | 57-12-5 | 5 | ug/L | 5 | U | 1SLB-MW02 | SL3103 | GEN CHEMISTRY | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Cyanide, total | 57-12-5 | 5 | ug/L | 5 | UJ | 1SLB-MW01 | SL3100 | GEN CHEMISTRY | U | REG | 18-Nov-09 | 0 | 0 | 10 | N |
| Cyanide, total | 57-12-5 | 5 | ug/L | 5 | UJ | 1SLB-MW02 | SL3101 | GEN CHEMISTRY | U | REG | 17-Nov-09 | 0 | 0 | 10 | N |
| Hexanone, 2- | 591-78-6 | 5 | ug/L | 5 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 10 | N |
| Hexanone, 2- | 591-78-6 | 5 | ug/L | 5 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 10 | N |
| Hexanone, 2- | 591-78-6 | 5 | ug/L | 5 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Hexanone, 2- | 591-78-6 | 5 | ug/L | 5 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Chloro-3-methylphenol, 4- | 59-50-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.091 | ug/L | 0.091 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.09 | ug/L | 0.09 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.055 | ug/L | 0.055 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.053 | ug/L | 0.053 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Dinitrotoluene, 2,6- | 606-20-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| n-Nitroso-di-n-propylamine | 621-64-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 1.6 | ug/L | 1.6 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| 3-Methylphenol and 4-Methylphenol | 65794-96-9 | 1.5 | ug/L | 1.5 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Benzoic acid | 65-85-0 | 9.5 | ug/L | 9.5 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 24 | N |
| Benzoic acid | 65-85-0 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 24 | N |
| Benzoic acid | 65-85-0 | 9.8 | ug/L | 9.8 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 25 | N |
| Benzoic acid | 65-85-0 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 24 | N |
| Acetone | 67-64-1 | 10 | ug/L | 10 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 25 | N |
| Acetone | 67-64-1 | 10 | ug/L | 10 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 25 | N |
| Chloroform | 67-66-3 | 0.28 | ug/L | 0.28 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Chloroform | 67-66-3 | 0.28 | ug/L | 0.28 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Chloroform | 67-66-3 | 0.25 | ug/L | 0.25 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Chloroform | 67-66-3 | 0.25 | ug/L | 0.25 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Hexachloroethane | 67-72-1 | 2.4 | ug/L | 2.4 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachloroethane | 67-72-1 | 2.4 | ug/L | 2.4 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachloroethane | 67-72-1 | 2.2 | ug/L | 2.2 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 67-72-1 | 2.1 | ug/L | 2.1 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Chlorophenyl phenyl ether, 4- | 7005-72-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Benzene | 71-43-2 | 0.4 | ug/L | 0.4 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Benzene | 71-43-2 | 0.4 | ug/L | 0.4 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Benzene | 71-43-2 | 0.21 | ug/L | 0.21 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Benzene | 71-43-2 | 0.21 | ug/L | 0.21 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Trichloroethane, 1,1,1- | 71-55-6 | 0.33 | ug/L | 0.33 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Trichloroethane, 1,1,1- | 71-55-6 | 0.33 | ug/L | 0.33 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Trichloroethane, 1,1,1- | 71-55-6 | 0.22 | ug/L | 0.22 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Trichloroethane, 1,1,1- | 71-55-6 | 0.22 | ug/L | 0.22 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Aluminum | 7429-90-5 | 24.6 | ug/L | 11 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 200 | N |
| Aluminum | 7429-90-5 | 69.8 | ug/L | 11 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 200 | N |
| Aluminum-fil | 7429-90-5 | 23.2 | ug/L | 11 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 200 | Y |
| Aluminum | 7429-90-5 | 20 | ug/L | 20 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 200 | N |
| Aluminum | 7429-90-5 | 20 | ug/L | 20 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 200 | N |
| Aluminum-fil | 7429-90-5 | 20 | ug/L | 20 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 200 | Y |
| Aluminum-fil | 7429-90-5 | 20 | ug/L | 20 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 200 | Y |
| Iron | 7439-89-6 | 41.4 | ug/L | 30 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 300 | N |
| Iron-fil | 7439-89-6 | 101 | ug/L | 23 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 300 | Y |
| Iron-fil | 7439-89-6 | 28.2 | ug/L | 23 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 300 | Y |
| Iron | 7439-89-6 | 23 | ug/L | 23 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 300 | N |
