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December 18, 2015

Stephanie Vaughn
Jennifer LaPoma
U.S. Environmental Protection Agency, Region II
290 Broadway
New York, New York 10007-1866

Via Electronic Mail

Re: *Revised 17-Mile Lower Passaic River Study Area (LPRSA) Baseline Human Health Risk Assessment - Administrative Agreement and Order on Consent for Remedial Investigation/Feasibility Study - CERCLA Docket No. 02-2007-2009*

Dear Ms. Vaughn and Ms. LaPoma:

The Lower Passaic River Study Area Cooperating Parties Group (CPG) is delivering the revised Baseline Human Health Risk Assessment (BHHRA) for the entire 17-mile LPRSA Remedial Investigation/Feasibility Study (RI/FS). The 17-mile LPRSA BHHRA has been prepared pursuant to the following documents:

- May 2007 Administrative Agreement and Order on Consent (AOC)
- August 2009 Region 2-approved Problem Formulation Document (PFD)
- February 2012 Region 2-CPG Dispute Resolution
- October 2013 Draft Risk Analysis and Risk Characterization Work Plan (RARC)
- June 2015 Region 2 BHHRA Comments
- October 2015 Region 2 BHHRA Responses
- December 2015 Region 2 BHHRA Responses

Despite the CPG's disagreements outlined herein, the CPG has revised under protest the 17-mile BHHRA to conform with the Region's directives. The inclusion of the directed changes should in no way be construed as CPG's waiving any of the issues outlined in this transmittal letter and previous documents prepared by the CPG.

The CPG again notes its strong objection to and disagreement with the directives that Region 2 has unilaterally imposed on the preparation of the 17-mile LPRSA BHHRA to inflate risk estimates. The CPG's objections are well-documented in the 2011 dispute resolution submissions and more recent communications.

Specifically, the CPG restates the following objections:

Conflating Current and Future Risk – The Region's directives have combined current and future exposure scenarios into a single scenario that does not accurately represent current use and cannot be assumed to represent reasonably foreseeable future uses of the river.

Non-Site-Specific and Unrealistic Assumptions – In its directives to the CPG, the Region has imposed numerous unrealistic assumptions and approaches that do not reflect site-specific conditions and do not comport with the intent of Reasonable Maximum Exposure (RME) or Central Tendency Exposure (CTE).

- Region 2 has determined, without relying on any LPRSA site-specific information, that adult anglers are consuming 28 lbs. of fish and 16 lbs. of crab per year for 24 years, and all of these fish and crabs are taken only from the LPRSA. Region 2's fish consumption rate equates to catching approximately 93 lbs. of whole fish per year for one adult or nearly 300 lbs. of whole fish per year for a family of four. The Region has no factual or documented evidence from the LPRSA to support these consumption rates.

- Region 2 has ignored the results of two creel angler surveys conducted in the LPRSA over the last 15 years, which demonstrate that consumption rates are well below the Region's non-site specific consumption rates. These lower consumption rates are also consistent with observations from the 2015 fish exchange pilot program performed by Rutgers University, which has found very limited fishing and consumption of Lower Passaic River fish by anglers.

- Region 2 has determined that anglers always eat the cooking juices, fat, and skin of fish and the cooking juices and hepatopancreas of crab, contrary to the published literature and available data on consumption practices, which artificially inflates risk.

The net effect of the multiple and compounding conservative assumptions directed by the Region is an unrealistic estimate of exposure to COPCs that is inconsistent with the intent of RME and CTE, as set forth in the USEPA's guidance. It is not appropriate to set most RME exposure factor inputs to upper-percentile values as Region 2 has directed, inasmuch as the resulting exposure estimates will fall in the extreme tail of the distribution and above bounding estimates for the population of interest (USEPA 1989, 1992, 2004).

Misrepresents PCB Risks - Region 2 purposely directs the "double counting" of PCB risk by summing the human health risks associated with dioxin-like PCBs and non-dioxin-like PCBs. This increases the risks/hazards associated with PCBs by up to a factor of 2 to 3-fold for the risk-driving fish and crab consumption pathways. Region 2 has not considered site-specific data, which support that enrichment of presumed dioxin-like congeners in fish and crab tissue does not exceed the level of protection afforded in the PCB toxicity factors.

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Consciously-Biased Selection of the Largest Fish Specimens – The Region employed a biased approach to developing the fish tissue exposure point concentrations for the BHHRA by selecting many of the largest fish specimens for chemical analysis. By not adequately considering the available size distribution data that was collected as part of the Region-approved fish community surveys, and simply targeting larger specimens for chemical analysis, the Region consciously biased upward the concentrations of chemicals in fish tissue for use in the risk assessment. When combined with upper-bound statistical estimates of concentration and the assumption of no contaminant loss due to preparation or cooking, the estimated chemical dose from fish consumption is at the extreme high end of the range of possible doses.

Refusal to Acknowledge the Severe and Significant Pathogen Risk – The Region refuses to allow discussion of pathogen risks, even in the uncertainty section of the BHHRA. Region 2 has directed that no language regarding pathogen contamination as a deterrent to swimming and other recreational activities, or as a public health risk to users of the river, be included in the risk assessment documents. While the CPG recognizes that pathogens are not CERCLA constituents, microbial risks are a well-documented component of background risks for river users, and should be considered within the broader context of risk-based remedial decision-making for the LPRSA.

Underestimation of the Contribution of Background Conditions on Site Risk – The Region has minimized the contribution of background to current and future conditions in the LPRSA. Region 2 has limited discussions about background and site risks, and continues to ignore the significant contribution of upstream and regional conditions on the LPRSA for many chemicals of concern including pesticides, PAHs, PCBs, and inorganics.

The CPG maintains that the directives imposed on its preparation of the 17-mile LPRSA BHHRA have significantly reduced its usefulness as a decision tool in the risk management process. The collective effect of the multiple compounding conservatisms has resulted in estimates of risk that are greatly exaggerated and unrealistic. The 17-mile BHHRA would be more informative and reduce the uncertainty during the remedial decision-making process if there were more flexibility and realism in the definition of human health exposure assumptions and scenarios that are evaluated. Instead, the Region's arbitrary directives have resulted in an unrealistic characterization of the risk to humans in consuming fish, crabs, and exposure to sediments and surface water. These unreasonable and unrealistic assumptions, which are not based on site-specific conditions, will result in remediation goals (e.g., PRGs etc.) that are significantly lower than required in order to provide protection of human health.

2014 Site-Specific Human Health Risk Assessment (SSHHRA)

The CPG has attached its 2014 Site-Specific Human Health Risk Assessment (SSHHRA) [1], which provides a more realistic estimate of risks to persons using the River than either the Region's 2014 FFS Human Health Risk Assessments or the revised 17-mile BHHRA. The CPG asks that the results of the SSHHRA be considered in the 17-mile remedial decision-making process. The SSHHRA utilizes realistic assumptions and site-specific data and provides the following risk estimates:

- Total potential cancer risk for anglers that contact accessible surface sediment and surface water and consume a mixed fish diet based on site-specific angler species preferences exceeds the USEPA's target risk range (4E-04) for the combined adult/adolescent/child. The exceedance is due primarily to TCDD-TEQ in fish tissue, and to a lesser extent PCBs. For the two mixed fish diets with and without carp, the total potential cancer risks are 5E-04 and 2E-04, respectively, for the combined adult/adolescent/child.

- Total potential cancer risks for anglers that contact accessible surface sediment and consume a diet of crab muscle and hepatopancreas or crab muscle only are within USEPA's target risk range of 10^{-6} to 10^{-4}.

It should be noted that most people only consume the crab muscle, which has lower concentrations than the hepatopancreas tissue. Calculating risk only for crab muscle is in agreement with USEPA CSTAG's April 2008 recommendation which stated *"[b]ecause many consumers eat only crab muscle, goals based on the ingestion of just muscle should also be presented"* (see Principle #8, bullet 1), which Region 2 has chosen to ignore and exclude in both the 8-mile Proposed Plan and 17-mile BHHRA.

CPG estimated site-specific risks from consuming LPRSA fish and crab are ten-fold lower than estimated in the revised BHHRA using Region 2's overly conservative assumptions.

Revised 17-mile BHHRA Review

Finally, the CPG believes these is no merit to the Region's contention in its June 2015 cover e-mail that the revised *"draft BHHRA will require a complete and thorough review by EPA and the partner agencies"*. The Region and the CPG went through an extensive review and discussion of comments from June through November of this year, in which many of the differences were resolved and others were documented. There is

[1] The CPG has previously delivered to Region 2 the SSHHRA with both its August 2014 8-mile FFS and Proposed Plan comments and the draft February 2015 17-mile RI Report. To date, the Region has not acknowledged the SSHHRA or offered to discuss the results with the CPG.

no reason to conduct a total review of the revised BHHRA by the Region's partner agencies; this will be a time-consuming and wasteful effort that will preclude the completion of the 17-mile LPRSA RI/FS and issuance of a Proposed Plan in calendar year 2016, which the Region has publicly stated as its goal[2]. Further, the CPG spent significant time and resources addressing 220 detailed comments to prepare a revised BHHRA document that identifies the same risk estimates and comes to the same conclusions as the 2014 draft BHHRA. There are no significant differences in the major source(s) of human-health risk between the 8-mile FFS HHRA, CPG's 2014 17-mile BHHRA and the 2015 revised 17-mile BHHRA, as shown below:

Mixed fish diet including carp	**R2 8-mile FFS HHRA (2014)**	**CPG 17-mile BHHRA (2014)**	**CPG 17-mile BHHRA (2015)**
Adult Angler	4E-03	3E-03	3E-03
Child Anger	1E-03	1E-03	1E-03
Combined Adult/Child	5E-03	4E-03	4E-03

Crab muscle & hepatopancreas	**R2 8-mile FFS HHRA (2014)**	**CPG 17-mile BHHRA (2014)**	**CPG 17-mile BHHRA (2015)**
Adult Angler	1E-03	9E-04	9E-04
Child Anger	5E-04	4E-04	4E-04
Combined Adult/Child	1.5E-03	1.3E-03	1.3E-03

The Region should rapidly review the document to determine that its directive comments have been addressed and then approve the document – and not further draw this process out well into calendar year 2016.

The CPG requests that this letter and its attachment be included in both the Administrative Records for the 17-mile LPRSA operable unit of the Diamond Alkali Superfund Site and the 8-mile Proposed Plan.

If you have any questions, please contact Bill Potter or me.

Very truly yours,
de maximis, inc.

Robert Law, Ph.D.
CPG Project Coordinator

[2] Statements made by Stephanie Vaughn during the July 9, 2015 LPR CAG Meeting.

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cc:
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Attachment - Site-Specific Human Health Risk Assessment of LPRSA

AECOM **Environment**

Submitted to
Cooperating Parties Group
Newark, NJ

Submitted by
AECOM
250 Apollo Drive
Chelmsford, MA 01824
August 2014

Attachment to CPG's December 18, 2015 Transmittal Letter

Site-Specific Human Health Risk Assessment of LPRSA

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1 Introduction

The United States Environmental Protection Agency (USEPA) provided the Cooperating Parties Group (CPG) with the exposure parameters to be used in the baseline human health risk assessment (BHHRA) for the Lower Passaic River Study Area (LPRSA). Exposure parameters for both Reasonable Maximum Exposure (RME) and a Central Tendency Exposure (CTE) scenario were provided by USEPA Region 2 in a *Technical Memorandum: Exposure Parameter Assumptions for the LPRSA Human Health Risk Assessment (Tech Memo)* and corresponding tables (USEPA 2010) and *Technical Memorandum: Revisions to Exposure Parameter Assumptions for the LPRSA Human Health Risk Assessment* (USEPA 2011a, 2012b).

As noted in responses to USEPA comments on risk planning documents and dispute resolution comments prepared by the CPG, many of the exposure parameter values directed by Region 2 for use in the baseline HHRA are not reasonable or representative of the LPRSA (AECOM 2011b). USEPA directed the use of exposure factors set at or above the high end of the range of possible values, and without regard to site-specific conditions. Application of these values in the baseline HHRA will result in an exaggerated estimate of site risk and cleanup levels that are unnecessarily stringent. To optimize development of realistic cleanup goals, it is critical that the methods and assumptions used to estimate risk be representative of the LPSRA. To address this need, the CPG has conducted a separate site-specific human health risk assessment (SSHHRA) to provide a more reasonable estimate of upper-bound risks. This has been accomplished by developing a more reasonable Reasonable Maximum Exposure (RME) scenario using more realistic exposure parameters and more realistic set of exposure scenarios.

The use of site-specific data is a critical part of the risk assessment and risk management processes, and is consistent with guidance concerning risk management decisions at contaminated sediment sites articulated by the National Academy of Sciences (NRC 2001) and USEPA (2002, 2005). A site-specific approach is especially relevant for evaluating water-related recreational activities (e.g., fishing, swimming, boating) that depend on the characteristics of the water body and are often not well described by default exposure parameters. Site-specific risk evaluation requires knowledge of local receptor populations and their behaviors, as well as the characteristics of the site and surrounding area.

Based on a review of available land use planning data, uses of the LPRSA in the foreseeable future are not expected to differ appreciably from present day uses. While a number of municipal and regional plans call for revitalization or expansion of green space and parks (e.g., proposed expansion of Minish Park between Bridge and Brill Streets in Newark), the proposed changes are not expected to result in new recreational uses or changes to current recreational uses that have the potential for direct contact with sediment and surface water. However, to ensure that the SSHHRA does not underestimate potential risks in the foreseeable future, the exposure assumptions were developed to account for the possibility that in the future, people may engage in certain activities, such as canoeing/kayaking, wading, or swimming, more frequently than they are observed to currently. The instances where exposure frequencies reflect potential future conditions are noted.

Site-specific data for the LPRSA have been gathered from a variety of sources including discussions with local organizations, observations of people using the river, interviews with anglers, and review of redevelopment and restoration plans. A year-long creel/angler survey (CAS) of the LPRSA conducted by the CPG in 2011 and 2012 provides extensive information on angling in the Study Area that has been used in the SSHHRA. Studies published in the peer reviewed literature also provide information that has been considered in the development of more realistic assumptions and exposure parameters. Applicable data on general exposure factors (e.g., body surface area, body weight) have been obtained from USEPA sources, including:

- Exposure Factors Handbook (EFH): 2011 Edition (USEPA 2011b); and
- Risk Assessment Guidance for Superfund (RAGS) Volume 1, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), (USEPA 2004).

Note that in the preface of the 2011 *EFH*, USEPA indicates that the 2011 document supersedes the Child-Specific *EFH* (USEPA 2008). In general, the data presented for children are the same in the 2008 document and the 2011 document. Therefore, exposure factor data for children have been obtained from the more recent 2011 *EFH*.

Section 2 provides an overview of the site setting and identifies the receptors and exposure pathways included in the SSHHRA. Section 3 presents the site-specific exposure scenarios and exposure point concentrations. Section 4 summarizes the toxicity and absorption factors used, and Section 5 presents the results. References are provided in Section 6.

2 Overview of Site-Specific Exposure Scenarios

This section provides an overview of the site setting and relevant potential exposure receptors and pathways evaluated in the SSHHRA. Additional details on the site setting can be found in the *Problem Formulation Document (PFD)* (Windward and AECOM 2009) and the *Revised Risk Analysis and Risk Characterization Plan (RARC Plan)* (Windward and AECOM [in prep]).

2.1 Site Setting

The approximately 80-mile Passaic River flows from its headwaters in southern Morris County (near Mendham) to Newark Bay in northern New Jersey. The LPRSA includes the lower 17.4 miles of the Passaic River and is generally considered to be within the Greater New York City Metropolitan Area (Figure 2-1). The upstream boundary of the LPRSA is the Dundee Dam, located at river mile (RM) 17.4 near the municipalities of Clifton (western riverbank) and Garfield (eastern riverbank). The downstream boundary is located at the red channel navigation marker at the confluence of the Passaic River and Newark Bay (RM 0.0). The portion of the Passaic River in the Study Area travels through Passaic, Bergen, Essex, and Hudson counties and several municipalities, including Clifton, Garfield, Rutherford, Nutley, Belleville, Kearny, Newark, and Harrison, among others. These counties had a combined population of 2.82 million people in 2010 , with an average density of approximately 6,600 people per square mile in 2010 (US Census Bureau 2014).

Land use along the 17.4-mile LPR varies considerably (see Figure 2-2). The differences in land use are taken into account in the development of the site-specific conceptual site model (CSM), which is presented in the *Draft Interim Conceptual Site Model for the LPRSA Remedial Investigation/Feasibility Study (RI/FS)* (LPR CPG 2013). The lower portion of the river is dominated by high-density commercial and industrial development and rail/transportation infrastructure. A strip of green space (Riverbank Park and Minish Park) runs along the western shoreline between RM 4 and 5 in Newark. The shoreline along much of the lower 7 miles is bulkheaded. As a result of physical constraints and the primarily industrial/commercial, urban, and infrastructure land uses, shoreline access is limited and exposure to sediment and surface water in the lower 7 miles is, and expected to continue to be, an infrequent occurrence.

Moving upriver, land use transitions to increasingly commercial and recreational, with pockets of residential located adjacent to the river above RM 8. Highway 21, a four-lane highway that runs parallel to the river along the western bank between RM 7 and RM 14, limits public access through this stretch. Several parks and boathouses are located along the eastern shoreline between RM 7 and RM 14. The upper portions of the LPRSA generally feature steeper and modified shorelines on the west banks with limited areas of riparian vegetation. The east bank tends to be less modified, consisting of more natural shoreline, residential areas, and parks. Future redevelopment plans include revitalizing existing parks and increasing open space along the riverfront, although it is unclear to what extent these potential improvements will change access to shoreline sediment and surface water. The potential for exposure to accessible sediment and surface water is greater in the recreational and residential areas above RM 7 where direct access to the shoreline is possible. The percentage of shoreline that is characterized by various land uses is summarized in the table below for the lower 7 miles and the upper 10 miles of the LPRSA.

Shoreline Land Use Along Lower Passaic River

Land Use	River Miles 0-7	River Miles 7-17.4
AGRICULTURE	0%	0.6%
INDUSTRIAL/COMMERCIAL/ URBAN	72.6%	32.4%
INFRASTRUCTURE	16.4%	22.4%
RECREATIONAL/OPEN SPACE	10.6%	33.9%
RESIDENTIAL	0.4%	10.2%
WETLANDS	0%	0.6%

Land Use data: NJDEP, 2007
http://www.state.nj.us/dep/gis/lulc07shp.html

Recreational activities observed along the LPRSA are generally of the type that involve low potential for direct contact with river sediment and surface water. The urban setting and presence of trash, debris, and combined sewer overflows (CSOs) discharging into the river serve as visible deterrents to swimming and other high contact water sports. Although the state's classification of the freshwater portion of the river (from the confluence with Second River to Dundee Dam) includes swimming as a designated use, this stretch of the river frequently does not meet the pathogen standards associated with this classification (New Jersey Harbor Dischargers Group 2012). There are no public beaches or designated swimming areas on the river, and no informal areas where people have been observed swimming. Any swimming in the river is likely to be a rare and very brief duration event (e.g., a few minutes).

Several local boat clubs, rowing associations, and high school teams use the river for sculling. The floating docks from which rowers board and exit their boats are located along the eastern shore between RM 8 and 12 (see Figure 2-2). Rowing takes place as far downriver as RM 4 and as far upriver as RM 16 (Nereid Boat Club 2010). Although canoes and kayaks are occasionally observed, pleasure boating is limited, due in part to limited public boat ramps and several low clearance bridges. A total of 22 bridges are located on the LPRSA between RM 1 and RM 16. Of these, eight have vertical clearance of eight feet or less, as noted below:

Name	River Mile	Type	Vertical Clearance (Feet)	Opening Schedule
Bridge Street Bridge	5.4	Swing	7	48-hour notice required
Clay Street Bridge	5.8	Swing	8	Hudson & Essex Counties
Belleville (Route 7) Bridge	8.5	Lift deck	8	4-hour notice required
DeJesse-Avondale Street Bridge	10.4	Opening Truss Swing	7	On demand 7 AM to 5 PM
Wallington Street Bridge	14.4	Fixed Span	5	--
West 8th Street Bridge	15	Fixed Rail (decommissioned)	5	--
Garfield-Wall Street Bridge	15.7	Fixed Span	5	--
Monroe Street Bridge	16.1	Fixed Span	6	--

The sale of fish and shellfish originating from the entire 17.4-mile LPRSA (from Newark Bay to Dundee Dam) is currently prohibited by the state of New Jersey (NJDEP and NJDHSS 2013) and has been since the 1980s. In addition, there is a fish

consumption advisory designed to warn the public against consumption of all fish and crab from the LPRSA (NJDEP and NJDHSS 2013). However, despite the presence of this fish advisory, recreational fishing has been observed, with most activity in the upper freshwater reach above RM 9. Angler surveys of fishing and crabbing activity in the Lower Passaic River (LPR) are discussed below in Section 2.2. These surveys indicate that consumption of LPRSA fish and/or crab by local anglers is limited.

2.2 Fishing and Crabbing in the LPRSA

Two angler surveys have been conducted in the LPRSA. In addition, a 1995 survey by NJDEP that was focused on Newark Bay included two locations on the LPR (NJDEP 1995). These surveys are summarized below. Additional details on NJDEP's 1995 survey and other Newark Bay angler surveys can be found in the *BHHRA* (AECOM [in prep]) and the *Creel/Angler Survey Work Plan for the LPRSA* (AECOM 2011a).

- *NJDEP 1995 Newark Bay Angler Survey* - The NJDEP's 1995 angler survey of the Newark Bay Complex included two locations in the LPR: 1) Nutley Bridge (Belleville Bridge) at RM 8.5, and 2) the Lyndhurst Boat Ramp in Riverside Park North at RM 11 (NJDEP 1995). Of the 22 surveys conducted in 1995 in the Passaic River portion, only one respondent reported consuming LPRSA fish and crab (70 year old white male), and sharing his catch with his wife and aunt (NJDEP 1995). The angler reported consuming crab twice a month (number of months not specified) and six crabs per meal, and striped bass once a year (about ½ to 1 pound of striped bass). No other species of fish, including bluefish, white perch, white catfish, American eel, were reported to be consumed by this angler (NJDEP 1995). Angler surveys of the Newark Bay complex by NJDEP in 2002 and 2005 included limited interviewer visits to LPR sites (AECOM 2011a).
- *Tierra's 2000-2001 Creel/Angler Survey of LPR* – Tierra conducted a year-long Creel/Angler Survey (CAS) of the lower six miles (RM 1 to 7) of the LPR in 2000 to 2001 (Desvousges et al. 2001). The survey used a stratified random sampling design, with data collection via on-site intercepts (angler interviews) on 101 days and boat-based angler counts on 143 days. The results are discussed in Kinnell et al. (2007) and Ray et al. (2007a,b). An estimated 61 unique anglers were interviewed, of which 7 were identified as consuming anglers (Ray et al. 2007b). Over 90% of total angling activity was observed at five locations in RM 1-7, with one location accounting for the majority of activity (behind Hess Gas Station at RM 5.4, which is now a Hampton Inn that is fenced off from the river). The size of the angler population in the lower six miles was estimated to be 154 to 385 anglers, of which an estimated 17 to 34 anglers consume LPR fish (Ray et al. 2007b). The 2000-2001 CAS found no anglers consuming crab.
- *CPG's 2011-2012 Creel/Angler Survey of LPRSA* - The CPG conducted a CAS of the entire LPRSA from September 16, 2011 to September 15, 2012 (AECOM 2011a). The data collection components included on-site intercepts on 136 sample days and angler counts on 164 sample days. The majority of angling activity was observed between April and October, with most activity above RM 9. A total of 381 angler interviews were completed, with an estimated 294 unique anglers. The CPG's CAS is discussed in more detail in Section 2.2.1 below.

2.2.1 CPG's Creel/Angler Survey of the LPRSA

Over a year-long period in 2011 and 2012, the CPG conducted a CAS in the LPRSA to collect site-specific data on anglers who fish and/or crab in the 17.4 mile Study Area, including information on trips and locations fished, the amount and types of fish and/or crabs caught and kept, preparation and consumption practices, demographic characteristics, advisory awareness and behaviors, and years of fishing the LPRSA. The survey design and administration methods are described in a work plan (AECOM 2011a), which was peer reviewed by an independent panel of experts convened by Toxicology Excellence for Risk Assessment (TERA).

During the period of the CAS administration (September 16, 2011 to September 15, 2012), survey personnel completed angler intercepts on 136 sample days and angler observations on 164 sample days. Stratified random sampling was used to allocate sample days by season, type of day, and time of day. Angler intercepts were conducted every month except December, January, and February; angler observations (counts) were conducted every month of the survey year. While the counts provided information on the number and locations of anglers in the Study Area on a sample day, the angler intercepts provided detailed information on angler demographics, trip taking, fishing behaviors, and consumption preferences. Interviewed anglers were asked about their catch, including what was kept/not kept, and why.

The angler counts were conducted by boat between RM 0 and 15, and by land between RM 15 and 17.4. Over a total of 164 sample days, approximately 1800 unique anglers were observed in the Study Area. Most were fishing at sites above RM 9. One popular site located along a bulkhead on the western bank south of the Union Avenue Bridge (~RM 12.8) accounted for approximately 25% of angler observations. Other popular sites included Dundee Dam area, Nutley Boat Launch (RM 10.4) and VFW Park/Firehouse Boat Launch (RM 9.1). On 136 sample days, anglers were intercepted and interviewed about their fishing and crabbing practices, catch and consumption, advisory awareness and behaviors, and demographics. A total of 381 angler interviews were completed, with a response rate of ~74% (minus anglers who refused re-interviews). Basic information (e.g., gender, estimated race, age, whether angler kept fish) was recorded for anglers who refused interviews ("Missed Creel Reports").

Of the estimated 294 unique anglers who were interviewed, approximately 57% were White, 23% Hispanic, 12% African American, 2% Asian, and 1% American Indian (5% Other or Refused). The vast majority of anglers were male (~95%), and the median age was 40. Most lived within 5 miles of the LPRSA and fished between April and October. About two-thirds of non-consuming anglers reported awareness of the LPRSA "Do Not Eat" consumption advisory; about one-third of consuming anglers reported awareness.

The CAS found that most LPRSA anglers practiced 'catch and release' fishing techniques; less than 10% reported consuming LPRSA fish (25 anglers kept fish or reported consuming LPRSA fish). Species that anglers kept or reported they would keep included striped bass, common carp, channel catfish, white perch, smallmouth and largemouth bass, northern pike, American eel, and brown bullhead. Frying was the cooking method of choice. While some anglers planned to share their catch with one other person, none reported sharing with children or pregnant or nursing women. Only three of the anglers who were interviewed reported they crab in the LPRSA, and only one of the three reported that he consumes LPRSA crab if caught. On the day interviewed, no anglers had any crabs in their possession. The objectives, methods, and results of the CPG's CAS are summarized in a data report (AECOM 2014a), and the results are used to derive the site-specific consumption rates used in the SSHHRA.

2.3 Exposure Scenarios for the Site-Specific HHRA

The National Contingency Plan (NCP) requires, and USEPA guidance (USEPA 1989) directs, that the human health risk assessment process present a description of exposures as they are occurring under current conditions at the site, with consideration of an individual or group reasonably expected to experience the highest levels of repeated exposure over an extended duration. In addition to evaluating current conditions, the analysis is also to consider conditions at the site, such as human activities and land use, which would be expected to change in the foreseeable future, and describe how those changes would influence estimates of current exposures. USEPA (1989) indicates on page 6-5 that estimates of the "reasonable" maximum exposure "necessarily involves the use of professional judgment." While the document provides guidance for determining the RME as well as some exposure variable values, the guidance notes that these are general recommendations that may change based on site-specific information.

Potential future land uses have been evaluated in accordance with USEPA (1995), including considering local land use plans regarding reasonably anticipated future uses. Based on the information currently available, future land and water uses within the LPRSA are not expected to differ greatly from current uses. Existing plans for redevelopment and restoration call for improvement and/or expansion of existing parks and open space along the river. For example, a riverfront walkway under development between Bridge and Brill Streets in Newark is designed to increase open space along the Passaic River that is accessible to the downtown and to residents and employees from the Ironbound neighborhood (City of Newark 2010). As another example, the Borough of Rutherford's planning goals include improving "accessibility, aesthetic and recreational opportunities in the area surrounding the Passaic River through restoration and redevelopment programs," and "the creation of passive recreation opportunities along the river corridor" (Bureau of Rutherford 2007).

Recent examples of redevelopment with riverfront access include the Hampton Inn & Suites and River Park condominiums, both located in Harrison adjacent to the Passaic River. The outdoor space at both locations includes a pedestrian walkway that provides access to the riverfront, but not to the river itself (the walkway is fenced preventing access to rip-rap sloping down to the water's edge). While a number of Passaic River communities include increasing access, green space, aesthetics, and overall connection to the riverfront in their master plans, many of the existing physical constraints are not expected to

change as a result of redevelopment and restoration actions. These constraints, including steep, bulkheaded and/or rip-rapped riverbanks, adjacent highways and rail infrastructure, industrial and urbanized land and waterway uses, as well as ongoing pathogenic contamination and visible trash and debris, will continue to limit the likelihood that recreational activities with a high potential for water contact, such as swimming and wading, will occur regularly in the LPRSA. Further details regarding planned future use can be found in the RARC Plan (Windward and AECOM [in prep).

2.3.1 Reasonable Maximum Exposures

As stated in USEPA's *Guidance for Exposure Assessment* (1992b), the intent of the RME is to estimate a conservative exposure that is above the average case but still within the range of possible exposures (defined as above the 90th percentile for the population of interest). USEPA's guidance also advises that not all RME exposure factor inputs should be set to upper percentile (or maximum) values, so that resulting exposure estimates do not exceed the RME (USEPA 1989, 2004). With this in mind, the SSHHRA identifies point estimate values that are appropriate for evaluating a single alternative RME scenario. For exposure parameters that are best characterized by site-specific conditions, such as fish consumption or the frequency of a particular recreational activity, this includes values that are more realistic and technically supportable for the LPRSA than the assumptions directed by USEPA for use in the BHHRA, but are still conservative and representative of an RME scenario.

As previously noted, available land use planning data suggest that uses of the LPRSA in the foreseeable future are not expected to differ appreciably from present day uses. Plans for revitalization or expansion of green space and parks are not expected to result in new recreational uses or changes to current recreational uses where direct contact with sediment and surface water is possible. However, to ensure that the SSHHRA does not underestimate potential risks in the foreseeable future, the alternate RME exposure assumptions were developed to account for the possibility that people may engage in certain activities in the future, such as canoeing/kayaking, wading, or swimming, more frequently than currently occurs.

2.3.2 Selected Exposure Scenarios

As described in the *PFD* (Windward and AECOM 2009) and the *RARC Plan* (Windward and AECOM [in prep]), the media of interest relevant to evaluating potential human health exposures for the LPRSA are:

- River surface water
- Nearshore river sediment
- Mudflat sediment
- Floodplain soil
- Fish tissue
- Shellfish tissue

The potentially exposed populations and potential exposure pathways evaluated in the SSHHRA are as follows:

- Current and future recreators, including swimmers, waders, and boaters:
  - Direct contact with accessible nearshore and mudflat surface sediment and surface water
- Current and future anglers:
  - Direct contact with accessible nearshore and mudflat surface sediment and surface water, and ingestion of LPRSA fish and crab
- Current and future residents:
  - Direct contact with river sediment that may have deposited in backyards adjacent to the river following flooding events, referred to as "floodplain soil"
- Current and future workers:
  - Direct contact with accessible nearshore and mudflat surface sediment

Per the USEPA's direction, the residential receptor was evaluated qualitatively in the BHHRA. This qualitative evaluation considered potential contact with river sediment and surface water adjacent to residential properties, and river sediment that has deposited onto yards in the aftermath of flooding events (floodplain soils). The evaluation found that risks to residents are unlikely to exceed target risk levels. For the SSHHRA, the residential evaluation focuses on exposure to floodplain soils in backyards adjacent to the river, and a quantitative evaluation of this scenario is included in the SSHHRA. A separate quantitative evaluation of potential residential exposure to river sediment and surface water is not included in the SSHHRA, as these exposures are likely to be similar to the wading scenario, which is already included in the SSHHRA.

The media and exposure pathways evaluated for each receptor are summarized in the following table.

Receptor	Age Group[(a)]	Accessible Surface Sediment	Surface Water	Tissue	Floodplain Soil
		Incidental ingestion and dermal contact	Incidental ingestion and dermal contact	Ingestion of fish and crab	Incidental ingestion and dermal contact
Swimmer	Adult	X	X		
	Adolescent	X	X		
	Young child	X	X		
Wader	Adult	X	X		
	Adolescent	X	X		
	Young child	X	X		
Boater	Adult	X	X		
	Teen	X	X		
	Older child	X	X		
Angler	Adult	X	X	X	
	Adolescent	X	X	X	
	Young child			X	
Resident	Adult				X
	Adolescent				X
	Young child				X
Worker	Adult	X			

(a) adult = ≥19 yrs; adolescent = 7 to <19 yrs; young child = 1 to <7 yrs; older child = 7 to <14 yrs; teen = 14 to <18 yrs.

To facilitate comparison with receptor-specific risk outcomes for the BHHRA, the same age groups are used for the SSHHRA. Inhalation exposure to organic COPCs volatilizing from mudflat sediment and surface water is not included in the SSHHRA. This potential exposure pathway was shown to be a negligible exposure pathway for the receptor scenarios evaluated in the BHHRA for the LPRSA (AECOM [in prep]).

3 Exposure Assessment

Exposure parameters are presented in Section 3.1 and exposure point concentrations are presented in Section 3.2.

3.1 Exposure Parameters

This section presents the exposure parameters for the receptors and exposure pathways quantitatively evaluated, and the exposure point concentrations used in the SSHHRA. Tables 3-1 through 3-6 provide the exposure parameters for each of the six receptors evaluated:

- Table 3-1 - Swimmer
- Table 3-2 - Wader
- Table 3-3 - Boater
- Table 3-4 - Angler
- Table 3-5 - Resident
- Table 3-6 - Worker

General descriptions of each receptor are presented in this section. Detailed discussions that describe the basis for each exposure parameter are provided in Exhibit B-1.

3.1.1 Swimmer

Given the visible deterrents to swimming along large sections of the river, including the presence of trash and debris and the generally urban setting of the river, as well as numerous visible outfalls and history of microbial contamination, swimming in the LPRSA is expected to be a rare and very brief duration (e.g., a few minutes) event both now and in the foreseeable future. As previously noted, there are no public beaches or designated swimming areas on the river, and no informal areas where people have been observed swimming. In addition, none of the park restoration or redevelopment plans include creation of swimming or recreational beach areas. While individuals visiting the LPRSA may not know specific levels of pathogens in the water, they are likely aware of the high potential for pathogenic contamination, due to the urbanized nature of the water way and visible CSOs.

While in reality it is unlikely that swimming or other high contact water activities currently take place or will in the foreseeable future, the site-specific HHRA includes a swimming scenario to address the potential risk for someone who may occasionally choose to swim in the river. Exposure assumptions are provided for a young child, adolescent, and adult recreator who may occasionally swim or fully submerge their bodies in the river. While swimming, receptors are assumed to be exposed to surface water and sediment via incidental ingestion and dermal contact. Exposure parameters for the swimmer receptor are presented in Table 3-1.

3.1.2 Wader

Similar to swimming, frequent and extended periods of unprotected wading in the river is expected to be a relatively infrequent occurrence. However, the SSHHRA assumes that a young child, adolescent, and adult wader may be exposed to accessible surface sediment and surface water during a wading event. Exposure parameters for the wader receptor are presented in Table 3-2.

3.1.3 Boater

As described in Section 2.1, the river is used by several local boat clubs and eight high school and college rowing teams for sculling. The sculler population consists of approximately 500 students and 400 boat club members. The sculling season runs from early spring through late fall, with spring and fall seasons for school teams. Additionally, some larger single day meets take place in which over 1,000 high school rowers are involved, such as the Head of the Passaic Regatta which takes place in October. Scullers typically wear spandex suits during most of the season (Nereid Boat Club 2010; Passaic River Rowing Association 2010). In colder weather, scullers may also wear long sleeves, pants, gloves, and hats. Sculls are boarded from floating docks to avoid damage to hulls, and boaters are expected to remain in their boats.

Canoeing and kayaking have also occasionally been observed during field programs conducted by CPG. The canoe and kayak season typically runs from March to November (National Park Service 2010). A 2007 action plan called for establishment of a canoe and kayak trail that included the stretch of the Passaic River between Dundee Dam and Newark Bay, as well as an annual paddling event (Passaic River Watershed Association 2013). The recently opened Newark Riverfront Park located on Raymond Boulevard includes a dock intended for boarding boats, such as canoes and kayaks.

Pleasure (motor) boating is limited, due in part to several low clearance bridges (as discussed in Section 2.1), as well as limited public boat ramps. The four public boat ramps in the LPRSA are located in Kearny, Nutley, Lyndhurst, and Rutherford, although the Lyndhurst ramp is typically locked and the Rutherford municipal ramp is in poor condition and not considered usable (Passaic River Boat Club 2013). Only the Nutley and Kearny ramps can be used to launch a boat on a trailer and launching is limited to approximately 2 hours before and after high tide (Passaic River Boat Club 2013). Improving the condition of the public boat ramps has been identified as a need by the Passaic River Boat Club.

Exposure to river sediment or surface water while boating is likely to be limited to occasional contact when entering or leaving a boat, such as a canoe or kayak, or during a fall into the river. For the SSHHRA, boaters are assumed to be potentially exposed to surface water and sediment via incidental ingestion and dermal contact. The boater receptor includes the following three age groups, which are consistent with the boater receptors evaluated in the baseline HHRA:

- Older children (age 7 to <14), who are assumed to canoe or kayak in the LPRSA,
- Teenagers (age 14 to <18), who are assumed to participate in sculling on high school crew teams, and
- Adults who are assumed to scull on the river.

The site-specific exposure parameters for the boater receptor are presented in Table 3-3.

3.1.4 Angler

Recreational anglers are those individuals who consume self-caught fish and/or shellfish from the LPRSA in spite of the “eat none” fish/crab consumption advisories. During the CPG’s 2011-2012 CAS, anglers were observed fishing from a variety of locations, including bridges, bulkheads, highway and bridge abutments, boat launches and docks, river banks, Dundee Dam, and occasionally while wading in the river (AECOM 2014a). Fishing from boats was limited. Anglers are not expected to contact surface water or sediment on days when they fish from bulkheads or bridges. However, on days when anglers fish from areas with direct shoreline access, they may be exposed to accessible surface sediment and surface water.

The angler receptor includes all three age groups: adults, adolescents (7 to <19 years old), and young children. Young children are assumed to ingest LPRSA fish or crab caught by a parent or adolescent sibling, however, young child anglers are not frequent visitors to the river. Therefore, the exposure of a young child angler to sediment and surface water is not evaluated under the angling scenario, which is consistent with the approach in the BHHRA. The site-specific exposure parameters for the angler receptor are presented in Table 3-4.

Loss of hydrophobic COPCs upon cooking is a recognized phenomenon that can have a significant effect on the calculated COPC exposure dose from tissue consumption by humans. Losses can vary with cooking method (e.g., broil, bake, pan fry), preparation method (e.g., trimmed/untrimmed, skin-on/skin-off), and species. It is unrealistic to assume that there is never any loss due to cooking or that the cooking juices are always consumed. The interviewed anglers with kept catch for consumption

indicated they planned to fry their catch and responded “No” when asked if they would eat the cooking juices (AECOM 2014a). Therefore, cooking loss factors for lipophilic organic chemicals in fish and crab tissue are used in the calculation of dose from consumption of fish and crab. As discussed in greater detail in Exhibit B-1, a detailed review of available studies on cooking loss was conducted (AECOM 2012). Based on the results of this review, the following cooking loss factors are used:

Chemical	Fish Tissue Cooking Loss
Chlordane	32%
Dieldrin	32%
DDx isomers	32%
Heptachlor epoxide	32%
Total PCBs	30%
TCDD-TEQ	48%

A cooking loss factor of 30% is also used in the SSHHRA for all lipophilic organic constituents in crab tissue, based on Zabik et al. (1992) (see Exhibit B-1).

3.1.5 Resident

Residential properties are located adjacent to the river, primarily above RM 8. While it is possible that residents may contact river sediment and surface water, these exposures are expected to be similar in nature to the recreational wading scenario and are therefore not evaluated for the resident. However, residents may also contact river sediment that has deposited onto their yard in the aftermath of flooding events (i.e., floodplain soil). Residential exposure to floodplain soil in yards is assumed to be similar to a typical residential scenario involving exposure to outdoor backyard soil. Exposure parameters for the resident are presented in Table 3-5.

3.1.6 Worker

Workers at properties adjacent to the river may perform outdoor activities, such as trash collection and grounds maintenance, that have the potential for direct contact with shoreline sediment. Workers are assumed to be potentially exposed to accessible surface sediment via incidental ingestion and dermal contact. Exposure parameters for the worker receptor are presented in Table 3-6.

3.2 Exposure Point Concentrations

The same environmental data sets used in the BHHRA for selecting chemicals of potential concern (COPCs), calculating exposure point concentrations (EPCs), and calculating risk have also been used in the SSHHRA, including:

- Accessible surface sediment[1];
- Near-surface surface water;
- Fish fillet tissue for the human health target species identified in the *Fish/Decapod QAPP* (Windward 2009) (American eel, channel catfish, largemouth bass, and white perch), and common carp[2]; and

[1] Consistent with the BHHRA, only accessible surface sediment samples collected from nearshore and mudflat locations are evaluated for direct contact exposures. Per the approved PFD (Windward and AECOM 2009), accessible sediment is defined as sediment under 2 feet (ft) or less of water at mean low water (MLW), using United States Army Corps of Engineers (USACE) nominal MLW of -2.3 ft NGVD 29.