| Iron | 7439-89-6 | 23 | ug/L | 23 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 300 | N |
| Iron | 7439-89-6 | 30 | ug/L | 30 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 300 | N |
| Iron-fil | 7439-89-6 | 30 | ug/L | 30 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 300 | Y |
| Iron-fil | 7439-89-6 | 30 | ug/L | 30 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 300 | Y |
| Lead | 7439-92-1 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | N |
| Lead | 7439-92-1 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Lead | 7439-92-1 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Lead-fil | 7439-92-1 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | Y |
| Lead-fil | 7439-92-1 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | Y |
| Lead-fil | 7439-92-1 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | Y |
| Lead-fil | 7439-92-1 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | Y |
| Magnesium | 7439-95-4 | 18000 | ug/L | 100 | | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 5000 | N |
| Magnesium | 7439-95-4 | 11200 | ug/L | 100 | | 1SLB-MW02 | SL3101 | METALS | | REG | 17-Nov-09 | 0 | 0 | 5000 | N |
| Magnesium | 7439-95-4 | 13700 | ug/L | 100 | | 1SLB-MW01 | SL3102 | METALS | | REG | 4-May-10 | 0 | 0 | 5000 | N |
| Magnesium | 7439-95-4 | 10700 | ug/L | 100 | | 1SLB-MW02 | SL3103 | METALS | | REG | 4-May-10 | 0 | 0 | 5000 | N |
| Magnesium-fil | 7439-95-4 | 14600 | ug/L | 100 | | 1SLB-MW01 | SL3102 | METALS | | REG | 4-May-10 | 0 | 0 | 5000 | Y |
| Magnesium-fil | 7439-95-4 | 10200 | ug/L | 100 | | 1SLB-MW02 | SL3103 | METALS | | REG | 4-May-10 | 0 | 0 | 5000 | Y |
| Magnesium-fil | 7439-95-4 | 17700 | ug/L | 100 | J | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 5000 | Y |
| Magnesium-fil | 7439-95-4 | 10800 | ug/L | 100 | J | 1SLB-MW02 | SL3101 | METALS | | REG | 17-Nov-09 | 0 | 0 | 5000 | Y |
| Manganese | 7439-96-5 | 163 | ug/L | 0.5 | | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 15 | N |
| Manganese | 7439-96-5 | 21.4 | ug/L | 0.5 | | 1SLB-MW02 | SL3101 | METALS | | REG | 17-Nov-09 | 0 | 0 | 15 | N |
| Manganese-fil | 7439-96-5 | 162 | ug/L | 0.5 | | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 15 | Y |
| Manganese-fil | 7439-96-5 | 20.3 | ug/L | 0.5 | | 1SLB-MW02 | SL3101 | METALS | | REG | 17-Nov-09 | 0 | 0 | 15 | Y |
| Manganese | 7439-96-5 | 6.2 | ug/L | 1 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 15 | N |
| Manganese-fil | 7439-96-5 | 6.2 | ug/L | 1 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 15 | Y |
| Manganese | 7439-96-5 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 15 | N |
| Manganese-fil | 7439-96-5 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 15 | Y |
| Mercury | 7439-97-6 | 0.14 | ug/L | 0.14 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Mercury | 7439-97-6 | 0.14 | ug/L | 0.14 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Mercury | 7439-97-6 | 0.071 | ug/L | 0.071 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Mercury | 7439-97-6 | 0.071 | ug/L | 0.071 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Mercury-fil | 7439-97-6 | 0.14 | ug/L | 0.14 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 1 | Y |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury-fil | 7439-97-6 | 0.14 | ug/L | 0.14 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 1 | Y |
| Mercury-fil | 7439-97-6 | 0.071 | ug/L | 0.071 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 1 | Y |
| Mercury-fil | 7439-97-6 | 0.071 | ug/L | 0.071 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 1 | Y |
| Nickel | 7440-02-0 | 2.4 | ug/L | 2.3 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 40 | N |
| Nickel-fil | 7440-02-0 | 4.2 | ug/L | 2.3 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 40 | Y |
| Nickel | 7440-02-0 | 2.3 | ug/L | 2.3 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 40 | N |
| Nickel | 7440-02-0 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 40 | N |
| Nickel | 7440-02-0 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 40 | N |
| Nickel-fil | 7440-02-0 | 2.3 | ug/L | 2.3 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 40 | Y |
| Nickel-fil | 7440-02-0 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 40 | Y |
| Nickel-fil | 7440-02-0 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 40 | Y |
| Silver | 7440-22-4 | 1.2 | ug/L | 1.2 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | N |
| Silver | 7440-22-4 | 1.2 | ug/L | 1.2 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | N |
| Silver | 7440-22-4 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Silver | 7440-22-4 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Silver-fil | 7440-22-4 | 1.2 | ug/L | 1.2 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | Y |
| Silver-fil | 7440-22-4 | 1.2 | ug/L | 1.2 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | Y |