- Crab tissue for two tissue types (muscle and hepatopancreas combined and muscle only).

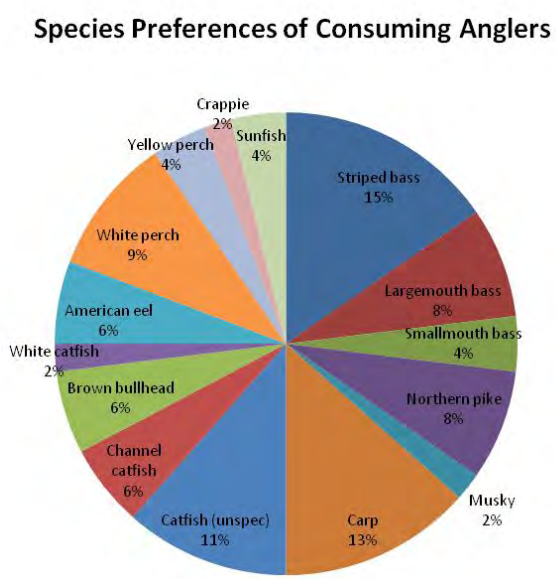
Thus, the same COPCs and EPCs used in the BHHRA (AECOM [in prep]) are also used for the SSHHRA, with the addition of site-specific mixed fish diet EPCs and floodplain soil EPCs.

Site-wide statistics are used to evaluate exposure to accessible surface sediment, surface water, fish tissue, and crab tissue. Consistent with the BHHRA, sediment was also evaluated on a refined spatial scale (see Section 3.2.2). USEPA's ProUCL software was used to calculate upper confidence limits (UCL). The lower of the UCL and maximum detect was used as the EPC for the SSHHRA. The EPCs for accessible surface sediment, surface water, fish tissue, and crab tissue are presented in Tables 3-7 to 3-27. The EPCs for floodplain soil are presented in Table 3-28, and discussed in Section 3.2.3.

3.2.1 Mixed Fish Diets

Fish consumption risks are evaluated using a mixed diet approach that takes into account angler species preferences and relative abundance. The species preferences used in the SSHHRA are based on interviews conducted during the CPG's 2011-2012 CAS (AECOM 2014b). The species most frequently sought by LPRSA consuming anglers included white perch, common carp, catfish and bullhead, striped bass, smallmouth and largemouth bass, and northern pike. Most anglers indicated preferences for more than one species. Species recorded as kept by anglers for consumption included: white perch, common carp, catfish, bullhead, smallmouth bass, and American eel (AECOM 2014b). Relative abundance is based on the CPG's 2009-2010 field sampling and fish community surveys of the LPRSA (Windward 2010a; 2010b, 2011). All of the anglers with kept catch indicated that only the fillet tissue would be consumed (one angler indicated that the carp tail would be consumed).

Based on the available data on species preferences and relative abundance, a mixed fish diet best represents potential exposure of anglers to COPCs in fish tissue. The following figure presents species preferences from interviews with consuming anglers (AECOM 2014b).



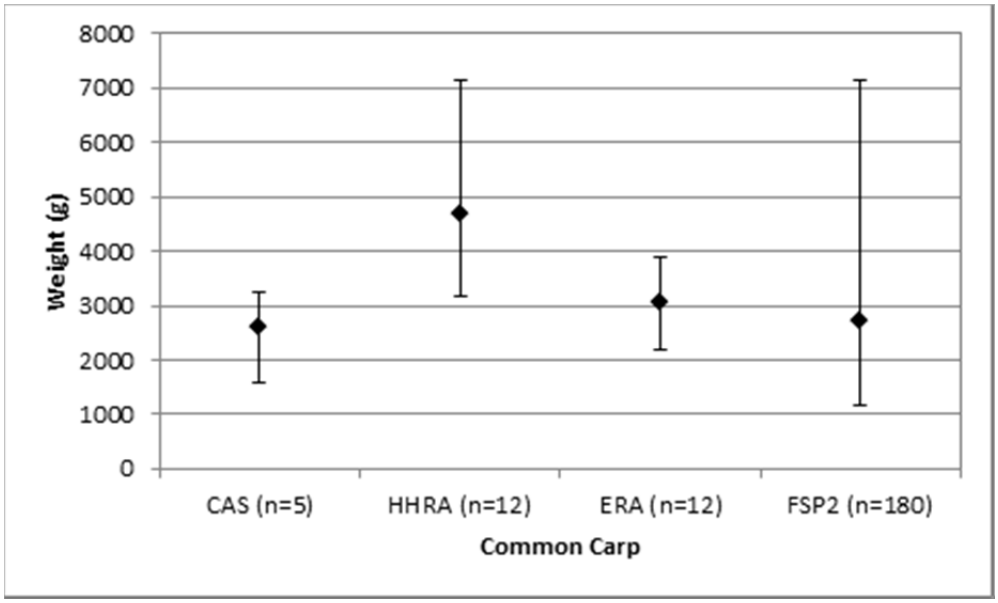
[2] While common carp was not a target species in the Fish/Decapod QAPP (Windward 2009), it is included in the SSHHRA because some anglers were recorded keeping carp during the CPG's CAS.

For calculation of tissue EPCs, species with similar habitats/feeding guilds were combined, as follows:

- Bottom feeders = carp, catfish (unspecified), channel catfish, bullhead, white catfish, and American eel (44%),
- Predators = striped bass, largemouth bass, smallmouth bass, northern pike, and musky (37%), and
- Intermediate = white perch, yellow perch, crappie, and sunfish (19%).

All of the LPRSA fillet tissue samples for each species in a group were combined and summary statistics calculated for each species group using the available LPRSA RI/FS fillet tissue chemistry data.[3]

It should be noted that the EPCs used in the SSHHRA are limited by the tissue chemistry data from the RI/FS. The selection of fish specimens for tissue chemistry was directed by USEPA Region 2, and preference was given to fish that were at the upper end of the range of sizes caught. This was particularly an issue for carp. Of the 180 carp specimens collected during the 2009 fish survey, the 12 specimens identified by Region 2 for tissue chemistry represent many of the largest carp. As the approach used by Region 2 preferentially selected many of the largest samples for analysis, it does not accurately reflect the fishery or consuming angler behavior. The figure below illustrates the size range of carp kept by anglers intercepted during the CAS, the size range of the carp specimens used for HHRA and BERA tissue chemistry, and the size range of the full set of carp specimens collected during the 2009 fish sampling program (Windward 2010c, 2011).



In addition to the site-specific mixed fish diet, two additional mixed fish diets that were evaluated in the BHHRA are included in the SSHHRA:

1. *Mixed Fish Diet with Carp*, which is comprised of equal fractions (20%) of common carp and the four QAPP target species (white perch, American eel, channel catfish, and largemouth bass); and
2. *Mixed Fish Diet without Carp*, which is comprised of equal fractions (25%) of the four QAPP target species (white perch, American eel, channel catfish, and largemouth bass).

[3] Fillet tissue chemistry data for striped bass, musky, bullhead, sunfish, crappie, and yellow perch are not available, therefore, chemistry data for other species in the group are assumed to be representative of these species.

Carp have been shown to have some of the highest concentrations of bioaccumulative COPCs detected in LPRSA fish (Windward [in prep]-a). Because of high concentrations and site-specific data on anglers consuming carp, it is important that the SSHHRA addresses the potential risk associated with carp in the diet. However, since not all LPRSA anglers consume carp, it is equally important that potential risks associated with a diet comprised of other species consumed by LPRSA anglers also be evaluated.

Note that rather than calculate a preference weighted tissue EPC for each COPC in the mixed fish diet, the species or group-specific preference weights are applied to the calculated risks for each species/group and the weighted risks are then summed. This approach allows for greater flexibility in evaluating mixed diets, provides greater transparency in relative species risks, and is mathematically the same as a weighted EPC-based approach.

3.2.2 River Segments for Sediment

In addition to evaluating sediment on a site-wide basis, exposure to accessible surface sediment was also evaluated on a refined spatial scale consisting of three-mile segments. The smaller sediment exposure areas are used to account for the possibility that some receptors may visit the same section of the river over time. The basis for the six three-mile segments used for sediment EPC development includes consideration of land use, shoreline type, access, and the primary types of human activities that take place, as presented in the BHHRA (AECOM [in prep]) and summarized below:

Segment	Primary Land Uses	Shoreline Type[a]	Public Access	Primary Types of Human Activities
RM 0-3	Industrial, marine, infrastructure (rail)	SP/B ~ 52.3% RR/S ~ 28.3% N/V ~ 19.4%	Limited access	Shoreline/dock work; occasional fishing
RM 3-6	Industrial, commercial, infrastructure (rail/ highway), urban, some green space	SP/B ~ 66.2% RR/S ~ 3.4% N/V ~ 30.5%	Limited access	Shoreline/dock work; passive recreation; occasional fishing, sculling/boating
RM 6-9	Urban, infrastructure (highway), parkland, commercial (retail), boat docks	SP/B ~ 52.3% RR/S ~ 3.0% N/V ~ 44.8%	Some access points along Riverbank Park shoreline; Kearny boat ramp; docks	Passive recreation; sculling/boating; fishing
RM 9-12	Urban, infrastructure (highway), parkland, boat docks, residential	SP/B ~ 41.8% RR/S ~ 0.0% N/V ~ 58.2%	Some access points along Passaic and Riverside County parks shoreline; Nutley boat ramp; docks	Passive recreation; sculling/boating; fishing
RM 12-15	Urban, infrastructure (highway), parkland, boat docks, residential	SP/B ~ 37.2% RR/S ~ 8.7% N/V ~ 54.1%	Some access points along park shoreline; bridge abutments; docks	Passive recreation; sculling/boating; fishing
RM 15-17.4	Commercial, parkland, residential	SP/B ~ 1.5% RR/S ~ 0.0% N/V ~ 98.5%	Access points along park shoreline; bridge abutments; dam	Passive recreation; sculling/boating (water depth limited); fishing

[a] Percent shoreline types taken from 2010 Habitat Survey (Windward 2014).
SP/B – sheetpile/bulkhead RR/S – riprap/stone N/V – natural/vegetated

In the lower six miles, characteristics such as predominantly industrial/urban land uses, hardened shorelines, and limited points of public access serve to deter recreational activities. Activities such as swimming and wading are unlikely to occur in this stretch of the river now and in the foreseeable future. While fishing and boating have occasionally been observed in the lower six miles, these activities are more likely to take place upriver of RM 6 as discussed below.

Moving upriver from RM 6, there is greater potential to contact river sediment and surface water, especially along the eastern bank where access to the shoreline is possible in some areas. As described in Section 2.1, several parks are located along the eastern shore between RM 7 and 14, and further upstream between RM 15 and Dundee Dam. Access to the river bank is possible in some clearings and areas where vegetation growth is limited and the river bank is not too steep (see Figure 2-2). Several boathouses and rowing docks are located on the eastern bank upriver of RM 8. The majority of fishing also occurs above RM 9 (AECOM 2014a). Therefore, the recreational receptor scenarios involving direct contact with sediment and surface are most likely to be potentially complete above RM 6. The worker receptor scenario involving direct contact with accessible surface sediment is potentially complete in all river segments, due to the presence of industrial and commercial properties at various locations adjacent to the river throughout the LPRSA.

The applicable river segments for each receptor for the sediment exposure pathway are summarized below.

Sediment Exposure Area	Boater	Swimmer	Wader	Angler	Worker
Sitewide	X	X	X	X	X
RM 0-3	X	O	O	X	X
RM 3-6	X	O	O	X	X
RM 6-9	X	X	X	X	X
RM 6-9 – East Bank[a]	X	X	X	X	X
RM 9-12	X	X	X	X	X
RM 12-15	X	X	X	X	X
RM 15-17.4	X	X	X	X	X

X - River segment exposure area is potentially applicable for the receptor scenario.
O - River segment exposure area is not likely complete for this receptor scenario, but has been included in the SSHHRA for informational purposes.
NA - River segment exposure area is not complete for this receptor scenario. See text.
[a] An area of known elevated concentrations of some COPCs has been identified on the east bank in the vicinity of RM 7-8.

3.2.3 Floodplain Soil

The ballpark and park residue soil sampling conducted by USEPA following Hurricane Irene was used to estimate floodplain soil concentrations in residential backyards that abut the river. The average of the UCLs calculated by USEPA for each of eight Decision Units (DU) sampled on two separate occasions (Fall 2011 and January 2012) was used in the SSHHRA as the EPC for floodplain soil COPCs (USEPA 2011d, 2012b). The parks that were sampled are located between approximately RM 9 and 11, and include the park adjacent to RM 10.9, a known area of elevated COPC concentrations in mudflat sediment that was remediated in 2013. The park residue sampling focused on a short list of key chemicals of interest, thus, floodplain soil COPCs are limited to Total-TEQ[4], PCBs, and mercury (USEPA 2011d, 2012b). Residential properties abutting the river that are located within the 100 year and 500 year floodplains of the LPRSA are shown in Figure 3-1.

[4] Calculated by USEPA using the Basic Kaplan-Meier Toxicity Equivalents Calculator; includes PCDD, PCDF, and PCB dioxin-like congeners.

4 Toxicity and Absorption Parameters

As previously noted, the same COPCs evaluated in the BHHRA are also evaluated in the SSHHRA. The COPCs for each medium are summarized in Table 4-1. The toxicity and absorption values used are consistent with those used in the BHHRA, and are summarized in Tables 4-2 (carcinogenic dose-response), 4-3 (noncarcinogenic dose-response), 4-4 (dermal soil/sediment absorption factors), and 4-5 (dermal water permeability constants). It should be noted that USEPA's default dermal and oral absorption factors (USEPA 2004) have been used for sediment and soil exposures, because the critical exposure pathways for the LPRSA are fish and crab consumption. However, the use of these defaults in the SSHHRA is conservative, as studies have shown dermal absorption of several of the sediment COPCs to be lower than USEPA's defaults (Mayes et al. 2002, Wester et al. 1993, 1990, Magee et al. 1996). Thus, the sediment and soil direct contact risks estimated in the SSHHRA would be lower if alternate and more realistic absorption factors were used.

PCBs are evaluated as Total PCBs using the cancer slope factors provided on USEPA's IRIS website (USEPA 2014). As discussed in AECOM ([in prep]) and the CPG's comments on the Focused Feasibility Study (FFS) for the lower 8 miles, there is no need to address the dioxin-like PCBs separately because the PCB high risk and persistence CSFs (which are used for the fish, crab, soil, and sediment ingestion pathways) are based on a PCB mixture that included dioxin-like PCBs. Several studies have concluded that the evaluation of PCBs in fish tissue as total PCBs using the CSFs for PCB mixtures is sufficiently protective, and that a TEQ analysis does not add significantly to the total risk (Keenan and Samuelian, 2005; Chaudhuri et al., 2003; Bodishbaugh et al., 2003). This is also supported by AECOM's analysis of the LPRSA fish and crab tissue data, as discussed in the human health risk assessment comments on the FFS.

The USEPA's data for Total TEQ in floodplain soil, which includes PCDDs, PDCFs, and dioxin-like PCBs, is evaluated using the TCDD-TEQ toxicity data.

5 Summary of Results

The results of the SSHHRA are discussed in this section. Section 5.1 discusses the potential risks for the scenarios involving direct contact with accessible surface sediment, surface water, and floodplain soil (i.e., swimmer, wader, boater, worker, and resident receptors). Section 5.2 discusses the potential risks for the angler receptors who are exposed via consumption of fish or crab and direct contact with accessible surface sediment and surface water. Section 5.3 discusses the major areas of uncertainty in the risk results. Section 5.4 presents the summary and conclusions.

5.1 Potential Risks for Direct Contact Scenarios

Tables 5-1 and 5-2 present the total potential cancer and noncancer risks, respectively, for the scenarios involving direct contact with accessible surface sediment and surface water for the swimmer, wader, boater, and worker receptors.

As shown in Table 5-1, the total potential cancer risks for the swimmer, wader, boater, and worker are within the USEPA's target risk range of 10^{-6} to 10^{-4} for the site-wide and river segment exposure areas. As shown in Table 5-2, the total potential noncancer risks for the swimmer, wader, boater, and worker are equal to or below the USEPA's target hazard index of 1 for the site-wide and river segment exposure areas, with the exception of the hazard index for the worker receptor in the east bank of RM 6-9, which slightly exceeds 1. Over 90% of the potential worker hazard index of 1.7 (which rounds to 2 as shown in Table 5-2) is due to TCDD-TEQ in accessible surface sediment.

Table 5-3 presents the total potential cancer and noncancer risks for the residential scenario involving direct contact with backyard floodplain soil. As shown in Table 5-3, the potential cancer risks for the resident who regularly contacts floodplain soil fall at the low end of USEPA's target risk range of 10^{-6} to 10^{-4} (2×10^{-6}), and the total potential noncancer risks are below the USEPA's target hazard index of 1.

5.2 Potential Risks for Angler Scenarios

Tables 5-4 and 5-5 present the total potential cancer and noncancer risks, respectively, for the angler scenario involving consumption of fish and direct contact with accessible surface sediment and surface water. Tables 5-6 and 5-7 present the total potential cancer and noncancer risks, respectively, for the angler scenario involving consumption of crab and direct contact with accessible surface sediment and surface water.

As shown in Table 5-4, the total potential cancer risk for the angler that contacts accessible surface sediment and surface water and consumes a mixed fish diet based on site-specific angler species preferences exceeds the USEPA's target risk range (4×10^{-4} for the combined adult/adolescent/child). The exceedance is due primarily to TCDD-TEQ in fish tissue, and to a lesser extent PCBs. For the two mixed fish diets with and without carp, the total potential cancer risks are 5×10^{-4} and 2×10^{-4}, respectively, for the combined adult/adolescent/child.

As shown in Table 5-5, the total potential noncancer risks for the angler (all age groups) exceed the target hazard index of 1 for the site-specific mixed fish diet (the highest hazard index is 17 for the young child). The total potential noncancer risks for the two mixed diets with and without carp also exceed 1 (young child hazard indices of 26 and 9, respectively). The exceedances for mixed fish diets are due primarily to TCDD-TEQ and PCBs, and to a lesser extent methyl mercury.

As shown in Table 5-6, the total potential cancer risks for the angler that contacts accessible surface sediment and consumes a diet of crab muscle and hepatopancreas or crab muscle only are within USEPA's target risk range of 10^{-6} to 10^{-4}.

As shown in Table 5-7, the total potential noncancer risks for the angler who consumes crab muscle and hepatopancreas exceed the target hazard index of 1 (hazard index of 3 for the young child). The exceedances are due primarily to TCDD-

TEQ, and to a lesser extent PCBs. The total potential noncancer risks for consumption of crab muscle only are at or below the hazard index of 1 except for the adolescent, and only at the east bank of RM 6-9. This exceedance is due to TCDD-TEQ in accessible surface sediment in the RM 6-9 east bank area. It should be noted that most people consume the crab muscle only, which has lower concentrations than the hepatopancreas tissue.

5.3 Discussion of Uncertainties

The risk assessment process requires that assumptions be made due to a lack of absolute scientific knowledge. Some of the assumptions are supported by considerable scientific evidence and site-specific data, while others have less support. Every assumption introduces some degree of uncertainty into the risk assessment process. Regulatory risk assessment methodology requires that conservative assumptions be made to ensure that risks are not underestimated. However, when all of the conservative assumptions and approaches are combined, it is more likely that risk results are overestimated than underestimated.

Key assumptions used in the SSHHRA that may be associated with greater uncertainty are discussed below. A detailed discussion on uncertainties in the baseline risk assessment process followed for the LPRSA is provided in the BHHRA (AECOM [in prep]).

5.3.1 Data Evaluation

The SSHHRA included all COPCs that were identified in the BHHRA for quantitative evaluation in sediment, surface water, fish tissue, and crab tissue (AECOM [in prep]). The environmental chemistry data used in the BHHRA were collected in accordance with approved QAPPs that included comprehensive and extended USEPA analyte lists. This resulted in a data set that is expected to be inclusive of chemicals that are typically used in industry and analyzed for under Superfund, and of potential public health concern. All of the data underwent rigorous quality assurance review and validation analyses, and only data deemed suitable for CERCLA decision-making purposes were used in the BHHRA and the SSHHRA.

The screening process used in the BHHRA to identify COPCs was intentionally conservative, including use of residential screening levels for sediment and surface water, and fish tissue screening levels that assume a consumption rate well above that used in the BHHRA. Consequently, there is a high degree of certainty that the chemicals eliminated from further evaluation contribute negligibly to total site risk, and the primary chemicals of public health concern at the LPRSA have been evaluated in the SSHHRA.

It should also be noted that the SSHHRA included many more COPCs (n=62) than the HHRA conducted by USEPA Region 2 for the April 2014 FFS (n=9). The list of COPCs included in the FFS HHRA is based on Region 2's judgment regarding chemicals that are the most bioaccumulative, persistent and toxic, as well as a chemical screening conducted by the Agency on historical tissue data nearly ten years ago.

5.3.2 Exposure Assessment

There is variability and uncertainty in human behaviors, intake rates, and physical characteristics. The SSHHRA has relied extensively on site-specific data to more accurately characterize the potentially exposed population and reduce uncertainty in the exposure parameter estimates. This includes the use of angler data collected during a year-long site-specific survey of the LPRSA (AECOM 2014a, b). The use of site-specific angler data is preferable to relying on studies of surrogate water bodies that do not resemble the LPRSA or the angler population. To develop the fish consumption rate used in the FFS HHRA, USEPA has relied on two studies, including an outdated study of New York State anglers (Connelly et al. 1992) that bears little resemblance to the LPRSA, and a study of Newark Bay anglers that focused on reasons for fishing, demographics, and consumptions patterns, and did not collect all of the data necessary to estimate long-term consumption (Burger 2002). The use of these studies to estimate fish consumption rates for LPRSA anglers has introduced considerable uncertainty and produced an unrealistic and overly conservative risk assessment.

Consistent with standard risk assessment practice, the exposure assumptions used in the SSHHRA are conservative to ensure that the RME scenario is not underestimated (e.g., use of upper bound values for exposure parameters, such as fish consumption rate). While the availability of a site-specific angler survey has resulted in more robust estimates of consumption,

uncertainty remains. Because of the importance of the fish consumption pathway, the SSHHRA includes an analysis of the impact on the estimate of consumption rate if alternative assumptions are used, as discussed below:

1. The number of LPRSA fishing trips per year was taken from a statistical model that combined angler-reported trip data, intercept and counts data, and demographic variables to predict LPRSA fishing trips per month for each interviewed angler. The trip estimates used in the baseline analysis were taken from one of five models developed to account for uncertainty in the specification of variance in the statistical model of trip taking behavior. An analysis was performed using the variance models that predicted the greatest and fewest number of trips per year.
2. The calculation of edible grams per trip for consuming anglers without kept catch accounted for sharing, based on sharing behavior of other anglers who kept that species, as well as the size of the species (i.e., larger fish such as carp and northern pike are more likely to be shared).[5] While the CAS data support that sharing occurs and is consistent with the risk assessment assumption that the adult angler shares catch with his children, an analysis was performed assuming the adult angler does not share his catch.
3. The calculation of edible grams per trip for consuming anglers without kept catch assumed the angler always left with two species of fish if he had more than one species preferences. This is very conservative as anglers reported catching only one species on the majority (65%) of trips with catch (AECOM 2012b). An analysis was performed assuming anglers left with only one species of fish.
4. Based on the CAS, white perch was caught on 65% of interviewed anglers' trips (AECOM 2014b). It is also the most abundant species of potential human health interest in the LPRSA based on fish community survey data (Windward 2010c, 2011). Because of the high probability of catching white perch on a fishing trip to the LPRSA, an analysis was performed assuming that white perch is a preferred species for all consuming anglers without kept catch data.
5. The calculation of consumption rate incorporated the probability of keeping fish on a trip, which was conservatively set at 100%. However, the CAS found that consuming anglers kept fish they caught on half of their trips, indicating that not all fish caught by consuming anglers are kept. The reasons that fish were not kept included wrong species, too small, and health concerns (AECOM 2014b). The analysis was performed assuming that 50% of fish caught on a trip are kept.

The results of the sensitivity analysis for each of the five alternative scenarios are summarized below. The RME 90th percentile consumption rate for the adult angler calculated using the assumptions described in the Basis of Assumptions (Exhibit B-1) is 8.4 g/day. As shown, using alternative assumptions for trip frequency, sharing, the number and species kept, and probability of keep, the RME consumption rate ranges from approximately 4 to 14 g/day. These rates are two to three times lower than the fish consumption rate used by Region 2 in the FFS HHRA.

Scenario	**Description**	**Population Consumption Rate (g/day) Summary Statistics**						
		n	**min**	**mean**	**percentile**			**max**
					50th	**90th**	**95th**	
Baseline	--	223	0.9	5.7	4.8	8.4	21	29.9
Scenario 1a	Trips variance model R	223	1.6	6.0	4.9	8.5	22.6	31.1
Scenario 1b	Trips variance model D	223	0.8	5.3	4.2	8.0	18.5	29.9
Scenario 2	No sharing	223	0.9	10.1	6.0	14.1	42.0	59.9
Scenario 3	Keep one species	223	0.8	4.2	2.8	6.7	11.8	20.3
Scenario 4	Keep white perch	223	0.9	6.3	4.8	10.7	19.8	24.3
Scenario 5	50% probability keep	223	0.4	2.8	2.4	4.2	10.5	15.0

[5] For the estimates of edible catch per trip for anglers without kept catch, it was assumed that catch was shared with one other person and that portions were equal.

Impact of Advisory

USEPA Region 2 has expressed concern that a fish consumption advisory, such as that in place on the Lower Passaic River, may impact consumption rate estimates and thus an angler survey may not provide information about the level of consumption that would occur if there were no advisory in place even though current river conditions remained the same (such asthe COPC levels, trash, discharges from CSOs, etc.). Several studies have evaluated the issue of advisory awareness and consumption behavior (e.g., West et al. 1989; Knuth 1995; Connelly et al. 1996; Burger et al. 1998; Pflugh et al. 1999; Burger et al. 1999; Beehler et al. 2001; Burger 2002; Campbell et al. 2002; Shaeffer and O'Leary 2005). Key findings are summarized below.

In a survey of Michigan sport anglers, West et al. (1989) concluded that advisories had a "suppression" effect on average fish consumption for some but not all anglers who are aware of advisories. Anglers who were most aware of advisories also consumed the greatest amount of fish, although the authors suggest that these anglers may not fish species or locations covered by advisories (West et al. 1989). A study of Indiana anglers compared fish consumption rates by advisory awareness, and found that anglers who knew the most about advisory warnings were the ones eating the most fish (Shaeffer and O'Leary 2005). In a survey of New York State anglers, Connelly et al. (1996) asked respondents to estimate their desired consumption if there were no advisories, and 32% of anglers said they would eat more fish, although the increase was modest for most. The authors concluded that the estimate of increased consumption was only slightly higher than current consumption (Connelly et al. 1996).

A number of studies have found non-compliance with water body-specific consumption advisories despite awareness. Non-compliance may occur for many reasons, including the de-amplification of risk in hazards that are familiar and enjoyed, such as fishing and fish consumption, a preference for fresh, self-caught fish, lack of understanding of the advisories, or lack of trust in the government in general or the government agencies that issue advisories (Knuth 1995; May and Burger 1996; Burger et al. 1998; Beehler et al. 2001; Knuth et al. 2003). Even when aware of advisories, some anglers do not modify their fish consumption behavior (May and Burger 1996; Burger et al. 1998; Pflugh et al. 1999; Burger et al. 1999; Campbell et al. 2002; Shilling et al. 2010). In several studies of anglers in the Newark Bay Complex, even though about 60-70% of anglers knew about the advisory, the majority thought the fish was safe to eat and/or ate their catch (Pflugh et al. 1999; Burger et al. 1999; May and Burger 1996). Pflugh et al. (1999) found that most urban anglers that fished the Newark Bay complex were either unfamiliar or unconcerned about fish consumption advisories. In a study of the Clinch River, 60-80% of anglers knew about the advisories in effect, however, about 50% thought that fish caught at the location were safe to eat and 30-40% ate their catch (Campbell et al. 2002). Shilling et al. (2010) found in the Central Valley of California that there were similar rates of fish consumption for those with high awareness of advisories and those with low awareness.

In the LPRSA CAS, nearly two thirds of interviewed anglers who reported eating LRPSA fish were not aware of the advisory (AECOM 2014a). For these anglers, it is unlikely the LPRSA advisory has affected their consumption behavior. For the LPRSA consuming anglers who reported awareness, it is possible the advisory has affected their consumption of LPRSA fish, however, if there is any impact, it is likely to be modest based on studies that have explored advisory awareness and effectiveness (e.g., Connelly et al. 1996). For the surveys of Newark Bay, where an advisory warning against consumption of several species and a ban on crab consumption has been in effect for many years, anglers expressed confidence in their knowledge and many indicated they did not intend to follow the advisory.

In summary, based on extensive literature that suggests limited advisory effectiveness for anglers who still wish to consume self-caught fish, as well as the CAS finding that nearly two thirds of interviewed consuming anglers are not aware of the LPRSA-specific advisory, the CPG's CAS does not underestimate baseline consumption in the LPRSA. Further, for the purposes of estimating risk from consumption of LPRSA fish and crab, the CPG's site-specific CAS data are superior to data from studies of surrogate water bodies (which are also subject to consumption advisories), as was used by Region 2 to develop the fish and crab consumption rates for the FFS HHRA.

Exposure Point Concentrations

The EPCs used in the SSHHRA are those used in the BHHRA for sediment, surface water, and tissue, and represent upper confidence limits (UCLs). For some fish species, including carp and American eel, the EPCs are further biased upward because many of the largest specimens were selected by Region 2 for tissue chemistry analysis, despite the availability of a

broader size range of specimens. Consequently, the tissue chemistry data set is biased toward larger specimens which tend to have higher concentrations of bioaccumulative COPCs.

The SSHHRA has also assumed that the EPCs based on current site conditions remain constant for the assumed exposure duration (e.g., up to 33 years). It is well known that chemicals in the environment are subject to natural attenuation and biodegradation processes. Organic chemicals are naturally degraded in the environment by a variety of processes (i.e., photodegradation, microbial activity, hydrolysis, etc.). As environmental degradation has been shown to be taking place, as discussed in the Interim Draft Conceptual Site Model for the LPRSA (CPG 2013), the assumption that EPCs based on current conditions persist into the future has resulted in an overestimation of site risks.

5.3.3 Toxicity Assessment

The toxicity values used in the SSHHRA were selected in accordance with USEPA's hierarchy, which identifies the Integrated Risk Information System (IRIS) as the first tier (USEPA 2003, 2013b). Many of the USEPA CSFs listed in IRIS are derived using the 95% UCL of the slope predicted by a linearized multistage (LMS) model used to extrapolate low dose risk from high dose experimental data. USEPA recognizes that this method produces very conservative risk estimates, and that other mathematical models may exist. The assumption that there is some probability of harm to human health at any level of exposure is very conservative and is expected to result in overestimates of risk, especially when coupled with the use of an upper bound estimate of cancer potency. Similarly, the reference doses used to evaluate potential noncarcinogenic effects are 100- to 10,000-fold lower than the lowest effect level found in laboratory animals. Consequently, the toxicity values used in the SSHHRA are biased to overestimate rather than underestimate human health risks.

A significant source of uncertainty and highly conservative element in the SSHHRA is the assumption of 100% relative oral bioavailability (RBA) from sediment and soil for the risk-driving chemicals, including dioxins and PCBs. The use of these defaults may result in overestimation of direct contact risks for key COPCs in sediment, particularly given the aged sediment matrix and high organic content in many parts of the river. Some states explicitly address RBA in the development of the applicable soil cleanup criteria for selected substances. For PCBs, dioxins, arsenic, and PAHs, RBA estimates are less than 100%. Alternate oral-soil/sediment and dermal-soil/sediment absorption factors are presented in the BHHRA, which suggest that RBA may be overestimated by as much as 70% for key COPCs including PCBs, dioxin, arsenic, and PAHs (AECOM [in prep]). The issue of relative bioavailability and the over-conservatism in the SSHHRA should be considered in risk management decision-making.

5.3.4 Risk Characterization

Risk characterization involves combining the estimates of exposure and toxicity to estimate risk. When the multiple values used to characterize exposure and toxicity are highly conservative, the final estimate of risk can be unrealistic and exceed the bounds used to ensure health-protectiveness. The issue of "compounding conservatism" has been recognized as a issue in regulatory risk assessment (e.g., Stone and Uesugi 2012; Bogen 2004; Cullen 1994; Burmaster and Harris 1993), and is acknowledged in USEPA's Cancer Risk Assessment Guidelines (USEPA 2005b). Further, USEPA (2005b) states:

> Overly conservative assumptions, when combined, can lead to unrealistic estimates of risk. This means that when constructing estimates from a series of factors (e.g., emissions, exposure, and unit risk estimates) not all factors should be set to values that maximize exposure, dose, or effect, since this will almost always lead to an estimate that is above the 99th percentile confidence level and may be of limited use to decision makers.

The impact of compounding conservatism can be illustrated by a simple example. Assume that potential risk depends upon three variables (soil consumption rate, COPC concentration in soil, and CSF). One way to generate a conservative estimate of potential risk is to multiply the upper 95% bounds of the three parameters in this example. Doing so assumes that the 5% of the people who are most sensitive to the potential carcinogenic effects of a COPC will also ingest soil at a rate that exceeds the rate for 95% of the population and that all the soil these people ingest will have a chemical concentration that exceeds the 95% UCL concentration in the soil. The consequence of these assumptions is that the estimated potential risk is representative of 0.0125% of the population (0.05 x 0.05 x 0.05 = 0.000125 x 100 = 0.0125%). Put another way, these serial assumptions overestimate risks for 99.99% of the population or 9,999 out 10,000 people.

Alternatively, if a central tendency exposure (CTE) estimate is considered, whereby a single upper 95% assumption of the cancer slope factor is combined with the 95% UCL concentration in the soil and the average (50th percentile) assumptions for soil ingestion rate, the resulting estimates of potential CTE risk still over predict the risk to nearly 99.9% of the potentially exposed population (0.05 x 0.05 x 0.5 = 0.00125 x 100 = 0.125%). This is a conservative and health-protective approach that still substantially overestimates the "average" level and even the reasonable maximum level of potential risk. Thus, the majority of people will have a much lower level of potential risk. The very conservative nature of the potential risks estimated by the typical risk assessment process is not generally recognized.

The approach used in this SSHHRA employed several upper-bound values for exposure and toxicity assumptions, as well as average values for some exposure inputs (e.g., occupational tenure, body surface area, body weight, and several inputs used to estimate edible grams of fish per trip). The resulting risk estimates are still very conservative and protective of the LPRSA population that is potentially exposed, but are more realistic than the risks estimated by USEPA Region 2 in the FFS HHRA for consumption of LPRSA fish and crab.

5.4 Summary and Conclusions

This SSHHRA has been prepared to provide a realistic but conservative estimate of potential RME risks from exposures to sediment, surface water, fish, crab, and floodplain soils of the LPRSA. The SSHHRA was conducted using many of the same methodologies used in the BHHRA (AECOM [in prep]), including selecting and evaluating a complete set of COPCs, using toxicity values selected in accordance with USEPA's hierarchy, calculating conservative EPCs using USEPA's ProUCL software, and evaluating receptor scenarios that address all relevant media of concern, with the addition of floodplain soil in residential backyards abutting the river. Thus, the SSHHRA provides a comprehensive analysis of potential human health risks for the entire LPRSA.

A significant shift in the conduct of the SSHHRA is away from the use of default and surrogate assumptions, as was done in the FFS HHRA, to the use of exposure assumptions and scenarios that more accurately reflect site-specific conditions. The use of site-specific data is a critical part of the risk assessment and risk management processes, and is consistent with guidance concerning risk management decisions at contaminated sediment sites articulated by the National Academy of Sciences (NRC 2001) and USEPA (2002, 2005a). The SSHHRA was expressly conducted to provide a more realistic assessment of potential risks. A site-specific approach is especially relevant for evaluating water-related recreational activities (e.g., fishing, swimming, boating) that depend on the characteristics of the water body and are often not well described by default exposure parameters. The CPG's CAS has provided extensive site-specific data on one of the most important potential exposure pathways, that is fish and crab consumption. Based on the CAS findings, which are supported by extensive literature suggesting limited effectiveness of advisories in posted water bodies such as the LPRSA, the CAS data do not underestimate baseline consumption in the LPRSA. Further, for the purposes of estimating risk from consumption of LPRSA fish and crab, the CPG's site-specific CAS data are superior to data from studies of surrogate water bodies (which are also subject to consumption advisories), as was used by Region 2 to develop the fish and crab consumption rates for the FFS HHRA.

The results of the SSHHRA confirm that risks in excess of USEPA's target risk levels are driven by consumption of fish and crab. The exceedances are due primarily to TCDD-TEQ, and to a lesser extent PCBs. Noncancer risks slightly exceed the target hazard index of 1 for direct contact with accessible surface sediment in the east bank area of RM 6-9 due to TCDD-TEQ. The evaluation of exposure to floodplain soils in residential backyards found cancer risks that fall at the very low end of USEPA target risk range of 10^{-6} to 10^{-4} and below the target hazard of 1 for noncancer. The results of the quantitative evaluation of residential exposure to floodplain soils suggest that further analysis of this potential exposure pathway is not warranted.

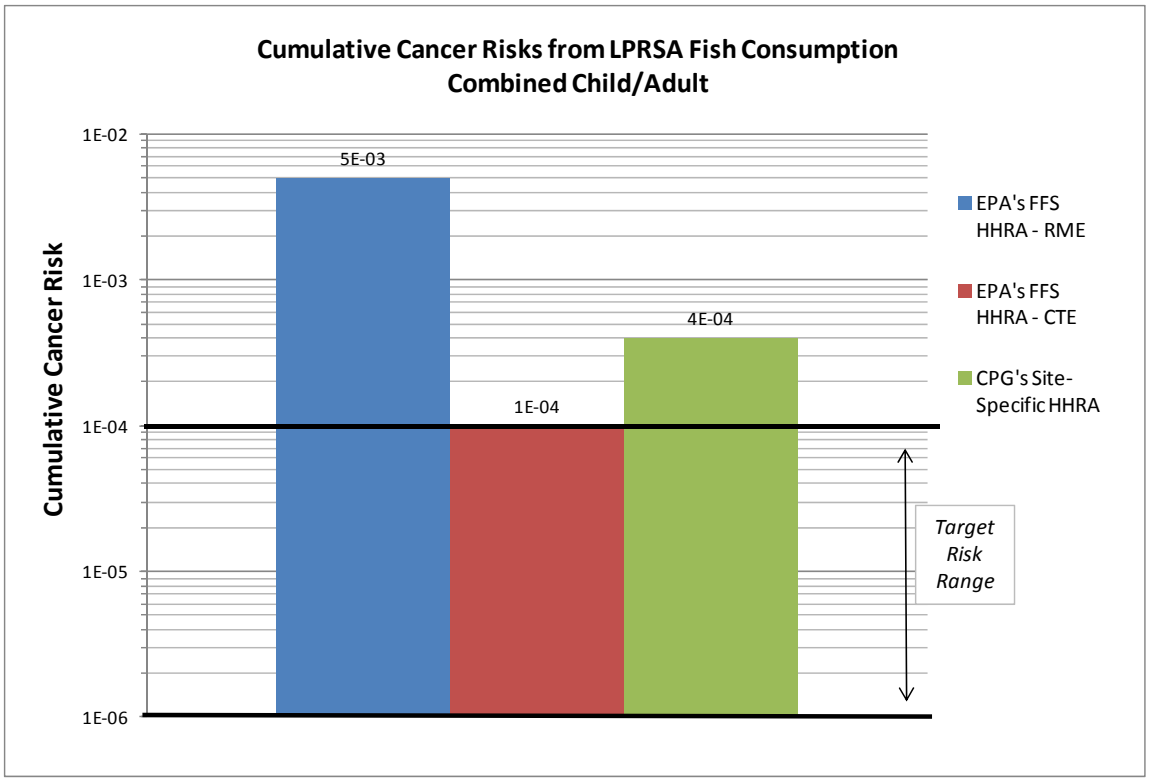
The figures below present a comparison of the potential RME fish consumption risks calculated in this SSHHRA to the RME and CTE risks calculated in the FFS HHRA. Using more realistic but still conservative RME assumptions, the total potential cancer risk for the angler receptor who consumes a site-specific mixed fish diet is estimated to be 4×10^{-4}. This risk estimate includes all potential exposure pathways, including occasional contact with river sediment and surface water while fishing (these risks are at or below the low end of EPA's target risk range of 10^{-6} to 10^{-4}), as well as fish consumption. It also assumes over 30 years of exposure and no reduction in contaminant concentrations over time. Although the site-specific

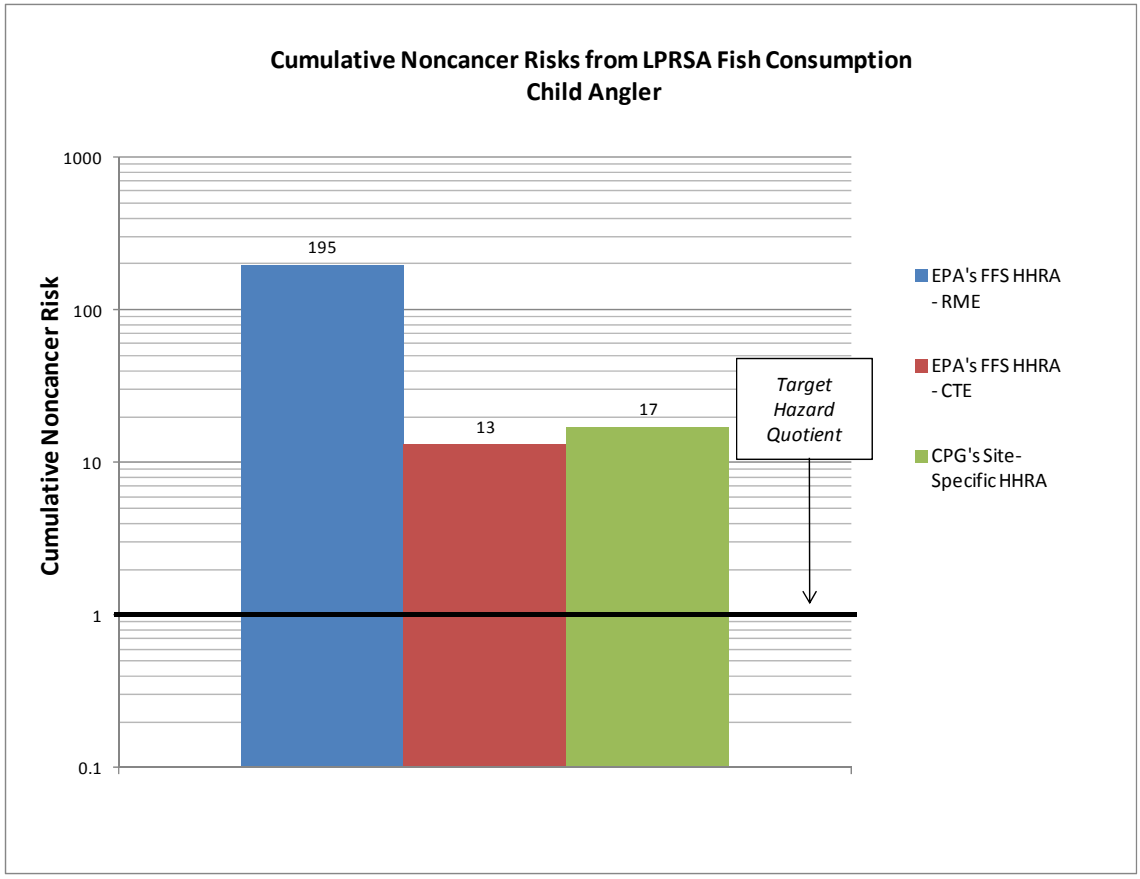
cancer risk estimate exceeds the upper end of USEPA's target risk range, it is over 10-fold lower than the RME risk predicted in the FFS HHRA, and only slightly higher than the FFS CTE risk estimate.

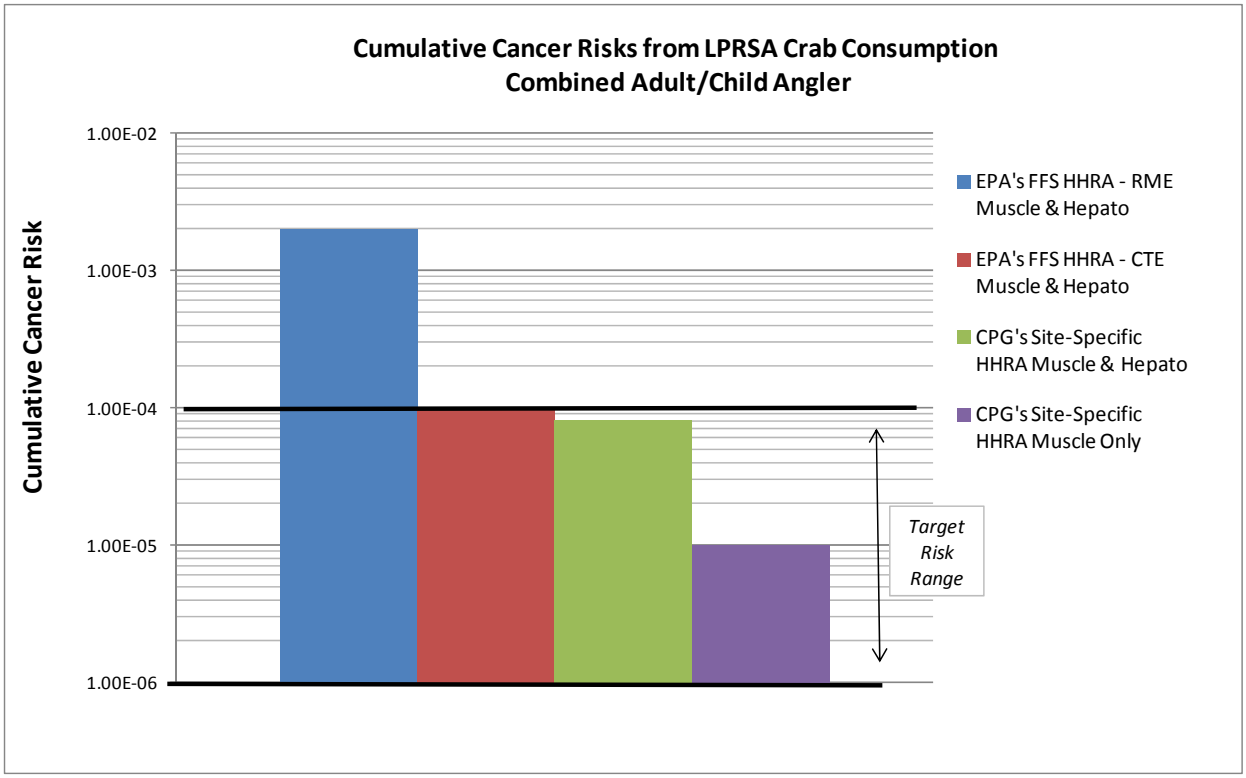
Similar results are shown for potential noncancer effects. The total potential noncancer risk for the young child angler (most sensitive age group for noncancer effects) is 17. This site-specific estimate is over 10-fold lower than the RME risk predicted in the FFS HHRA, and only slightly higher than the FFS CTE estimate.

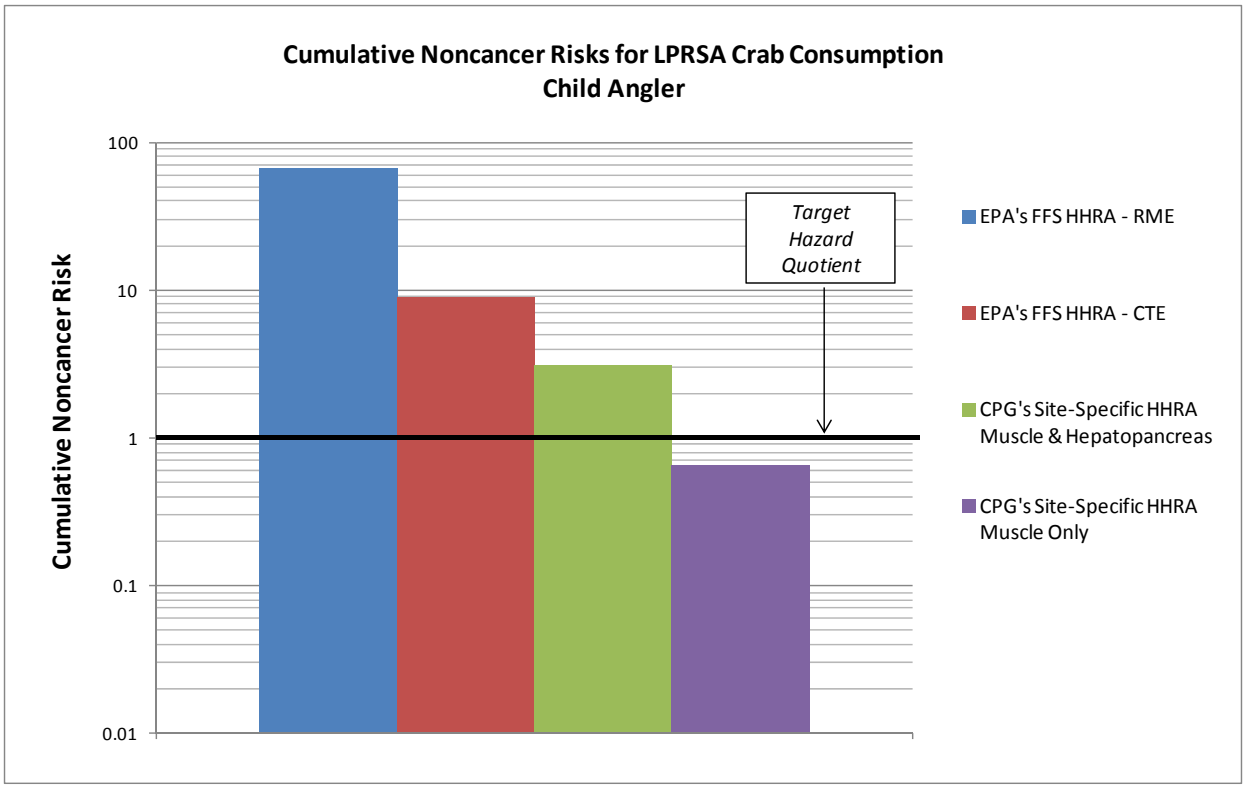
It should be noted that the contribution of background to site risks has not been evaluated in this risk assessment. Based on an analysis of background risks in the LPRSA, background levels of several COPCs, including PCBs, mercury, several pesticides, and PAHs, pose risks in excess of target risk levels and contribute significantly to the risks calculated for the LPRSA (AECOM [in prep]).

In summary, the SSHHRA illustrates the extreme over-conservatism in the USEPA's FFS HHRA. The exaggerated risks presented in the FFS HHRA are not borne out by a more site-specific analysis which shows risks to be only slightly above USEPA's target risk levels.


Cumulative Cancer Risks from LPRSA Fish Consumption
Combined Child/Adult
Cumulative Cancer Risk
1E-02
1E-03
1E-04
1E-05
1E-06
5E-03
1E-04
4E-04
EPA's FFS HHRA - RME
EPA's FFS HHRA - CTE
CPG's Site-Specific HHRA
Target Risk Range


Cumulative Noncancer Risks from LPRSA Fish Consumption
Child Angler
Cumulative Noncancer Risk
1000
100
10
1
0.1
195
13
17
EPA's FFS HHRA - RME
EPA's FFS HHRA - CTE
CPG's Site-Specific HHRA
Target Hazard Quotient


Cumulative Cancer Risks from LPRSA Crab Consumption
Combined Adult/Child Angler
Cumulative Cancer Risk
1.00E-02
1.00E-03
1.00E-04
1.00E-05
1.00E-06
Target Risk Range
EPA's FFS HHRA - RME Muscle & Hepato
EPA's FFS HHRA - CTE Muscle & Hepato
CPG's Site-Specific HHRA Muscle & Hepato
CPG's Site-Specific HHRA Muscle Only


Cumulative Noncancer Risks for LPRSA Crab Consumption
Child Angler
Cumulative Noncancer Risk
100
10
1
0.1
0.01
Target Hazard Quotient
EPA's FFS HHRA - RME
EPA's FFS HHRA - CTE
CPG's Site-Specific HHRA Muscle & Hepatopancreas
CPG's Site-Specific HHRA Muscle Only

6 References

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TABLE 3-1
EXPOSURE PARAMETERS - SWIMMER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

		Swimmer (Child 1 to <7 yrs)			Swimmer (Adolescent 7 to <19 yrs)			Swimmer (Adult)			
Pathway		**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	**Site-Specific Notes**
General Assumptions											
BW	Mean Body Weight (Kg):	15	15	17	52	52	53	70	70	80	(b)
ED	Exposure Duration (years):	6	3	6	12	6	12	24	9	15	(c)
Lifetme	Lifetime	70	70	78	70	70	78	70	70	78	(b)
Sediment Incidental Ingestion											
IR	Incidental Ingestion Rate (mg-sediment/day):	100	50	50	50	25	50	50	25	20	(d)
FI	Fraction Ingested from Source (unitless):	1	1	0.5	1	1	0.5	1	1	0.5	(e)
EF	Exposure Frequency (days/year):	13	7	7	39	20	13	13	7	7	(f)
	Intake Factor (carc, Kg-soil/Kg-BW-day)	***2.04E-08***	***2.74E-09***	***2.17E-09***	***1.76E-08***	***2.26E-09***	***2.58E-09***	***8.72E-09***	***8.81E-10***	***4.61E-10***	
	Intake Factor (noncarc, Kg-soil/Kg-BW-day)	***2.37E-07***	***6.39E-08***	***2.82E-08***	***1.03E-07***	***2.63E-08***	***1.68E-08***	***2.54E-08***	***6.85E-09***	***2.40E-09***	
Sediment Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	2,500	2,500	2,184	5,100	5,100	2,884	6,100	6,100	3,800	(g)
AF	Adherence Rate (mg-sediment/cm^2):	0.2	0.2	0.3	0.2	0.2	0.26	0.3	0.3	0.32	(h)
EF	Exposure Frequency (days/year):	13	7	7	39	20	13	13	7	7	(f)
	Intake Factor (carc, Kg-soil/Kg-BW)	***1.02E-07***	***2.74E-08***	***5.69E-08***	***3.59E-07***	***9.21E-08***	***7.75E-08***	***3.19E-07***	***6.45E-08***	***5.61E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***1.19E-06***	***6.39E-07***	***7.39E-07***	***2.10E-06***	***1.07E-06***	***5.04E-07***	***9.31E-07***	***5.01E-07***	***2.92E-07***	
Surface Water Incidental Ingestion											
IR	Incidental Ingestion Rate (L/hour):	0.05	0.05	0.049	0.05	0.05	0.049	0.05	0.05	0.021	(i)
IR	Incidental Ingestion Rate (L/day)	0.13	0.13	0.01225	0.13	0.13	0.01225	0.13	0.13	0.00525	(i)
EF	Exposure Frequency (days/year):	13	7	7	39	20	13	13	7	7	(f)
	Intake Factor (carc, L/Kg-BW-day)	***2.65E-05***	***7.12E-06***	***1.06E-06***	***4.58E-05***	***1.17E-05***	***1.27E-06***	***2.27E-05***	***4.58E-06***	***2.42E-07***	
	Intake Factor (noncarc, L/Kg-BW-day)	***3.09E-04***	***1.66E-04***	***1.38E-05***	***2.67E-04***	***1.37E-04***	***8.23E-06***	***6.61E-05***	***3.56E-05***	***1.26E-06***	
Surface Water Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	6,600	6,600	7,500	14,800	14,800	14,825	18,000	18,000	19,550	(j)
EV	Event Frequency (events/day)	1	1	1	1	1	1	1	1	1	(l)
t_{event}	Event Duration (hours/event)	2.6	2.6	0.25	2.6	2.6	0.25	2.6	2.6	0.25	(k)
EF	Exposure Frequency (days/year):	13	7	7	39	20	13	13	7	7	(f)
	Intake Factor (carc, L-hr/Kg-day-cm)	***3.49E-03***	***9.40E-04***	***1.63E-04***	***1.36E-02***	***3.48E-03***	***3.83E-04***	***8.16E-03***	***1.65E-03***	***2.25E-04***	
	Intake Factor (noncarc, L-hr/Kg-day-cm)	***4.07E-02***	***2.19E-02***	***2.12E-03***	***7.91E-02***	***4.05E-02***	***2.49E-03***	***2.38E-02***	***1.28E-02***	***1.17E-03***	

Notes:

CTE - Central Tendency Exposure.

RME - Reasonable Maximum Exposure.

(a) RME and CTE exposure assumptions are those directed by USEPA. They are presented here for comparison with the site-specific values.

(b) USEPA, 2011b (EFH). Mean values, average of males and females.

(c) USEPA, 2011b (EFH). Upper bound residential occupancy period of 33 years total (6 as a young child, 12 as an adolescent, and 15 as an adult).

(d) Central tendency ingestion rate for outdoor soil, not including dust (USEPA, 2011b). Given that sediments are wet, generaration of dust is not expected.

(e) On days when the receptor is assumed to have direct contact with LPRSA sediment, one-half of the receptor's total daily ingestion exposure to outdoor soil/sediment is assumed to come from the LPRSA, and the other half while away from the site (i.e., at home, work, school).

(f) Once every 2 weeks during summer months for young child and adult; once a week for adolescent.

(g) Hands, forearms, lower legs, and feet for young child; lower legs and feet for adult and adolescent. Mean values, average of males and females (USEPA, 2011b). See Exhibit B-1 tables for calculations.

(h) Weighted adherence factors are calculated based on the body surface areas exposed and activity-specific soil loading factors from USEPA (2011b). See Exhibit B-1 tables for calculations.

(i) Mean hourly incidental water ingestion rate while swimming (pool/freshwater exposures) (USEPA, 2011b). Total intake per event is calculated by multiplying the hourly ingestion rate by the swimming event duration. Daily rate calculated by multiplying hourly rate by Event Duration.

(j) Full body surface areas. Mean values, average of males and females (USEPA, 2011b).

(k) Given the LPRSA site setting, swimming exposure times are expected to be very brief, such that a 15 minute duration for a swimming event is likely to be an overestimate. See Exhibit B-1 text.

(l) It is assumed that there is one swimming event per day.

TABLE 3-2
EXPOSURE PARAMETERS - WADER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Pathway		Wader (Child 1 to <7 yrs)			Wader (Adolescent 7 to <19 yrs)			Wader (Adult)			Site-Specific Notes
		EPA RME (a)	EPA CTE (a)	Site-Specific	EPA RME (a)	EPA CTE (a)	Site-Specific	EPA RME (a)	EPA CTE (a)	Site-Specific	
General Assumptions											
BW	Mean Body Weight (Kg):	15	15	17	52	52	53	70	70	80	(b)
ED	Exposure Duration (years):	6	3	6	12	6	12	24	9	15	(c)
Lifetme	Lifetime	70	70	78	70	70	78	70	70	78	(b)
Sediment Incidental Ingestion											
IR	Incidental Ingestion Rate (mg-sediment/day):	100	50	50	50	25	50	50	25	20	(d)
FI	Fraction Ingested from Source (unitless):	1	1	0.5	1	1	0.5	1	1	0.5	(e)
EF	Exposure Frequency (days/year):	13	7	7	39	20	20	13	7	7	(f)
	Intake Factor (carc, Kg-soil/Kg-BW-day)	***2.04E-08***	***2.74E-09***	***2.17E-09***	***1.76E-08***	***2.26E-09***	***3.98E-09***	***8.72E-09***	***8.81E-10***	***4.61E-10***	
	Intake Factor (noncarc, Kg-soil/Kg-BW-day)	***2.37E-07***	***6.39E-08***	***2.82E-08***	***1.03E-07***	***2.63E-08***	***2.58E-08***	***2.54E-08***	***6.85E-09***	***2.40E-09***	
Sediment Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	2,500	2,500	2,184	5,100	5,100	2,884	6,100	6,100	3,800	(g)
AF	Adherence Rate (mg-sediment/cm^2):	0.2	0.2	0.3	0.2	0.2	0.26	0.3	0.3	0.32	(h)
EF	Exposure Frequency (days/year):	13	7	7	39	20	20	13	7	7	(f)
	Intake Factor (carc, Kg-soil/Kg-BW)	***1.02E-07***	***2.74E-08***	***5.69E-08***	***3.59E-07***	***9.21E-08***	***1.19E-07***	***3.19E-07***	***6.45E-08***	***5.61E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***1.19E-06***	***6.39E-07***	***7.39E-07***	***2.10E-06***	***1.07E-06***	***7.75E-07***	***9.31E-07***	***5.01E-07***	***2.92E-07***	
Surface Water Incidental Ingestion											
IR	Incidental Ingestion Rate (L/hour):	0.025	0.025	--	0.025	0.025	--	0.025	0.025	--	(i)
IR	Incidental Ingestion Rate (L/day):	0.025	0.0125	0.013	0.025	0.0125	0.013	0.025	0.0125	0.013	(i)
EF	Exposure Frequency (days/year):	13	7	7	39	20	20	13	7	7	(f)
	Intake Factor (carc, L/Kg-BW-day)	***5.09E-06***	***6.85E-07***	***1.13E-06***	***8.81E-06***	***1.13E-06***	***2.07E-06***	***4.36E-06***	***4.40E-07***	***5.99E-07***	
	Intake Factor (noncarc, L/Kg-BW-day)	***5.94E-05***	***1.60E-05***	***1.47E-05***	***5.14E-05***	***1.32E-05***	***1.34E-05***	***1.27E-05***	***3.42E-06***	***3.12E-06***	
Surface Water Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	2,500	2,500	2,184	5,100	5,100	2,884	6,100	6,100	3,800	(g)
EV	Event Frequency (events/day)	1	1	1	1	1	1	1	1	1	(k)
t_{event}	Event Duration (hours/event)	1	0.5	0.5	1	0.5	0.5	1	0.5	0.5	(j)
EF	Exposure Frequency (days/year):	13	7	7	39	20	20	13	7	7	(f)
	Intake Factor (carc, L-hr/Kg-day-cm)	***5.09E-04***	***6.85E-05***	***9.48E-05***	***1.80E-03***	***2.30E-04***	***2.29E-04***	***1.06E-03***	***1.07E-04***	***8.76E-05***	
	Intake Factor (noncarc, L-hr/Kg-day-cm)	***5.94E-03***	***1.60E-03***	***1.23E-03***	***1.05E-02***	***2.69E-03***	***1.49E-03***	***3.10E-03***	***8.36E-04***	***4.55E-04***	

Notes:
CTE - Central Tendency Exposure.
RME - Reasonable Maximum Exposure.
(a) RME and CTE exposure assumptions are those directed by USEPA. They are presented here for comparison with the site-specific values.
(b) USEPA, 2011b (EFH). Mean values, average of males and females.
(c) USEPA, 2011b (EFH). Upper bound residential occupancy period of 33 years total (6 as a young child, 12 as an adolescent, and 15 as an adult).
(d) Central tendency ingestion rate for outdoor soil, not including dust (USEPA, 2011b). Given that sediments are wet, generaration of dust is not expected.
(e) On days when the receptor is assumed to have direct contact with LPRSA sediment, one-half of the receptor's total daily ingestion exposure to outdoor soil/sediment is assumed to come from the LPRSA, and the other half while away from the site (i.e., at home, work, school).
(f) Once every 2 weeks during summer months for young child and adult; 3 times every two weeks for adolescent.
(g) Hands, forearms, lower legs, and feet for young child; lower legs and feet for adult and adolescent.Mean values, average of males and females (USEPA, 2011b). See Exhibit B-1 tables for calculations.
(h) Weighted adherence factors are calculated based on the body surface areas exposed and activity-specific soil loading factors from USEPA (2011b). See Exhibit B-1 tables for calculations.
(i) Dorevitch, S. et al. 2011. Water ingestion during water recreation. Water Research 45(5):2020-8. Authors cite mean of 3-4 mL and upper confidence level estimate of 10-15 mL for limited contact recreational exposures to surface water (e.g., canoeing, kayaking, fishing, motor boating and rowing). The midpoint of the upper confidence level rate (13 mL) is adopted as the site-specific value. As this is a per event rate, an hourly rate is not provided.
(j) Given the LPRSA site setting, extended periods of wading are unlikely to occur, such that a 30 minute duration for a wading event is likely to be an overestimate. See Exhbibit B-1 text.
(k) It is assumed that there is one wading event per day.

TABLE 3-3
EXPOSURE PARAMETERS - BOATER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Pathway		Boater - Paddler (Older Child 7 to <14 yrs)			Boater - Rower (Teen 14 to <18 yrs)			Boater - Rower (Adult)			Site-Specific Notes
		EPA RME (a)	EPA CTE (b)	Site-Specific	EPA RME (a)	EPA CTE (b)	Site-Specific	EPA RME (a)	EPA CTE (b)	Site-Specific	
General Assumptions											
BW	Mean Body Weight (Kg):	41	41	42	66	66	67	70	70	80	(b)
ED	Exposure Duration (years):	7	3	7	5	3	4	24	9	33	(c)
Lifetme	Lifetime	70	70	78	70	70	78	70	70	78	(b)
Sediment Incidental Ingestion											
IR	Incidental Ingestion Rate (mg-sediment/day):	50	25	50	50	25	50	50	25	20	(d)
FI	Fraction Ingested from Source (unitless):	1	1	0.5	1	1	0.5	1	1	0.5	(e)
EF	Exposure Frequency (days/year):	13	7	13	4	2	2	9	4	4	(f, g)
	Intake Factor (carc, Kg-soil/Kg-BW-day)	***4.343E-09***	***5.012E-10***	***1.903E-09***	***5.93E-10***	***8.895E-11***	***1.048E-10***	***6.039E-09***	***5.032E-10***	***5.796E-10***	
	Intake Factor (noncarc, Kg-soil/Kg-BW-day)	***4.343E-08***	***1.169E-08***	***2.12E-08***	***8.302E-09***	***2.076E-09***	***2.045E-09***	***1.761E-08***	***3.914E-09***	***1.37E-09***	
Sediment Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	4,400	4,400	3,890	2,500	2,500	2,006	2,500	2,500	2,255	(h)
AF	Adherence Rate (mg-sediment/cm^2):	0.2	0.2	0.29	0.2	0.2	0.31	0.3	0.3	0.31	(i)
EF	Exposure Frequency (days/year):	13	7	13	4	2	2	9	4	4	(f, g)
	Intake Factor (carc, Kg-soil/Kg-BW)	***7.645E-08***	***1.764E-08***	***8.585E-08***	***5.93E-09***	***1.779E-09***	***2.608E-09***	***9.058E-08***	***1.51E-08***	***4.051E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***7.645E-07***	***4.116E-07***	***9.566E-07***	***8.302E-08***	***4.151E-08***	***5.086E-08***	***2.642E-07***	***1.174E-07***	***9.576E-08***	
Surface Water Incidental Ingestion											
IR	Incidental Ingestion Rate (L/hour):	0.025	0.025	--	0.025	0.025	--	0.025	0.025	--	(j)
IR	Incidental Ingestion Rate (L/day):	0.05	0.0375	0.013	0.05	0.0375	0.013	0.05	0.0375	0.013	(j)
EF	Exposure Frequency (days/year):	13	7	13	98	70	98	259	111	148	(g, k)
	Intake Factor (carc, L/Kg-BW-day)	***4.34E-06***	***7.52E-07***	***9.89E-07***	***1.45E-05***	***4.67E-06***	***2.67E-06***	***1.74E-04***	***2.09E-05***	***2.79E-05***	
	Intake Factor (noncarc, L/Kg-BW-day)	***4.34E-05***	***1.75E-05***	***1.10E-05***	***2.03E-04***	***1.09E-04***	***5.21E-05***	***5.07E-04***	***1.63E-04***	***6.59E-05***	
Surface Water Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	4,400	4,400	3,890	6,000	6,000	2,006	6,100	6,100	2,255	(h)
EV	Event Frequency (events/day)	1	1	1	1	1	1	1	1	1	(m)
t_{event}	Event Duration (hours/event)	2	1.5	2	2	1.5	2	2	1.5	2	(l)
EF	Exposure Frequency (days/year):	13	7	13	98	70	98	259	111	148	(g, k)
	Intake Factor (carc, L-hr/Kg-day-cm)	***7.64E-04***	***1.32E-04***	***5.92E-04***	***3.49E-03***	***1.12E-03***	***8.24E-04***	***4.24E-02***	***5.11E-03***	***9.67E-03***	
	Intake Factor (noncarc, L-hr/Kg-day-cm)	***7.64E-03***	***3.09E-03***	***6.60E-03***	***4.88E-02***	***2.62E-02***	***1.61E-02***	***1.24E-01***	***3.98E-02***	***2.29E-02***	

See Notes on following page.

TABLE 3-3
EXPOSURE PARAMETERS - BOATER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Notes:
CTE - Central Tendency Exposure.
RME - Reasonable Maximum Exposure.
(a) RME and CTE exposure assumptions are those directed by USEPA. They are presented here for comparison with the site-specific values.
(b) USEPA, 2011b (EFH). Mean values, average of males and females.
(c) USEPA, 2011b (EFH). Upper bound residential occupancy period. Each boater is assumed to be a separate receptor doing different types of boating. Therefore, the boating exposure pathway is not summed over the various age groups.
(d) Central tendency ingestion rate for outdoor soil, not including dust (USEPA, 2011b). Given that sediments are wet, generaration of dust is not expected.
(e) On days when the receptor is assumed to have direct contact with LPRSA sediment, one-half of the receptor's total daily ingestion exposure to outdoor soil/sediment is assumed to come from the LPRSA, and the other half while away from the site (i.e., at home, work, school).
(f) Based on discussions with local boat club personnel (Nereid Boat Club 2010, Passaic River Rowing Assn. 2010), the potential for rowers (scullers) to contact sediment while rowing, entering, or exiting their boat is very limited, as the boats are boarded from floating docks. Sediment contact is likely limited to a potential capsize event. Based on this site-specific information, the USEPA Region 2's directed CTE exposure frequency is reasonable for this parameter for the adult and teen rowers.
(g) Occasional canoeing and kayaking in the LPRSA takes place (National Park Service 2010; Passaic River Watershed Assn. 2013) Unlike sculls, canoes and kayaks may be boarded from shore, where there is a greater potential for direct contact exposure to sediment. It is conservatively assumed that the older child boater canoes or kayaks once a week during the warm summer months (13 days/year).
(h) Hands, forearms, lower legs, and feet for older child, hands and forearms for teen and adult. Mean values, average of males and females (USEPA, 2011b). See Exhibit B-1 tables for calculations.
(i) Weighted adherence factors are calculated based on the body surface areas exposed and activity-specific soil loading factors from USEPA (2011b). See Exhbit B-1 tables for calculations.
(j) Dorevitch, S. et al. 2011. Water ingestion during water recreation. Water Research 45(5):2020-8. Authors cite mean of 3-4 mL and upper confidence level estimate of 10-15 mL value. for limited contact recreational exposures to surface water (e.g., canoeing, kayaking, fishing). The midpoint of the upper confidence level rate (13 mL) is adopted as the site-specific value. As this is a per event rate, an hourly rate is not provided.
(k) Site-specific surface water exposure frequency for teen rower of 98 days/year is based on high school spring season of 14 weeks (March through May), a fall season of 10 weeks and up to 4-5 days/week of rowing. Adult rowers may row from early spring until late fall (~37 weeks). An avid rower may row several days/week and an average rower may row once per week during this period (Nereid Boat Club 2010). An exposure frequency of 4 days per week during the 9 month season (148 days/year) is selected as a conservative but realistic estimate for the adult rower.
(l) The duration of a canoe or kayak event is assumed to be 2 hours. The duration of a rowing event is assumed to be 2 hours based on typical rowing durations of 1-2 hours (Nereid Boat Club 2010; Passaic River Rowing Assn. 2010).
(m) It is assumed that there is one boating event per day.

TABLE 3-4
EXPOSURE PARAMETERS - ANGLER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

		Angler (Child 1 to <7 yrs)			Angler (Adolescent 7 to <19 yrs)			Angler (Adult)			Site-Specific Notes
Pathway		**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	
General Assumptions											
BW	Mean Body Weight (Kg):	15	15	17	52	52	53	70	70	80	(b)
ED	Exposure Duration (years):	6	3	6	12	6	12	24	9	15	(c)
Lifetme	Lifetime	70	70	78	70	70	78	70	70	78	(b)
Sediment Incidental Ingestion											
IR	Incidental Ingestion Rate (mg-sediment/day):	NA	NA	NA	50	25	50	50	25	20	(d)
FI	Fraction Ingested from Source (unitless):	NA	NA	NA	1	1	0.5	1	1	0.5	(e)
EF	Exposure Frequency (days/year):	NA	NA	NA	39	20	20	13	7	7	(f)
	Intake Factor (carc, Kg-soil/Kg-BW-day)	***NA***	***NA***	***NA***	***1.76E-08***	***2.26E-09***	***3.98E-09***	***8.72E-09***	***8.81E-10***	***4.61E-10***	
	Intake Factor (noncarc, Kg-soil/Kg-BW-day)	***NA***	***NA***	***NA***	***1.03E-07***	***2.63E-08***	***2.58E-08***	***2.54E-08***	***6.85E-09***	***2.40E-09***	
Sediment Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	NA	NA	NA	5,100	5,100	2,884	6,100	6,100	3,800	(g)
AF	Adherence Rate (mg-sediment/cm^2):	NA	NA	NA	0.2	0.2	0.26	0.3	0.3	0.32	(h)
EF	Exposure Frequency (days/year):	NA	NA	NA	39	20	20	13	7	7	(f)
	Intake Factor (carc, Kg-soil/Kg-BW)	***NA***	***NA***	***NA***	***3.59E-07***	***9.21E-08***	***1.19E-07***	***3.19E-07***	***6.45E-08***	***5.61E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***NA***	***NA***	***NA***	***2.10E-06***	***1.07E-06***	***7.75E-07***	***9.31E-07***	***5.01E-07***	***2.92E-07***	
Surface Water Incidental Ingestion											
IR	Incidental Ingestion Rate (L/hour):	NA	NA	NA	0.025	0.025	--	0.025	0.025	--	(i)
IR	Incidental Ingestion Rate (L/day):	NA	NA	NA	0.025	0.0125	0.013	0.025	0.0125	0.013	(i)
EF	Exposure Frequency (days/year):	NA	NA	NA	39	20	20	13	7	7	(f)
	Intake Factor (carc, L/Kg-BW-day)	***NA***	***NA***	***NA***	***8.81E-06***	***1.13E-06***	***2.07E-06***	***4.36E-06***	***4.40E-07***	***5.99E-07***	
	Intake Factor (noncarc, L/Kg-BW-day)	***NA***	***NA***	***NA***	***5.14E-05***	***1.32E-05***	***1.34E-05***	***1.27E-05***	***3.42E-06***	***3.12E-06***	
Surface Water Dermal Contact											
BSAE	Body Surface Area Exposed (cm^2):	NA	NA	NA	5,100	5,100	2,884	6,100	6,100	3,800	(g)
EV	Event Frequency (events/day)	NA	NA	NA	1	1	1	1	1	1	(p)
t_{event}	Event Duration (hours/event)	NA	NA	NA	1	0.5	1	1	0.5	1	(j)
EF	Exposure Frequency (days/year):	NA	NA	NA	39	20	20	13	7	7	(f)
	Intake Factor (carc, L-hr/Kg-day-cm)	***NA***	***NA***	***NA***	***1.80E-03***	***2.30E-04***	***4.59E-04***	***1.06E-03***	***1.07E-04***	***1.75E-04***	
	Intake Factor (noncarc, L-hr/Kg-day-cm)	***NA***	***NA***	***NA***	***1.05E-02***	***2.69E-03***	***2.98E-03***	***3.10E-03***	***8.36E-04***	***9.11E-04***	
Fish Consumption											
IR	Fish Ingestion Rate (g/day)	11.5	1.3	2.8	23.1	2.6	5.6	34.6	3.9	8.4	(k)
FI	Fraction Ingested from Source (unitless):	1	1	1	1	1	1	1	1	1	
Loss	Cooking Loss (unitless)	0	chem-specific	chem-specific	0	chem-specific	chem-specific	0	chem-specific	chem-specific	(l)
EF	Exposure Frequency (days/year):	365	365	365	365	365	365	365	365	365	(o)
	Intake Factor (carc, Kg-soil/Kg-BW)	***6.57E-08***	***3.71E-09***	***1.27E-08***	***7.62E-08***	***4.29E-09***	***1.63E-08***	***1.69E-07***	***7.16E-09***	***2.02E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***7.67E-07***	***8.67E-08***	***1.65E-07***	***4.44E-07***	***5.00E-08***	***1.06E-07***	***4.94E-07***	***5.57E-08***	***1.05E-07***	
Crab Consumption											
IR	Crab Ingestion Rate (g/day)	7.0	1.0	7.0	14.0	2.0	14.0	21.0	3.0	21.0	(m)
FI	Fraction Ingested from Source (unitless):	1	1	0.1	1	1	0.1	1	1	0.1	(n)
Loss	Cooking Loss (unitless)	0	chem-specific	chem-specific	0	chem-specific	chem-specific	0	chem-specific	chem-specific	(l)
EF	Exposure Frequency (days/year):	365	365	365	365	365	365	365	365	365	
	Intake Factor (carc, Kg-soil/Kg-BW)	***1.00E-07***	***1.43E-08***	***8.97E-09***	***2.00E-07***	***2.86E-08***	***1.79E-08***	***3.00E-07***	***4.29E-08***	***2.69E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***4.67E-07***	***6.67E-08***	***4.12E-08***	***2.69E-07***	***3.85E-08***	***2.64E-08***	***3.00E-07***	***4.29E-08***	***2.63E-08***	

See notes on following page.

TABLE 3-4
EXPOSURE PARAMETERS - ANGLER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Notes:
CTE - Central Tendency Exposure.
RME - Reasonable Maximum Exposure.
(a) RME and CTE exposure assumptions are those directed by USEPA. They are presented here for comparison with the site-specific values.
(b) USEPA, 2011b (EFH). Mean values, average of males and females.
(c) USEPA, 2011b (EFH). Upper bound residential occupancy period of 33 years total (6 as a young child, 12 as an adolescent, and 15 as an adult).
(d) Central tendency ingestion rate for outdoor soil, not including dust (USEPA, 2011b). Given that sediments are wet, generaration of dust is not expected.
(e) On days when the receptor is assumed to have direct contact with LPRSA sediment, one-half of the receptor's total daily ingestion exposure to outdoor soil/sediment is assumed to come from the LPRSA, and the other half while away from the site (i.e., at home, work, school).
(f) Once every 2 weeks during summer months for adult; 3 times every 2 weeks for adolescent. The angler is also assumed to fish from bulkheads, bridges, etc., such that surface water and sediment contact only occurs on a subset of fishing days.
(g) Lower legs and feet; mean values, average of males and females (USEPA, 2011b). See Exhibit B-1 tables for calculations.
(h) Weighted adherence factors are calculated based on the body surface areas exposed and activity-specific soil loading factors from USEPA (2011b). See Exhibit B-1 tables for calculations.
(i) Dorevitch, S. et al. 2011. Water ingestion during water recreation. Water Research 45(5):2020-8. Authors cite mean of 3-4 mL and upper confidence level estimate of 10-15 mL for limited contact recreational exposures to surface water (e.g., canoeing, kayaking, fishing, motor boating and rowing). The midpoint of the upper confidence level rate (13 mL) is adopted as the site-specific value. As this is a per event rate, an hourly rate is not provided.
(j) Given the LPRSA site setting, extended periods of wading while fishing are unlikely to occur, such that a 1 hour duration for a wading event is likely to be an overestimate. See Exhbibit B-1 text.
(k) Derived based on site-specific 2011-2012 creel/angler survey of LPRSA (see Exhibit B-1 tables). Equivalent to approximately 14 fish meals of 8 ounces (227 grams) each for the adult.
(l) Chemical-specific cooking loss values. See Exhibit B-1 text.
(m) USEPA Region 2 reanalysis of Burger (2002) using site-specific edible crab tissue weight of 45 g. 90th percentile estimate for consumers.
(n) Based on information obtained during the site-specific creel angler survey, corroborated by other LPR survey data. See Exhibit B-1 text.
(o) By convention, fish and crab ingestion rates are pro-rated to 365 days per year.
(p) It is assumed that there is one fishing event per day.

TABLE 3-5
EXPOSURE PARAMETERS - RESIDENT
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

		Resident (Child 1 to <7 yrs)			Resident (Adolescent 7 to <19 yrs)			Resident (Adult)			Site-Specific Notes
Pathway		**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	**EPA RME (a)**	**EPA CTE (a)**	**Site-Specific**	
General Assumptions											
BW	Mean Body Weight (Kg):	15	15	17	NA	NA	53	70	70	80	(b)
ED	Exposure Duration (years):	6	3	6	NA	NA	12	24	9	15	(c)
Lifetime	Lifetime	70	70	78	NA	NA	78	70	70	78	(b)
Floodplain Soil Incidental Ingestior											
IR	Incidental Ingestion Rate (mg-sediment/day):	200	100	100	NA	NA	50	100	50	50	(d)
FI	Fraction Ingested from Source (unitless):	1	1	1	NA	NA	1	1	1	1	(e)
EF	Exposure Frequency (days/year):	350	350	277	NA	NA	277	350	350	277	(f)
	Intake Factor (carc, Kg-soil/Kg-BW-day)	***1.10E-06***	***2.74E-07***	***3.43E-07***	***NA***	***NA***	***1.10E-07***	***4.70E-07***	***8.81E-08***	***9.12E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW-day)	***1.28E-05***	***6.39E-06***	***4.46E-06***	***NA***	***NA***	***7.16E-07***	***1.37E-06***	***6.85E-07***	***4.74E-07***	
Floodplain Soil Dermal Contact											
BSAE	Body Surface Area Exposed (cm²):	2,690	2,690	1,702	NA	NA	3,359	6,032	6,032	3,715	(g)
AF	Adherence Rate (mg-sediment/cm²):	0.2	0.2	0.26	NA	NA	0.25	0.07	0.07	0.07	(h)
FC	Fraction Contacted from Source (unitless):	1	1	1	NA	NA	1	1	1	1	(e)
EF	Exposure Frequency (days/year):	350	350	277	NA	NA	277	350	350	277	(f)
	Intake Factor (carc, Kg-soil/Kg-BW)	***2.95E-06***	***1.47E-06***	***1.52E-06***	***NA***	***NA***	***1.85E-06***	***1.98E-06***	***7.44E-07***	***4.74E-07***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***3.44E-05***	***3.44E-05***	***1.98E-05***	***NA***	***NA***	***1.20E-05***	***5.78E-06***	***5.78E-06***	***2.47E-06***	

Notes:
CTE - Central Tendency Exposure.
RME - Reasonable Maximum Exposure.
(a) USEPA did not direct the CPG to include residential scenarios in the baseline HHRA; default USEPA RME and CTE parameters for a young child and adult resident (USEPA 1989, 1991, 2004, 2014) are shown here for comparison with the site-specific values. USEPA's default resident receptor does not typically include an adolescent age group.
(b) USEPA, 2011b (EFH). Mean values, average of males and females.
(c) USEPA, 2011b (EFH). Upper bound residential occupancy period of 33 years total (6 as a young child, 12 as an adolescent, and 15 as an adult).
(d) Based on soil tracer studies of Stanek et al. (1999) and Stanek and Calabrese (2000) for young child, and Stanek et al. (1997) and Davis and Mirick (2006) for adolescent and adult. See Exhibit B-1 text.
(e) It is assumed that the resident's total daily ingestion exposure to outdoor soil is assumed to come from the LPRSA floodplain soils.
(f) Residential default of 350 days/year adjusted for days with inclement weather (21%), [350-(350 x 0.21) = 277]. See text.
(g) USEPA, 2011b. Seasonally-weighted body surface area calculated assuming face, hands, forearms, lower legs and feet (child and adolescent) and the face, hands, forearms and lower legs (adult) are exposed to floodplain soil in the resident's backyard for 6 warmer months of the year, and the hands and forearms are exposed for the 6 cooler months of the year. See Exhibit B-1 text.
(h) Weighted adherence factors are calculated based on the body surface areas exposed and activity-specific soil loading factors from USEPA (2011b). See Exhibit B-1 tables for calculations.