| Silver-fil | 7440-22-4 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Silver-fil | 7440-22-4 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Sodium-fil | 7440-23-5 | 20500 | ug/L | 500 | | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 10000 | Y |
| Sodium | 7440-23-5 | 18300 | ug/L | 500 | J | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 10000 | N |
| Sodium | 7440-23-5 | 3160 | ug/L | 500 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 10000 | N |
| Sodium | 7440-23-5 | 5100 | ug/L | 750 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | N |
| Sodium-fil | 7440-23-5 | 4030 | ug/L | 500 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 10000 | Y |
| Sodium-fil | 7440-23-5 | 4850 | ug/L | 750 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | Y |
| Sodium | 7440-23-5 | 750 | ug/L | 750 | U | 1SLB-MW01 | SL3102 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | N |
| Sodium-fil | 7440-23-5 | 750 | ug/L | 750 | U | 1SLB-MW01 | SL3102 | METALS | B | REG | 4-May-10 | 0 | 0 | 10000 | Y |
| Thallium | 7440-28-0 | 3.4 | ug/L | 3.4 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | N |
| Thallium | 7440-28-0 | 3.4 | ug/L | 3.4 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | N |
| Thallium | 7440-28-0 | 1.5 | ug/L | 1.5 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Thallium | 7440-28-0 | 1.5 | ug/L | 1.5 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Thallium-fil | 7440-28-0 | 3.4 | ug/L | 3.4 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | Y |
| Thallium-fil | 7440-28-0 | 3.4 | ug/L | 3.4 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | Y |
| Thallium-fil | 7440-28-0 | 1.5 | ug/L | 1.5 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Thallium-fil | 7440-28-0 | 1.5 | ug/L | 1.5 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Antimony | 7440-36-0 | 4.5 | ug/L | 4.5 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 6 | N |
| Antimony | 7440-36-0 | 4.5 | ug/L | 4.5 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 6 | N |
| Antimony | 7440-36-0 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 6 | N |
| Antimony | 7440-36-0 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 6 | N |
| Antimony-fil | 7440-36-0 | 4.5 | ug/L | 4.5 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 6 | Y |
| Antimony-fil | 7440-36-0 | 4.5 | ug/L | 4.5 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 6 | Y |
| Antimony-fil | 7440-36-0 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 6 | Y |
| Antimony-fil | 7440-36-0 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 6 | Y |
| Arsenic | 7440-38-2 | 3.6 | ug/L | 3.6 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | N |
| Arsenic | 7440-38-2 | 3.6 | ug/L | 3.6 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | N |
| Arsenic | 7440-38-2 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Arsenic | 7440-38-2 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Arsenic-fil | 7440-38-2 | 3.6 | ug/L | 3.6 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | Y |
| Arsenic-fil | 7440-38-2 | 3.6 | ug/L | 3.6 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | Y |
| Arsenic-fil | 7440-38-2 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Arsenic-fil | 7440-38-2 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Barium | 7440-39-3 | 98.2 | ug/L | 5 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 200 | N |
| Barium | 7440-39-3 | 22.7 | ug/L | 5 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 200 | N |
| Barium | 7440-39-3 | 23.6 | ug/L | 5 | J | 1SLB-MW01 | SL3102 | METALS | B | REG | 4-May-10 | 0 | 0 | 200 | N |
| Barium | 7440-39-3 | 22.3 | ug/L | 5 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 200 | N |
| Barium-fil | 7440-39-3 | 101 | ug/L | 5 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 200 | Y |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium-fil | 7440-39-3 | 23 | ug/L | 5 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 200 | Y |
| Barium-fil | 7440-39-3 | 25.6 | ug/L | 5 | J | 1SLB-MW01 | SL3102 | METALS | B | REG | 4-May-10 | 0 | 0 | 200 | Y |
| Barium-fil | 7440-39-3 | 22.5 | ug/L | 5 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 200 | Y |
| Beryllium | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 4 | N |
| Beryllium | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 4 | N |
| Beryllium | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 4 | N |
| Beryllium | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 4 | N |
| Beryllium-fil | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 4 | Y |
| Beryllium-fil | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 4 | Y |
| Beryllium-fil | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 4 | Y |
| Beryllium-fil | 7440-41-7 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 4 | Y |
| Cadmium | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 5 | N |
| Cadmium | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 5 | N |
| Cadmium | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Cadmium | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Cadmium-fil | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 5 | Y |
| Cadmium-fil | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 5 | Y |
| Cadmium-fil | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | Y |
| Cadmium-fil | 7440-43-9 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 5 | Y |
| Chromium | 7440-47-3 | 1.6 | ug/L | 1.6 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | N |
| Chromium | 7440-47-3 | 1.6 | ug/L | 1.6 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | N |
| Chromium | 7440-47-3 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Chromium | 7440-47-3 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Chromium-fil | 7440-47-3 | 1.6 | ug/L | 1.6 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | Y |
| Chromium-fil | 7440-47-3 | 1.6 | ug/L | 1.6 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 10 | Y |
| Chromium-fil | 7440-47-3 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Chromium-fil | 7440-47-3 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Cobalt | 7440-48-4 | 0.83 | ug/L | 0.83 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 50 | N |
| Cobalt | 7440-48-4 | 0.83 | ug/L | 0.83 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 50 | N |
| Cobalt | 7440-48-4 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | N |
| Cobalt | 7440-48-4 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | N |
| Cobalt-fil | 7440-48-4 | 0.83 | ug/L | 0.83 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 50 | Y |
| Cobalt-fil | 7440-48-4 | 0.83 | ug/L | 0.83 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 50 | Y |
| Cobalt-fil | 7440-48-4 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | Y |
| Cobalt-fil | 7440-48-4 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | Y |
| Copper | 7440-50-8 | 2.1 | ug/L | 2.1 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 25 | N |
| Copper | 7440-50-8 | 2.1 | ug/L | 2.1 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 25 | N |
| Copper | 7440-50-8 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 25 | N |
| Copper | 7440-50-8 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 25 | N |
| Copper-fil | 7440-50-8 | 2.1 | ug/L | 2.1 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 25 | Y |
| Copper-fil | 7440-50-8 | 2.1 | ug/L | 2.1 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 25 | Y |
| Copper-fil | 7440-50-8 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 25 | Y |
| Copper-fil | 7440-50-8 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 25 | Y |
| Vanadium-fil | 7440-62-2 | 1.1 | ug/L | 0.66 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 50 | Y |
| Vanadium | 7440-62-2 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | N |
| Vanadium | 7440-62-2 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | N |
| Vanadium-fil | 7440-62-2 | 0.66 | ug/L | 0.66 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 50 | Y |
| Vanadium-fil | 7440-62-2 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | Y |
| Vanadium-fil | 7440-62-2 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 50 | Y |
| Vanadium | 7440-62-2 | 0.66 | ug/L | 0.66 | UJ | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 50 | N |
| Vanadium | 7440-62-2 | 0.66 | ug/L | 0.66 | UJ | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 50 | N |
| Zinc | 7440-66-6 | 3.8 | ug/L | 3.8 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 20 | N |
| Zinc | 7440-66-6 | 3.8 | ug/L | 3.8 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 20 | N |
| Zinc | 7440-66-6 | 5 | ug/L | 5 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 20 | N |
| Zinc | 7440-66-6 | 5 | ug/L | 5 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 20 | N |
| Zinc-fil | 7440-66-6 | 3.8 | ug/L | 3.8 | U | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 20 | Y |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zinc-fil | 7440-66-6 | 3.8 | ug/L | 3.8 | U | 1SLB-MW02 | SL3101 | METALS | U | REG | 17-Nov-09 | 0 | 0 | 20 | Y |
| Zinc-fil | 7440-66-6 | 5 | ug/L | 5 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 20 | Y |
| Zinc-fil | 7440-66-6 | 5 | ug/L | 5 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 20 | Y |
| Calcium | 7440-70-2 | 94100 | ug/L | 100 | | 1SLB-MW01 | SL3102 | METALS | | REG | 4-May-10 | 0 | 0 | 1000 | N |
| Calcium | 7440-70-2 | 58200 | ug/L | 100 | | 1SLB-MW02 | SL3103 | METALS | | REG | 4-May-10 | 0 | 0 | 1000 | N |
| Calcium-fil | 7440-70-2 | 97800 | ug/L | 100 | | 1SLB-MW01 | SL3102 | METALS | | REG | 4-May-10 | 0 | 0 | 1000 | Y |
| Calcium-fil | 7440-70-2 | 56200 | ug/L | 100 | | 1SLB-MW02 | SL3103 | METALS | | REG | 4-May-10 | 0 | 0 | 1000 | Y |
| Calcium | 7440-70-2 | 88600 | ug/L | 100 | J | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 1000 | N |