TABLE 3-6
EXPOSURE PARAMETERS - WORKER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Pathway		Worker (Adult)			Site-Specific Notes
		EPA RME (a)	EPA CTE (a)	Site-Specific	
General Assumptions					
BW	Mean Body Weight (Kg):	70	70	80	(b)
ED	Exposure Duration (years):	25	7	6.6	(c)
Lifetime	Lifetime	70	70	78	(b)
Sediment Incidental Ingestion					
IR	Incidental Ingestion Rate (mg-sediment/day):	50	25	20	(d)
FI	Fraction Ingested from Source (unitless):	1	1	1	(h)
EF	Exposure Frequency (days/year):	50	25	43	(e)
	Intake Factor (carc, Kg-soil/Kg-BW-day)	***3.49E-08***	***2.45E-09***	***2.49E-09***	
	Intake Factor (noncarc, Kg-soil/Kg-BW-day)	***9.78E-08***	***2.45E-08***	***2.95E-08***	
Sediment Dermal Contact					
BSAE	Body Surface Area Exposed (cm^2):	3,300	3,300	2,670	(f)
AF	Adherence Rate (mg-sediment/cm^2):	0.3	0.3	0.27	(g)
EF	Exposure Frequency (days/year):	50	25	43	(e)
	Intake Factor (carc, Kg-soil/Kg-BW)	***6.92E-07***	***9.69E-08***	***8.98E-08***	
	Intake Factor (noncarc, Kg-soil/Kg-BW)	***1.94E-06***	***9.69E-07***	***1.06E-06***	

Notes:
CTE - Central Tendency Exposure.
RME - Reasonable Maximum Exposure.
(a) RME and CTE exposure assumptions are those directed by USEPA. They are presented here for comparison with the site-specific values.
(b) USEPA, 2011b (EFH). Mean values, average of males and females.
(c) Median tenure of employed individuals at the same job, all workers (USEPA, 2011b, EFH, Table 16-82).
(d) Central tendency ingestion rate for outdoor soil, not including dust for adult (USEPA, 2011b). Given that sediments are wet, generaration of dust is not expected.
(e) The worker is assumed to contact shoreline sediment once a week during the ten months of the year when the ground is not frozen or snow covered, or when such activity is not precluded by inclement weather, as indicated by ten years of local meteorological data from the National Climatic Data Center (March through December). See Exhibit B-1 text.
(f) The worker's exposure to sediment is assumed to occur during occasional shoreline maintenance activities. Exposed body surface area is assumed to be hands, forearms, and face. Mean values, average of males and females (USEPA, 2011b). The worker is assumed to wear long pants and foot covering, which is consistent with USEPA (2004). See Exhibit B-1 tables for calculations.
(g) Weighted adherence factors are calculated based on the body surface areas exposed and activity-specific soil loading factors from USEPA (2011b). See Exhibit B-1 tables for calculations.
(h) All of the worker's sediment exposure is assumed to occur at the LPRSA.

TABLE 3-7
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE ACCESSIBLE SURFACE SEDIMENT
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f) Value	Units	Statistic (g)	Rationale (g)
Sitewide	TCDD-TEQ	mg/kg	143:143	5.85E-07		1.06E-03	2.46E-03	95% Chebyshev (Mean, Sd) UCL	3.46E-02		2.46E-03	mg/kg	UCL	UCL < Max
Sitewide	Total PCBs	mg/kg	143:143	1.75E-03		1.45E+00	2.46E+00	95% Chebyshev (Mean, Sd) UCL	1.89E+01		2.46E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Aluminum	mg/kg	143:143	2.76E+03		9.38E+03	9.88E+03	95% Student's-t UCL	1.80E+04	J	9.88E+03	mg/kg	UCL	UCL < Max
Sitewide	Antimony	mg/kg	141:143	3.00E-02	J	1.11E+00	1.31E+00	95% KM (BCA) UCL	1.18E+01	J	1.31E+00	mg/kg	UCL	UCL < Max
Sitewide	Arsenic, total	mg/kg	143:143	4.80E-01	J	7.31E+00	9.61E+00	95% Chebyshev (Mean, Sd) UCL	3.74E+01	J	9.61E+00	mg/kg	UCL	UCL < Max
Sitewide	Cadmium	mg/kg	143:143	7.40E-02	J	3.30E+00	4.94E+00	95% Chebyshev (Mean, Sd) UCL	3.47E+01	J	4.94E+00	mg/kg	UCL	UCL < Max
Sitewide	Chromium	mg/kg	143:143	4.03E+00	J	1.13E+02	1.70E+02	95% Chebyshev (Mean, Sd) UCL	1.14E+03	J	1.70E+02	mg/kg	UCL	UCL < Max
Sitewide	Chromium hexavalent	mg/kg	2:3	5.39E+00	J	6.59E+00	NC	NC	7.78E+00	J	7.78E+00	mg/kg	Max	< 5 samples
Sitewide	Cobalt	mg/kg	142:142	2.19E+00	J	7.19E+00	8.00E+00	95% Student's-t UCL	1.65E+01	J	8.00E+00	mg/kg	UCL	UCL < Max
Sitewide	Copper	mg/kg	165:165	4.19E+00	J	1.43E+02	1.80E+02	95% Chebyshev (Mean, Sd) UCL	7.06E+02	J	1.80E+02	mg/kg	UCL	UCL < Max
Sitewide	Lead	mg/kg	140:140	3.94E+00		2.38E+02	3.21E+02	95% Chebyshev (Mean, Sd) UCL	2.05E+03		3.21E+02	mg/kg	UCL	UCL < Max
Sitewide	Manganese	mg/kg	143:143	5.75E+01		4.15E+02	4.49E+02	95% Approximate Gamma UCL	1.07E+03	J	4.49E+02	mg/kg	UCL	UCL < Max
Sitewide	Mercury	mg/kg	143:143	2.14E-02		2.09E+00	2.92E+00	95% Chebyshev (Mean, Sd) UCL	1.34E+01	J	2.92E+00	mg/kg	UCL	UCL < Max
Sitewide	Thallium	mg/kg	140:143	2.50E-02		1.55E-01	1.63E-01	95% KM (BCA) UCL	4.51E-01	J	1.63E-01	mg/kg	UCL	UCL < Max
Sitewide	Vanadium	mg/kg	143:143	6.25E+00		2.56E+01	2.77E+01	95% Modified-t UCL	1.10E+02	J	2.77E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
Sitewide	Dieldrin	mg/kg	141:143	1.07E-04	J	5.29E-03	7.35E-03	95% KM (BCA) UCL	1.30E-01	J	7.35E-03	mg/kg	UCL	UCL < Max
	PAHs													
Sitewide	Benzo(a)anthracene	mg/kg	142:143	1.10E-03		2.61E+00	3.30E+00	95% KM (Chebyshev) UCL	1.30E+01	J	3.30E+00	mg/kg	UCL	UCL < Max
Sitewide	Benzo(a)pyrene	mg/kg	142:143	1.62E-03		3.08E+00	3.86E+00	95% KM (Chebyshev) UCL	1.20E+01	J	3.86E+00	mg/kg	UCL	UCL < Max
Sitewide	Benzo(b)fluoranthene	mg/kg	142:143	2.35E-03		3.62E+00	4.57E+00	95% KM (Chebyshev) UCL	1.68E+01	J	4.57E+00	mg/kg	UCL	UCL < Max
Sitewide	Benzo(k)fluoranthene	mg/kg	142:143	1.20E-03		1.72E+00	2.14E+00	95% KM (Chebyshev) UCL	8.95E+00		2.14E+00	mg/kg	UCL	UCL < Max
Sitewide	C2-Benzanthracene/chrysenes	mg/kg	141:143	8.58E-03		2.49E+00	3.83E+00	95% KM (Chebyshev) UCL	1.90E+01	J	3.83E+00	mg/kg	UCL	UCL < Max
Sitewide	C2-Naphthalenes	mg/kg	142:143	1.90E-03	J	7.48E-01	1.13E+00	95% KM (Chebyshev) UCL	4.80E+00	J	1.13E+00	mg/kg	UCL	UCL < Max
Sitewide	C3-Naphthalenes	mg/kg	142:143	2.40E-03	J	9.21E-01	1.66E+00	97.5% KM (Chebyshev) UCL	9.30E+00	J	1.66E+00	mg/kg	UCL	UCL < Max
Sitewide	C4-Naphthalenes	mg/kg	141:143	1.70E-03	J	9.32E-01	1.68E+00	97.5% KM (Chebyshev) UCL	9.22E+00	J	1.68E+00	mg/kg	UCL	UCL < Max
Sitewide	Chrysene	mg/kg	143:143	1.30E-03	J	3.63E+00	4.65E+00	95% Chebyshev (Mean, Sd) UCL	1.90E+01	J	4.65E+00	mg/kg	UCL	UCL < Max
Sitewide	Dibenzo(a,h)anthracene	mg/kg	136:143	3.48E-03		3.99E-01	4.29E-01	95% KM (BCA) UCL	2.20E+00	J	4.29E-01	mg/kg	UCL	UCL < Max
Sitewide	Indeno(1,2,3-cd)pyrene	mg/kg	142:143	1.25E-03		1.91E+00	2.36E+00	95% KM (Chebyshev) UCL	8.90E+00	J	2.36E+00	mg/kg	UCL	UCL < Max
Sitewide	Naphthalene	mg/kg	128:143	5.87E-03	J	5.64E-01	9.60E-01	95% KM (Chebyshev) UCL	1.40E+01	J	9.60E-01	mg/kg	UCL	UCL < Max

TABLE 3-7
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE ACCESSIBLE SURFACE SEDIMENT
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	TPH													
Sitewide	C9-C18 Hydrocarbons (h)	mg/kg	143:143	4.50E+00	J	1.99E+02	2.81E+02	95% Chebyshev (Mean, Sd) UCL	1.80E+03	J	2.81E+02	mg/kg	UCL	UCL < Max
Sitewide	C19-C40 Hydrocarbons (h)	mg/kg	143:143	4.05E+01	J	1.79E+03	2.53E+03	95% Chebyshev (Mean, Sd) UCL	1.62E+04	J	2.53E+03	mg/kg	UCL	UCL < Max
	VOCs													
Sitewide	Benzene	mg/kg	2:89	2.60E-04	J	4.10E-04	NC	NC	5.60E-04	J	5.60E-04	mg/kg	Max	< 5 detects
Sitewide	Trichloroethene	mg/kg	10:89	3.00E-04	J	2.57E-03	1.69E-03	95% KM (Percentile Bootstrap) UCL	6.00E-03	J	1.69E-03	mg/kg	UCL	UCL < Max
	SVOCs													
Sitewide	bis-(2-Ethylhexyl)phthalate	mg/kg	130:143	5.39E-02	J	1.19E+01	2.43E+01	97.5% KM (Chebyshev) UCL	2.40E+02	J	2.43E+01	mg/kg	UCL	UCL < Max

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 (TPH UCLs were calculated using ProUCL Version 5) using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted. In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) Based on a reveiw of available TPH hydrocarbon range data for SSP2 sediment samples, approximately 90% of the TPH is comprised of hydrocarbons in the C19-C40 range and approximately 10% is comprised of hydrocarbons in the C9-C18 range. The fractions (0.9 and 0.10) were applied to the BHHRA TPH sediment data (for which analytical hydrocarbon ranges were not provided by the lab) to estimate the concentrations of C19-C40 and C9-C18 hydrocarbons in each sample.

TABLE 3-8
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 0-3
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f) Value	Units	Statistic (g)	Rationale (g)
RM 0-3	TCDD-TEQ	mg/kg	25:25	9.14E-05		5.69E-04	1.17E-03	95% Chebyshev (Mean, Sd) UCL	2.77E-03		1.17E-03	mg/kg	UCL	UCL < Max
RM 0-3	Total PCBs	mg/kg	25:25	2.88E-01		1.36E+00	2.64E+00	95% Chebyshev (Mean, Sd) UCL	7.56E+00		2.64E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
RM 0-3	Aluminum	mg/kg	25:25	5.36E+03		1.08E+04	1.15E+04	95% Student's-t UCL	1.60E+04	J	1.15E+04	mg/kg	UCL	UCL < Max
RM 0-3	Antimony	mg/kg	25:25	3.90E-01	J	7.32E-01	8.56E-01	95% Adjusted Gamma UCL	2.39E+00	J	8.56E-01	mg/kg	UCL	UCL < Max
RM 0-3	Arsenic, total	mg/kg	25:25	6.40E+00	J	9.68E+00	1.07E+01	95% Adjusted Gamma UCL	1.80E+01	J	1.07E+01	mg/kg	UCL	UCL < Max
RM 0-3	Cadmium	mg/kg	25:25	7.70E-01	J	2.71E+00	2.98E+00	95% Student's-t UCL	4.48E+00	J	2.98E+00	mg/kg	UCL	UCL < Max
RM 0-3	Chromium	mg/kg	25:25	6.66E+01	J	1.09E+02	1.18E+02	95% Student's-t UCL	1.67E+02	J	1.18E+02	mg/kg	UCL	UCL < Max
RM 0-3	Chromium hexavalent	mg/kg	1:1	7.78E+00	J	7.78E+00	NC	NC	7.78E+00	J	7.78E+00	mg/kg	Max	< 5 samples
RM 0-3	Cobalt	mg/kg	24:24	4.30E+00	J	8.19E+00	8.67E+00	95% Student's-t UCL	1.09E+01	J	8.67E+00	mg/kg	UCL	UCL < Max
RM 0-3	Copper	mg/kg	32:32	9.92E+01	J	1.43E+02	1.53E+02	95% Student's-t UCL	2.21E+02	J	1.53E+02	mg/kg	UCL	UCL < Max
RM 0-3	Lead	mg/kg	24:24	8.78E+01		1.76E+02	1.91E+02	95% Student's-t UCL	2.60E+02		1.91E+02	mg/kg	UCL	UCL < Max
RM 0-3	Manganese	mg/kg	25:25	1.50E+02		3.23E+02	3.54E+02	95% Student's-t UCL	5.21E+02	J	3.54E+02	mg/kg	UCL	UCL < Max
RM 0-3	Mercury	mg/kg	25:25	1.49E+00		2.28E+00	2.60E+00	95% Modified-t UCL	5.07E+00	J	2.60E+00	mg/kg	UCL	UCL < Max
RM 0-3	Thallium	mg/kg	25:25	1.35E-01		1.82E-01	1.90E-01	95% Student's-t UCL	2.53E-01	J	1.90E-01	mg/kg	UCL	UCL < Max
RM 0-3	Vanadium	mg/kg	25:25	1.11E+01		2.77E+01	2.95E+01	95% Student's-t UCL	3.80E+01	J	2.95E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
RM 0-3	Dieldrin	mg/kg	25:25	9.30E-04	J	4.78E-03	9.45E-03	95% Chebyshev(Mean, Sd) UCL (h)	2.44E-02	J	9.45E-03	mg/kg	UCL	UCL < Max
	PAHs													
RM 0-3	Benzo(a)anthracene	mg/kg	25:25	3.90E-01		2.27E+00	2.70E+00	95% Student's-t UCL	5.62E+00	J	2.70E+00	mg/kg	UCL	UCL < Max
RM 0-3	Benzo(a)pyrene	mg/kg	25:25	5.80E-01		3.05E+00	3.66E+00	95% Student's-t UCL	7.57E+00	J	3.66E+00	mg/kg	UCL	UCL < Max
RM 0-3	Benzo(b)fluoranthene	mg/kg	25:25	5.20E-01		3.11E+00	3.70E+00	95% Student's-t UCL	7.73E+00	J	3.70E+00	mg/kg	UCL	UCL < Max
RM 0-3	Benzo(k)fluoranthene	mg/kg	25:25	6.40E-01		1.70E+00	2.04E+00	95% Adjusted Gamma UCL	5.00E+00		2.04E+00	mg/kg	UCL	UCL < Max
RM 0-3	C2-Benzanthracene/chrysenes	mg/kg	25:25	2.70E-01		1.76E+00	4.08E+00	95% Chebyshev(Mean, Sd) UCL (h)	1.40E+01	J	4.08E+00	mg/kg	UCL	UCL < Max
RM 0-3	C2-Naphthalene	mg/kg	25:25	9.60E-02	J	4.71E-01	1.09E+00	95% Chebyshev (Mean, Sd) UCL	3.60E+00	J	1.09E+00	mg/kg	UCL	UCL < Max
RM 0-3	C3-Naphthalene	mg/kg	25:25	1.10E-01	J	5.93E-01	1.40E+00	95% Chebyshev (Mean, Sd) UCL	4.10E+00	J	1.40E+00	mg/kg	UCL	UCL < Max
RM 0-3	C4-Naphthalene	mg/kg	25:25	7.30E-02	J	5.64E-01	1.36E+00	95% Chebyshev (Mean, Sd) UCL	3.90E+00	J	1.36E+00	mg/kg	UCL	UCL < Max
RM 0-3	Chrysene	mg/kg	25:25	5.90E-01	J	3.03E+00	3.65E+00	95% Student's-t UCL	8.87E+00	J	3.65E+00	mg/kg	UCL	UCL < Max
RM 0-3	Dibenz(ah)anthracene	mg/kg	12:25	9.80E-02		3.60E-01	4.16E-01	95% KM (t) UCL	8.10E-01	J	4.16E-01	mg/kg	UCL	UCL < Max
RM 0-3	Indeno(1,2,3-cd)pyrene	mg/kg	25:25	3.50E-01		1.70E+00	1.98E+00	95% Student's-t UCL	3.74E+00	J	1.98E+00	mg/kg	UCL	UCL < Max
RM 0-3	Naphthalene	mg/kg	23:25	1.80E-01	J	4.67E-01	5.16E-01	95% KM (t) UCL	1.10E+00	J	5.16E-01	mg/kg	UCL	UCL < Max

TABLE 3-8
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 0-3
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	SVOCs													
RM 0-3	bis-(2-Ethylhexl)phthalate	mg/kg	25:25	6.14E-01	J	6.58E+00	7.92E+00	95% Student's-t UCL	2.00E+01	J	7.92E+00	mg/kg	UCL	UCL < Max
	TPH													
RM 0-3	TPH (C9-C18 Hydrocarbons)	mg/kg	25:25	3.00E+01	J	2.00E+02	2.44E+02	95% Student's-t UCL	5.50E+02	J	2.44E+02	mg/kg	UCL	UCL < Max
RM 0-3	TPH (C19-C40 Hydrocarbons)	mg/kg	25:25	2.70E+02	J	1.80E+03	2.19E+03	95% Student's-t UCL	4.95E+03	J	2.19E+03	mg/kg	UCL	UCL < Max
	VOCs													
RM 0-3	Benzene	mg/kg	1:18	5.60E-04	J	5.60E-04	NC	NC	5.60E-04	J	5.60E-04	mg/kg	Max	< 5 detects
RM 0-3	Trichloroethene	mg/kg	2:18	1.10E-03	J	1.60E-03	NC	NC	2.10E-03	J	2.10E-03	mg/kg	Max	< 5 detects

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
RM - River miles.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-9
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 3-6
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
RM 3-6	TCDD-TEQ	mg/kg	29:29	3.96E-05		3.39E-04	4.89E-04	95% Chebyshev (Mean, Sd) UCL	1.13E-03		4.89E-04	mg/kg	UCL	UCL < Max
RM 3-6	Total PCBs	mg/kg	29:29	3.62E-02		9.89E-01	1.47E+00	95% Chebyshev (Mean, Sd) UCL	3.34E+00		1.47E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
RM 3-6	Aluminum	mg/kg	29:29	7.38E+03		1.12E+04	1.18E+04	95% Student's-t UCL	1.51E+04	J	1.18E+04	mg/kg	UCL	UCL < Max
RM 3-6	Antimony	mg/kg	29:29	2.10E-01	J	1.22E+00	2.50E+00	95% Chebyshev (Mean, Sd) UCL	8.90E+00	J	2.50E+00	mg/kg	UCL	UCL < Max
RM 3-6	Arsenic, total	mg/kg	29:29	4.70E+00	J	8.23E+00	9.32E+00	95% Modified-t UCL	2.10E+01	J	9.32E+00	mg/kg	UCL	UCL < Max
RM 3-6	Cadmium	mg/kg	29:29	2.10E-01	J	3.14E+00	4.94E+00	95% Chebyshev (Mean, Sd) UCL	1.34E+01	J	4.94E+00	mg/kg	UCL	UCL < Max
RM 3-6	Chromium	mg/kg	29:29	3.70E+01	J	1.07E+02	1.35E+02	95% Modified-t UCL	5.00E+02	J	1.35E+02	mg/kg	UCL	UCL < Max
RM 3-6	Chromium hexavalent	mg/kg	1:1	5.39E+00	J	5.39E+00	NC	NC	5.39E+00	J	5.39E+00	mg/kg	Max	< 5 samples
RM 3-6	Cobalt	mg/kg	29:29	6.10E+00	J	8.73E+00	9.38E+00	95% Student's-t UCL	1.65E+01	J	9.38E+00	mg/kg	UCL	UCL < Max
RM 3-6	Copper	mg/kg	30:30	2.58E+01	J	1.59E+02	1.87E+02	95% Adjusted Gamma UCL	4.76E+02	J	1.87E+02	mg/kg	UCL	UCL < Max
RM 3-6	Lead	mg/kg	29:29	4.26E+01		2.26E+02	3.33E+02	95% Chebyshev (Mean, Sd) UCL	6.82E+02		3.33E+02	mg/kg	UCL	UCL < Max
RM 3-6	Manganese	mg/kg	29:29	2.20E+02		4.09E+02	4.56E+02	95% Student's-t UCL	8.26E+02	J	4.56E+02	mg/kg	UCL	UCL < Max
RM 3-6	Mercury	mg/kg	29:29	1.20E-01		1.95E+00	2.80E+00	95% Chebyshev (Mean, Sd) UCL	6.19E+00	J	2.80E+00	mg/kg	UCL	UCL < Max
RM 3-6	Thallium	mg/kg	29:29	1.00E-01		1.82E-01	2.03E-01	95% Modified-t UCL	4.19E-01	J	2.03E-01	mg/kg	UCL	UCL < Max
RM 3-6	Vanadium	mg/kg	29:29	1.95E+01		2.84E+01	2.97E+01	95% Student's-t UCL	3.43E+01	J	2.97E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
RM 3-6	Dieldrin	mg/kg	29:29	6.59E-04	J	4.26E-03	5.52E-03	95% Adjusted Gamma UCL	1.90E-02	J	5.52E-03	mg/kg	UCL	UCL < Max
	PAHs													
RM 3-6	Benzo(a)anthracene	mg/kg	29:29	1.70E-01		2.94E+00	4.75E+00	95% Chebyshev (Mean, Sd) UCL	1.30E+01	J	4.75E+00	mg/kg	UCL	UCL < Max
RM 3-6	Benzo(a)pyrene	mg/kg	29:29	2.10E-01		3.46E+00	3.99E+00	95% Student's-t UCL	9.10E+00	J	3.99E+00	mg/kg	UCL	UCL < Max
RM 3-6	Benzo(b)fluoranthene	mg/kg	29:29	2.30E-01		3.91E+00	4.45E+00	95% Student's-t UCL	9.60E+00	J	4.45E+00	mg/kg	UCL	UCL < Max
RM 3-6	Benzo(k)fluoranthene	mg/kg	29:29	8.40E-02		1.77E+00	1.99E+00	95% Student's-t UCL	3.80E+00		1.99E+00	mg/kg	UCL	UCL < Max
RM 3-6	C2-Benzanthracene/chrysenes	mg/kg	29:29	6.30E-02		4.25E+00	8.76E+00	95% Chebyshev(Mean, Sd) UCL (h)	1.90E+01	J	8.76E+00	mg/kg	UCL	UCL < Max
RM 3-6	C2-Naphthalene	mg/kg	29:29	1.50E-02	J	1.17E+00	1.79E+00	95% Adjusted Gamma UCL	4.70E+00	J	1.79E+00	mg/kg	UCL	UCL < Max
RM 3-6	C3-Naphthalene	mg/kg	29:29	1.90E-02	J	1.48E+00	3.19E+00	95% Chebyshev(Mean, Sd) UCL (h)	9.30E+00	J	3.19E+00	mg/kg	UCL	UCL < Max
RM 3-6	C4-Naphthalene	mg/kg	29:29	2.90E-02	J	1.24E+00	2.44E+00	95% Chebyshev(Mean, Sd) UCL	4.90E+00	J	2.44E+00	mg/kg	UCL	UCL < Max
RM 3-6	Chrysene	mg/kg	29:29	2.00E-01	J	4.36E+00	7.15E+00	95% Chebyshev (Mean, Sd) UCL	1.90E+01	J	7.15E+00	mg/kg	UCL	UCL < Max
RM 3-6	Dibenz(ah)anthracene	mg/kg	26:29	3.20E-02		3.77E-01	4.00E-01	95% KM (t) UCL	6.40E-01	J	4.00E-01	mg/kg	UCL	UCL < Max
RM 3-6	Indeno(1,2,3-cd)pyrene	mg/kg	29:29	1.30E-01		1.99E+00	2.27E+00	95% Student's-t UCL	4.80E+00	J	2.27E+00	mg/kg	UCL	UCL < Max
RM 3-6	Naphthalene	mg/kg	27:29	2.30E-02	J	6.13E-01	1.33E+00	95% KM (Chebyshev) UCL	5.30E+00	J	1.33E+00	mg/kg	UCL	UCL < Max

TABLE 3-9
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 3-6
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	SVOCs													
RM 3-6	bis-(2-Ethylhexl)phthalate	mg/kg	29:29	3.90E-01	J	1.70E+01	5.25E+01	95% Chebyshev (Mean, Sd) UCL	2.40E+02	J	5.25E+01	mg/kg	UCL	UCL < Max
	TPH													
RM 3-6	TPH (C9-C18 Hydrocarbons)	mg/kg	29:29	6.00E+00	J	2.43E+02	3.00E+02	95% Student's-t UCL	8.10E+02	J	3.00E+02	mg/kg	UCL	UCL < Max
RM 3-6	TPH (C19-C40 Hydrocarbons)	mg/kg	29:29	5.40E+01	J	2.19E+03	2.70E+03	95% Student's-t UCL	7.29E+03	J	2.70E+03	mg/kg	UCL	UCL < Max
	VOCs													
RM 3-6	Benzene	mg/kg	0:18	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 3-6	Trichloroethene	mg/kg	0:18	NC		NC	NC	NC	NC		NC	NA	NA	NA

Notes:
J - Estimated value.
Max - Maximum detected value.
NA - Not applicable.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
RM - River miles.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-10
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 6-9
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f) Value	Units	Statistic (g)	Rationale (g)
RM 6-9	TCDD-TEQ	mg/kg	32:32	6.95E-07		3.66E-03	1.20E-02	97.5% Chebyshev (Mean, Sd) UCL	3.46E-02		1.20E-02	mg/kg	UCL	UCL < Max
RM 6-9	Total PCBs	mg/kg	32:32	1.05E-02		3.43E+00	7.35E+00	95% Chebyshev (Mean, Sd) UCL	1.89E+01		7.35E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
RM 6-9	Aluminum	mg/kg	32:32	3.46E+03		1.17E+04	1.28E+04	95% Student's-t UCL	1.80E+04	J	1.28E+04	mg/kg	UCL	UCL < Max
RM 6-9	Antimony	mg/kg	32:32	1.00E-01	J	1.31E+00	2.12E+00	95% Chebyshev(Mean, Sd) UCL (h)	5.14E+00	J	2.12E+00	mg/kg	UCL	UCL < Max
RM 6-9	Arsenic, total	mg/kg	32:32	1.70E+00	J	1.15E+01	1.50E+01	95% Adjusted Gamma UCL	3.74E+01	J	1.50E+01	mg/kg	UCL	UCL < Max
RM 6-9	Cadmium	mg/kg	32:32	2.45E-01	J	6.98E+00	9.86E+00	95% Adjusted Gamma UCL	3.47E+01	J	9.86E+00	mg/kg	UCL	UCL < Max
RM 6-9	Chromium	mg/kg	32:32	9.32E+00	J	2.33E+02	3.34E+02	95% Adjusted Gamma UCL	1.14E+03	J	3.34E+02	mg/kg	UCL	UCL < Max
RM 6-9	Chromium hexavalent	mg/kg	0:0	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 6-9	Cobalt	mg/kg	32:32	3.00E+00	J	8.28E+00	9.14E+00	95% Student's-t UCL	1.40E+01	J	9.14E+00	mg/kg	UCL	UCL < Max
RM 6-9	Copper	mg/kg	35:35	2.00E+01	J	2.41E+02	3.00E+02	95% Adjusted Gamma UCL	7.06E+02	J	3.00E+02	mg/kg	UCL	UCL < Max
RM 6-9	Lead	mg/kg	32:32	3.62E+01		3.38E+02	3.99E+02	95% Student's-t UCL	9.06E+02		3.99E+02	mg/kg	UCL	UCL < Max
RM 6-9	Manganese	mg/kg	32:32	1.27E+02		4.60E+02	5.19E+02	95% Student's-t UCL	8.06E+02	J	5.19E+02	mg/kg	UCL	UCL < Max
RM 6-9	Mercury	mg/kg	32:32	5.06E-02		4.04E+00	5.62E+00	95% Adjusted Gamma UCL	1.34E+01	J	5.62E+00	mg/kg	UCL	UCL < Max
RM 6-9	Thallium	mg/kg	31:32	2.50E-02		2.18E-01	2.46E-01	95% KM (t) UCL	4.51E-01	J	2.46E-01	mg/kg	UCL	UCL < Max
RM 6-9	Vanadium	mg/kg	32:32	9.32E+00		3.46E+01	4.24E+01	95% Adjusted Gamma UCL	1.10E+02	J	4.24E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
RM 6-9	Dieldrin	mg/kg	32:32	1.49E-04	J	8.37E-03	2.56E-02	95% Chebyshev (Mean, Sd) UCL	1.30E-01	J	2.56E-02	mg/kg	UCL	UCL < Max
	PAHs													
RM 6-9	Benzo(a)anthracene	mg/kg	32:32	4.70E-02		2.96E+00	4.55E+00	95% Chebyshev (Mean, Sd) UCL	9.40E+00	J	4.55E+00	mg/kg	UCL	UCL < Max
RM 6-9	Benzo(a)pyrene	mg/kg	32:32	7.00E-02		3.50E+00	5.40E+00	95% Chebyshev (Mean, Sd) UCL	1.10E+01	J	5.40E+00	mg/kg	UCL	UCL < Max
RM 6-9	Benzo(b)fluoranthene	mg/kg	32:32	6.70E-02		4.36E+00	6.63E+00	95% Chebyshev (Mean, Sd) UCL	1.50E+01	J	6.63E+00	mg/kg	UCL	UCL < Max
RM 6-9	Benzo(k)fluoranthene	mg/kg	32:32	7.40E-02		1.95E+00	2.29E+00	95% Student's-t UCL	4.80E+00		2.29E+00	mg/kg	UCL	UCL < Max
RM 6-9	C2-Benzanthracene/chrysenes	mg/kg	32:32	7.70E-02		3.17E+00	4.59E+00	95% Adjusted Gamma UCL	1.70E+01	J	4.59E+00	mg/kg	UCL	UCL < Max
RM 6-9	C2-Naphthalene	mg/kg	32:32	1.10E-02	J	1.13E+00	1.69E+00	95% Adjusted Gamma UCL	4.80E+00	J	1.69E+00	mg/kg	UCL	UCL < Max
RM 6-9	C3-Naphthalene	mg/kg	32:32	1.20E-02	J	1.48E+00	2.26E+00	95% Adjusted Gamma UCL	6.66E+00	J	2.26E+00	mg/kg	UCL	UCL < Max
RM 6-9	C4-Naphthalene	mg/kg	32:32	1.20E-02	J	1.85E+00	2.87E+00	95% Adjusted Gamma UCL	9.22E+00	J	2.87E+00	mg/kg	UCL	UCL < Max
RM 6-9	Chrysene	mg/kg	32:32	8.70E-02	J	4.15E+00	4.90E+00	95% Student's-t UCL	1.20E+01	J	4.90E+00	mg/kg	UCL	UCL < Max
RM 6-9	Dibenz(ah)anthracene	mg/kg	31:32	1.90E-02		4.99E-01	7.63E-01	95% KM (Chebyshev) UCL	1.90E+00	J	7.63E-01	mg/kg	UCL	UCL < Max
RM 6-9	Indeno(1,2,3-cd)pyrene	mg/kg	32:32	5.10E-02		2.38E+00	3.65E+00	95% Chebyshev (Mean, Sd) UCL	8.90E+00	J	3.65E+00	mg/kg	UCL	UCL < Max
RM 6-9	Naphthalene	mg/kg	29:32	1.40E-02	J	9.88E-01	3.57E+00	97.5% KM (Chebyshev) UCL	1.40E+01	J	3.57E+00	mg/kg	UCL	UCL < Max

TABLE 3-10
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 6-9
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	SVOCs													
RM 6-9	bis-(2-Ethylhexl)phthalate	mg/kg	32:32	6.41E-02	J	2.10E+01	3.25E+01	95% Adjusted Gamma UCL	1.74E+02	J	3.25E+01	mg/kg	UCL	UCL < Max
	TPH													
RM 6-9	TPH (C9-C18 Hydrocarbons)	mg/kg	32:32	1.30E+01	J	3.25E+02	4.74E+02	95% Adjusted Gamma UCL	1.80E+03	J	4.74E+02	mg/kg	UCL	UCL < Max
RM 6-9	TPH (C19-C40 Hydrocarbons)	mg/kg	32:32	1.17E+02	J	2.93E+03	4.27E+03	95% Adjusted Gamma UCL	1.62E+04	J	4.27E+03	mg/kg	UCL	UCL < Max
	VOCs													
RM 6-9	Benzene	mg/kg	1:16	2.60E-04	J	2.60E-04	NC	NC	2.60E-04	J	2.60E-04	mg/kg	Max	< 5 detects
RM 6-9	Trichloroethene	mg/kg	4:16	3.10E-03	J	3.70E-03	NC	NC	5.00E-03	J	5.00E-03	mg/kg	Max	< 5 detects

Notes:
J - Estimated value.
Max - Maximum detected value.
NA - Not applicable.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
RM - River miles.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-11
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 6-9 EAST BANK
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
RM 6-9 East Bank	TCDD-TEQ	mg/kg	20:20	6.29E-06		4.95E-03	1.78E-02	97.5% Chebyshev (Mean, Sd) UCL	3.46E-02		1.78E-02	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Total PCBs	mg/kg	20:20	1.81E-02		4.10E+00	9.95E+00	95% Chebyshev (Mean, Sd) UCL	1.89E+01		9.95E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
RM 6-9 East Bank	Aluminum	mg/kg	20:20	3.46E+03		1.19E+04	1.33E+04	95% Student's-t UCL	1.80E+04	J	1.33E+04	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Antimony	mg/kg	20:20	3.20E-01	J	1.53E+00	2.74E+00	95% Chebyshev(Mean, Sd) UCL (h)	5.14E+00	J	2.74E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Arsenic, total	mg/kg	20:20	1.80E+00	J	1.26E+01	1.82E+01	95% Adjusted Gamma UCL	3.73E+01	J	1.82E+01	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Cadmium	mg/kg	20:20	5.40E-01	J	8.39E+00	1.38E+01	95% Adjusted Gamma UCL	3.47E+01	J	1.38E+01	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Chromium	mg/kg	20:20	1.88E+01	J	2.81E+02	6.12E+02	95% Chebyshev (Mean, Sd) UCL	1.14E+03	J	6.12E+02	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Chromium hexavalent	mg/kg	0:0	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 6-9 East Bank	Cobalt	mg/kg	20:20	3.00E+00	J	8.14E+00	9.30E+00	95% Student's-t UCL	1.40E+01	J	9.30E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Copper	mg/kg	23:23	2.00E+01	J	2.70E+02	3.35E+02	95% Student's-t UCL	7.06E+02	J	3.35E+02	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Lead	mg/kg	20:20	3.62E+01		3.52E+02	4.44E+02	95% Student's-t UCL	9.06E+02		4.44E+02	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Manganese	mg/kg	20:20	1.39E+02		4.69E+02	5.44E+02	95% Student's-t UCL	8.06E+02	J	5.44E+02	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Mercury	mg/kg	20:20	2.90E-01		4.76E+00	8.86E+00	95% Chebyshev (Mean, Sd) UCL	1.34E+01	J	8.86E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Thallium	mg/kg	20:20	4.50E-02		2.28E-01	2.75E-01	95% Student's-t UCL	4.51E-01	J	2.75E-01	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Vanadium	mg/kg	20:20	1.03E+01		3.67E+01	6.52E+01	95% Chebyshev(Mean, Sd) UCL (h)	1.10E+02	J	6.52E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
RM 6-9 East Bank	Dieldrin	mg/kg	20:20	1.49E-04	J	1.10E-02	3.85E-02	95% Chebyshev (Mean, Sd) UCL	1.30E-01	J	3.85E-02	mg/kg	UCL	UCL < Max
	PAHs													
RM 6-9 East Bank	Benzo(a)anthracene	mg/kg	20:20	1.20E-01		3.05E+00	3.82E+00	95% Student's-t UCL	9.40E+00	J	3.82E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Benzo(a)pyrene	mg/kg	20:20	1.40E-01		3.65E+00	4.55E+00	95% Student's-t UCL	1.10E+01	J	4.55E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Benzo(b)fluoranthene	mg/kg	20:20	1.70E-01		4.48E+00	5.44E+00	95% Student's-t UCL	1.10E+01	J	5.44E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Benzo(k)fluoranthene	mg/kg	20:20	7.40E-02		2.07E+00	2.51E+00	95% Student's-t UCL	4.30E+00		2.51E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	C2-Benzanthracene/chrysenes	mg/kg	20:20	7.70E-02		3.12E+00	4.96E+00	95% Adjusted Gamma UCL	1.70E+01	J	4.96E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	C2-Naphthalene	mg/kg	20:20	2.10E-02	J	1.20E+00	1.98E+00	95% Adjusted Gamma UCL	4.80E+00	J	1.98E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	C3-Naphthalene	mg/kg	20:20	2.40E-02	J	1.64E+00	2.88E+00	95% Adjusted Gamma UCL	6.66E+00	J	2.88E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	C4-Naphthalene	mg/kg	20:20	5.20E-02	J	2.12E+00	3.75E+00	95% Adjusted Gamma UCL	9.22E+00	J	3.75E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Chrysene	mg/kg	20:20	1.20E-01	J	4.33E+00	5.21E+00	95% Student's-t UCL	8.50E+00	J	5.21E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Dibenzo(a,h)anthracene	mg/kg	19:20	1.40E-01		4.67E-01	5.54E-01	95% KM (Percentile Bootstrap) UCL	1.10E+00	J	5.54E-01	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Indeno(1,2,3-cd)pyrene	mg/kg	20:20	1.70E-01		2.22E+00	2.67E+00	95% Student's-t UCL	5.30E+00	J	2.67E+00	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	Naphthalene	mg/kg	17:10	1.62E-01	J	6.06E-01	6.50E-01	95% KM (t) UCL	1.06E+00	J	6.50E-01	mg/kg	UCL	UCL < Max

TABLE 3-11
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 6-9 EAST BANK
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	SVOCs													
RM 6-9 East Bank	bis-(2-Ethylhexl)phthalate	mg/kg	20:20	6.41E-02	J	2.29E+01	4.10E+01	95% Adjusted Gamma UCL	1.74E+02	J	4.10E+01	mg/kg	UCL	UCL < Max
	TPH													
RM 6-9 East Bank	TPH (C9-C18 Hydrocarbons)	mg/kg	20:20	1.60E+01	J	3.79E+02	6.37E+02	95% Adjusted Gamma UCL	1.80E+03	J	6.37E+02	mg/kg	UCL	UCL < Max
RM 6-9 East Bank	TPH (C19-C40 Hydrocarbons)	mg/kg	20:20	1.44E+02	J	3.41E+03	5.73E+03	95% Adjusted Gamma UCL	1.62E+04	J	5.73E+03	mg/kg	UCL	UCL < Max
	VOCs													
RM 6-9 East Bank	Benzene	mg/kg	1:10	2.60E-04	J	2.60E-04	NC	NC	2.60E-04	J	2.60E-04	mg/kg	Max	< 5 detects
RM 6-9 East Bank	Trichloroethene	mg/kg	3:10	3.10E-03	J	3.27E-03	NC	NC	3.50E-03	J	3.50E-03	mg/kg	Max	< 5 detects