| Calcium | 7440-70-2 | 63400 | ug/L | 100 | J | 1SLB-MW02 | SL3101 | METALS | | REG | 17-Nov-09 | 0 | 0 | 1000 | N |
| Calcium-fil | 7440-70-2 | 84300 | ug/L | 100 | J | 1SLB-MW01 | SL3100 | METALS | | REG | 18-Nov-09 | 0 | 0 | 1000 | Y |
| Calcium-fil | 7440-70-2 | 60000 | ug/L | 100 | J | 1SLB-MW02 | SL3101 | METALS | | REG | 17-Nov-09 | 0 | 0 | 1000 | Y |
| Bromomethane | 74-83-9 | 0.78 | ug/L | 0.78 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 2 | N |
| Bromomethane | 74-83-9 | 0.78 | ug/L | 0.78 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 2 | N |
| Bromomethane | 74-83-9 | 0.78 | ug/L | 0.78 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Bromomethane | 74-83-9 | 0.78 | ug/L | 0.78 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Chloromethane | 74-87-3 | 0.61 | ug/L | 0.61 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 2 | N |
| Chloromethane | 74-87-3 | 0.61 | ug/L | 0.61 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 2 | N |
| Chloromethane | 74-87-3 | 0.5 | ug/L | 0.5 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Chloromethane | 74-87-3 | 0.5 | ug/L | 0.5 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Chloroethane | 75-00-3 | 0.48 | ug/L | 0.48 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 2 | N |
| Chloroethane | 75-00-3 | 0.48 | ug/L | 0.48 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 2 | N |
| Chloroethane | 75-00-3 | 0.51 | ug/L | 0.51 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Chloroethane | 75-00-3 | 0.51 | ug/L | 0.51 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Vinyl chloride | 75-01-4 | 0.3 | ug/L | 0.3 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Vinyl chloride | 75-01-4 | 0.3 | ug/L | 0.3 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Vinyl chloride | 75-01-4 | 0.28 | ug/L | 0.28 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Vinyl chloride | 75-01-4 | 0.28 | ug/L | 0.28 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Methylene chloride | 75-09-2 | 1 | ug/L | 1 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 5 | N |
| Methylene chloride | 75-09-2 | 1 | ug/L | 1 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 5 | N |
| Methylene chloride | 75-09-2 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Methylene chloride | 75-09-2 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Carbon disulfide | 75-15-0 | 0.4 | ug/L | 0.4 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 2 | N |
| Carbon disulfide | 75-15-0 | 0.4 | ug/L | 0.4 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 2 | N |
| Carbon disulfide | 75-15-0 | 0.4 | ug/L | 0.4 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Carbon disulfide | 75-15-0 | 0.4 | ug/L | 0.4 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 2 | N |
| Bromoform | 75-25-2 | 0.33 | ug/L | 0.33 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Bromoform | 75-25-2 | 0.33 | ug/L | 0.33 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Bromoform | 75-25-2 | 0.24 | ug/L | 0.24 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Bromoform | 75-25-2 | 0.24 | ug/L | 0.24 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Bromodichloromethane | 75-27-4 | 0.2 | ug/L | 0.2 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Bromodichloromethane | 75-27-4 | 0.2 | ug/L | 0.2 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Bromodichloromethane | 75-27-4 | 0.28 | ug/L | 0.28 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Bromodichloromethane | 75-27-4 | 0.28 | ug/L | 0.28 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethane, 1,1- | 75-34-3 | 0.24 | ug/L | 0.24 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethane, 1,1- | 75-34-3 | 0.24 | ug/L | 0.24 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethane, 1,1- | 75-34-3 | 0.22 | ug/L | 0.22 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethane, 1,1- | 75-34-3 | 0.22 | ug/L | 0.22 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethene, 1,1- | 75-35-4 | 0.54 | ug/L | 0.54 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethene, 1,1- | 75-35-4 | 0.54 | ug/L | 0.54 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloroethene, 1,1- | 75-35-4 | 0.29 | ug/L | 0.29 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloroethene, 1,1- | 75-35-4 | 0.29 | ug/L | 0.29 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Hexachlorocyclopentadiene | 77-47-4 | 1.2 | ug/L | 1.2 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachlorocyclopentadiene | 77-47-4 | 1.2 | ug/L | 1.2 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachlorocyclopentadiene | 77-47-4 | 4.8 | ug/L | 4.8 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 9.8 | N |
| Hexachlorocyclopentadiene | 77-47-4 | 4.7 | ug/L | 4.7 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 9.5 | N |