Notes:
J - Estimated value.
Max - Maximum detected value.
NA - Not applicable.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
RM - River miles.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-12
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 9-12
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
RM 9-12	TCDD-TEQ	mg/kg	34:34	5.85E-07		2.73E-04	4.22E-04	95% Adjusted Gamma UCL	1.92E-03		4.22E-04	mg/kg	UCL	UCL < Max
RM 9-12	Total PCBs	mg/kg	34:34	1.75E-03		6.55E-01	1.02E+00	95% Adjusted Gamma UCL	3.51E+00		1.02E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
RM 9-12	Aluminum	mg/kg	34:34	2.93E+03		7.40E+03	8.09E+03	95% Student's-t UCL	1.21E+04	J	8.09E+03	mg/kg	UCL	UCL < Max
RM 9-12	Antimony	mg/kg	33:24	3.00E-02	J	1.01E+00	3.12E+00	97.5% KM (Chebyshev) UCL	1.18E+01	J	3.12E+00	mg/kg	UCL	UCL < Max
RM 9-12	Arsenic, total	mg/kg	34:34	4.80E-01	J	4.00E+00	4.77E+00	95% Student's-t UCL	1.41E+01	J	4.77E+00	mg/kg	UCL	UCL < Max
RM 9-12	Cadmium	mg/kg	34:34	7.40E-02	J	1.77E+00	2.17E+00	95% Student's-t UCL	5.80E+00	J	2.17E+00	mg/kg	UCL	UCL < Max
RM 9-12	Chromium	mg/kg	34:34	4.03E+00	J	5.86E+01	7.16E+01	95% Student's-t UCL	2.09E+02	J	7.16E+01	mg/kg	UCL	UCL < Max
RM 9-12	Chromium hexavalent	mg/kg	0:0	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 9-12	Cobalt	mg/kg	34:34	2.19E+00	J	5.87E+00	6.52E+00	95% Student's-t UCL	1.10E+01	J	6.52E+00	mg/kg	UCL	UCL < Max
RM 9-12	Copper	mg/kg	34:34	4.19E+00	J	1.02E+02	1.22E+02	95% Student's-t UCL	3.31E+02	J	1.22E+02	mg/kg	UCL	UCL < Max
RM 9-12	Lead	mg/kg	34:34	3.94E+00		2.35E+02	5.10E+02	95% Chebyshev(Mean, Sd) UCL (h)	2.05E+03		5.10E+02	mg/kg	UCL	UCL < Max
RM 9-12	Manganese	mg/kg	34:34	5.75E+01		4.51E+02	5.33E+02	95% Student's-t UCL	1.02E+03	J	5.33E+02	mg/kg	UCL	UCL < Max
RM 9-12	Mercury	mg/kg	34:34	2.15E-02		1.09E+00	1.39E+00	95% Student's-t UCL	4.10E+00	J	1.39E+00	mg/kg	UCL	UCL < Max
RM 9-12	Thallium	mg/kg	34:34	3.00E-03		1.05E-01	1.22E-01	95% Student's-t UCL	2.49E-01	J	1.22E-01	mg/kg	UCL	UCL < Max
RM 9-12	Vanadium	mg/kg	34:34	9.00E+00		2.10E+01	2.32E+01	95% Student's-t UCL	3.43E+01	J	2.32E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
RM 9-12	Dieldrin	mg/kg	32:24	1.07E-04	J	4.35E-03	8.36E-03	95% KM (Chebyshev) UCL	3.10E-02	J	8.36E-03	mg/kg	UCL	UCL < Max
	PAHs													
RM 9-12	Benzo(a)anthracene	mg/kg	33:34	1.10E-03		2.29E+00	2.79E+00	95% KM (t) UCL	8.27E+00	J	2.79E+00	mg/kg	UCL	UCL < Max
RM 9-12	Benzo(a)pyrene	mg/kg	33:34	1.62E-03		2.64E+00	3.27E+00	95% KM (Percentile Bootstrap) UCL	9.90E+00	J	3.27E+00	mg/kg	UCL	UCL < Max
RM 9-12	Benzo(b)fluoranthene	mg/kg	33:34	2.35E-03		3.52E+00	6.05E+00	95% KM (Chebyshev) UCL	1.68E+01	J	6.05E+00	mg/kg	UCL	UCL < Max
RM 9-12	Benzo(k)fluoranthene	mg/kg	33:34	1.20E-03		1.64E+00	2.89E+00	95% KM (Chebyshev) UCL	8.95E+00		2.89E+00	mg/kg	UCL	UCL < Max
RM 9-12	C2-Benzanthracene/chrysenes	mg/kg	32:34	8.58E-03		1.70E+00	3.34E+00	95% KM (Chebyshev) UCL	1.10E+01	J	3.34E+00	mg/kg	UCL	UCL < Max
RM 9-12	C2-Naphthalene	mg/kg	33:34	1.90E-03	J	4.60E-01	9.54E-01	95% KM (Chebyshev) UCL	2.90E+00	J	9.54E-01	mg/kg	UCL	UCL < Max
RM 9-12	C3-Naphthalene	mg/kg	33:34	2.40E-03	J	4.87E-01	9.98E-01	95% KM (Chebyshev) UCL	2.90E+00	J	9.98E-01	mg/kg	UCL	UCL < Max
RM 9-12	C4-Naphthalene	mg/kg	33:34	1.70E-03	J	4.48E-01	9.48E-01	95% KM (Chebyshev) UCL	2.80E+00	J	9.48E-01	mg/kg	UCL	UCL < Max
RM 9-12	Chrysene	mg/kg	34:34	1.30E-03	J	3.32E+00	4.24E+00	95% Student's-t UCL	1.45E+01	J	4.24E+00	mg/kg	UCL	UCL < Max
RM 9-12	Dibenz(ah)anthracene	mg/kg	32:34	3.48E-03		3.38E-01	3.92E-01	95% KM (t) UCL	1.00E+00	J	3.92E-01	mg/kg	UCL	UCL < Max
RM 9-12	Indeno(1,2,3-cd)pyrene	mg/kg	33:34	1.25E-03		1.71E+00	2.08E+00	95% KM (t) UCL	6.47E+00	J	2.08E+00	mg/kg	UCL	UCL < Max
RM 9-12	Naphthalene	mg/kg	29:34	5.87E-03	J	3.41E-01	5.64E-01	95% KM (Chebyshev) UCL	1.93E+00	J	5.64E-01	mg/kg	UCL	UCL < Max

TABLE 3-12
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 9-12
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	SVOCs													
RM 9-12	bis-(2-Ethylhexl)phthalate	mg/kg	26:34	5.39E-02	J	5.71E+00	1.40E+01	99% KM (Chebyshev) UCL	1.98E+01	J	1.40E+01	mg/kg	UCL	UCL < Max
	TPH													
RM 9-12	TPH (C9-C18 Hydrocarbons)	mg/kg	34:34	4.50E+00	J	1.13E+02	1.57E+02	95% Adjusted Gamma UCL	3.00E+02	J	1.57E+02	mg/kg	UCL	UCL < Max
RM 9-12	TPH (C19-C40 Hydrocarbons)	mg/kg	34:34	4.05E+01	J	1.02E+03	1.42E+03	95% Adjusted Gamma UCL	2.70E+03	J	1.42E+03	mg/kg	UCL	UCL < Max
	VOCs													
RM 9-12	Benzene	mg/kg	0:20	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 9-12	Trichloroethene	mg/kg	20:20	3.30E-04	J	4.17E-03	5.08E-03	95% Student's-t UCL	1.00E-02	J	5.08E-03	mg/kg	UCL	UCL < Max

Notes:
J - Estimated value.
Max - Maximum detected value.
NA - Not applicable.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
RM - River miles.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-13
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 12-15
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
RM 12-15	TCDD-TEQ	mg/kg	11:11	3.16E-06		1.14E-04	3.55E-04	95% Adjusted Gamma UCL	3.40E-04		3.40E-04	mg/kg	Max	Max < UCL
RM 12-15	Total PCBs	mg/kg	11:11	6.85E-02		8.32E-01	1.76E+00	95% Adjusted Gamma UCL	4.04E+00		1.76E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
RM 12-15	Aluminum	mg/kg	11:11	2.89E+03		6.69E+03	8.34E+03	95% Student's-t UCL	1.07E+04	J	8.34E+03	mg/kg	UCL	UCL < Max
RM 12-15	Antimony	mg/kg	11:11	1.60E-01	J	7.28E-01	9.66E-01	95% Student's-t UCL	1.50E+00	J	9.66E-01	mg/kg	UCL	UCL < Max
RM 12-15	Arsenic, total	mg/kg	11:11	8.20E-01	J	2.75E+00	3.44E+00	95% Student's-t UCL	4.50E+00	J	3.44E+00	mg/kg	UCL	UCL < Max
RM 12-15	Cadmium	mg/kg	11:11	3.60E-01	J	1.56E+00	2.05E+00	95% Student's-t UCL	2.71E+00	J	2.05E+00	mg/kg	UCL	UCL < Max
RM 12-15	Chromium	mg/kg	11:11	1.21E+01	J	4.93E+01	6.47E+01	95% Student's-t UCL	8.72E+01	J	6.47E+01	mg/kg	UCL	UCL < Max
RM 12-15	Chromium hexavalent	mg/kg	0:1	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 12-15	Cobalt	mg/kg	11:11	2.70E+00	J	5.62E+00	6.55E+00	95% Student's-t UCL	7.81E+00	J	6.55E+00	mg/kg	UCL	UCL < Max
RM 12-15	Copper	mg/kg	14:14	2.21E+01	J	7.95E+01	9.83E+01	95% Student's-t UCL	1.60E+02	J	9.83E+01	mg/kg	UCL	UCL < Max
RM 12-15	Lead	mg/kg	11:11	6.60E+01		1.59E+02	1.87E+02	95% Student's-t UCL	2.16E+02		1.87E+02	mg/kg	UCL	UCL < Max
RM 12-15	Manganese	mg/kg	11:11	1.27E+02		5.56E+02	7.37E+02	95% Student's-t UCL	1.07E+03	J	7.37E+02	mg/kg	UCL	UCL < Max
RM 12-15	Mercury	mg/kg	11:11	2.10E-01		1.38E+00	2.23E+00	95% Student's-t UCL	5.50E+00	J	2.23E+00	mg/kg	UCL	UCL < Max
RM 12-15	Thallium	mg/kg	11:11	4.10E-02		8.61E-02	1.04E-01	95% Student's-t UCL	1.43E-01	J	1.04E-01	mg/kg	UCL	UCL < Max
RM 12-15	Vanadium	mg/kg	11:11	7.20E+00		1.72E+01	2.08E+01	95% Student's-t UCL	2.56E+01	J	2.08E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
RM 12-15	Dieldrin	mg/kg	11:11	1.00E-03	J	4.80E-03	6.93E-03	95% Student's-t UCL	1.40E-02	J	6.93E-03	mg/kg	UCL	UCL < Max
	PAHs													
RM 12-15	Benzo(a)anthracene	mg/kg	11:11	7.00E-01		1.97E+00	2.45E+00	95% Student's-t UCL	3.70E+00	J	2.45E+00	mg/kg	UCL	UCL < Max
RM 12-15	Benzo(a)pyrene	mg/kg	11:11	9.50E-01		2.06E+00	2.42E+00	95% Student's-t UCL	3.10E+00	J	2.42E+00	mg/kg	UCL	UCL < Max
RM 12-15	Benzo(b)fluoranthene	mg/kg	11:11	1.00E+00		2.57E+00	3.25E+00	95% Student's-t UCL	4.90E+00	J	3.25E+00	mg/kg	UCL	UCL < Max
RM 12-15	Benzo(k)fluoranthene	mg/kg	11:11	6.10E-01		1.26E+00	1.50E+00	95% Student's-t UCL	2.10E+00		1.50E+00	mg/kg	UCL	UCL < Max
RM 12-15	C2-Benzanthracene/chrysenes	mg/kg	11:11	4.50E-01		1.15E+00	1.51E+00	95% Student's-t UCL	2.90E+00	J	1.51E+00	mg/kg	UCL	UCL < Max
RM 12-15	C2-Naphthalene	mg/kg	11:11	1.40E-01	J	4.07E-01	8.44E-01	95% Chebyshev (Mean, Sd) UCL	1.20E+00	J	8.44E-01	mg/kg	UCL	UCL < Max
RM 12-15	C3-Naphthalene	mg/kg	11:11	1.50E-01	J	3.82E-01	5.76E-01	95% Adjusted Gamma UCL	1.00E+00	J	5.76E-01	mg/kg	UCL	UCL < Max
RM 12-15	C4-Naphthalene	mg/kg	11:11	1.00E-01	J	2.92E-01	3.95E-01	95% Student's-t UCL	7.70E-01	J	3.95E-01	mg/kg	UCL	UCL < Max
RM 12-15	Chrysene	mg/kg	11:11	1.10E+00	J	2.59E+00	3.14E+00	95% Student's-t UCL	4.20E+00	J	3.14E+00	mg/kg	UCL	UCL < Max
RM 12-15	Dibenzo(a,h)anthracene	mg/kg	11:11	1.20E-01		3.09E-01	3.71E-01	95% Student's-t UCL	4.80E-01	J	3.71E-01	mg/kg	UCL	UCL < Max
RM 12-15	Indeno(1,2,3-cd)pyrene	mg/kg	11:11	7.70E-01		1.60E+00	1.92E+00	95% Student's-t UCL	2.30E+00	J	1.92E+00	mg/kg	UCL	UCL < Max
RM 12-15	Naphthalene	mg/kg	10:11	9.20E-02	J	2.95E-01	5.02E-01	95% GROS Adjusted Gamma UCL	7.90E-01	J	5.02E-01	mg/kg	UCL	UCL < Max

TABLE 3-13
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 12-15
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	SVOCs													
RM 12-15	bis-(2-Ethylhexl)phthalate	mg/kg	10:11	8.50E-01	J	6.00E+00	1.59E+01	95% GROS Adjusted Gamma UCL	2.50E+01	J	1.59E+01	mg/kg	UCL	UCL < Max
	TPH													
RM 12-15	TPH (C9-C18 Hydrocarbons)	mg/kg	11:11	2.00E+01	J	1.33E+02	2.51E+02	95% Adjusted Gamma UCL	5.00E+02	J	2.51E+02	mg/kg	UCL	UCL < Max
RM 12-15	TPH (C19-C40 Hydrocarbons)	mg/kg	11:11	1.80E+02	J	1.20E+03	2.26E+03	95% Adjusted Gamma UCL	4.50E+03	J	2.26E+03	mg/kg	UCL	UCL < Max
	VOCs													
RM 12-15	Benzene	mg/kg	0:10	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 12-15	Trichloroethene	mg/kg	0:10	NC		NC	NC	NC	NC		NC	NA	NA	NA

Notes:
J - Estimated value.
Max - Maximum detected value.
NA - Not applicable.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
RM - River miles.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-14
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 15-17.4
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
RM 15-17.4	TCDD-TEQ	mg/kg	12:12	1.55E-06		5.48E-06	6.89E-06	95% Student's-t UCL	1.01E-05		6.89E-06	mg/kg	UCL	UCL < Max
RM 15-17.4	Total PCBs	mg/kg	12:12	1.04E-02		3.30E-01	1.36E+00	95% Chebyshev (Mean, Sd) UCL	2.92E+00		1.36E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
RM 15-17.4	Aluminum	mg/kg	12:12	2.76E+03		4.01E+03	4.40E+03	95% Student's-t UCL	5.23E+03	J	4.40E+03	mg/kg	UCL	UCL < Max
RM 15-17.4	Antimony	mg/kg	11:12	2.70E-01	J	1.81E+00	4.42E+00	95% KM (Chebyshev) UCL	7.20E+00	J	4.42E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Arsenic, total	mg/kg	12:12	8.00E-01	J	2.65E+00	6.02E+00	95% Chebyshev(Mean, Sd) UCL (h)	1.06E+01	J	6.02E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Cadmium	mg/kg	12:12	9.10E-02	J	9.94E-01	1.36E+00	95% Student's-t UCL	2.12E+00	J	1.36E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Chromium	mg/kg	12:12	1.15E+01	J	2.27E+01	3.06E+01	95% Student's-t UCL	6.67E+01	J	3.06E+01	mg/kg	UCL	UCL < Max
RM 15-17.4	Chromium hexavalent	mg/kg	0:0	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 15-17.4	Cobalt	mg/kg	12:12	2.44E+00	J	3.79E+00	4.18E+00	95% Student's-t UCL	5.20E+00	J	4.18E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Copper	mg/kg	15:15	7.72E+00	J	4.84E+01	7.14E+01	95% Adjusted Gamma UCL	1.60E+02	J	7.14E+01	mg/kg	UCL	UCL < Max
RM 15-17.4	Lead	mg/kg	10:10	1.77E+01		1.93E+02	4.24E+02	95% Adjusted Gamma UCL	5.89E+02		4.24E+02	mg/kg	UCL	UCL < Max
RM 15-17.4	Manganese	mg/kg	12:12	1.01E+02		2.65E+02	4.23E+02	95% Adjusted Gamma UCL	8.64E+02	J	4.23E+02	mg/kg	UCL	UCL < Max
RM 15-17.4	Mercury	mg/kg	12:12	6.80E-02		3.65E-01	6.37E-01	95% Adjusted Gamma UCL	1.30E+00	J	6.37E-01	mg/kg	UCL	UCL < Max
RM 15-17.4	Thallium	mg/kg	11:12	3.20E-02		5.08E-02	8.29E-02	95% KM (Chebyshev) UCL	1.30E-01	J	8.29E-02	mg/kg	UCL	UCL < Max
RM 15-17.4	Vanadium	mg/kg	12:12	6.25E+00		1.17E+01	1.34E+01	95% Student's-t UCL	1.82E+01	J	1.34E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
RM 15-17.4	Dieldrin	mg/kg	12:12	4.20E-04	J	3.54E-03	6.29E-03	95% Adjusted Gamma UCL	1.40E-02	J	6.29E-03	mg/kg	UCL	UCL < Max
	PAHs													
RM 15-17.4	Benzo(a)anthracene	mg/kg	12:12	8.30E-02		3.02E+00	4.33E+00	95% Student's-t UCL	7.60E+00	J	4.33E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Benzo(a)pyrene	mg/kg	12:12	1.20E-01		3.21E+00	6.57E+00	95% Adjusted Gamma UCL	1.20E+01	J	6.57E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Benzo(b)fluoranthene	mg/kg	12:12	7.30E-02		3.31E+00	5.05E+00	95% Student's-t UCL	1.10E+01	J	5.05E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Benzo(k)fluoranthene	mg/kg	12:12	1.10E-01		1.68E+00	2.31E+00	95% Student's-t UCL	3.90E+00		2.31E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	C2-Benzanthracene/chrysenes	mg/kg	12:12	9.70E-02		1.34E+00	2.95E+00	95% Adjusted Gamma UCL	8.40E+00	J	2.95E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	C2-Naphthalene	mg/kg	12:12	1.20E-02	J	3.93E-01	8.99E-01	95% Adjusted Gamma UCL	2.10E+00	J	8.99E-01	mg/kg	UCL	UCL < Max
RM 15-17.4	C3-Naphthalene	mg/kg	12:12	1.20E-02	J	4.54E-01	1.07E+00	95% Adjusted Gamma UCL	1.80E+00	J	1.07E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	C4-Naphthalene	mg/kg	11:12	9.00E-03	J	3.99E-01	1.29E+00	95% Adjusted Gamma KM-UCL	2.40E+00	J	1.29E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Chrysene	mg/kg	12:12	1.10E-01	J	3.56E+00	7.08E+00	95% Adjusted Gamma UCL	1.20E+01	J	7.08E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Dibenzo(a,h)anthracene	mg/kg	12:12	2.50E-02		5.07E-01	1.02E+00	95% Adjusted Gamma UCL	2.20E+00	J	1.02E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Indeno(1,2,3-cd)pyrene	mg/kg	12:12	6.30E-02		1.71E+00	2.39E+00	95% Student's-t UCL	4.10E+00	J	2.39E+00	mg/kg	UCL	UCL < Max
RM 15-17.4	Naphthalene	mg/kg	10:12	9.80E-03	J	3.35E-01	4.59E-01	95% KM (t) UCL	1.20E+00	J	4.59E-01	mg/kg	UCL	UCL < Max

TABLE 3-14
EXPOSURE POINT CONCENTRATION SUMMARY – ACCESSIBLE SURFACE SEDIMENT RIVER MILES 15-17.4
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Accessible Surface Sediment

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
	SVOCs													
RM 15-17.4	bis-(2-Ethylhexl)phthalate	mg/kg	8:12	9.70E-02	J	9.96E-01	1.09E+00	95% KM (t) UCL	2.20E+00	J	1.09E+00	mg/kg	UCL	UCL < Max
	TPH													
RM 15-17.4	TPH (C9-C18 Hydrocarbons)	mg/kg	12:12	9.10E+00	J	5.23E+01	1.75E+02	95% Chebyshev (Mean, Sd) UCL	3.60E+02	J	1.75E+02	mg/kg	UCL	UCL < Max
RM 15-17.4	TPH (C19-C40 Hydrocarbons)	mg/kg	12:12	8.19E+01	J	4.71E+02	1.58E+03	95% Chebyshev (Mean, Sd) UCL	3.24E+03	J	1.58E+03	mg/kg	UCL	UCL < Max
	VOCs													
RM 15-17.4	Benzene	mg/kg	0:7	NC		NC	NC	NC	NC		NC	NA	NA	NA
RM 15-17.4	Trichloroethene	mg/kg	1:7	3.00E-04	J	3.00E-04	NC	NC	3.00E-04	J	3.00E-04	mg/kg	Max	< 5 detects

Notes:
J - Estimated value.
Max - Maximum detected value.
NA - Not applicable.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
RM - River miles.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-15
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE SURFACE WATER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

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

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
Sitewide	TCDD-TEQ	ug/L	99:99	1.91E-09		5.69E-06	7.00E-06	95% Approximate Gamma UCL	2.77E-05	(h)	7.00E-06	ug/L	UCL	UCL < Max
Sitewide	TCDD-TEQ (Dissolved)	ug/L	99:99	8.83E-11		2.63E-07	3.23E-07	95% Approximate Gamma UCL	1.28E-06	(h)	3.23E-07	ug/L	UCL	UCL < Max
Sitewide	PCB, TOTAL	ug/L	100:100	1.96E-03		1.81E-02	2.00E-02	95% Approximate Gamma UCL	6.51E-02		2.00E-02	ug/L	UCL	UCL < Max
Sitewide	PCB, TOTAL (Dissolved)	ug/L	100:100	5.83E-04		5.39E-03	5.95E-03	95% Approximate Gamma UCL	1.94E-02		5.95E-03	ug/L	UCL	UCL < Max
	INORGANICS													
Sitewide	Aluminum	ug/L	60:60	6.95E+01		3.32E+02	4.98E+02	95% Chebyshev (Mean, Sd) UCL (i)	1.83E+03		4.98E+02	ug/L	UCL	UCL < Max
Sitewide	Antimony	ug/L	26:60	1.94E-01		5.66E-01	5.68E-01	95% KM (% Bootstrap) UCL	1.84E+00	J	5.68E-01	ug/L	UCL	UCL < Max
Sitewide	Arsenic	ug/L	60:60	6.40E-01		1.35E+00	1.45E+00	95% Student's-t UCL	2.30E+00		1.45E+00	ug/L	UCL	UCL < Max
Sitewide	Chromium	ug/L	60:60	4.00E-01		2.68E+00	3.92E+00	95% Chebyshev (Mean, Sd) UCL (i)	1.35E+01		3.92E+00	ug/L	UCL	UCL < Max
Sitewide	Cobalt	ug/L	60:60	1.36E-01		3.62E-01	4.08E-01	95% Modified-t UCL	1.29E+00	J	4.08E-01	ug/L	UCL	UCL < Max
Sitewide	Lead	ug/L	100:100	1.04E-01		4.90E+00	6.78E+00	95% Chebyshev (Mean, Sd) UCL	2.59E+01	J	6.78E+00	ug/L	UCL	UCL < Max
Sitewide	Manganese	ug/L	60:60	5.29E+01	J	9.41E+01	9.97E+01	95% Modified-t UCL	1.49E+02		9.97E+01	ug/L	UCL	UCL < Max
Sitewide	Thallium	ug/L	18:60	2.00E-03	J	9.89E-03	8.35E-03	95% KM (t) UCL	2.60E-02	J	8.35E-03	ug/L	UCL	UCL < Max
	PESTICIDES													
Sitewide	Dieldrin	ug/L	40:49	2.78E-04	J	1.22E-03	1.20E-03	95% KM (Percentile Bootstrap) UCL	2.33E-03		1.20E-03	ug/L	UCL	UCL < Max
	PAHs													
Sitewide	Benzo(a)anthracene	ug/L	58:60	3.76E-03	J	2.61E-02	3.78E-02	95% KM (Chebyshev) UCL	1.04E-01		3.78E-02	ug/L	UCL	UCL < Max
Sitewide	Benzo(a)pyrene	ug/L	48:60	8.55E-03	J	4.75E-02	5.05E-02	95% KM (BCA) UCL	2.08E-01		5.05E-02	ug/L	UCL	UCL < Max
Sitewide	Benzo(b)fluoranthene	ug/L	53:60	8.48E-03	J	6.02E-02	6.74E-02	95% KM (BCA) UCL	2.50E-01		6.74E-02	ug/L	UCL	UCL < Max
Sitewide	Dibenzo(a,h)anthracene	ug/L	51:60	1.03E-03	J	9.10E-03	1.32E-02	95% KM (Chebyshev) UCL	4.33E-02		1.32E-02	ug/L	UCL	UCL < Max
Sitewide	Indeno(1,2,3-cd)pyrene	ug/L	55:60	4.10E-03	J	3.12E-02	4.49E-02	95% KM (Chebyshev) UCL	1.45E-01		4.49E-02	ug/L	UCL	UCL < Max
Sitewide	Naphthalene	ug/L	38:60	1.63E-02	J	3.74E-02	4.41E-02	95% KM (BCA) UCL	3.30E-01		4.41E-02	ug/L	UCL	UCL < Max
	SVOCs													
Sitewide	1,1'-Biphenyl	ug/L	3:54	5.30E-02	J	6.63E-02	NC	NC	9.20E-02	J	9.20E-02	ug/L	Max	< 5 detects
Sitewide	bis-(2-Ethylhexyl)phthalate	ug/L	6:54	1.70E+00	J	3.12E+00	2.19E+00	95% KM (Percentile Bootstrap) UCL	6.00E+00		2.19E+00	ug/L	UCL	UCL < Max
	VOCs													
Sitewide	Benzene	ug/L	1:60	8.00E-02	J	8.00E-02	NC	NC	8.00E-02	J	8.00E-02	ug/L	Max	< 5 detects
Sitewide	Chloroform	ug/L	37:60	8.00E-02	J	1.85E-01	2.04E-01	95% KM (Percentile Bootstrap) UCL	3.30E-01	J	2.04E-01	ug/L	UCL	UCL < Max
Sitewide	Trichloroethene	ug/L	52:60	1.00E-01	J	2.47E-01	2.77E-01	95% KM (BCA) UCL	6.00E-01		2.77E-01	ug/L	UCL	UCL < Max

TABLE 3-15
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE SURFACE WATER
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

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

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)	Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)	Exposure Point Concentration (f)			
									Value	Units	Statistic (g)	Rationale (g)

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
SVOC - Semivolatile Organic Compound.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
UCL - Upper confidence limit.
VOC - Volatile Organic Compound.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 (total) and Version 5.0 (dissolved) using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted. In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) Sample 11A-CE04-TTR1 was identified as an outlier for TCDD, and was excluded from the EPC data set for TCDD-TEQ.
(i) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-16
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - AMERICAN EEL (SKINLESS FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f) Value	Units	Statistic (g)	Rationale (g)
American Eel-Fillet (skinless)														
Sitewide	TCDD-TEQ	mg/kg	32:32	5.10E-07		1.41E-05	1.71E-05	95% Student's-t UCL	4.15E-05		1.71E-05	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	32:32	2.74E-01		1.07E+00	1.30E+00	95% Approximate Gamma UCL	4.34E+00		1.30E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Chromium, total	mg/kg	11:32	5.00E-02	J	8.45E-02	7.16E-02	95% KM (% Bootstrap) UCL	1.50E-01	J	7.16E-02	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	32:32	1.70E-01		4.22E-01	4.84E-01	95% Approximate Gamma UCL	1.10E+00	J	4.84E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	8:32	1.00E-02		4.50E-02	3.22E-02	95% KM (Percentile Bootstrap) UCL	1.20E-01		3.22E-02	mg/kg	UCL	UCL < Max
Sitewide	Selenium	mg/kg	32:32	2.60E-01		5.15E-01	6.53E-01	95% Modified-t UCL	2.80E+00		6.53E-01	mg/kg	UCL	UCL < Max
Sitewide	Thallium	mg/kg	2:32	6.20E-03	J	6.25E-03	NC	NC	6.30E-03	J	6.30E-03	mg/kg	Max	< 5 detects
	PESTICIDES													
Sitewide	4,4'-DDD	mg/kg	28:32	1.30E-02	J	5.03E-02	5.42E-02	95% KM (BCA) UCL	1.10E-01	J	5.42E-02	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDE	mg/kg	32:32	3.50E-02	J	1.10E-01	1.25E-01	95% Student's-t UCL	2.30E-01	J	1.25E-01	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDT	mg/kg	25:32	2.30E-03	J	7.22E-03	7.79E-03	95% KM (Percentile Bootstrap) UCL	1.70E-02	J	7.79E-03	mg/kg	UCL	UCL < Max
Sitewide	cis-Chlordane	mg/kg	32:32	1.10E-02		3.98E-02	4.98E-02	95% Approximate Gamma UCL	2.60E-01	J	4.98E-02	mg/kg	UCL	UCL < Max
Sitewide	cis-Nonachlor	mg/kg	32:32	5.10E-03	J	1.61E-02	1.81E-02	95% Student's-t UCL	3.10E-02	J	1.81E-02	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	32:32	9.40E-03	J	3.01E-02	3.53E-02	95% Approximate Gamma UCL	1.00E-01	J	3.53E-02	mg/kg	UCL	UCL < Max
Sitewide	gamma-Chlordane	mg/kg	28:32	3.40E-03	J	9.60E-03	1.05E-02	95% KM (BCA) UCL	2.00E-02	J	1.05E-02	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	32:32	4.30E-03	J	1.13E-02	1.30E-02	95% Student's-t UCL	2.70E-02	J	1.30E-02	mg/kg	UCL	UCL < Max
Sitewide	Hexachlorobenzene	mg/kg	30:32	9.50E-04	J	4.70E-03	5.39E-03	95% KM (t) UCL	1.10E-02	J	5.39E-03	mg/kg	UCL	UCL < Max
Sitewide	Oxychlordane	mg/kg	32:32	8.20E-03	J	3.14E-02	3.81E-02	95% Approximate Gamma UCL	8.80E-02	J	3.81E-02	mg/kg	UCL	UCL < Max
Sitewide	trans-Nonachlor	mg/kg	30:32	3.30E-03	J	1.03E-02	1.14E-02	95% KM (t) UCL	2.30E-02	J	1.14E-02	mg/kg	UCL	UCL < Max
	PAHs													
Sitewide	Benzo(a)pyrene	mg/kg	2:32	6.90E-04	J	7.85E-04	NC	NC	8.80E-04	J	8.80E-04	mg/kg	Max	< 5 detects
Sitewide	bis-(2-Ethylhexyl)phthalate	mg/kg	2:32	9.00E-01	J	1.15E+00	NC	NC	1.40E+00	J	1.40E+00	mg/kg	Max	< 5 detects

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 5.0 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-17
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - CHANNEL CATFISH (SKINLESS FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
Channel Catfish-Fillet (skinless)														
Sitewide	TCDD-TEQ	mg/kg	11:11	9.74E-06		2.88E-05	4.28E-05	95% Approximate Gamma UCL	7.97E-05		4.28E-05	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	11:11	1.90E-01		5.00E-01	7.22E-01	95% Approximate Gamma UCL	1.27E+00		7.22E-01	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Chromium, total	mg/kg	10:11	2.00E-02	J	5.80E-02	7.18E-02	95% KM (t) UCL	1.10E-01		7.18E-02	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	11:11	4.90E-02		1.55E-01	2.05E-01	95% Student's-t UCL	3.70E-01		2.05E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	6:11	1.80E-02		4.27E-02	4.55E-02	95% KM (Percentile Bootstrap) UCL	8.00E-02		4.55E-02	mg/kg	UCL	UCL < Max
Sitewide	Thallium	mg/kg	5:11	4.00E-04	J	1.76E-03	1.64E-03	95% KM (BCA) UCL	6.90E-03		1.64E-03	mg/kg	UCL	UCL < Max
	PESTICIDES													
Sitewide	4,4'-DDD	mg/kg	10:11	4.00E-03	J	2.74E-02	5.21E-02	95% KM (Chebyshev) UCL	7.70E-02	J	5.21E-02	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDE	mg/kg	11:11	7.00E-03	J	5.13E-02	7.16E-02	95% Student's-t UCL	1.30E-01	J	7.16E-02	mg/kg	UCL	UCL < Max
Sitewide	Aldrin	mg/kg	6:11	3.70E-05	J	1.09E-04	1.25E-04	95% KM (Percentile Bootstrap) UCL	2.10E-04	J	1.25E-04	mg/kg	UCL	UCL < Max
Sitewide	cis-Chlordane	mg/kg	11:11	8.00E-03	J	3.00E-02	4.03E-02	95% Student's-t UCL	7.70E-02	J	4.03E-02	mg/kg	UCL	UCL < Max
Sitewide	cis-Nonachlor	mg/kg	9:11	1.30E-03	J	1.19E-02	1.50E-02	95% KM (t) UCL	2.70E-02	J	1.50E-02	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	11:11	4.90E-03	J	1.49E-02	1.95E-02	95% Student's-t UCL	3.50E-02	J	1.95E-02	mg/kg	UCL	UCL < Max
Sitewide	gamma-Chlordane	mg/kg	11:11	4.70E-03	J	1.39E-02	1.95E-02	95% Approximate Gamma UCL	4.10E-02	J	1.95E-02	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	11:11	2.70E-03	J	6.92E-03	8.95E-03	95% Student's-t UCL	1.50E-02	J	8.95E-03	mg/kg	UCL	UCL < Max
Sitewide	Hexachlorobenzene	mg/kg	11:11	5.00E-04	J	2.44E-03	6.68E-03	95% Chebyshev (Mean,Sd) UCL (h)	1.20E-02	J	6.68E-03	mg/kg	UCL	UCL < Max
Sitewide	Oxychlordane	mg/kg	11:11	1.80E-03	J	9.92E-03	1.62E-02	95% Approximate Gamma UCL	2.90E-02	J	1.62E-02	mg/kg	UCL	UCL < Max
Sitewide	trans-Nonachlor	mg/kg	10:11	4.50E-03	J	1.39E-02	1.82E-02	95% KM (BCA) UCL	3.50E-02	J	1.82E-02	mg/kg	UCL	UCL < Max

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.
(h) ProUCL does not recommend the use of the H-statistic as it often results in unstable UCL values; in these cases, the UCL based on a non-parametric statistic (95% Chebyshev (mean, Sd)) was selected.

TABLE 3-18
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - COMMON CARP (SKIN-ON FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
Common Carp-Fillet (with skin)														
Sitewide	TCDD-TEQ	mg/kg	12:12	1.42E-05		2.79E-04	4.07E-04	95% Student's-t UCL	7.56E-04		4.07E-04	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	12:12	8.46E-01		4.76E+00	7.11E+00	95% Approximate Gamma UCL	1.48E+01		7.11E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Antimony	mg/kg	4:12	7.00E-03	J	4.03E-02	NC	NC	9.20E-02		9.20E-02	mg/kg	Max	< 5 detects
Sitewide	Chromium, total	mg/kg	12:12	6.00E-02	J	1.13E-01	1.46E-01	95% Approximate Gamma UCL	2.20E-01	J	1.46E-01	mg/kg	UCL	UCL < Max
Sitewide	Cobalt	mg/kg	12:12	4.90E-03	J	1.49E-02	4.72E-02	95% Chebyshev (Mean, Sd) UCL	9.60E-02	J	4.72E-02	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	12:12	6.90E-02		1.19E-01	1.56E-01	95% Modified-t UCL	2.80E-01		1.56E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	12:12	1.00E-03		1.83E-02	2.48E-02	95% Student's-t UCL	4.00E-02		2.48E-02	mg/kg	UCL	UCL < Max
Sitewide	Selenium	mg/kg	12:12	4.10E-01		5.80E-01	6.73E-01	95% Modified-t UCL	9.50E-01		6.73E-01	mg/kg	UCL	UCL < Max
Sitewide	Thallium	mg/kg	6:12	5.00E-04	J	5.70E-03	2.77E-02	99% KM (Chebyshev) UCL	2.90E-02		2.77E-02	mg/kg	UCL	UCL < Max
	PESTICIDES													
Sitewide	2,4'-DDD	mg/kg	9:12	1.10E-02	J	6.23E-02	7.88E-02	95% KM (t) UCL	1.80E-01		7.88E-02	mg/kg	UCL	UCL < Max
Sitewide	2,4'-DDE	mg/kg	7:12	1.30E-03	J	2.72E-02	3.18E-02	95% KM (Percentile Bootstrap) UCL	6.90E-02	J	3.18E-02	mg/kg	UCL	UCL < Max
Sitewide	2,4'-DDT	mg/kg	5:12	1.70E-03	J	8.64E-03	1.07E-02	95% KM (t) UCL	2.70E-02	J	1.07E-02	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDD	mg/kg	11:12	3.80E-02	J	1.82E-01	2.41E-01	95% KM (t) UCL	5.00E-01		2.41E-01	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDE	mg/kg	12:12	5.10E-02	J	2.78E-01	3.99E-01	95% Approximate Gamma UCL	7.60E-01		3.99E-01	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDT	mg/kg	6:12	1.40E-03	J	5.25E-03	7.28E-03	95% KM (t) UCL	1.60E-02	J	7.28E-03	mg/kg	UCL	UCL < Max
Sitewide	Aldrin	mg/kg	5:12	4.00E-05	J	3.28E-04	4.36E-04	95% KM (Percentile Bootstrap) UCL	7.50E-04	J	4.36E-04	mg/kg	UCL	UCL < Max
Sitewide	cis-Chlordane	mg/kg	11:12	4.90E-02	J	1.30E-01	1.55E-01	95% KM (t) UCL	2.70E-01		1.55E-01	mg/kg	UCL	UCL < Max
Sitewide	cis-Nonachlor	mg/kg	12:12	1.40E-02	J	3.95E-02	4.85E-02	95% Student's-t UCL	8.10E-02	J	4.85E-02	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	12:12	1.20E-02	J	3.98E-02	5.14E-02	95% Student's-t UCL	9.70E-02		5.14E-02	mg/kg	UCL	UCL < Max
Sitewide	gamma-Chlordane	mg/kg	12:12	2.50E-02	J	6.66E-02	8.48E-02	95% Student's-t UCL	1.50E-01		8.48E-02	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	11:12	5.30E-03	J	1.68E-02	2.10E-02	95% KM (t) UCL	3.80E-02		2.10E-02	mg/kg	UCL	UCL < Max
Sitewide	Hexachlorobenzene	mg/kg	11:12	2.10E-03	J	1.04E-02	1.41E-02	95% KM (t) UCL	2.80E-02		1.41E-02	mg/kg	UCL	UCL < Max
Sitewide	Oxychlordane	mg/kg	12:12	3.30E-03	J	1.68E-02	2.25E-02	95% Student's-t UCL	4.50E-02	J	2.25E-02	mg/kg	UCL	UCL < Max
Sitewide	trans-Nonachlor	mg/kg	12:12	2.50E-02	J	5.39E-02	6.32E-02	95% Student's-t UCL	8.20E-02	J	6.32E-02	mg/kg	UCL	UCL < Max
	PAHs													
Sitewide	Benzo(a)anthracene	mg/kg	12:12	1.30E-03	J	4.57E-03	6.66E-03	95% Approximate Gamma UCL	1.10E-02	J	6.66E-03	mg/kg	UCL	UCL < Max

TABLE 3-18
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - COMMON CARP (SKIN-ON FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)	Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)	Exposure Point Concentration (f)			
									Value	Units	Statistic (g)	Rationale (g)

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-19
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - LARGEMOUTH & SMALLMOUTH BASS (SKIN-ON FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
Largemouth & Smallmouth Bass Fillet (skinless)														
Sitewide	TCDD-TEQ	mg/kg	6:6	8.00E-08		4.77E-06	8.94E-06	95% Student's-t UCL	1.40E-05		8.94E-06	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	6:6	4.82E-02		1.48E-01	3.61E-01	95% Approximate Gamma UCL	4.77E-01		3.61E-01	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Chromium, total	mg/kg	6:6	1.00E-01	J	2.08E-01	2.70E-01	95% Student's-t UCL	3.20E-01	J	2.70E-01	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	6:6	1.40E-01		2.97E-01	5.27E-01	95% Approximate Gamma UCL	7.00E-01		5.27E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	6:6	1.00E-02		7.83E-02	1.28E-01	95% Student's-t UCL	1.80E-01		1.28E-01	mg/kg	UCL	UCL < Max
	PESTICIDES													
Sitewide	4,4'-DDE	mg/kg	6:6	2.70E-03	J	7.38E-03	1.02E-02	95% Student's-t UCL	1.20E-02	J	1.02E-02	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	6:6	9.10E-04	J	2.02E-03	2.88E-03	95% Student's-t UCL	3.90E-03	J	2.88E-03	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	6:6	4.00E-04	J	6.68E-04	8.66E-04	95% Student's-t UCL	1.10E-03	J	8.66E-04	mg/kg	UCL	UCL < Max

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-20

EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - NORTHERN PIKE (SKIN-ON FILLET)

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (b) (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
Northern Pike-Fillet (with skin)														
Sitewide	TCDD-TEQ	mg/kg	1:1	7.84E-06		7.84E-06	NC	NC	7.84E-06		7.84E-06	mg/kg	Max	< 5 samples
Sitewide	PCBs, total	mg/kg	1:1	3.30E-01		3.30E-01	NC	NC	3.30E-01		3.30E-01	mg/kg	Max	< 5 samples
	INORGANICS													
Sitewide	Chromium, total	mg/kg	1:1	1.10E-01	J	1.10E-01	NC	NC	1.10E-01		1.10E-01	mg/kg	Max	< 5 samples
Sitewide	Methyl Mercury	mg/kg	1:1	2.20E-01		2.20E-01	NC	NC	2.20E-01		2.20E-01	mg/kg	Max	< 5 samples
Sitewide	Mercury, Inorganic	mg/kg	1:1	8.00E-02		8.00E-02	NC	NC	8.00E-02		8.00E-02	mg/kg	Max	< 5 samples
	PESTICIDES													
Sitewide	4,4'-DDE	mg/kg	1:1	2.70E-02	J	2.70E-02	NC	NC	2.70E-02	J	2.70E-02	mg/kg	Max	< 5 samples
Sitewide	cis-Chlordane	mg/kg	1:1	1.60E-02	J	1.60E-02	NC	NC	1.60E-02	J	1.60E-02	mg/kg	Max	< 5 samples
Sitewide	Dieldrin	mg/kg	1:1	6.90E-03	J	6.90E-03	NC	NC	6.90E-03	J	6.90E-03	mg/kg	Max	< 5 samples
Sitewide	Heptachlor Epoxide	mg/kg	1:1	2.70E-03	J	2.70E-03	NC	NC	2.70E-03	J	2.70E-03	mg/kg	Max	< 5 samples

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted. In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-21
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE -WHITE CATFISH (SKINLESS FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f) Value	Units	Statistic (g)	Rationale (g)
White catfish-Fillet (skinless)														
Sitewide	TCDD-TEQ	mg/kg	19:19	3.56E-06		5.77E-05	8.79E-05	95% Approximate Gamma UCL	1.76E-04		8.79E-05	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	19:19	1.28E-01		9.81E-01	1.43E+00	95% Approximate Gamma UCL	3.91E+00		1.43E+00	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Chromium, total	mg/kg	17:19	2.00E-02	J	8.41E-02	1.68E-01	95% KM (Chebyshev) UCL	4.00E-01		1.68E-01	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	19:19	1.00E-01		3.00E-01	3.79E-01	95% Approximate Gamma UCL	8.30E-01		3.79E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	14:19	1.00E-02		5.86E-02	7.37E-02	95% KM (Percentile Bootstrap) UCL	3.00E-01		7.37E-02	mg/kg	UCL	UCL < Max
Sitewide	Thallium	mg/kg	4:19	6.00E-04	J	2.30E-03	NC	NC	5.40E-03		5.40E-03	mg/kg	Max	< 5 detects
	PESTICIDES													
Sitewide	2,4'-DDE	mg/kg	12:19	7.80E-04	J	3.38E-03	3.57E-03	95% KM (Percentile Bootstrap) UCL	1.10E-02	J	3.57E-03	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDD	mg/kg	16:19	4.80E-03	J	3.66E-02	4.55E-02	95% KM (BCA) UCL	1.40E-01		4.55E-02	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDE	mg/kg	19:19	1.40E-02	J	7.61E-02	1.09E-01	95% Approximate Gamma UCL	3.50E-01		1.09E-01	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDT	mg/kg	12:19	1.40E-03	J	5.57E-03	6.51E-03	95% KM (BCA) UCL	2.00E-02	J	6.51E-03	mg/kg	UCL	UCL < Max
Sitewide	cis-Chlordane	mg/kg	19:19	4.40E-03	J	2.97E-02	4.25E-02	95% Approximate Gamma UCL	1.00E-01		4.25E-02	mg/kg	UCL	UCL < Max
Sitewide	cis-Nonachlor	mg/kg	18:19	1.80E-03	J	1.25E-02	2.50E-02	95% KM (Chebyshev) UCL	5.50E-02	J	2.50E-02	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	19:19	1.70E-03	J	8.79E-03	1.26E-02	95% Approximate Gamma UCL	3.20E-02	J	1.26E-02	mg/kg	UCL	UCL < Max
Sitewide	gamma-Chlordane	mg/kg	17:19	2.40E-03	J	1.32E-02	1.71E-02	95% KM (BCA) UCL	4.20E-02	J	1.71E-02	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	18:19	6.00E-04	J	3.61E-03	6.67E-03	95% KM (Chebyshev) UCL	1.20E-02	J	6.67E-03	mg/kg	UCL	UCL < Max
Sitewide	Hexachlorobenzene	mg/kg	17:19	3.70E-04	J	2.23E-03	2.86E-03	95% KM (BCA) UCL	6.50E-03		2.86E-03	mg/kg	UCL	UCL < Max
Sitewide	Oxychlordane	mg/kg	18:19	7.20E-04	J	7.80E-03	1.68E-02	95% KM (Chebyshev) UCL	3.80E-02	J	1.68E-02	mg/kg	UCL	UCL < Max
Sitewide	trans-Nonachlor	mg/kg	19:19	2.60E-03	J	1.42E-02	2.02E-02	95% Approximate Gamma UCL	4.70E-02	J	2.02E-02	mg/kg	UCL	UCL < Max

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-22
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - WHITE PERCH (SKIN-ON FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
White Perch-Fillet (with skin)														
Sitewide	TCDD-TEQ	mg/kg	19:19	3.78E-06		4.26E-05	5.24E-05	95% Student's-t UCL	1.02E-04		5.24E-05	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	19:19	1.49E-01		5.80E-01	7.12E-01	95% Student's-t UCL	1.47E+00		7.12E-01	mg/kg	UCL	UCL < Max
	INORGANICS	mg/kg												
Sitewide	Chromium, total	mg/kg	19:19	6.00E-02	J	2.38E-01	3.06E-01	95% Approximate Gamma UCL	7.40E-01	J	3.06E-01	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	19:19	8.50E-02		1.72E-01	2.21E-01	95% Modified-t UCL	5.50E-01		2.21E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	18:19	4.00E-02		1.18E-01	1.52E-01	95% KM (BCA) UCL	4.00E-01		1.52E-01	mg/kg	UCL	UCL < Max
Sitewide	Selenium	mg/kg	19:19	3.70E-01		9.67E-01	1.10E+00	95% Student's-t UCL	1.70E+00		1.10E+00	mg/kg	UCL	UCL < Max
	PESTICIDES													
Sitewide	2,4'-DDD	mg/kg	17:19	3.30E-03		8.32E-03	9.33E-03	95% KM (t) UCL	1.50E-02		9.33E-03	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDD	mg/kg	14:19	7.60E-03		1.88E-02	2.02E-02	95% KM (Percentile Bootstrap) UCL	3.60E-02		2.02E-02	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDE	mg/kg	19:19	1.00E-02		2.98E-02	3.48E-02	95% Student's-t UCL	5.50E-02		3.48E-02	mg/kg	UCL	UCL < Max
Sitewide	cis-Chlordane	mg/kg	19:19	8.10E-03	J	7.23E-02	2.47E-01	95% Chebyshev (Mean, Sd) UCL	7.70E-01		2.47E-01	mg/kg	UCL	UCL < Max
Sitewide	cis-Nonachlor	mg/kg	17:19	3.60E-03	J	6.34E-03	7.21E-03	95% KM (BCA) UCL	1.40E-02	J	7.21E-03	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	17:19	4.00E-03	J	9.52E-03	1.05E-02	95% KM (t) UCL	1.70E-02		1.05E-02	mg/kg	UCL	UCL < Max
Sitewide	gamma-Chlordane	mg/kg	16:19	2.70E-03	J	6.88E-03	7.76E-03	95% KM (Percentile Bootstrap) UCL	1.40E-02	J	7.76E-03	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	17:19	1.20E-03	J	3.59E-03	3.96E-03	95% KM (t) UCL	5.90E-03		3.96E-03	mg/kg	UCL	UCL < Max
Sitewide	Hexachlorobenzene	mg/kg	18:19	1.80E-04	J	1.79E-03	2.10E-03	95% KM (t) UCL	3.30E-03		2.10E-03	mg/kg	UCL	UCL < Max
Sitewide	Oxychlordane	mg/kg	16:19	2.50E-03	J	4.69E-03	7.73E-03	95% KM (Chebyshev) UCL	1.60E-02	J	7.73E-03	mg/kg	UCL	UCL < Max
Sitewide	trans-Nonachlor	mg/kg	17:19	2.90E-03	J	7.58E-03	9.08E-03	95% KM (t) UCL	1.60E-02	J	9.08E-03	mg/kg	UCL	UCL < Max
	PAHs													
Sitewide	Benzo(a)pyrene	mg/kg	2:19	4.00E-04	J	5.00E-04	NC	NC	6.00E-04	J	6.00E-04	mg/kg	Max	< 5 detects

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-23
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE FISH TISSUE - WHITE SUCKER (SKIN-ON FILLET)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)	Exposure Point Concentration (f)			
										Value	Units	Statistic (g)	Rationale (g)
White Sucker-Fillet (with skin)													
Sitewide	TCDD-TEQ	mg/kg	5:5	1.12E-06		1.40E-05	2.66E-05	95% Student's-t UCL	3.02E-05	2.66E-05	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	5:5	1.60E-01		3.34E-01	5.24E-01	95% Student's-t UCL	5.83E-01	5.24E-01	mg/kg	UCL	UCL < Max
	INORGANICS												
Sitewide	Chromium, total	mg/kg	5:5	3.00E-02	J	1.32E-01	2.57E-01	95% Student's-t UCL	3.30E-01	2.57E-01	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	5:5	1.10E-01		1.56E-01	1.87E-01	95% Student's-t UCL	2.00E-01	1.87E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	2:5	1.00E-02		1.00E-02	NC	NC	1.00E-02	1.00E-02	mg/kg	Max	< 5 detects
	PESTICIDES												
Sitewide	4,4'-DDD	mg/kg	2:5	1.00E-02		1.30E-02	NC	NC	1.60E-02	1.30E-02	mg/kg	Max	< 5 detects
Sitewide	4,4'-DDE	mg/kg	5:5	1.20E-02		1.96E-02	2.64E-02	95% Student's-t UCL	3.00E-02	2.64E-02	mg/kg	UCL	UCL < Max
Sitewide	cis-Chlordane	mg/kg	5:5	1.00E-02		1.30E-02	1.58E-02	95% Student's-t UCL	1.70E-02	1.58E-02	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	5:5	4.50E-03		5.38E-03	6.33E-03	95% Student's-t UCL	6.70E-03	6.33E-03	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	4:5	3.00E-02	J	1.32E-01	NC	NC	3.30E-01	1.32E-01	mg/kg	Max	< 5 detects

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted. In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-24
EXPOSURE POINT CONCENTRATIONS - BOTTOM FEEDERS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	Frequency of Detection (a)	Minimum Concentration (mg/kg) (b)	Maximum Concentration (mg/kg) (c)	Mean Concentration (mg/kg) (d)	Median (mg/kg) (e)	UCL (mg/kg) (f)	UCL Type
PCBs, total	79:79	1.28E-01	1.48E+01	1.49E+00	8.02E-01	2.51E+00 (g)	95% Chebyshev(Mean, Sd) UCL
TCDD-TEQ	79:79	5.07E-07	7.56E-04	6.69E-05	2.02E-05	1.32E-04 (g)	95% Chebyshev(Mean, Sd) UCL
INORGANICS							
Antimony	14:79	4.00E-03	9.20E-02	1.80E-02	8.00E-03	8.04E-03	95% KM (% Bootstrap) UCL
Chromium	55:79	2.00E-02	4.00E-01	9.00E-02	7.00E-02	8.23E-02	95% KM (BCA) UCL
Cobalt	50:66	3.90E-03	9.60E-02	1.10E-02	7.60E-03	1.12E-02	95% KM (BCA) UCL
Mercury	79:79	4.10E-02	9.90E-01	3.00E-01	2.60E-01	3.35E-01	95% Approximate Gamma UCL
Mercury, Inorganic	42:79	1.00E-03	3.00E-01	4.00E-02	2.60E-02	5.12E-02	97.5% KM (Chebyshev) UCL
Methyl Mercury	79:79	4.90E-02	1.10E+00	2.90E-01	2.30E-01	3.32E-01	95% Approximate Gamma UCL
Selenium	79:79	1.00E-01	2.80E+00	3.80E-01	3.90E-01	5.42E-01	95% Chebyshev (Mean, Sd) UCL
Thallium	19:79	4.00E-04	2.90E-02	3.50E-03	9.00E-04	1.79E-03	95% KM (BCA) UCL
PESTICIDES							
2,4'-DDD	56:79	6.00E-04	1.80E-01	1.30E-02	3.75E-03	2.29E-02	95% KM (Chebyshev) UCL
2,4'-DDE	28:79	5.30E-04	6.90E-02	8.60E-03	1.60E-03	5.62E-03	95% KM (BCA) UCL
2,4'-DDT	13:79	5.90E-04	2.70E-02	4.00E-03	1.50E-03	1.93E-03	95% KM (BCA) UCL
4,4'-DDD	67:79	4.00E-03	5.00E-01	6.40E-02	4.00E-02	7.05E-02	95% KM (BCA) UCL
4,4'-DDE	79:79	7.00E-03	7.60E-01	1.10E-01	8.30E-02	1.34E-01	95% Approximate Gamma UCL
4,4'-DDT	55:79	8.60E-04	2.00E-02	5.80E-03	4.70E-03	8.01E-03	95% GROS Approximate Gamma UCL
Aldrin	22:79	2.70E-05	7.50E-04	1.30E-04	6.25E-05	7.49E-05	95% Approximate Gamma KM-UCL
cis-Chlordane	78:79	4.40E-03	2.70E-01	4.70E-02	2.85E-02	5.71E-02	95% KM (BCA) UCL
cis-Nonachlor	74:79	1.30E-03	8.10E-02	1.80E-02	1.30E-02	2.42E-02	95% KM (Chebyshev) UCL
Dieldrin	79:79	1.70E-03	1.00E-01	2.30E-02	1.80E-02	2.67E-02	95% Approximate Gamma UCL
Gamma-chlordane	72:79	2.40E-03	1.50E-01	2.04E-02	1.00E-02	2.40E-02	95% KM (BCA) UCL
Heptachlor Epoxide	76:79	6.00E-04	3.80E-02	9.20E-03	8.15E-03	1.24E-02	95% KM (Chebyshev) UCL
Hexachlorobenzene	73:79	3.70E-04	2.80E-02	4.43E-03	2.90E-03	5.79E-03	95% GROS Approximate Gamma UCL
Oxy-chlordane	77:79	7.20E-04	8.80E-02	1.90E-02	1.40E-02	2.76E-02	95% KM (Chebyshev) UCL
trans-Nonachlor	74:79	2.60E-03	8.20E-02	1.90E-02	1.15E-02	2.13E-02	95% KM (BCA) UCL
PAHs							
Benzo(a)anthracene	20:79	9.80E-04	1.10E-02	3.40E-03	2.30E-03	1.63E-03 (h)	95% Approximate Gamma KM-UCL
Benzo(a)pyrene	2:79	6.90E-04	8.80E-04	7.90E-04	7.85E-04	4.04E-04 (i)	95% KM (t) UCL
SVOCs							
bis-(2-Ethylhexyl)phthalate	2:79	9.00E-01	1.40E+00	1.20E+00	1.15E+00	1.40E+00	Maximum

TABLE 3-24
EXPOSURE POINT CONCENTRATIONS - BOTTOM FEEDERS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	Frequency of Detection (a)	Minimum Concentration (mg/kg) (b)	Maximum Concentration (mg/kg) (c)	Mean Concentration (mg/kg) (d)	Median (mg/kg) (e)	UCL (mg/kg) (f)	UCL Type

Notes:

Bottom Feeders - Common Carp, Channel Catfish, American Eel, White Catfish, White Sucker.

FOD - Frequency of detection.

ND- Not detected.

UCL - Upper confidence level.

(a) Number of samples detected: Total number of samples.

(b) Minimum detected concentration for each constituent.

(c) Maximum detected concentration for each constituent.

(d) Mean detected concentration for each constituent.

(e) Median detected concentration for each constituent.

(f) 95% UCL on the arithmetic mean for each constituent. 95% UCLs were calculated using ProUCL Version 5.0 using the recommended detection limit substitution method (USEPA, 2011). Where too few samples or detects are available, the maximum detected concentration is used. If more than one UCL was recommended, the higher UCL was used.

(g) ProUCL computes and outputs the H-statistic based UCLs for historic reasons only as it often results in unstable (both low and high) values of UCL95 (USEPA, 2010). As such, the 95% Chebyshev UCL was used to estimate the 95% UCL for this data set.

(h) The 95% GROS Approximate Gamma UCL cannot be used when the data set has greater than 50% NDs (USEPA, 2013). Therefore, the next highest suggested ProUCL was used.

(i) Although ProUCL was able to calculate a 95% UCL, the number of detected data may not be adequate to compute meaningful and reliable test statistics and estimates. As such this UCL result should be interpreted with caution.

TABLE 3-25
EXPOSURE POINT CONCENTRATIONS - PREDATOR SPECIES
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	Frequency of Detection (a)	Minimum Concentration (mg/kg) (b)	Maximum Concentration (mg/kg) (c)	Mean Concentration (mg/kg) (d)	Median (mg/kg) (e)	UCL (mg/kg) (f)	UCL Type
PCB, TOTAL	7:7	4.82E-02	4.77E-01	1.74E-01	9.28E-02	2.95E-01	95% Student's-t UCL
TCDD-TEQ	7:7	7.96E-08	1.40E-05	5.21E-06	5.12E-06	8.71E-06	95% Student's-t UCL
INORGANICS							
Chromium	7:7	1.00E-01	3.20E-01	1.90E-01	1.80E-01	2.51E-01	95% Student's-t UCL
Mercury, Inorganic	7:7	1.00E-02	1.80E-01	7.90E-02	8.00E-02	1.19E-01	95% Student's-t UCL
Methyl Mercury	7:7	1.40E-01	7.00E-01	2.90E-01	2.10E-01	5.99E-01 (g)	95% Chebyshev(Mean, Sd) UCL
PESTICIDES							
4,4'-DDE	7:7	2.70E-03	2.70E-02	1.00E-02	8.90E-03	1.61E-02	95% Student's-t UCL
cis-Chlordane	6:7	1.50E-03	1.60E-02	5.80E-03	3.75E-03	8.90E-03	95% KM (t) UCL
Dieldrin	7:7	9.10E-04	6.90E-03	2.70E-03	2.10E-03	4.24E-03	95% Student's-t UCL
Heptachlor Epoxide	7:7	4.00E-04	2.70E-03	9.60E-04	6.60E-04	2.06E-03	95% Adjusted Gamma UCL

Notes:
Predators - Smallmouth Bass, Largemouth Bass, Northern Pike.
FOD - Frequency of detection.
ND- Not detected.
UCL - Upper confidence level.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Maximum detected concentration for each constituent.
(d) Mean detected concentration for each constituent.
(e) Median detected concentration for each constituent.
(f) 95% UCL on the arithmetic mean for each constituent. 95% UCLs were calculated using ProUCL Version 5.0 using the recommended detection limit substitution method (USEPA, 2011). Where too few samples or detects are available, the maximum detected concentration is used. If more than one UCL was recommended, the higher UCL was used.
(g) ProUCL computes and outputs the H-statistic based UCLs for historic reasons only as it often results in unstable (both low and high) values of UCL95 (USEPA, 2010). As such, the 95% Chebyshev UCL was used to estimate the 95% UCL for this data set.

TABLE 3-26
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE BLUE CRAB TISSUE - MUSCLE & HEPATOPANCREAS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Crab Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f)			
											Value	Units	Statistic (g)	Rationale (g)
Blue Crab-Muscle/Hepatopancreas														
Sitewide	TCDD-TEQ	mg/kg	41:41	4.49E-06		5.28E-05	5.96E-05	95% Student's-t UCL	1.15E-04		5.96E-05	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	41:41	7.57E-02		3.25E-01	3.64E-01	95% Approximate Gamma UCL	7.86E-01		3.64E-01	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Antimony	mg/kg	22:41	6.70E-03	J	2.81E-02	2.46E-02	95% KM (Percentile Bootstrap) UCL	6.00E-02	J	2.46E-02	mg/kg	UCL	UCL < Max
Sitewide	Arsenic, inorganic	mg/kg	36:41	7.00E-03	J	1.29E-02	1.69E-02	95% KM (Chebyshev) UCL	4.00E-02		1.69E-02	mg/kg	UCL	UCL < Max
Sitewide	Arsenic, organic	mg/kg	41:41	1.53E-01		6.84E-01	1.06E+00	95% Chebyshev (Mean, Sd) UCL	2.08E+00		1.06E+00	mg/kg	UCL	UCL < Max
Sitewide	Cadmium	mg/kg	41:41	4.40E-02		1.01E-01	1.12E-01	95% Approximate Gamma UCL	2.10E-01		1.12E-01	mg/kg	UCL	UCL < Max
Sitewide	Chromium, total	mg/kg	29:41	9.00E-02	J	1.03E+00	9.79E-01	95% KM (Percentile Bootstrap) UCL	4.20E+00		9.79E-01	mg/kg	UCL	UCL < Max
Sitewide	Cobalt	mg/kg	41:41	2.40E-02		4.16E-02	4.56E-02	95% Approximate Gamma UCL	1.10E-01	J	4.56E-02	mg/kg	UCL	UCL < Max
Sitewide	Copper	mg/kg	41:41	1.31E+01		2.28E+01	2.43E+01	95% Student's-t UCL	3.74E+01		2.43E+01	mg/kg	UCL	UCL < Max
Sitewide	Mercury	mg/kg	41:41	6.90E-02		1.40E-01	1.54E-01	Student's-t UCL (i)	2.50E-01		1.54E-01	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	41:41	6.60E-02		1.28E-01	1.40E-01	5% Modified-t UCL	2.30E-01		1.40E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	32:41	1.00E-03		1.64E-02	3.01E-02	99% KM (Chebyshev) UCL	5.00E-02		3.01E-02	mg/kg	UCL	UCL < Max
Sitewide	Manganese	mg/kg	41:41	1.60E+00		6.96E+00	8.38E+00	95% Approximate Gamma UCL	2.19E+01	J	8.38E+00	mg/kg	UCL	UCL < Max
Sitewide	Selenium	mg/kg	41:41	3.20E-01	J	7.00E-01	7.68E-01	95% Approximate Gamma UCL	1.50E+00	J	7.68E-01	mg/kg	UCL	UCL < Max
Sitewide	Thallium	mg/kg	12:41	3.60E-04	J	2.18E-03	1.61E-03	95% KM (BCA) UCL	1.40E-02		1.61E-03	mg/kg	UCL	UCL < Max
Sitewide	Zinc	mg/kg	41:41	3.10E+01		3.99E+01	4.12E+01	95% Student's-t UCL	5.04E+01		4.12E+01	mg/kg	UCL	UCL < Max
	PESTICIDES													
Sitewide	4,4'-DDD	mg/kg	39:41	8.00E-03		1.96E-02	2.08E-02	95% KM (t) UCL	3.60E-02		2.08E-02	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDE	mg/kg	41:41	1.60E-02		4.57E-02	4.95E-02	95% Student's-t UCL	7.70E-02		4.95E-02	mg/kg	UCL	UCL < Max
Sitewide	4,4'-DDT	mg/kg	35:41	2.50E-04	J	2.84E-03	4.05E-03	95% KM (Chebyshev) UCL	1.20E-02		4.05E-03	mg/kg	UCL	UCL < Max
Sitewide	cis-Chlordane	mg/kg	40:41	1.50E-03		4.90E-03	5.35E-03	95% KM (t) UCL	1.00E-02		5.35E-03	mg/kg	UCL	UCL < Max
Sitewide	cis-Nonachlor	mg/kg	40:41	2.60E-03		7.27E-03	7.86E-03	95% KM (t) UCL	1.60E-02		7.86E-03	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	40:41	2.00E-03		8.61E-03	9.39E-03	95% KM (t) UCL	1.70E-02		9.39E-03	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	41:41	1.70E-03		8.87E-03	1.00E-02	95% Student's-t UCL	2.00E-02		1.00E-02	mg/kg	UCL	UCL < Max
Sitewide	Hexachlorobenzene	mg/kg	41:41	4.00E-04	J	2.17E-03	3.01E-03	95% Chebyshev (Mean, Sd) UCL	4.00E-03		3.01E-03	mg/kg	UCL	UCL < Max
Sitewide	Oxychlordane	mg/kg	41:41	1.10E-02	J	3.26E-02	3.57E-02	95% Student's-t UCL	6.10E-02	J	3.57E-02	mg/kg	UCL	UCL < Max
	PAHs													
Sitewide	Benz(a)anthracene	mg/kg	40:41	2.60E-04	J	1.49E-03	2.88E-03	95% KM (Chebyshev) UCL	1.30E-02		2.88E-03	mg/kg	UCL	UCL < Max
Sitewide	Benz(a)pyrene	mg/kg	16:41	4.90E-04	J	2.23E-03	1.74E-03	95% KM (t) UCL	1.20E-02		1.74E-03	mg/kg	UCL	UCL < Max
Sitewide	Benzo(b)fluoranthene	mg/kg	41:41	6.70E-04	J	2.27E-03	3.95E-03	95% Chebyshev (Mean, Sd) UCL	1.60E-02	J	3.95E-03	mg/kg	UCL	UCL < Max
Sitewide	Indeno(1,2,3-cd)pyrene	mg/kg	7:41	7.40E-04	J	2.74E-03	1.69E-03	95% KM (% Bootstrap) UCL	1.00E-02	J	1.69E-03	mg/kg	UCL	UCL < Max

TABLE 3-26
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE BLUE CRAB TISSUE - MUSCLE & HEPATOPANCREAS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Crab Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)	Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)	Exposure Point Concentration (f)			
									Value	Units	Statistic (g)	Rationale (g)

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-27
EXPOSURE POINT CONCENTRATION SUMMARY – SITEWIDE BLUE CRAB TISSUE - MUSCLE ONLY
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario Timeframe: Current/Future
Medium: Surface Water/Sediment
Exposure Medium: Crab Tissue

Exposure Point	Chemical of Potential Concern	Units	Frequency of Detection (a)	Minimum Concentration (Qualifier)		Arithmetic Mean (c)	UCL (d)	UCL Basis (Distribution)	Maximum Concentration (e) (Qualifier)		Exposure Point Concentration (f) Value	Units	Statistic (g)	Rationale (g)
Blue Crab-Muscle Only														
Sitewide	TCDD-TEQ	mg/kg	21:21	8.70E-07		7.98E-06	1.03E-05	95% Student's-t UCL	2.17E-05		1.03E-05	mg/kg	UCL	UCL < Max
Sitewide	PCBs, total	mg/kg	21:21	1.13E-02		4.18E-02	5.42E-02	95% Approximate Gamma UCL	1.07E-01		5.42E-02	mg/kg	UCL	UCL < Max
	PESTICIDES													
Sitewide	4,4'-DDE	mg/kg	20:21	5.70E-03		1.33E-02	1.52E-02	95% KM (BCA) UCL	2.10E-02		1.52E-02	mg/kg	UCL	UCL < Max
Sitewide	Dieldrin	mg/kg	20:21	7.00E-04	J	1.92E-03	2.17E-03	95% KM (t) UCL	3.60E-03		2.17E-03	mg/kg	UCL	UCL < Max
Sitewide	Heptachlor Epoxide	mg/kg	21:21	2.70E-04	J	8.67E-04	9.79E-04	95% Student's-t UCL	1.40E-03		9.79E-04	mg/kg	UCL	UCL < Max
	INORGANICS													
Sitewide	Arsenic, inorganic	mg/kg	7:21	1.20E-02	J	1.94E-02	1.85E-02	95% KM (Percentile Bootstrap) UCL	2.80E-02		1.85E-02	mg/kg	UCL	UCL < Max
Sitewide	Arsenic, organic	mg/kg	21:21	1.30E-01		6.68E-01	1.28E+00	95% Chebyshev (Mean, Sd) UCL	1.98E+00		1.28E+00	mg/kg	UCL	UCL < Max
Sitewide	Chromium, total	mg/kg	12:21	5.30E-01		1.79E+00	1.69E+00	95% KM (Percentile Bootstrap) UCL	3.30E+00		1.69E+00	mg/kg	UCL	UCL < Max
Sitewide	Copper	mg/kg	21:21	1.00E+01		1.57E+01	1.68E+01	95% Student's-t UCL	2.03E+01		1.68E+01	mg/kg	UCL	UCL < Max
Sitewide	Methyl Mercury	mg/kg	21:21	6.70E-02		1.63E-01	1.88E-01	95% Student's-t UCL	2.70E-01		1.88E-01	mg/kg	UCL	UCL < Max
Sitewide	Mercury, Inorganic	mg/kg	16:21	5.00E-03		1.73E-02	3.91E-02	99% KM (Chebyshev) UCL	5.00E-02		3.91E-02	mg/kg	UCL	UCL < Max
Sitewide	Selenium	mg/kg	21:21	2.10E-01		6.43E-01	7.42E-01	95% Student's-t UCL	1.30E+00	J	7.42E-01	mg/kg	UCL	UCL < Max
Sitewide	Thallium	mg/kg	3:21	2.80E-03	J	4.20E-03	NC	NC	5.40E-03		5.40E-03	mg/kg	Max	< 5 detects
Sitewide	Zinc	mg/kg	21:21	2.86E+01		3.80E+01	4.01E+01	95% Student's-t UCL	4.73E+01		4.01E+01	mg/kg	UCL	UCL < Max
	PAHs													
Sitewide	Benzo(a)pyrene	mg/kg	6:21	8.30E-04	J	1.56E-03	1.49E-03	95% KM (Percentile Bootstrap) UCL	2.30E-03	J	1.49E-03	mg/kg	UCL	UCL < Max

Notes:
J - Estimated value.
Max - Maximum detected value.
NC - Not calculated.
PAH - Polycyclic Aromatic Hydrocarbon.
PCB - Polychlorinated Biphenyl.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
UCL - Upper confidence limit.
(a) Number of samples detected: Total number of samples.
(b) Minimum detected concentration for each constituent.
(c) Mean detected concentration for each constituent.
(d) 95% UCL on the arithmetic mean calculated using ProUCL Version 4.1 using the ProUCL recommended method for handling non-detects. The UCL suggested by ProUCL is used, unless otherwise noted.
In cases where more than one UCL is suggested, the higher UCL is used, unless otherwise noted. Where too few samples or detects are available, the maximum detected concentration is used.
(e) Maximum detected concentration for each constituent.
(f) Per USEPA direction, the exposure point concentration used to evaluate Reasonable Maximum Exposure (RME) is also used to evaluate Central Tendency Exposure (CTE).
(g) Exposure point concentration (EPC) is the lower of the UCL and maximum detect. UCLs are calculated for data sets with at least 5 [detected] samples. For data sets with fewer than 5 samples or 5 detects, the maximum concentration is used.

TABLE 3-28

ESTIMATED EXPOSURE POINT CONCENTRATIONS FOR FLOODPLAIN SOIL IN RESIDENTIAL BACKYARDS

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Sampling Location	River Mile	Floodplain Soil Concentration (a)		
		Total TEQ (b)	Total PCBs (c)	Mercury
North Arlington Vikings Field	8.8	0.0000314	0.058847	NS
Little League Field	8.9	0.0000061	0.036808	NS
Riverside County Park Field	9.7-9.8	0.0000072	0.026163	NS
Crew Boat Field near PRRA Boathouse	10	0.0000588	0.157236	NS
Lundt Park DU1	10.6	0.0000174	0.0521	0.221
Lundt Park DU2	10.7	0.0000132	0.0317	0.33
Lundt Park DU3	10.9	0.0000125	0.0216	0.113
Lundt Park DU4	11	0.0000133	0.0279	0.211
Exposure Point Concentration (d)		**0.000020**	**0.052**	**0.22**

Notes:
All in units of mg/kg.
DU - Decision Unit.
NS - Not sampled.
PRRA - Passaic River Rowing Association.
(a) Values shown are 95% UCLs based on students t-distribution and are taken from USEPA's analyses of flood residue/soil samples collected in Fall 2011 and January 2012 from locations in parks adjacent to the eastern shore between river miles 8.8 and 11 (USEPA 2011, 2012).
(b) Calculated by USEPA using the Basic Kaplan-Meier Toxicity Equivalents Calculator; includes PCDD, PCDF, and PCB dioxin-like congeners.
(c) Values shown are based on the summation of PCB homolog groups as reported by USEPA (2011, 2012).
(d) The exposure point concentration is the arithmetic average of the 95% UCL concentrations for the eight park locations sampled in 2011 and 2012.

TABLE 4-1
CHEMICALS OF POTENTIAL CONCERN FOR QUANTITATIVE EVALUATION
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA

	COPCs for Site-Specific Human Health Risk Assessment											
			Tissue									
COPCs	Surface Water	Surface Sediment	American Eel	Channel Catfish	Common Carp	Largemouth & Smallmouth Bass	Northern Pike	White Catfish	White Perch	White Sucker	Blue Crab-Muscle/ Hepatopancreas	Blue Crab-Muscle Only
TCDD-TEQ	X	X	X	X	X	X	X	X	X	X	X	X
PCBs	X	X	X	X	X	X	X	X	X	X	X	X
Inorganics												
Aluminum	X	X										
Antimony	X	X			X						X	
Arsenic, total	X	X										
Arsenic, inorganic											X	X
Cadmium		X									X	
Chromium	X	X	X	X	X	X	X	X	X	X	X	X
Chromium hexavalent		X										
Cobalt	X	X			X						X	
Copper		X									X	X
Lead	X	X									X	
Manganese	X	X									X	
Mercury		X	X	X	X	X	X	X	X	X	X	X
Methyl Mercury			X	X	X	X	X	X	X	X	X	X
Selenium			X		X				X		X	X
Silver												
Thallium	X	X	X	X	X			X			X	X
Vanadium		X										
Zinc											X	X
Pesticides												
2,4'-DDD					X				X			
2,4'-DDE					X			X				
2,4'-DDT					X							
4,4'-DDD			X	X	X			X	X	X	X	
4,4'-DDE			X	X	X	X	X	X	X	X	X	X
4,4'-DDT			X		X			X			X	
Aldrin				X	X							
cis-Chlordane			X	X	X		X	X	X	X	X	
cis-Nonachlor			X	X	X			X	X		X	
Dieldrin	X	X	X	X	X	X	X	X	X	X	X	X
Gamma-Chlordane			X	X	X			X	X			
Heptachlor Epoxide			X	X	X	X	X	X	X	X	X	X
Oxy-chlordane			X	X	X			X	X		X	
trans-Nonachlor			X	X	X			X	X			

TABLE 4-1
CHEMICALS OF POTENTIAL CONCERN FOR QUANTITATIVE EVALUATION
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA

	COPCs for Site-Specific Human Health Risk Assessment											
			Tissue									
COPCs	**Surface Water**	**Surface Sediment**	**American Eel**	**Channel Catfish**	**Common Carp**	**Largemouth & Smallmouth Bass**	**Northern Pike**	**White Catfish**	**White Perch**	**White Sucker**	**Blue Crab-Muscle/ Hepatopancreas**	**Blue Crab-Muscle Only**
PAHs												
Benzo(a)anthracene	X	X			X						X	
Benzo(a)pyrene	X	X	X						X		X	X
Benzo(b)fluoranthene	X	X									X	
Benzo(k)fluoranthene		X										
C2-Benzanthracene/chrysenes		X										
C2-Naphthalene		X										
C3-Naphthalene		X										
C4-Naphthalene		X										
Chrysene		X										
Dibenzo(a,h)anthracene	X	X										
Indeno(1,2,3-cd)pyrene	X	X									X	
Naphthalene	X	X										
SVOCs												
1,1'-Biphenyl	X											
bis-(2-Ethylhexyl)phthalate	X	X	X									
Hexachlorobenzene			X	X	X			X	X		X	
TPH												
Total Petroleum Hydrocarbons (TPH)		X										
VOCs												
Benzene	X	X										
Chloroform	X											
Trichloroethene	X	X										

Notes:

COPC - Chemical of Potential Concern.

PAH - Polycyclic Aromatic Hydrocarbon.

PCB - Polychlorinated biphenyl.

TCDD-TEQ - 2,3,7,8-Tetrachlorodibenzo-p-dioxin-Toxicity Equivalence.

SVOC - Semi-Volatile Organic Compound.

VOC - Volatile Organic Compound.

X - COPC for quantitative evaluation in Site-Specific Human Health Risk Assessment (SSHHRA).

USEPA Regional Screening Levels (RSLs) for tap water used for surface water and residential soil RSLs used for surface sediment (November 2013).

USEPA Region 3 Fish Tissue Screening Levels used for all tissue types (November 2013).