| Selenium | 7782-49-2 | 3.6 | ug/L | 3.1 | J | 1SLB-MW01 | SL3100 | METALS | B | REG | 18-Nov-09 | 0 | 0 | 10 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Selenium | 7782-49-2 | 4.9 | ug/L | 3.1 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 10 | N |
| Selenium | 7782-49-2 | 2.9 | ug/L | 2 | J | 1SLB-MW01 | SL3102 | METALS | B | REG | 4-May-10 | 0 | 0 | 10 | N |
| Selenium-fil | 7782-49-2 | 3.5 | ug/L | 3.1 | J | 1SLB-MW02 | SL3101 | METALS | B | REG | 17-Nov-09 | 0 | 0 | 10 | Y |
| Selenium-fil | 7782-49-2 | 2.1 | ug/L | 2 | J | 1SLB-MW02 | SL3103 | METALS | B | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Selenium | 7782-49-2 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | N |
| Selenium-fil | 7782-49-2 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | METALS | U | REG | 4-May-10 | 0 | 0 | 10 | Y |
| Selenium-fil | 7782-49-2 | 3.1 | ug/L | 3.1 | UJ | 1SLB-MW01 | SL3100 | METALS | U | REG | 18-Nov-09 | 0 | 0 | 10 | Y |
| Isophorone | 78-59-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Isophorone | 78-59-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Isophorone | 78-59-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Isophorone | 78-59-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichloropropane, 1,2- | 78-87-5 | 0.21 | ug/L | 0.21 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Dichloropropane, 1,2- | 78-87-5 | 0.21 | ug/L | 0.21 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Dichloropropane, 1,2- | 78-87-5 | 0.27 | ug/L | 0.27 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Dichloropropane, 1,2- | 78-87-5 | 0.27 | ug/L | 0.27 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Butanone, 2- | 78-93-3 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 5 | N |
| Butanone, 2- | 78-93-3 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 5 | N |
| Butanone, 2- | 78-93-3 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Butanone, 2- | 78-93-3 | 2 | ug/L | 2 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 5 | N |
| Trichloroethane, 1,1,2- | 79-00-5 | 0.26 | ug/L | 0.26 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Trichloroethane, 1,1,2- | 79-00-5 | 0.26 | ug/L | 0.26 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Trichloroethane, 1,1,2- | 79-00-5 | 0.29 | ug/L | 0.29 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Trichloroethane, 1,1,2- | 79-00-5 | 0.29 | ug/L | 0.29 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Trichloroethene | 79-01-6 | 0.32 | ug/L | 0.32 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Trichloroethene | 79-01-6 | 0.32 | ug/L | 0.32 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Trichloroethene | 79-01-6 | 0.24 | ug/L | 0.24 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Trichloroethene | 79-01-6 | 0.24 | ug/L | 0.24 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 0.21 | ug/L | 0.21 | U | 1SLB-MW01 | SL3100 | VOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 1 | N |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 0.21 | ug/L | 0.21 | U | 1SLB-MW02 | SL3101 | VOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 1 | N |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 0.29 | ug/L | 0.29 | U | 1SLB-MW01 | SL3102 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 0.29 | ug/L | 0.29 | U | 1SLB-MW02 | SL3103 | VOLATILES | U | REG | 4-May-10 | 0 | 0 | 1 | N |
| Acenaphthene | 83-32-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Acenaphthene | 83-32-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Acenaphthene | 83-32-9 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Acenaphthene | 83-32-9 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Diethyl phthalate | 84-66-2 | 5.3 | ug/L | 1.9 | | 1SLB-MW01 | SL3100 | SEMIVOLATILES | | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Diethyl phthalate | 84-66-2 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Diethyl phthalate | 84-66-2 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Diethyl phthalate | 84-66-2 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Di-n-butyl phthalate | 84-74-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Di-n-butyl phthalate | 84-74-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Di-n-butyl phthalate | 84-74-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Di-n-butyl phthalate | 84-74-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Phenanthrene | 85-01-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Phenanthrene | 85-01-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Phenanthrene | 85-01-8 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Phenanthrene | 85-01-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Butyl benzyl phthalate | 85-68-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Butyl benzyl phthalate | 85-68-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Butyl benzyl phthalate | 85-68-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Butyl benzyl phthalate | 85-68-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| n-Nitrosodiphenylamine | 86-30-6 | 1.9 | ug/L | 1.9 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| n-Nitrosodiphenylamine | 86-30-6 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| n-Nitrosodiphenylamine | 86-30-6 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| n-Nitrosodiphenylamine | 86-30-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Fluorene | 86-73-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluorene | 86-73-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Fluorene | 86-73-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Fluorene | 86-73-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Carbazole | 86-74-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Carbazole | 86-74-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Carbazole | 86-74-8 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Carbazole | 86-74-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Hexachlorobutadiene | 87-68-3 | 2.4 | ug/L | 2.4 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachlorobutadiene | 87-68-3 | 2.4 | ug/L | 2.4 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Hexachlorobutadiene | 87-68-3 | 2.5 | ug/L | 2.5 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Hexachlorobutadiene | 87-68-3 | 2.5 | ug/L | 2.5 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Pentachlorophenol | 87-86-5 | 9.5 | ug/L | 9.5 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 24 | N |
| Pentachlorophenol | 87-86-5 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 24 | N |
| Pentachlorophenol | 87-86-5 | 9.8 | ug/L | 9.8 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 25 | N |
| Pentachlorophenol | 87-86-5 | 9.5 | ug/L | 9.5 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 24 | N |
| Trichlorophenol, 2,4,6- | 88-06-2 | 1.3 | ug/L | 1.3 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Trichlorophenol, 2,4,6- | 88-06-2 | 1.3 | ug/L | 1.3 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Trichlorophenol, 2,4,6- | 88-06-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Nitrotoluene, 2- | 88-72-2 | 0.18 | ug/L | 0.083 | J | 1SLB-MW02 | SL3103 | EXPLOSIVES | J | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Nitrotoluene, 2- | 88-72-2 | 0.063 | ug/L | 0.063 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Nitrotoluene, 2- | 88-72-2 | 0.062 | ug/L | 0.062 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Nitrotoluene, 2- | 88-72-2 | 0.086 | ug/L | 0.086 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Nitroaniline, 2- | 88-74-4 | 1.9 | ug/L | 1.9 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 9.5 | N |
| Nitroaniline, 2- | 88-74-4 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 9.5 | N |
| Nitroaniline, 2- | 88-74-4 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Nitroaniline, 2- | 88-74-4 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Nitrophenol, 2- | 88-75-5 | 1.2 | ug/L | 1.2 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Nitrophenol, 2- | 88-75-5 | 1.2 | ug/L | 1.2 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Nitrophenol, 2- | 88-75-5 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Nitrophenol, 2- | 88-75-5 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Naphthalene | 91-20-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Naphthalene | 91-20-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Naphthalene | 91-20-3 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Naphthalene | 91-20-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Methylnaphthalene, 2- | 91-57-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Methylnaphthalene, 2- | 91-57-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Methylnaphthalene, 2- | 91-57-6 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Methylnaphthalene, 2- | 91-57-6 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Chloronaphthalene, 2- | 91-58-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Chloronaphthalene, 2- | 91-58-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Chloronaphthalene, 2- | 91-58-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Chloronaphthalene, 2- | 91-58-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 1.9 | ug/L | 1.9 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 9.5 | N |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 9.5 | N |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 2 | ug/L | 2 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 9.8 | N |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 9.5 | N |
| Methylphenol, 2- | 95-48-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Methylphenol, 2- | 95-48-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Methylphenol, 2- | 95-48-7 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Methylphenol, 2- | 95-48-7 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Dichlorobenzene, 1,2- | 95-50-1 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Chlorophenol, 2- | 95-57-8 | 1.1 | ug/L | 1.1 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |

**Table E-3**
**Overburden Groundwater Monitoring Well Analytical Data Used in the TNTB/WWTP1 Sewer Lines Baseline Human Health Risk Assessment**



| PARAMETER | CASNUM | RES | UNIT | MDL | VQUAL | LOCATION_CODE | SAMPLE_NO | USER_TEST_GROUP | LAB QUAL | PURPOSE | SAMPLE_DATE | START_DEPTH | END_DEPTH | REPORT LIMIT | FILTERED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorophenol, 2- | 95-57-8 | 1.1 | ug/L | 1.1 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Chlorophenol, 2- | 95-57-8 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Chlorophenol, 2- | 95-57-8 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Trichlorophenol, 2,4,5- | 95-95-4 | 1.3 | ug/L | 1.3 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Trichlorophenol, 2,4,5- | 95-95-4 | 1.3 | ug/L | 1.3 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Trichlorophenol, 2,4,5- | 95-95-4 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Nitrobenzene | 98-95-3 | 0.049 | ug/L | 0.049 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Nitrobenzene | 98-95-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 4.8 | N |
| Nitrobenzene | 98-95-3 | 0.049 | ug/L | 0.049 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Nitrobenzene | 98-95-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 4.8 | N |
| Nitrobenzene | 98-95-3 | 0.056 | ug/L | 0.056 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Nitrobenzene | 98-95-3 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Nitrobenzene | 98-95-3 | 0.054 | ug/L | 0.054 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Nitrobenzene | 98-95-3 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Nitrotoluene, 3- | 99-08-1 | 0.095 | ug/L | 0.095 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Nitrotoluene, 3- | 99-08-1 | 0.094 | ug/L | 0.094 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Nitrotoluene, 3- | 99-08-1 | 0.074 | ug/L | 0.074 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Nitrotoluene, 3- | 99-08-1 | 0.072 | ug/L | 0.072 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Nitroaniline, 3- | 99-09-2 | 1.9 | ug/L | 1.9 | U | 1SLB-MW01 | SL3100 | SEMIVOLATILES | U | REG | 18-Nov-09 | 0 | 0 | 9.5 | N |
| Nitroaniline, 3- | 99-09-2 | 1.9 | ug/L | 1.9 | U | 1SLB-MW02 | SL3101 | SEMIVOLATILES | U | REG | 17-Nov-09 | 0 | 0 | 9.5 | N |
| Nitroaniline, 3- | 99-09-2 | 0.98 | ug/L | 0.98 | U | 1SLB-MW01 | SL3102 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.9 | N |
| Nitroaniline, 3- | 99-09-2 | 0.95 | ug/L | 0.95 | U | 1SLB-MW02 | SL3103 | SEMIVOLATILES | U | REG | 4-May-10 | 0 | 0 | 4.8 | N |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.049 | ug/L | 0.049 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.049 | ug/L | 0.049 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.05 | ug/L | 0.05 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 0.049 | ug/L | 0.049 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.05 | ug/L | 0.05 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.05 | ug/L | 0.05 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.05 | ug/L | 0.05 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Dinitrobenzene, 1,3- | 99-65-0 | 0.049 | ug/L | 0.049 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |
| Nitrotoluene, 4- | 99-99-0 | 0.075 | ug/L | 0.075 | U | 1SLB-MW01 | SL3100 | EXPLOSIVES | U | REG | 18-Nov-09 | 0 | 0 | 0.2 | N |
| Nitrotoluene, 4- | 99-99-0 | 0.074 | ug/L | 0.074 | U | 1SLB-MW02 | SL3101 | EXPLOSIVES | U | REG | 17-Nov-09 | 0 | 0 | 0.19 | N |
| Nitrotoluene, 4- | 99-99-0 | 0.067 | ug/L | 0.067 | U | 1SLB-MW01 | SL3102 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.2 | N |
| Nitrotoluene, 4- | 99-99-0 | 0.19 | ug/L | 0.19 | U | 1SLB-MW02 | SL3103 | EXPLOSIVES | U | REG | 4-May-10 | 0 | 0 | 0.19 | N |

# RESPONSE TO COMMENTS

**Response to Ohio EPA Comments**
**Draft Baseline Human Health Risk Assessment**
**TNT Area B to Waste Water Treatment Plant No. 1 Sewer Lines**
**Plum Brook Ordnance Works, Sandusky, Ohio,**
**Dated September 23, 2011**
**FUDS Project No. G05OH001817**

*Dr. Janusz Z. Byczkowski, Risk Assessor, Ohio Environmental Protection Agency (OEPA), Division of Emergency and Remedial Response, reviewed the Baseline Human Health Risk Assessment (BHHRA) for the TNT Area B (TNTB) to Waste Water Treatment Plant 1 (WWTP1) Sewer Lines, but had no comments as indicated by the comment letter received from the OEPA on October 24, 2011 . However, based on a comment by Dr. Byczkowski on the WWTP1 BHHRA and subsequent agreement between the Ohio Environmental Protection Agency and the U.S. Army Corps of Engineers (USACE) on November 22, 2011, the "Recommendations"(Chapter 8.0) and their discussion in the executive summary of the draft TNTB/WWTP1 BHHRA will be removed from the final BHHRA and placed into the final RI.*