TABLE 4-2
CANCER TOXICITY DATA FOR COPCs - ORAL/DERMAL
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Oral Absorption Efficiency for Dermal (a)	Absorbed Dermal Cancer Slope Factor (b) $(mg/kg\text{-}day)^{-1}$	Study Animal	Study Method	Weight of Evidence/ Cancer Guideline Description (c)	Classification System	Oral CSF/WOE		CSF Tier (n)
									Source(s)	Date	
PCDDs/PCDFs											
TCDD-TEQ	TCDD-TEQ	1.30E+05 (d)	--	1.30E+05 (d)	Mouse	Oral: Gavage	(o)	(o)	CalEPA	10/2013	Tier 3
PCBs											
PCBs, total (high risk & persistence/upper bound)	1336-36-3	2.00E+00	--	2.00E+00	Rat	Oral: Diet	B2	1986	IRIS	10/2013	Tier 1
PCBs, total (high risk & persistence/central estimate)	1336-36-3	1.00E+00	--	1.00E+00	Rat	Oral: Diet	B2	1986	IRIS	10/2013	Tier 1
PCBs, total (low risk & persistence/upper bound)	1336-36-3	4.00E-01	--	4.00E-01	Rat	Oral: Diet	B2	1986	IRIS	10/2013	Tier 1
PCBs, total (low risk & persistence/central estimate)	1336-36-3	3.00E-01	--	3.00E-01	Rat	Oral: Diet	B2	1986	IRIS	10/2013	Tier 1
PCBs, total (lowest risk & persistence/upper bound)	1336-36-3	7.00E-02	--	7.00E-02	Rat	Oral: Diet	B2	1986	IRIS	10/2013	Tier 1
PCBs, total (lowest risk & persistence/central estimate)	1336-36-3	4.00E-02	--	4.00E-02	Rat	Oral: Diet	B2	1986	IRIS	10/2013	Tier 1
Inorganics											
Aluminum	7429-90-5	NA	--	NA	NA	NA	Inadequate Information	2005	PPRTV	2/2007	NA
Antimony	7440-36-0	NA	0.15	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, organic	7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, inorganic	7440-38-2	1.50E+00	--	1.50E+00	Human	Oral: Drinking Water	A	1986	IRIS	10/2013	Tier 1
Cadmium, diet	7440-43-9	NA	0.025	NA	NA	NA	B1	1986	IRIS	10/2013	NA
Cadmium, water	7440-43-9	NA	0.05	NA	NA	NA	B1	1986	IRIS	10/2013	NA
Chromium, total	7440-47-3	NA	0.013	NA	NA	NA	D	1986	IRIS	10/2013	NA
Chromium, hexavalent	18540-29-9	5.00E-01 (m,q)	0.025	2.00E+01 (m,q)	Mouse	Oral: Drinking Water	D [oral (p)]; A [inhalation]	1986	NJDEP	4/2009	Tier 3
Cobalt	7440-48-4	NA	--	NA	NA	NA	Likely Carcinogenic (inhalation)	2005	PPRTV	8/2008	NA
Copper	7440-50-8	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	--	NA	NA	NA	B2	1986	IRIS	10/2013	NA
Manganese, diet	7439-96-5	NA	NA	NA	NA	NA	D	1986	IRIS	10/2013	NA
Manganese, nondiet	7439-96-5	NA	0.04	NA	NA	NA	D	1986	IRIS	10/2013	NA
Mercury, inorganic	7487-94-7	NA	0.07	NA	NA	NA	D	1986	IRIS	10/2013	NA
Methyl Mercury	22967-92-6	NA	NA	NA	NA	NA	C	1986	IRIS	10/2013	NA
Selenium	7782-49-2	NA	--	NA	NA	NA	D	1986	IRIS	10/2013	NA
Silver	7440-22-4	NA	0.04	NA	NA	NA	D	1986	IRIS	10/2013	NA
Thallium	7440-28-0	NA	--	NA	NA	NA	Inadequate Information	2005	PPRTV	10/2012	NA
Vanadium	7440-62-2	NA	0.026	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	--	NA	NA	NA	Inadequate Information	2005	IRIS	10/2013	NA
Pesticides											
2,4-DDD	53-19-0	2.40E-01 (e)	--	2.40E-01 (e)	(e)	(e)	(e)	(e)	(e)	(e)	Surrogate
2,4-DDE	3424-82-6	3.40E-01 (f)	--	3.40E-01 (f)	(f)	(f)	(f)	(f)	(f)	(f)	Surrogate
2,4-DDT	789-02-6	3.40E-01 (g)	--	3.40E-01 (g)	(g)	(g)	(g)	(g)	(g)	(g)	Surrogate
4,4'-DDD	72-54-8	2.40E-01	--	2.40E-01	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
4,4'-DDE	72-55-9	3.40E-01	--	3.40E-01	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
4,4'-DDT	50-29-3	3.40E-01	--	3.40E-01	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Aldrin	309-00-2	1.70E+01	--	1.70E+01	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
cis-Chlordane	5103-71-9	3.50E-01	--	3.50E-01	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
cis-Nonachlor	5103-73-1	3.50E-01 (h)	--	3.50E-01 (h)	(h)	(h)	(h)	(h)	(h)	(h)	Surrogate
Dieldrin	60-57-1	1.60E+01	--	1.60E+01	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Gamma-Chlordane	5566-34-7	3.50E-01	--	3.50E-01	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Heptachlor Epoxide	1024-57-3	9.10E+00	--	9.10E+00	Mouse	Oral: diet	Likely Carcinogenic	2005	IRIS	10/2013	Tier 1
Oxychlordane	27304-13-8	3.50E-01 (h)	--	3.50E-01 (h)	(h)	(h)	(h)	(h)	(h)	(h)	Surrogate
trans-Nonachlor	39765-80-5	3.50E-01 (h)	--	3.50E-01 (h)	(h)	(h)	(h)	(h)	(h)	(h)	Surrogate
PAHs											
Benzo(a)anthracene	56-55-3	7.30E-01 (i,q)	--	7.30E-01 (i,q)	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Benzo(a)pyrene	50-32-8	7.30E+00 (q)	--	7.30E+00 (q)	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Benzo(b)fluoranthene	205-99-2	7.30E-01 (i,q)	--	7.30E-01 (i,q)	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Benzo(k)fluoranthene	207-08-9	7.30E-02 (i,q)	--	7.30E-02 (i,q)	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
C2-Benzanthracene/chrysenes	BACC2	7.30E-03 (j,q)	--	7.30E-03 (j,q)	(j,q)	(j,q)	(j,q)	(j,q)	(j,q)	(j,q)	Surrogate
C2-Naphthalene	NPHC2	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
C3-Naphthalene	NPHC3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
C4-Naphthalene	NPHC4	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	7.30E-03 (i,q)	--	7.30E-03 (i,q)	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1

TABLE 4-2
CANCER TOXICITY DATA FOR COPCs - ORAL/DERMAL
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Oral Absorption Efficiency for Dermal (a)	Absorbed Dermal Cancer Slope Factor (b) $(mg/kg\text{-}day)^{-1}$	Study Animal	Study Method	Weight of Evidence/ Cancer Guideline Description (c)	Classification System	Oral CSF/WOE		CSF Tier (n)
									Source(s)	Date	
Dibenz(a,h)anthracene	53-70-3	7.30E+00 (i,q)	--	7.30E+00 (i,q)	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Indeno(1,2,3-cd)pyrene	193-39-5	7.30E-01 (i,q)	--	7.30E-01 (i,q)	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Naphthalene	91-20-3	NA	--	NA	NA	NA	C	1986	IRIS	10/2013	NA
SVOCs											
1,1-Biphenyl	92-52-4	8.00E-03	--	8.00E-03	Mouse	Oral: diet	Suggestive Evidence	2005	IRIS	10/2013	Tier 1
bis(2-Ethylhexyl) phthalate	117-81-7	1.40E-02	--	1.40E-02	Mouse	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
Hexachlorobenzene	118-74-1	1.60E+00	--	1.60E+00	Rat	Oral: diet	B2	1986	IRIS	10/2013	Tier 1
TPH											
TPH C9-C18	TPHC9-C18	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
TPH C19-C40	TPHC19-C40	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
VOCs											
Benzene	71-43-2	5.50E-02 (k)	--	5.50E-02 (k)	Human	Occupational: Inhalation	A	1986	IRIS	10/2013	Tier 1
Chloroform	67-66-3	NA (l)	--	NA (l)	NA	NA	B2	1986	NA	NA	NA
Trichloroethene	79-01-6	4.60E-02 (q)	--	4.60E-02 (q)	Human	Epidemiological: Inhalation	Carcinogenic	2005	IRIS	10/2013	Tier 1

TABLE 4-2
CANCER TOXICITY DATA FOR COPCs - ORAL/DERMAL
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Oral Absorption Efficiency for Dermal (a)	Absorbed Dermal Cancer Slope Factor (b) $(mg/kg\text{-}day)^{-1}$	Study Animal	Study Method	Weight of Evidence/ Cancer Guideline Description (c)	Classification System	Oral CSF/WOE		CSF Tier (n)
									Source(s)	Date	

Notes:
"--" - No adjustment necessary.
$ABS_{(GI)}$ - Fraction of contaminant absorbed in gastrointestinal tract (dimensionless).
CalEPA - California Environmental Protection Agency. Toxicity Criteria Database. http://www.oehha.ca.gov/risk/ChemicalDB/index.asp.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
CSF - Cancer Slope Factor.
IRIS - Integrated Risk Information System, an online computer database of toxicological information (USEPA, 2013a).
mg/kg-day - Milligrams per Kilogram per day.
NA - Not available.
NJDEP - New Jersey Department of Environmental Protection.
NTP - National Toxicology Program.
PAH - Polycyclic Aromatic Hydrocarbons.
PCB - Polychlorinated Biphenyls.
PCDD - Polychlorinated dibenzodioxins.
PCDF - Polychlorinated dibenzofurans.
PPRTV - Provisional Peer Reviewed Toxicity Value.
RPF - Relative Potency Factor.
RSL - Regional Screening Level, derived by USEPA for chemicals in soil, water, air, & fish (USEPA, 2013b,c).
SVOC - Semi-Volatile Organic Compounds.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compounds.
WOE - Weight-of-Evidence.

(a) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 4-1. Where USEPA, 2004 does not recommend adjustments, no value is listed.
(b) Oral CSF divided by ABSGI. Where no adjustment is recommended, Dermal CSF = Oral CSF.
(c) Some chemicals are classified under the 1986 system, while others have been classified under the 2005 system:

1986 Classifications
- Group A Carcinogenic to Humans.
- Group B Probably Carcinogenic to Humans:
  - B1 Based on limited human evidence.
  - B2 Based on animal evidence.
- Group C Possibly Carcinogenic to Humans
- Group D Not Classifiable as to Human Carcinogenicity.
- Group E Evidence of Non-carcinogenicity for Humans

2005 Classifications
- Carcinogenic Carcinogenic to Humans
- Likely Carcinogenic Likely to be Carcinogenic to Humans
- Suggestive Evidence Suggestive Evidence of Carcinogenic Potential
- Inadequate Information Inadequate Information to Assess Carcinogenic Potential
- Not Likely Carcinogenic Not Likely to be Carcinogenic to Humans

(d) Consistent with the heirarchy used in USEPA's development of Regional Screening Levels (USEPA 2013d), the CalEPA cancer slope factor for 2,3,7,8-TCDD is used to evaluate TCDD-TEQ and the potentially dioxin-like PCBs.
(e) The value for 4,4'-DDD was used as a surrogate based on structural similarity.
(f) The value for 4,4'-DDE was used as a surrogate based on structural similarity.
(g) The value for 4,4'-DDT was used as a surrogate based on structural similarity.
(h) The value for chlordane was used as a surrogate based on structural similarity.
(i) Calculated using RPFs as per USEPA Guidance for Quantitative Risk Assessment of PAHs (USEPA, 1993).
(j) The value for chrysene was used as a surrogate based on structural similarity.
(k) IRIS provides a range of CSF for benzene of 1.5E-02 to 5.5E-02 mg/kg-day IRIS states that each value within this range has equal scientific plausibility. The high end of the range is used to be conservative.
(l) The oral reference dose is considered protective of potential carcinogenic effects (USEPA 2013a).
(m) IRIS indicates that there is no evidence that hexavalent chromium is carcinogenic via the oral route and does not provide a CSF. However, because USEPA has used the NJDEP CSF in its RSL tables, the NJDEP value is used here (Derivation of Ingestion-Based Soil Remediation Criterion for Cr+6 Based on the NTP Chronic Bioassay Data for Chromium (NJDEP, 2009)).
(n) USEPA, 2003. Human Health Toxicity Values in Superfund Risk Assessments. OSWER Directive 9285.7-53. December 5, 2003. IRIS values are considered Tier 1, PPRTVs are considered Tier 2, and other values, including ATSDR, CalEPA, PPRTV Appendix Screening Toxicity Values, HEAST and other non-EPA values are considered Tier 3 values. Selection of Tier 3 values followed the heirarchy put forth in USEPA, 2013d. Tier 3 Toxicity Value White Paper, OSWER 9285.7-86, May 16, 2013.
(o) The cancer assessment for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) is currently underway (USEPA IRIS, 2013a).
(p) The cancer assessment for oral exposure to hexavalent chromium is currently underway (USEPA, 2013a).
(q) Assumed to act via a mutagenic mode of carcinogenic action; therefore, age-dependent adjustment factors are applied to the risk estimates.

TABLE 4-3
NON-CANCER TOXICITY DATA FOR COPCs - ORAL/DERMAL
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Chronic Oral Reference Dose (mg/kg-day)	Oral Absorption Efficiency for Dermal (a)	Absorbed Chronic RfD for Dermal (b) (mg/kg-day)	Study Animal	Study Method	Primary Target Organ/System	Critical Endpoint	Combined Uncertainty/ Modifying Factors	Confidence Level	RfD:Target Organ(s)		RfD Tier (h)
											Source	Date	
PCDDs/PCDFs													
TCDD-TEQ	TCDD-TEQ	7.00E-10	--	7.00E-10	Human	Epidemiological	Reproductive, Developmental	Decreased sperm count and motility in men / Increased TSH in neonates	30	High	IRIS	10/2013	Tier 1
PCBs													
PCBs, total	1336-36-3	7.00E-05 (c)	--	7.00E-05	Monkey	Oral: Bioassay	Developmental	Reduced birth weights	100	Medium	IRIS	10/2013	Tier 1
		2.00E-05 (c)	--	2.00E-05	Monkey	Oral: Capsule	Eye, Nails, Immune	Ocular exudate, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody response to sheep erythrocytes	300	Medium	IRIS	10/2013	Tier 1
Inorganics													
Aluminum	7429-90-5	1.00E+00	--	1.00E+00	Mouse	Oral:Diet	Neurological	Neurological Toxicity	100	Low	PPRTV	10/2006	Tier 2
Antimony	7440-36-0	4.00E-04	0.15	6.00E-05	Rat	Oral: Bioassay	Mortality, Blood	Longevity, blood glucose, and cholesterol	1,000	Low	IRIS	10/2013	Tier 1
Arsenic, organic	7440-38-2	2.00E-02 (m)	NA	NA	Mouse	Oral: diet	Bladder	Vacuolization of the urothelium	100	NA	ATSDR	8/2007	Tier 3
Arsenic, inorganic	7440-38-2	3.00E-04	--	3.00E-04	Human	Oral: Drinking water	Skin, Vascular	Hyperpigmentation, keratosis and possible vascular complications	3	Medium	IRIS	10/2013	Tier 1
Cadmium, diet	7440-43-9	1.00E-03 (o)	0.025	2.50E-05	Human	Oral	Kidney	Significant proteinuria	10	High	IRIS	10/2013	Tier 1
Cadmium, water	7440-43-9	5.00E-04 (o)	0.05	2.50E-05	Human	Oral	Kidney	Significant proteinuria	10	High	IRIS	10/2013	Tier 1
Chromium, total	7440-47-3	1.50E+00	0.013	1.95E-02	Rat	Oral: Diet	No effects observed	No effects observed	100	Low	IRIS	10/2013	Tier 1
Chromium, hexavalent	18540-29-9	3.00E-03	0.025	7.50E-05	Rat	Oral:Drinking Water	None reported	None reported	900	Low	IRIS	10/2013	Tier 1
Cobalt	7440-48-4	3.00E-04	--	3.00E-04	Human	Oral	Thyroid	Decreased iodine uptake	3,000	Low/Medium	PPRTV	8/2008	Tier 2
Copper	7440-50-8	4.00E-02	--	4.00E-02	Human	Oral	Gastrointestinal	GI Irritation	NA	NA	HEAST	1997	Tier 3
Lead	7439-92-1	NA (j)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, diet	7439-96-5	1.40E-01 (p)	NA	NA	Human	Oral: dietary supplements	Neurological	CNS effects (other effect: Impairment of neurobehavioral function)	1	High	IRIS	10/2013	Tier 1
Manganese, nondiet	7439-96-5	2.40E-02 (n)	0.04	9.60E-04	Human	Oral: dietary supplements	Neurological	CNS effects (other effect: Impairment of neurobehavioral function)	3	High	IRIS	10/2013	Tier 1
Mercury, inorganic	7487-94-7	3.00E-04	0.07	2.10E-05	Rat	Oral: Diet	Immune	Autoimmune	1,000	High	IRIS	10/2013	Tier 1
Methyl Mercury	22967-92-6	1.00E-04 (q)	NA	NA	Human	Epidemiological	Neurological	Developmental neuropsychological impairment	10	High	IRIS	10/2013	Tier 1
Selenium	7782-49-2	5.00E-03	--	5.00E-03	Human	Epidemiological	Skin, Nails, Hair, Behavioral	Clinical selenosis	3	High	IRIS	10/2013	Tier 1
Silver	7440-22-4	5.00E-03	0.04	2.00E-04	Human	Medical (Intravenous)	Skin	Argyria	3	Low	IRIS	10/2013	Tier 1
Thallium	7440-28-0	1.00E-05 (k)	--	1.00E-05	Rat	Oral: Subchronic	Hair	Hair follicle atrophy	3,000	--	PPRTV screening value (k)	10/2012	Tier 3
Vanadium	7440-62-2	5.04E-03 (l)	0.026	1.31E-04	Rat	Oral	Hair	Decreased hair cystine	100	Low	IRIS	10/2013	Tier 1
Zinc	7440-66-6	3.00E-01	--	3.00E-01	Human	Oral	Blood	Decreases in erythrocyte Cu, Zn-superoxide dismutase (ESOD) activity in healthy adult male and female volunteers	3	Medium/High	IRIS	10/2013	Tier 1

TABLE 4-3
NON-CANCER TOXICITY DATA FOR COPCs - ORAL/DERMAL
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Chronic Oral Reference Dose (mg/kg-day)	Oral Absorption Efficiency for Dermal (a)	Absorbed Chronic RfD for Dermal (b) (mg/kg-day)	Study Animal	Study Method	Primary Target Organ/System	Critical Endpoint	Combined Uncertainty/ Modifying Factors	Confidence Level	RfD:Target Organ(s)		RfD Tier (h)
											Source	Date	
Pesticides													
2,4-DDD	53-19-0	5.00E-04 (f)	--	5.00E-04	(f)	(f)	(f)	(f)	(f)	--	(f)	(f)	Surrogate
2,4-DDE	3424-82-6	5.00E-04 (f)	--	5.00E-04	(f)	(f)	(f)	(f)	(f)	--	(f)	(f)	Surrogate
2,4-DDT	789-02-6	5.00E-04 (f)	--	5.00E-04	(f)	(f)	(f)	(f)	(f)	--	(f)	(f)	Surrogate
4,4'-DDD	72-54-8	5.00E-04 (f)	--	5.00E-04	(f)	(f)	(f)	(f)	(f)	--	(f)	(f)	Surrogate
4,4'-DDE	72-55-9	5.00E-04 (f)	--	5.00E-04	(f)	(f)	(f)	(f)	(f)	--	(f)	(f)	Surrogate
4,4'-DDT	50-29-3	5.00E-04	--	5.00E-04	Rat	Oral: diet	Liver	Liver lesions	100	Medium	IRIS	10/2013	Tier 1
Aldrin	309-00-2	3.00E-05	--	3.00E-05	Rat	Oral: diet	Liver	Liver toxicity	1,000	Medium	IRIS	10/2013	Tier 1
cis-Chlordane	5103-71-9	5.00E-04	--	5.00E-04	Mouse	Oral	Liver	Liver necrosis	300	Medium	IRIS	10/2013	Tier 1
cis-Nonachlor	5103-73-1	5.00E-04 (g)	--	5.00E-04	(g)	(g)	(g)	(g)	(g)	--	(g)	(g)	Surrogate
Dieldrin	60-57-1	5.00E-05	--	5.00E-05	Rat	Oral: diet	Liver	Liver lesions	100	Medium	IRIS	10/2013	Tier 1
Gamma-Chlordane	5566-34-7	5.00E-04	--	5.00E-04	Mouse	Oral	Liver	Liver necrosis	300	Medium	IRIS	10/2013	Tier 1
Heptachlor Epoxide	1024-57-3	1.30E-05	--	1.30E-05	Dog	Oral	Liver	Increased liver-to-body weight ratio in both males and females	1,000	Low	IRIS	10/2013	Tier 1
Oxychlordane	27304-13-8	5.00E-04 (g)	--	5.00E-04	(g)	(g)	(g)	(g)	(g)	--	(g)	(g)	Surrogate
trans-Nonachlor	39765-80-5	5.00E-04 (g)	--	5.00E-04	(g)	(g)	(g)	(g)	(g)	--	(g)	(g)	Surrogate
PAHs													
Benzo(a)anthracene	56-55-3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-Benzanthracene/chrysenes	BACC2	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C2-Naphthalene	NPHC2	2.00E-02 (i)	--	2.00E-02	(i)	(i)	(i)	(i)	(i)		(i)	(i)	Surrogate
C3-Naphthalene	NPHC3	2.00E-02 (i)	--	2.00E-02	(i)	(i)	(i)	(i)	(i)		(i)	(i)	Surrogate
C4-Naphthalene	NPHC4	2.00E-02 (i)	--	2.00E-02	(i)	(i)	(i)	(i)	(i)		(i)	(i)	Surrogate
Chrysene	218-01-9	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	2.00E-02	--	2.00E-02	Rat	Oral	Body Weight	Decreased mean terminal body weight in males	3,000	Low	IRIS	10/2013	Tier 1
SVOCs													
1,1-Biphenyl	92-52-4	5.00E-02	--	5.00E-02	Rat	Oral: diet	Kidney	Renal papillary mineralization	30	Medium to High	IRIS	10/2013	Tier 1
Bis(2-ethylhexyl) phthalate	117-81-7	2.00E-02	--	2.00E-02	Guinea Pig	Oral: Bioassay	Liver	Increased relative liver weight	1,000	Medium	IRIS	10/2013	Tier 1
Hexachlorobenzene	118-74-1	8.00E-04	--	8.00E-04	Rat	Oral: Diet	Liver	Liver effects	100	Medium	IRIS	10/2013	Tier 1
TPH													
TPH C9-C18	TPHC9-C18	1.00E-02 (d)	--	1.00E-02	Rat	Oral: gavage	Liver, Kidney, Blood	Liver/kidney weight increases and other changes, serum chemistry changes	10,000	Low	PPRTV screening value (d)	9/2009	Tier 3
TPH C19-C40	TPHC19-C40	3.00E+00 (e)	--	3.00E+00	Human	Therapeutic	Gastrointestinal	Laxative effects	300	Low	PPRTV	9/2009	Tier 2
VOCs													
Benzene	71-43-2	4.00E-03	--	4.00E-03	Human	Occupational: Inhalation	Immune	Decreased lymphocyte count	300	Medium	IRIS	10/2013	Tier 1
Chloroform	67-66-3	1.00E-02	--	1.00E-02	Dog	Oral: Bioassay	Liver, Blood	Moderate/marked fatty cyst formation in the liver and elevated SGPT	100	Medium	IRIS	10/2013	Tier 1
Trichloroethene	79-01-6	5.00E-04	--	5.00E-04	Mouse	Oral: Drinking Water	Thyroid	Decreased thymus weight	100	High	IRIS	10/2013	Tier 1
					Mouse	Oral: Drinking Water	Developmental	Immunotoxicity	1,000				
					Rat	Oral: Drinking Water	Vascular	Increased fetal heart malformations	10				

TABLE 4-3
NON-CANCER TOXICITY DATA FOR COPCs - ORAL/DERMAL
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Chronic Oral Reference Dose (mg/kg-day)	Oral Absorption Efficiency for Dermal (a)	Absorbed Chronic RfD for Dermal (b) (mg/kg-day)	Study Animal	Study Method	Primary Target Organ/System	Critical Endpoint	Combined Uncertainty/ Modifying Factors	Confidence Level	RfD:Target Organ(s)		RfD Tier (h)
											Source	Date	

Notes:
"--" - No adjustment necessary.
$ABS_{(GI)}$ - Fraction of contaminant absorbed in gastrointestinal tract (dimensionless).
ATSDR - Agency for Toxic Substances Disease Registry.
CAS - Chemical Abstracts Service.
CNS - Central Nervous System.
GI - Gastrointestinal.
HEAST - Health Effects Assessment Summary Tables (USEPA, 1997).
IRIS - Integrated Risk Information System, an online computer database of toxicological information (USEPA, 2013a).
mg/kg-day - Milligrams per Kilogram per day.
NA - Not available/Not Applicable.
PAH - Polycyclic Aromatic Hydrocarbons.
PCB - Polychlorinated Biphenyls.
PCDD - Polychlorinated dibenzodioxins.
PCDF - Polychlorinated dibenzofurans.
PPRTV - Provisional Peer Reviewed Toxicity Value.
RfD - Reference Dose.
RSL - Regional Screening Level, derived by USEPA for chemicals in soil, water, air, & fish (USEPA, 2013b). [http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm].
SVOC - Semi-Volatile Organic Compounds.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
TSH - Thyroid Stimulating Hormone.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compounds.
(a) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 4-1. Where USEPA, 2004 does not recommend adjustments, no value is listed.
(b) Oral RfD multiplied by ABS_{GI}. Where no adjustment is recommended, Dermal RfD = Oral RfD.
(c) Value for Aroclor 1254 (2E-05 mg/kg-day) or Aroclor 1016 (7E-05 mg/kg-day) may be used to evaluate the noncarcinogenic hazards of total PCBs, and the Aroclor selected depends on the chlorine content of the PCB congeners in the medium of interest. For the LPRSA BHHRA, the RfD for Aroclor 1254 is used.
(d) Value for TPH (Aliphatic Medium), based on the PPRTV for Midrange Aliphatic Hydrocarbon Streams. RfD is considered a screening provisional value (USEPA, 2009).
(e) Value for TPH (Aliphatic High), based on the PPRTV for White Mineral Oil (USEPA, 2009).
(f) The value for 4,4'-DDT was used as a surrogate based on structural similarity.
(g) Value for chlordane was used as a surrogate based on structural similarity.
(h) USEPA, 2003. Human Health Toxicity Values in Superfund Risk Assessments. OSWER Directive 9285.7-53. December 5, 2003. IRIS values are considered Tier 1, PPRTVs are considered Tier 2, and other values, including ATSDR, CalEPA, HEAST, and other non-EPA values are considered Tier 3 values. Selection of Tier 3 values followed the heirarchy put forth in USEPA, 2013c. Tier 3 Toxicity Value White Paper, OSWER 9285.7-86, May 16, 2013.
(i) Value for naphthalene used as surrogate based on structural similarity.
(j) Lead is evaluated using available lead modeling tools.
(k) No PPRTVs were developed for thallium in the PPRTV document (USEPA, 2012) due to database deficiencies. According to USEPA (2012) an RfD for thallium was not derived because the available toxicity database contains studies that are generally of poor quality. Appendix A of the PPRTV document indicates that it is inappropriate to derive provisional chronic or subchronic RfDs for thallium, but that information is available which, although insufficient to support derivation of a provisional toxicity value, under current guidelines, may be of limited use to risk assessors as a screening value. The use of this screening provisional value is highly uncertain but is the value used in the USEPA Regional Screening Tables (USEPA, 2013b).
(l) The oral RfD for Vanadium is derived from the IRIS oral RfD for Vanadium Pentoxide by factoring out the molecular weight (MW) of the oxide ion. Vanadium Pentoxide (V205) has a molecular weight of 181.88. The two atoms of Vanadium contribute 56% of the MW. Vanadium Pentoxide's oral RfD of 9E-03 mg/kg-day multiplied by 56% gives a Vanadium oral RfD of 5.04E-03 mg/kg-day.
(m) Minimal Risk Level for Dimethylarsinic acid (DMA) derived in Appendix A of Toxicological Profile for Arsenic (ATSDR, 2007). The value for organic arsenic is used to assess dietary exposure to crab tissue.
(n) When assessing exposure to manganese for non-dietary pathways, IRIS recommends applying a modifying factor of 3 to the oral RfD of 0.14 mg/kg-day. The USEPA Regional Screening Level User's Guide also indicates that the average dietary manganese content of the US diet (5 mg/day) be subtracted from the critical dose of 10 mg/day when assessing exposure to non-dietary manganese. Therefore, the RfD is (10 mg/day - 5 mg/day)/Modifying Factor (3) = 1.67 mg/day / 70 kg = 0.024 mg/kg-day. The unadjusted value of 0.14 mg/kg-day is used to assess dietary exposure to fish and crab tissue.
(o) The RfD for cadmium in food is used to evaluate dietary cadmium as well as oral and dermal contact with cadmium in sediment. The RfD for cadmium in water is used to evaluate oral and dermal contact with cadmium in surface water. This approach is consistent with the USEPA Regional Screening Levels (USEPA, 2013b).
(p) The value for Manganese, nondiet is used to assess dermal exposures.
(q) The value for Mercury, inorganic is used to assess dermal exposures.

TABLE 4-4
DEFAULT ABSORPTION FACTORS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Oral - Incidental Sediment Ingestion		Dermal - Sediment Contact	
		Default		Default	
PCDDs/PCDFs					
TCDD-TEQ	TCDD-TEQ	1	(a)	0.03	(c)
PCBs					
PCBs, total	1336-36-3	1	(a)	0.14	(c)
Inorganics					
Aluminum	7429-90-5	1	(a)	NA	(a)
Antimony	7440-36-0	1	(a)	NA	
Arsenic, inorganic	7440-38-2	0.6	(b)	0.03	(c)
Cadmium, diet	7440-43-9	1	(a)	0.001	(c)
Chromium, total	7440-47-3	1	(a)	NA	(c)
Chromium, hexavalent	18540-29-9	1	(a)	NA	(c)
Cobalt	7440-48-4	1	(a)	NA	(c)
Copper	7440-50-8	1	(a)	NA	(c)
Lead	7439-92-1	1	(a)	NA	(c)
Manganese, nondiet	7439-96-5	1	(a)	NA	(c)
Mercury, inorganic	7487-94-7	1	(a)	NA	(c)
Selenium	7782-49-2	1	(a)	NA	(c)
Silver	7440-22-4	1	(a)	NA	(c)
Thallium	7440-28-0	1	(a)	NA	(c)
Vanadium	7440-62-2	1	(a)	NA	(c)
Zinc	7440-66-6	1	(a)	NA	(c)
Pesticides					
2,4-DDD	53-19-0	1	(a)	0.1	(c)
2,4-DDE	3424-82-6	1	(a)	0.1	(c)
2,4-DDT	789-02-6	1	(a)	0.03	(c)
4,4'-DDD	72-54-8	1	(a)	0.1	(c)
4,4'-DDE	72-55-9	1	(a)	0.1	(c)
4,4'-DDT	50-29-3	1	(a)	0.03	(c)
Aldrin	309-00-2	1	(a)	0.1	(c)
cis-Chlordane	5103-71-9	1	(a)	0.04	(c)
cis-Nonachlor	5103-73-1	1	(a)	0.04	(c)
Dieldrin	60-57-1	1	(a)	0.1	(c)
Gamma-Chlordane	5566-34-7	1	(a)	0.04	(c)
Heptachlor Epoxide	1024-57-3	1	(a)	0.1	(c)
Oxychlordane	27304-13-8	1	(a)	0.04	(c)
trans-Nonachlor	39765-80-5	1	(a)	0.04	(c)
PAHs					
Benzo(a)anthracene	56-55-3	1	(a)	0.13	(c)
Benzo(a)pyrene	50-32-8	1	(a)	0.13	(c)
Benzo(b)fluoranthene	205-99-2	1	(a)	0.13	(c)
Benzo(k)fluoranthene	207-08-9	1	(a)	0.13	(c)
C2-Benzanthracene/chrysenes	BACC2	1	(a)	0.13	(c)
C2-Naphthalene	NPHC2	1	(a)	0.13	(c)
C3-Naphthalene	NPHC3	1	(a)	0.13	(c)
C4-Naphthalene	NPHC4	1	(a)	0.13	(c)
Chrysene	218-01-9	1	(a)	0.13	(c)
Dibenz(a,h)anthracene	53-70-3	1	(a)	0.13	(c)
Indeno(1,2,3-cd)pyrene	193-39-5	1	(a)	0.13	(c)
Naphthalene	91-20-3	1	(a)	0.13	(c)
SVOCs					
1,1-Biphenyl	92-52-4	1	(a)	0.1	(c)
bis(2-Ethylhexyl) phthalate	117-81-7	1	(a)	0.1	(c)
Hexachlorobenzene	118-74-1	1	(a)	0.1	(c)
TPH					
TPH C9-C18	TPHC9-C18	1	(a)	0.1	(c)
TPH C19-C40	TPHC19-C40	1	(a)	0.1	(c)
VOCs					
Benzene	71-43-2	1	(a)	NA	(c)
Chloroform	67-66-3	1	(a)	NA	(c)
Trichloroethene	79-01-6	1	(a)	NA	(c)

TABLE 4-4
DEFAULT ABSORPTION FACTORS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Oral - Incidental Sediment Ingestion	Dermal - Sediment Contact
		Default	Default

Notes:
CAS - Chemical Abstracts Service.
NA - Not Applicable. Chemical is not assessed via this pathway.
PAH - Polycyclic Aromatic Hydrocarbons.
PCB - Polychlorinated Biphenyls.
PCDD - Polychlorinated dibenzodioxins.
PCDF - Polychlorinated dibenzofurans.
SVOC - Semi-Volatile Organic Compounds.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
TPH - Total Petroleum Hydrocarbons.
VOC - Volatile Organic Compounds.
(a) Absorption is assumed to be 100% (absorption factor = 1) (USEPA, 1989; 2013b)
(b) Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil. OSWER Directive 9200.1-113. USEPA, December 2012.
Consistent with the approach used bythe November 2013 Regional Screening Level (RSL) table (USEPA, 2013b).
(c) USEPA, 2004. Risk Assessment Guidance for Superfund. Vol. 1, Part E. July, 2004. Exhibit 3-4.

TABLE 4-5
DERMAL WATER PARAMETERS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Constituent Properties		Dermal Water Parameters											Source
		MW g/mol	log Kow unitless	Kp (cm/hr)	B unitless	Lag Time τ hr/event	t* hr	FA unitless	lsc cm	log(Dsc/lsc) unitless	Dsc/lsc unitless	Dsc unitless	b unitless	c unitless	
PCDDs/PCDFs															
TCDD-TEQ	TCDD-TEQ	3.22E+02	6.80E+00	8.07E-01	5.57E+00	6.82E+00	3.01E+01	5.00E-01	1.00E-03	-4.61E+00	2.44E-05	2.44E-08	2.19E+01	5.62E+00	(a)
PCBs															
PCBs, total	1336-36-3	3.61E+02	6.72E+00	4.32E-01	3.15E+00	1.13E+01	4.79E+01	5.00E-01	1.00E-03	-4.83E+00	1.48E-05	1.48E-08	7.75E+00	3.23E+00	(a,e)
Inorganics															
Aluminum	7429-90-5	--	--	1.00E-03	--	--	--	--	--	--	--	--	--	--	(b)
Antimony	7440-36-0	--	--	1.00E-03	--	--	--	--	--	--	--	--	--	--	(b)
Arsenic, inorganic	7440-38-2	--	--	1.00E-03	--	--	--	--	--	--	--	--	--	--	(b)
Chromium, total	7440-47-3	--	--	1.00E-03	--	--	--	--	--	--	--	--	--	--	(b)
Cobalt	7440-48-4	--	--	4.00E-04	--	--	--	--	--	--	--	--	--	--	(b)
Lead	7439-92-1	--	--	1.00E-04	--	--	--	--	--	--	--	--	--	--	(b)
Manganese, nondiet	7439-96-5	--	--	1.00E-03	--	--	--	--	--	--	--	--	--	--	(b)
Thallium	7440-28-0	--	--	1.00E-03	--	--	--	--	--	--	--	--	--	--	(b)
Pesticides															
Dieldrin	60-57-1	3.81E+02	4.56E+00	1.22E-02	9.18E-02	1.46E+01	3.51E+01	8.00E-01	1.00E-03	-4.94E+00	1.14E-05	1.14E-08	3.62E-01	3.97E-01	(a)
PAHs															
Benzo(a)anthracene	56-55-3	2.28E+02	5.66E+00	4.74E-01	2.75E+00	2.03E+00	8.53E+00	1.00E+00	1.00E-03	-4.09E+00	8.20E-05	8.20E-08	6.12E+00	2.84E+00	(a)
Benzo(a)pyrene	50-32-8	2.50E+02	6.10E+00	7.01E-01	4.27E+00	2.69E+00	1.17E+01	1.00E+00	1.00E-03	-4.21E+00	6.19E-05	6.19E-08	1.33E+01	4.33E+00	(a)
Benzo(b)fluoranthene	205-99-2	2.52E+02	6.12E+00	7.02E-01	4.29E+00	2.77E+00	1.20E+01	1.00E+00	1.00E-03	-4.22E+00	6.01E-05	6.01E-08	1.35E+01	4.35E+00	(a)
Dibenz(a,h)anthracene	53-70-3	2.78E+02	6.84E+00	1.51E+00	9.68E+00	3.88E+00	1.76E+01	6.00E-01	1.00E-03	-4.37E+00	4.29E-05	4.29E-08	6.29E+01	9.71E+00	(a)
Indeno(1,2,3-cd)pyrene	193-39-5	2.76E+02	6.58E+00	1.04E+00	6.65E+00	3.78E+00	1.68E+01	6.00E-01	1.00E-03	-4.36E+00	4.41E-05	4.41E-08	3.06E+01	6.70E+00	(a)
Naphthalene	91-20-3	1.28E+02	3.30E+00	4.66E-02	2.03E-01	5.58E-01	1.34E+00	1.00E+00	1.00E-03	-3.52E+00	2.99E-04	2.99E-07	4.41E-01	4.80E-01	(a)
SVOCs															
1,1-Biphenyl	92-52-4	1.54E+02	3.98E+00	9.43E-02	4.50E-01	7.80E-01	1.87E+00	1.00E+00 (d)	1.00E-03	-3.67E+00	2.14E-04	2.14E-07	6.59E-01	6.80E-01	(c)
bis(2-Ethylhexyl) phthalate	117-81-7	3.91E+02	5.11E+00	2.49E-02	1.90E-01	1.66E+01	3.99E+01	8.00E-01	1.00E-03	-5.00E+00	1.00E-05	1.00E-08	4.31E-01	4.70E-01	(a)
VOCs															
Benzene	71-43-2	7.81E+01	2.13E+00	1.49E-02	5.05E-02	2.92E-01	7.00E-01	1.00E+00	1.00E-03	-3.24E+00	5.71E-04	5.71E-07	3.35E-01	3.68E-01	(a)
Chloroform	67-66-3	1.19E+02	1.97E+00	6.83E-03	2.87E-02	4.98E-01	1.19E+00	1.00E+00	1.00E-03	-3.48E+00	3.35E-04	3.35E-07	3.21E-01	3.53E-01	(a)
Trichloroethene	79-01-6	1.31E+02	2.42E+00	1.16E-02	5.13E-02	5.81E-01	1.39E+00	1.00E+00	1.00E-03	-3.54E+00	2.87E-04	2.87E-07	3.35E-01	3.68E-01	(a)

TABLE 4-5
DERMAL WATER PARAMETERS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical of Potential Concern	CAS Number	Constituent Properties		Dermal Water Parameters											Source
		MW g/mol	log Kow unitless	Kp (cm/hr)	B unitless	Lag Time τ hr/event	t* hr	FA unitless	lsc cm	log(Dsc/lsc) unitless	Dsc/lsc unitless	Dsc unitless	b unitless	c unitless	

Notes:
CAS - Chemical Abstracts Service.
PAH - Polycyclic Aromatic Hydrocarbons.
PCB - Polychlorinated Biphenyls.
PCDD - Polychlorinated dibenzodioxins.
PCDF - Polychlorinated dibenzofurans.
SVOC - Semi-Volatile Organic Compounds.
TCDD - 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEQ - Toxicity Equivalence.
VOC - Volatile Organic Compounds.

(a) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit B-3 (Organics)
Note that values were obtained from the spreadsheet provided with the guidance, therefore, rounding differs from that presented in Exhibit B-3.
(b) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 3-1. (Inorganics)
(c) Calculated. Log Kow and molecular weight obtained from the Risk Assessment Information System (RAIS). See equations below.
(d) FA assumed to be one.
(e) Values for PCB-hexachlorobiphenyl.

Equations:
USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment

Equation 3.8:	Log Kp = -2.80 + 0.66 log Kow - 0.0056 MW
Equation A.1:	$B = Kp \times MW^{0.5}/2.6$
Equation A.2:	Log Dsc/lsc = -2.8-0.0056 MW, where lsc = 1E-3 cm. Solving for Dsc: $Dsc = 10^{-2.8-0.0056\ MW} * lsc$.
Equation A.4:	$\tau = lsc^2/(6*Dsc)$
Equation A.5:	If $B \leq 0.6$, Equation A.5: $t^* = 2.4*\tau$
Equation A.6:	If $B > 0.6$: $t^* = (b- (b^2-c^2)^{0.5}) * l^2sc/(Dsc)$
Equation A-7:	$b = (2*(1+B)^2/\pi) -c$
Equation A-8:	$c = (1+3B+3B^2)/(3*(1+B))$

Definitions:
B - Relative Contribution of Permeability Coefficient.
Dsc - Effective diffusion coefficient through stratum corneum.
FA - Fraction Absorbed.
Kow - Octanol-Water Partition Coefficient.
Kp - Dermal Permeability Coefficient.
lsc - Apparent thickness of stratum corneum.
MW - Molecular Weight.
τ - lag time (hr/event).
t* - Time to reach steady state.

TABLE 5-1
SUMMARY OF TOTAL POTENTIAL CANCER RISKS FOR SWIMMER, WADER, BOATER AND WORKER RECEPTORS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

River Segment	Medium	Swimmer				Wader				Boater			Worker
		Young Child	Adolescent	Adult	Combined (a)	Young Child	Adolescent	Adult	Combined (a)	Older Child	Teen	Adult	Adult
RM 0-3	Accessible Surface Sediment	2E-06	2E-06	7E-07	5E-06	2E-06	3E-06	7E-07	6E-06	2E-06	7E-08	5E-07	1E-06
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***5E-06***	***6E-06***	***2E-06***	***1E-05***	***3E-06***	***5E-06***	***9E-07***	***9E-06***	***5E-06***	***2E-06***	***2E-05***	***1E-06***
RM 3-6	Accessible Surface Sediment	2E-06	2E-06	5E-07	4E-06	2E-06	3E-06	5E-07	5E-06	2E-06	5E-08	4E-07	1E-06
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***5E-06***	***6E-06***	***1E-06***	***1E-05***	***3E-06***	***4E-06***	***8E-07***	***8E-06***	***5E-06***	***2E-06***	***1E-05***	***1E-06***
RM 6-9	Accessible Surface Sediment	9E-06	1E-05	4E-06	2E-05	9E-06	1E-05	4E-06	3E-05	9E-06	3E-07	3E-06	9E-06
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***1E-05***	***1E-05***	***5E-06***	***3E-05***	***1E-05***	***2E-05***	***4E-06***	***3E-05***	***1E-05***	***3E-06***	***2E-05***	***9E-06***
RM 6-9 East Bank	Accessible Surface Sediment	1E-05	1E-05	6E-06	3E-05	1E-05	2E-05	6E-06	4E-05	1E-05	5E-07	5E-06	1E-05
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***1E-05***	***2E-05***	***6E-06***	***4E-05***	***1E-05***	***2E-05***	***6E-06***	***4E-05***	***2E-05***	***3E-06***	***2E-05***	***1E-05***
RM 9-12	Accessible Surface Sediment	2E-06	1E-06	4E-07	4E-06	2E-06	2E-06	4E-07	4E-06	2E-06	4E-08	3E-07	8E-07
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***4E-06***	***5E-06***	***1E-06***	***1E-05***	***3E-06***	***4E-06***	***7E-07***	***7E-06***	***4E-06***	***2E-06***	***1E-05***	***8E-07***
RM 12-15	Accessible Surface Sediment	1E-06	1E-06	3E-07	3E-06	1E-06	2E-06	3E-07	3E-06	1E-06	3E-08	3E-07	7E-07
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***4E-06***	***5E-06***	***1E-06***	***1E-05***	***2E-06***	***3E-06***	***6E-07***	***6E-06***	***4E-06***	***2E-06***	***1E-05***	***7E-07***
RM 15-17.4	Accessible Surface Sediment	3E-06	2E-06	5E-07	5E-06	3E-06	3E-06	5E-07	6E-06	3E-06	6E-08	4E-07	1E-06
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***5E-06***	***6E-06***	***1E-06***	***1E-05***	***4E-06***	***5E-06***	***8E-07***	***9E-06***	***5E-06***	***2E-06***	***1E-05***	***1E-06***
Sitewide	Accessible Surface Sediment	3E-06	3E-06	1E-06	7E-06	3E-06	5E-06	1E-06	9E-06	3E-06	1E-07	9E-07	2E-06
	Surface Water (Sitewide)	3E-06	4E-06	9E-07	8E-06	1E-06	2E-06	3E-07	3E-06	3E-06	2E-06	1E-05	NA
	Total Cumulative Risk	***6E-06***	***7E-06***	***2E-06***	***1E-05***	***4E-06***	***6E-06***	***1E-06***	***1E-05***	***6E-06***	***2E-06***	***2E-05***	***2E-06***

Notes:
A refined spatial analysis of sediment direct contact risk was performed using accessible sediment data in three mile segments, and along the east bank of RM 6-9.
Risks associated with surface water contact are sitewide estimates.
NA - Pathway or exposure area not applicable for this receptor.
RM - River mile.
(a) Cancer risks for adult, adolescent and young child age groups for the same receptor are summed.

TABLE 5-2
SUMMARY OF TOTAL POTENTIAL NONCANCER RISKS FOR SWIMMER, WADER, BOATER AND WORKER RECEPTORS
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

River Segment	Medium	Swimmer			Wader			Boater			Worker
		Young Child	Adolescent	Adult	Young Child	Adolescent	Adult	Older Child	Teen	Adult	Adult
RM 0-3	Accessible Surface Sediment	0.1	0.1	0.03	0.1	0.1	0.03	0.1	0.01	0.01	0.1
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***0.1***	***0.1***	***0.03***	***0.1***	***0.1***	***0.03***	***0.1***	***0.03***	***0.05***	***0.1***
RM 3-6	Accessible Surface Sediment	0.1	0.03	0.01	0.1	0.1	0.01	0.1	0.004	0.005	0.1
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***0.1***	***0.04***	***0.02***	***0.1***	***0.1***	***0.01***	***0.1***	***0.03***	***0.04***	***0.1***
RM 6-9	Accessible Surface Sediment	0.9	0.6	0.2	0.9	0.9	0.2	0.9	0.07	0.1	1.1
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***0.9***	***0.6***	***0.2***	***1***	***1***	***0.2***	***1***	***0.1***	***0.1***	***1***
RM 6-9 East Bank	Accessible Surface Sediment	1.4	0.9	0.3	1.4	1.3	0.3	1.4	0.10	0.1	2
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***1***	***1***	***0.3***	***1***	***1***	***0.3***	***1***	***0.1***	***0.2***	***2***
RM 9-12	Accessible Surface Sediment	0.04	0.03	0.01	0.04	0.04	0.01	0.04	0.003	0.004	0.1
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***0.1***	***0.04***	***0.01***	***0.05***	***0.05***	***0.01***	***0.1***	***0.03***	***0.04***	***0.1***
RM 12-15	Accessible Surface Sediment	0.04	0.03	0.01	0.04	0.04	0.01	0.04	0.003	0.004	0.1
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***0.1***	***0.04***	***0.02***	***0.05***	***0.05***	***0.01***	***0.1***	***0.03***	***0.04***	***0.1***
RM 15-17.4	Accessible Surface Sediment	0.01	0.009	0.004	0.01	0.01	0.004	0.02	0.001	0.001	0.02
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***0.02***	***0.02***	***0.01***	***0.02***	***0.02***	***0.01***	***0.03***	***0.03***	***0.04***	***0.02***
Sitewide	Accessible Surface Sediment	0.2	0.1	0.05	0.2	0.2	0.05	0.2	0.01	0.02	0.2
	Surface Water (Sitewide)	0.01	0.01	0.005	0.004	0.005	0.001	0.01	0.03	0.04	NA
	Total Cumulative Risk (a)	***0.2***	***0.1***	***0.1***	***0.2***	***0.2***	***0.05***	***0.2***	***0.04***	***0.1***	***0.2***

Notes:
A refined spatial analysis of sediment direct contact risk was performed using accessible sediment data in three mile segments, and along the east bank of RM 6-9.
Risks associated with surface water contact are sitewide estimates.
Cumulative noncancer risks in excess of the target hazard index of 1 are highlighted. For the exceedance identified in RM 6-9 (East Bank), TCDD-TEQ contributes over 90% of the total noncancer risk.
NA - Pathway or exposure area not applicable for this receptor.
RM - River mile.
(a) The total hazard index (HI) is presented without regard to target endpoint analysis.

TABLE 5-3
SUMMARY OF TOTAL POTENTIAL CANCER AND NONCANCER RISKS FOR RESIDENTIAL EXPOSURE TO FLOODPLAIN SOIL
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Chemical	Potential Carcinogenic Risk				Noncarcinogenic Hazard (b)		
	Young Child	Adolescent	Adult	Combined (a)	Young Child	Adolescent	Adult
Total TEQ (c)	1E-06	4E-07	3E-07	2E-06	0.1	0.03	0.02
PCBs, total	6E-08	4E-08	2E-08	1E-07	0.02	0.006	0.002
Mercury	NC	NC	NC	NC	0.003	0.001	0.0003
Total	**1E-06**	**5E-07**	**3E-07**	**2E-06**	**0.2**	**0.04**	**0.02**

Notes:
NC - Not Calculated. Not a potential carcinogen.
PCB - Polychlorinated Biphenyls.
PCDD - Polychlorinated Dibenzo-p-Dioxin
PCDF - Polychlorinated Dibenzofuran
TEQ - Toxicity Equivalence.
(a) Cancer risks for adult, adolescent and young child resident age groups summed.
(b) The total hazard index (HI) is presented without regard to target endpoint analysis.
(c) Calculated by USEPA using the Basic Kaplan-Meier Toxicity Equivalents Calculator; includes PCDD, PCDF, and PCB dioxin-like congeners (USEPA 2011c, 2012c).

TABLE 5-4
SUMMARY OF TOTAL POTENTIAL CANCER RISKS FOR ANGLER RECEPTOR (FISH CONSUMPTION)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

River Segment	Medium	Site-Specific Mixed Fish Diet (a)				Mixed Fish Diet Without Carp (b)				Mixed Fish Diet With Carp (c)			
		Young Child	Adolescent	Adult	Combined (d)	Young Child	Adolescent	Adult	Combined (d)	Young Child	Adolescent	Adult	Combined (d)
RM 0-3	Accessible Surface Sediment	NA	3E-06	7E-07	4E-06	NA	3E-06	7E-07	4E-06	NA	3E-06	7E-07	4E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***4E-04***	***4E-05***	***6E-05***	***7E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***
RM 3-6	Accessible Surface Sediment	NA	3E-06	5E-07	3E-06	NA	3E-06	5E-07	3E-06	NA	3E-06	5E-07	3E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***3E-04***	***4E-05***	***6E-05***	***7E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***
RM 6-9	Accessible Surface Sediment	NA	1E-05	4E-06	2E-05	NA	1E-05	4E-06	2E-05	NA	1E-05	4E-06	2E-05
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***4E-04***	***4E-05***	***7E-05***	***7E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***
RM 6-9 East Bank	Accessible Surface Sediment	NA	2E-05	6E-06	3E-05	NA	2E-05	6E-06	3E-05	NA	2E-05	6E-06	3E-05
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***4E-04***	***4E-05***	***8E-05***	***8E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***
RM 9-12	Accessible Surface Sediment	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***3E-04***	***4E-05***	***6E-05***	***7E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***
RM 12-15	Accessible Surface Sediment	NA	2E-06	3E-07	2E-06	NA	2E-06	3E-07	2E-06	NA	2E-06	3E-07	2E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***3E-04***	***4E-05***	***6E-05***	***7E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***
RM 15-17.4	Accessible Surface Sediment	NA	3E-06	5E-07	4E-06	NA	3E-06	5E-07	4E-06	NA	3E-06	5E-07	4E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***4E-04***	***4E-05***	***6E-05***	***7E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***
Sitewide	Accessible Surface Sediment	NA	5E-06	1E-06	6E-06	NA	5E-06	1E-06	6E-06	NA	5E-06	1E-06	6E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Fish (Sitewide)	9E-05	1E-04	1E-04	3E-04	4E-05	6E-05	7E-05	2E-04	1E-04	2E-04	2E-04	5E-04
	Total Cumulative Risk	***9E-05***	***1E-04***	***1E-04***	***4E-04***	***4E-05***	***6E-05***	***7E-05***	***2E-04***	***1E-04***	***2E-04***	***2E-04***	***5E-04***

Notes:
A refined spatial analysis of sediment direct contact risk was performed using accessible sediment data in three mile segments, and along the east bank of RM 6-9.
Risks associated with surface water contact and fish consumption are sitewide estimates.
Cumulative cancer risks in excess of the target risk range of 10-6 to 10-4 are highlighted.
NA - Pathway not applicable for this receptor.
RM - River mile.
(a) Site-specific mixed fish diet based on angler preferences from CAS; comprised of 44% bottomfeeders (carp, channel catfish, white catfish, white sucker, and American eel), 37% predators (largemouth bass, smallmouth bass, northern pike) and 19% intermediate (white perch).
(b) Mixed fish diet without carp assumed to consist of equal fractions (25%) of four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, and largemouth bass.
(c) Mixed fish diet with carp assumed to consist of equal fractions (20%) of common carp and four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, and largemouth bass.
(d) Cancer risks for adult, adolescent and young child age groups summed.

TABLE 5-5
SUMMARY OF TOTAL POTENTIAL NONCANCER RISKS FOR ANGLER RECEPTOR (FISH CONSUMPTION)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

River Segment	Medium	Site-Specific Mixed Fish Diet (a)			Angler - Mixed Fish Diet Without Carp (b)			Angler - Mixed Fish Diet With Carp (c)		
		Young Child	Adolescent	Adult	Young Child	Adolescent	Adult	Young Child	Adolescent	Adult
RM 0-3	Accessible Surface Sediment	NA	0.1	0.03	NA	0.1	0.03	NA	0.1	0.03
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***11***	***11***	***9***	***6***	***6***	***26***	***17***	***16***
RM 3-6	Accessible Surface Sediment	NA	0.1	0.01	NA	0.1	0.01	NA	0.1	0.01
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***11***	***11***	***9***	***6***	***6***	***26***	***17***	***16***
RM 6-9	Accessible Surface Sediment	NA	0.9	0.2	NA	0.9	0.2	NA	0.9	0.2
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***12***	***11***	***9***	***7***	***6***	***26***	***17***	***17***
RM 6-9 East Bank	Accessible Surface Sediment	NA	1.3	0.3	NA	1.3	0.3	NA	1.3	0.3
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***13***	***11***	***9***	***7***	***6***	***26***	***18***	***17***
RM 9-12	Accessible Surface Sediment	NA	0.04	0.01	NA	0.04	0.01	NA	0.04	0.01
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***11***	***11***	***9***	***6***	***6***	***26***	***16***	***16***
RM 12-15	Accessible Surface Sediment	NA	0.04	0.01	NA	0.04	0.01	NA	0.04	0.01
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***11***	***11***	***9***	***6***	***6***	***26***	***16***	***16***
RM 15-17.4	Accessible Surface Sediment	NA	0.01	0.004	NA	0.01	0.004	NA	0.01	0.004
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***11***	***11***	***9***	***6***	***6***	***26***	***16***	***16***
Sitewide	Accessible Surface Sediment	NA	0.2	0.05	NA	0.2	0.05	NA	0.2	0.05
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002	NA	0.01	0.002
	Fish (Sitewide)	17	11	11	9	6	6	26	16	16
	Total Cumulative Risk (d)	***17***	***11***	***11***	***9***	***6***	***6***	***26***	***17***	***16***

Notes:
A refined spatial analysis of sediment direct contact risk was performed using accessible sediment data in three mile segments, and along the east bank of RM 6-9.
Risks associated with surface water contact and fish consumption are sitewide estimates.
Cumulative noncancer risks in excess of the target hazard index of 1 are highlighted.
NA - Pathway not applicable for this receptor.
RM - River mile.
(a) Site-specific mixed fish diet based on angler preferences from CAS; comprised of 44% bottomfeeders (carp, channel catfish, white catfish, white sucker, and American eel), 37% predators (largemouth bass, smallmouth bass, northern pike) and 19% intermediate (white perch).
(b) Mixed fish diet without carp assumed to consist of equal fractions (25%) of four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, and largemouth bass.
(c) Mixed fish diet with carp assumed to consist of equal fractions (20%) of common carp and four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, and largemouth bass.
(d) The total hazard index (HI) is presented without regard to target endpoint analysis.

TABLE 5-6
SUMMARY OF TOTAL POTENTIAL CANCER RISKS FOR ANGLER RECEPTOR (CRAB CONSUMPTION)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

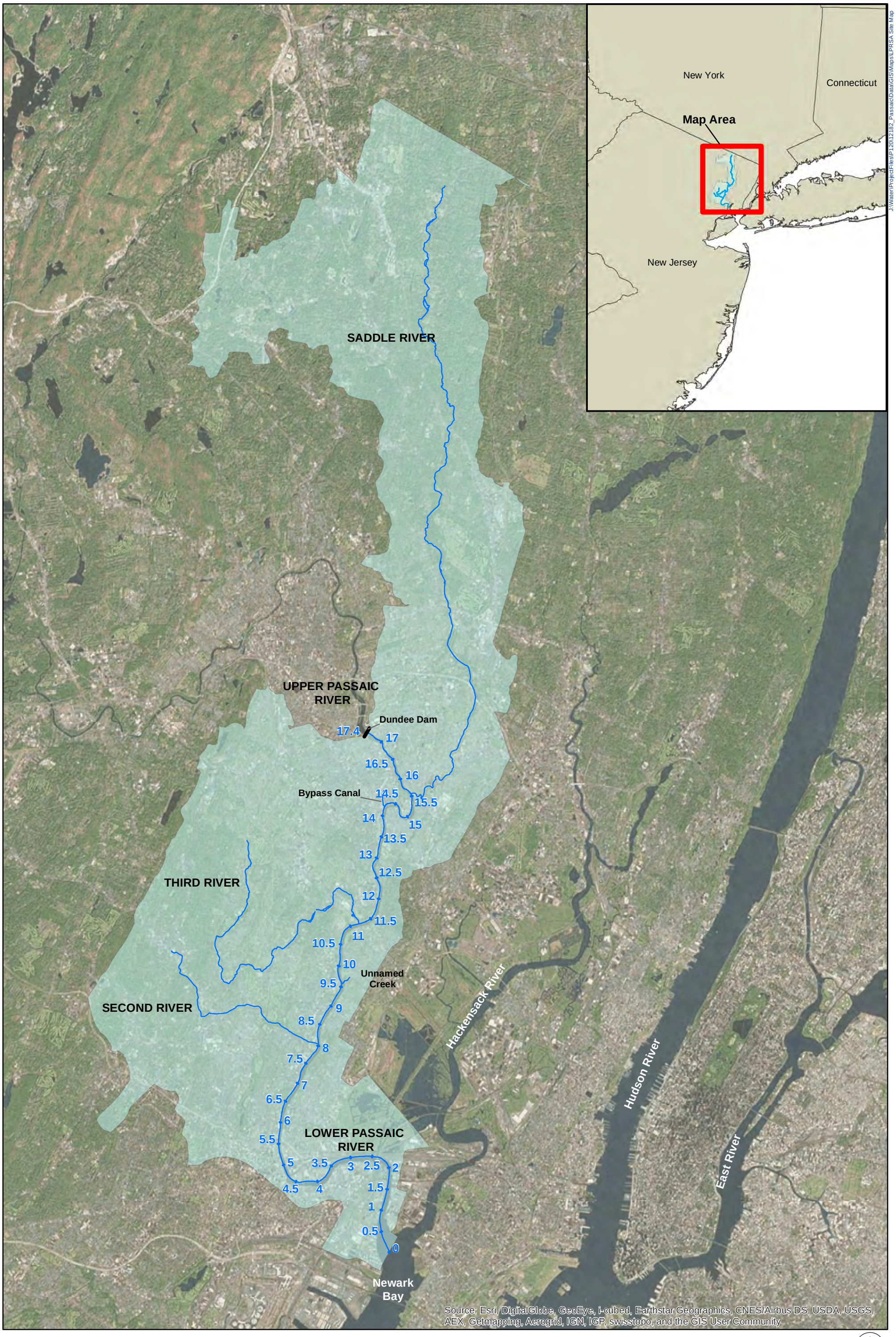
River Segment	Medium	Crab Muscle & Hepatopancreas				Crab Muscle			
		Young Child	Adolescent	Adult	Combined (a)	Young Child	Adolescent	Adult	Combined (a)
RM 0-3	Accessible Surface Sediment	NA	3E-06	7E-07	4E-06	NA	3E-06	7E-07	4E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***3E-05***	***3E-05***	***8E-05***	***4E-06***	***1E-05***	***7E-06***	***2E-05***
RM 3-6	Accessible Surface Sediment	NA	3E-06	5E-07	3E-06	NA	3E-06	5E-07	3E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***3E-05***	***3E-05***	***8E-05***	***4E-06***	***9E-06***	***6E-06***	***2E-05***
RM 6-9	Accessible Surface Sediment	NA	1E-05	4E-06	2E-05	NA	1E-05	4E-06	2E-05
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***4E-05***	***4E-05***	***1E-04***	***4E-06***	***2E-05***	***1E-05***	***4E-05***
RM 6-9 East Bank	Accessible Surface Sediment	NA	2E-05	6E-06	3E-05	NA	2E-05	6E-06	3E-05
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***5E-05***	***4E-05***	***1E-04***	***4E-06***	***3E-05***	***1E-05***	***4E-05***
RM 9-12	Accessible Surface Sediment	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***3E-05***	***3E-05***	***8E-05***	***4E-06***	***9E-06***	***6E-06***	***2E-05***
RM 12-15	Accessible Surface Sediment	NA	2E-06	3E-07	2E-06	NA	2E-06	3E-07	2E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***3E-05***	***3E-05***	***8E-05***	***4E-06***	***9E-06***	***6E-06***	***2E-05***
RM 15-17.4	Accessible Surface Sediment	NA	3E-06	5E-07	4E-06	NA	3E-06	5E-07	4E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***3E-05***	***3E-05***	***8E-05***	***4E-06***	***1E-05***	***6E-06***	***2E-05***
Sitewide	Accessible Surface Sediment	NA	5E-06	1E-06	6E-06	NA	5E-06	1E-06	6E-06
	Surface Water (Sitewide)	NA	2E-06	4E-07	3E-06	NA	2E-06	4E-07	3E-06
	Crab (Sitewide)	2E-05	3E-05	3E-05	8E-05	4E-06	4E-06	5E-06	1E-05
	Total Cumulative Risk	***2E-05***	***3E-05***	***3E-05***	***8E-05***	***4E-06***	***1E-05***	***7E-06***	***2E-05***

Notes:
A refined spatial analysis of sediment direct contact risk was performed using accessible sediment data in three mile segments, and along the east bank of RM 6-9.
Risks associated with surface water contact and crab consumption are sitewide estimates.
Cumulative cancer risks in excess of the target risk range of 10-6 to 10-4 are highlighted.
NA - Pathway not applicable for this receptor.
RM - River mile.
(a) Cancer risks for adult, adolescent and young child age groups summed.

TABLE 5-7
SUMMARY OF TOTAL POTENTIAL NONCANCER RISKS FOR ANGLER RECEPTOR (CRAB CONSUMPTION)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

River Segment	Medium	Crab Muscle & Hepatopancreas			Crab Muscle		
		Young Child	Adolescent	Adult	Young Child	Adolescent	Adult
RM 0-3	Accessible Surface Sediment	NA	0.1	0.03	NA	0.1	0.03
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***2***	***2***	***1***	***1***	***0.4***
RM 3-6	Accessible Surface Sediment	NA	0.1	0.01	NA	0.1	0.01
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***2***	***2***	***1***	***0.5***	***0.4***
RM 6-9	Accessible Surface Sediment	NA	0.9	0.2	NA	0.9	0.2
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***3***	***2***	***1***	***1***	***1***
RM 6-9 East Bank	Accessible Surface Sediment	NA	1.3	0.3	NA	1.3	0.3
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***3***	***2***	***1***	***2***	***1***
RM 9-12	Accessible Surface Sediment	NA	0.04	0.01	NA	0.04	0.01
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***2***	***2***	***1***	***0.5***	***0.4***
RM 12-15	Accessible Surface Sediment	NA	0.04	0.01	NA	0.04	0.01
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***2***	***2***	***1***	***0.5***	***0.4***
RM 15-17.4	Accessible Surface Sediment	NA	0.01	0.004	NA	0.01	0.004
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***2***	***2***	***1***	***0.4***	***0.4***
Sitewide	Accessible Surface Sediment	NA	0.2	0.05	NA	0.2	0.05
	Surface Water (Sitewide)	NA	0.01	0.002	NA	0.01	0.002
	Crab (Sitewide)	3	2	2	1	0.4	0.4
	Total Cumulative Risk (a)	***3***	***2***	***2***	***1***	***1***	***0.5***

Notes:
A refined spatial analysis of sediment direct contact risk was performed using accessible sediment data in three mile segments, and along the east bank of RM 6-9.
Risks associated with surface water contact and crab consumption are sitewide estimates.
Cumulative noncancer risks in excess of the target hazard index of 1 are highlighted.
NA - Pathway not applicable for this receptor.
RM - River mile.
(a) The total hazard index (HI) is presented without regard to target endpoint analysis.



J:\Water\ProjectFiles\P120\12182_Passaic\Data\GIS\Maps\LPRSA Site Map

Figure 2-1 Lower Passaic River Study Area

Lower Passaic River with River Miles

LPRSA

0 1 2 3 4 5 Miles

AECOM

August 2014

Ortho: Copyright:© 2009 ESRI, i-cubed, GeoEye

Map Projection: NJ State Plane, NAD 83 Feet

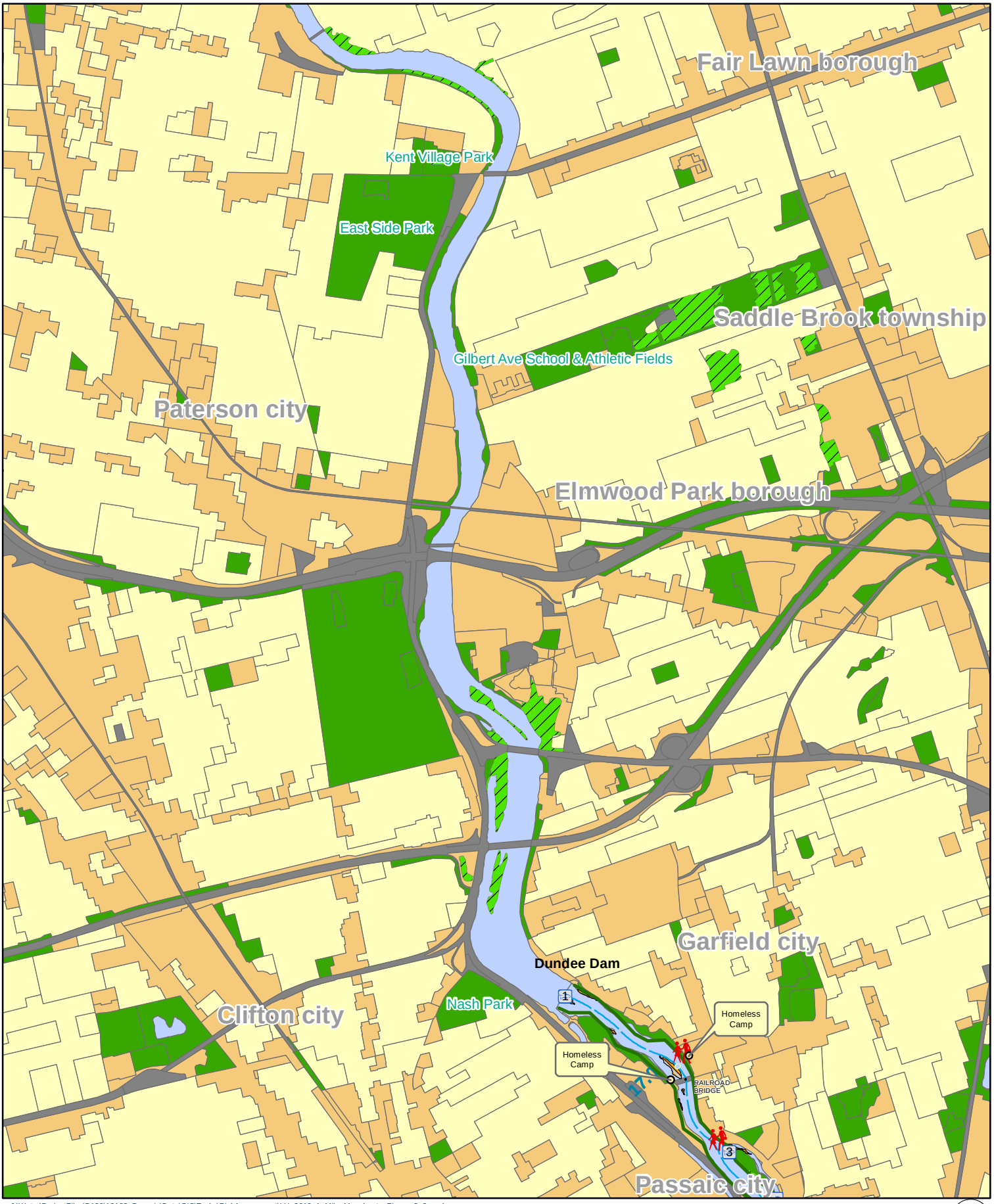


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Figure 2-2 LPR Shoreline Features and Adjacent Land Use

Shoreline type was estimated based on 2010 habitat survey field observations and photo documentation (Windward, 2014).

Potentially accessible sediment between RM 15 and Dundee Dam estimated from CPG aerial photography (2007) and groundtruthed during 2010 habitat survey.

Fishing sites shown are locations where 10 or more anglers were observed during the CPG 2011-2012 Creel Angler Survey.

Legend
- Passaic River Centerline (miles)
- Potential Access to Shore
- Boat Dock/Launch
- Fishing Site

Shoreline Type
- Natural/Vegetated
- RipRap/Stone
- Sheet Pile/Bulkhead
- Potentially Accessible Sediment

Land Use 2007
- INDUSTRIAL/COMMERCIAL/URBAN
- RESIDENTIAL
- RECREATIONAL/OPEN SPACE
- INFRASTRUCTURE
- WETLANDS
- WATER

0 0.125 0.25 0.5 Miles

AECOM

August 2014

Land Use: NJDEP, 2007

Coordinate System: NJ State Plane, Feet

J:\Water\ProjectFiles\P120\12182_Passaic\Data\GIS\Tasks\RiskAssessment\LU_2010_1_Mile_Mapsheets_Figure_2_2.mxd

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Fishing sites shown are locations where 10 or more anglers were observed during the CPG 2011-2012 Creel Angler Survey.

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- Passaic River Centerline (miles)
- Potential Access to Shore
- Boat Dock/Launch
- Fishing Site

Shoreline Type
- Natural/Vegetated
- RipRap/Stone
- Sheet Pile/Bulkhead
- Potentially Accessible Sediment

Land Use 2007
- INDUSTRIAL/COMMERCIAL/URBAN
- RESIDENTIAL
- RECREATIONAL/OPEN SPACE
- INFRASTRUCTURE
- WETLANDS
- WATER

0 0.125 0.25 0.5 Miles

AECOM

August 2014

Land Use: NJDEP, 2007

Coordinate System: NJ State Plane, Feet

Passaic River mile 13.5 to 17.0

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Figure 2-2 LPR Shoreline Features and Adjacent Land Use

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Legend
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- Potential Access to Shore
- Boat Dock/Launch
- Fishing Site

Shoreline Type
- Natural/Vegetated
- RipRap/Stone
- Sheet Pile/Bulkhead
- Potentially Accessible Sediment

Land Use 2007
- INDUSTRIAL/COMMERCIAL/URBAN
- RESIDENTIAL
- RECREATIONAL/OPEN SPACE
- INFRASTRUCTURE
- WETLANDS
- WATER

0 0.125 0.25 0.5 Miles

AECOM

August 2014

Land Use: NJDEP, 2007

Coordinate System: NJ State Plane, Feet

Passaic River mile 10.5 to 13.0

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Figure 2-2 LPR Shoreline Features and Adjacent Land Use

Shoreline type was estimated based on 2010 habitat survey field observations and photo documentation (Windward, 2014).

Potentially accessible sediment between RM 15 and Dundee Dam estimated from CPG aerial photography (2007) and groundtruthed during 2010 habitat survey.

Fishing sites shown are locations where 10 or more anglers were observed during the CPG 2011-2012 Creel Angler Survey.

Legend
- Passaic River Centerline (miles)
- Potential Access to Shore
- Boat Dock/Launch
- Fishing Site

Shoreline Type
- Natural/Vegetated
- RipRap/Stone
- Sheet Pile/Bulkhead
- Potentially Accessible Sediment

Land Use 2007
- INDUSTRIAL/COMMERCIAL/URBAN
- RESIDENTIAL
- RECREATIONAL/OPEN SPACE
- INFRASTRUCTURE
- WETLANDS
- WATER

0 0.125 0.25 0.5 Miles

AECOM

August 2014

Land Use: NJDEP, 2007

Coordinate System: NJ State Plane, Feet

Passaic River mile 7.5 to 10.0

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Figure 2-2 LPR Shoreline Features and Adjacent Land Use

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Potentially accessible sediment between RM 15 and Dundee Dam estimated from CPG aerial photography (2007) and groundtruthed during 2010 habitat survey.

Fishing sites shown are locations where 10 or more anglers were observed during the CPG 2011-2012 Creel Angler Survey.

Legend
- Passaic River Centerline (miles)
- Potential Access to Shore
- Boat Dock/Launch
- Fishing Site

Shoreline Type
- Natural/Vegetated
- RipRap/Stone
- Sheet Pile/Bulkhead
- Potentially Accessible Sediment

Land Use 2007
- INDUSTRIAL/COMMERCIAL/URBAN
- RESIDENTIAL
- RECREATIONAL/OPEN SPACE
- INFRASTRUCTURE
- WETLANDS
- WATER

0 0.125 0.25 0.5 Miles

AECOM

August 2014

Land Use: NJDEP, 2007

Coordinate System: NJ State Plane, Feet

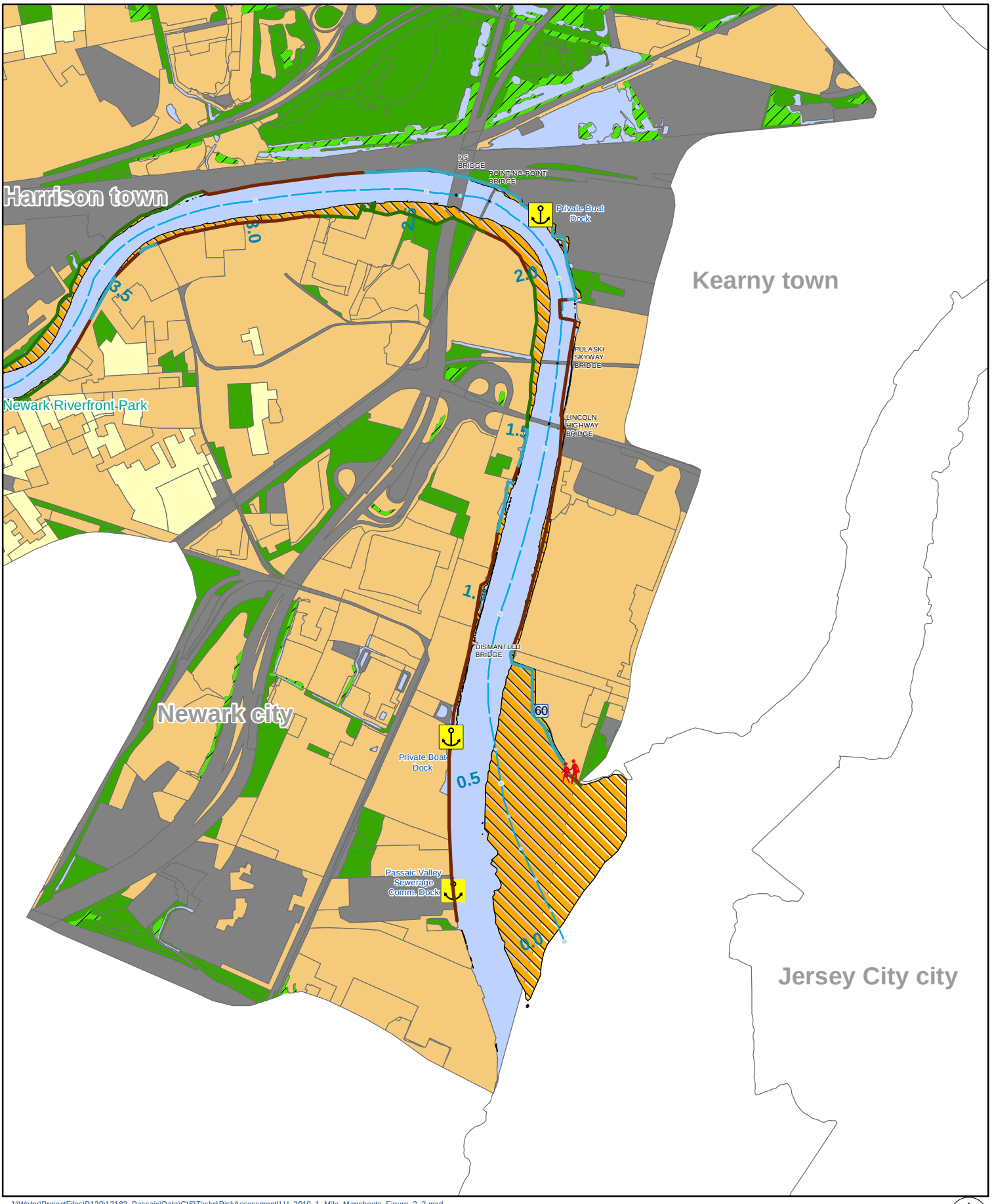

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Figure 2-2 LPR Shoreline Features and Adjacent Land Use

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Potentially accessible sediment between RM 15 and Dundee Dam estimated from CPG aerial photography (2007) and groundtruthed during 2010 habitat survey.

Fishing sites shown are locations where 10 or more anglers were observed during the CPG 2011-2012 Creel Angler Survey.

Legend
- Passaic River Centerline (miles)
- Potential Access to Shore
- Boat Dock/Launch
- Fishing Site

Shoreline Type
- Natural/Vegetated
- RipRap/Stone
- Sheet Pile/Bulkhead
- Potentially Accessible Sediment

Land Use 2007
- INDUSTRIAL/COMMERCIAL/URBAN
- RESIDENTIAL
- RECREATIONAL/OPEN SPACE
- INFRASTRUCTURE
- WETLANDS
- WATER

0 0.125 0.25 0.5 Miles

AECOM

August 2014

Land Use: NJDEP, 2007

Coordinate System: NJ State Plane, Feet

Passaic River mile 0.0 to 3.5

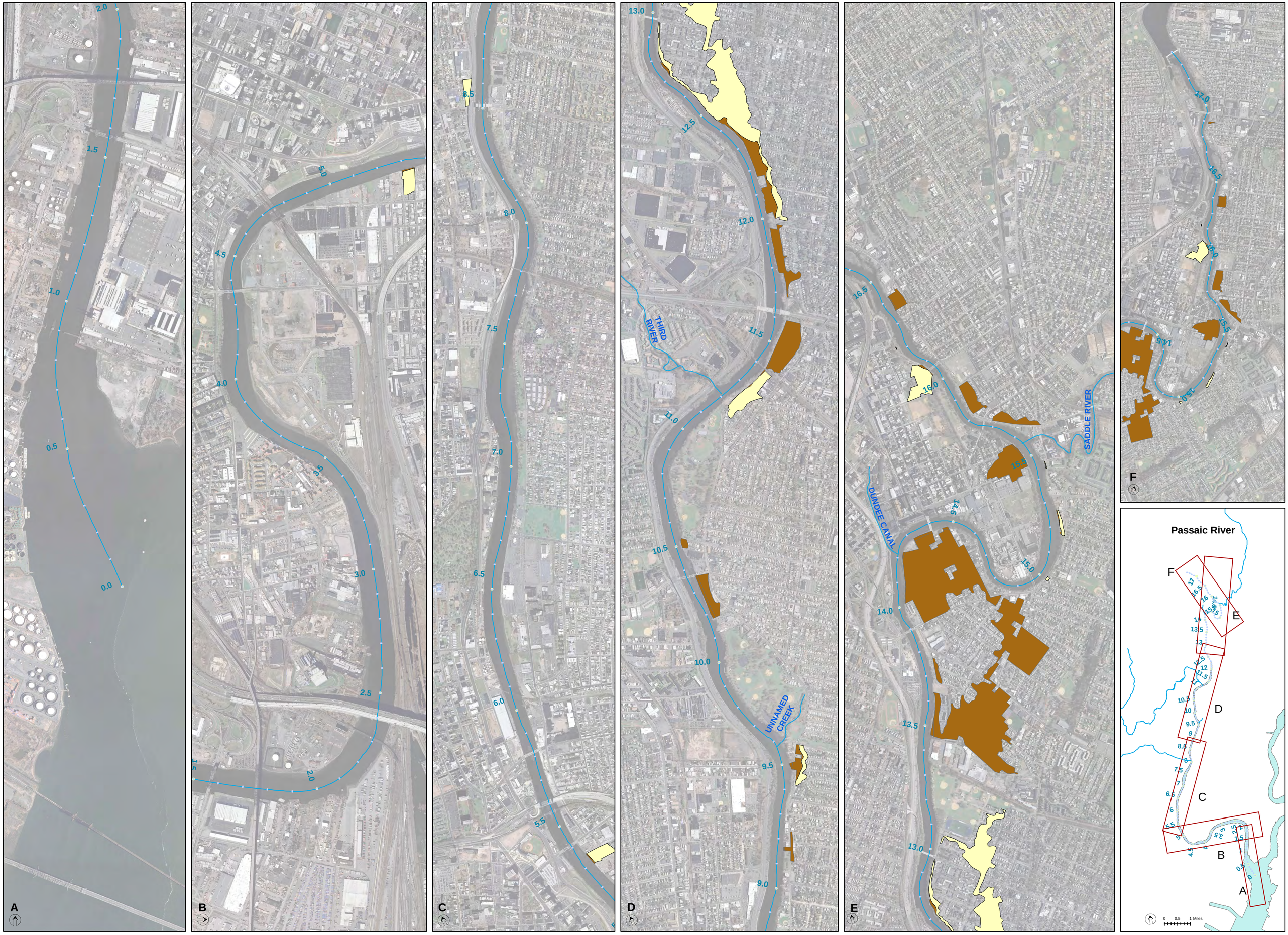

Figure 3-1. Potentially Flooded Residential Areas Abutting the LPRSA

0 0.25 0.5 0.75 1 Miles

Potentially Flooded Residential Areas

- 0.2% Annual Chance (500 year flood event)
- 1% Annual Chance (100 year flood event)
- Passaic River measured centerline (miles)

AECOM

August 2014
Ortho: NJOIT, OGIS: 2007-2008

Path: J:\Water\ProjectFiles\P120\12182_Passaic\Data\GIS\Tasks\RiskAssessment\ResidentialFloodplain.mxd

Exhibit B-1.
Basis for Site-Specific Receptor-Specific Exposure Parameters

Basis for Site-Specific Receptor-Specific Exposure Parameters

As noted in the main text of Attachment B, the United States Environmental Protection Agency (USEPA) provided the Cooperating Parties Group (CPG) with the exposure parameters to be used in the baseline human health risk assessment (BHHRA) for the Lower Passaic River Study Area (LPRSA). Exposure parameters for both Reasonable Maximum Exposure (RME) and a Central Tendency Exposure (CTE) scenario were provided by USEPA Region 2 in a *Technical Memorandum: Exposure Parameter Assumptions for the LPRSA Human Health Risk Assessment (Tech Memo)* and corresponding tables (USEPA 2010) and *Technical Memorandum: Revisions to Exposure Parameter Assumptions for the LPRSA Human Health Risk Assessment* (USEPA 2011a, 2012a,b).

As noted in responses to USEPA comments on risk planning documents and dispute resolution comments prepared by the CPG, many of the exposure parameter values directed by Region 2 for use in the baseline HHRA are not reasonable or representative of the LPRSA (AECOM 2011b). USEPA directed the use of exposure factors set at or above the high end of the range of possible values, and without regard to site-specific conditions. Application of these values in the baseline HHRA will result in an exaggerated estimate of site risk and cleanup levels that are unnecessarily stringent. To optimize development of realistic cleanup goals, it is critical that the methods and assumptions used to estimate risk be representative of the LPSRA. To address this need, the CPG has conducted a separate site-specific human health risk assessment (SSHHRA) to provide a more reasonable estimate of upper-bound risks. This has been accomplished by developing a more reasonable RME scenario using more realistic exposure parameters and more realistic set of exposure scenarios.

The use of site-specific data is a critical part of the risk assessment and risk management processes, and is consistent with guidance concerning risk management decisions at contaminated sediment sites articulated by the National Academy of Sciences (NRC 2001) and USEPA (2002, 2005). A site-specific approach is especially relevant for evaluating water-related recreational activities (e.g., fishing, swimming, boating) that depend on the characteristics of the water body and are often not well described by default exposure parameters. Site-specific risk evaluation requires knowledge of local receptor populations and their behaviors, as well as the characteristics of the site and surrounding area. The basis of the alternative site-specific RME exposure parameters used in the LPRSA SSHHRA for the swimmer, the wader, the boater, the angler, the resident, and the worker are discussed in this appendix to the SSHHRA. The site-specific exposure assumptions have been developed with the specific intent of characterizing the activities and behaviors that can reasonably be anticipated now and in the foreseeable future for people who recreate, live, and work adjacent to the LPRSA under an RME scenario.

The exposure assumption values selected were based on a review of numerous data sources, including local organizations and planning documents, scientific studies in the peer reviewed literature, human population studies, and exposure factors presented in USEPA guidance. The use of values from these sources is consistent with USEPA's Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency (USEPA 2002), which identify information suitable for inclusion in risk assessments as "the best available science and supporting studies conducted in accordance with sound and objective scientific practices, including, when available, peer reviewed science and supporting studies." Further, the selected values represent a mix of upper bound and central tendency estimates that, when combined, provide a conservative estimate of exposure that is above the average case but still within the range of possible exposures and consistent with the concept of RME (USEPA 1989b, 1992b, 2004a).

The RME is a high-end or upper estimate of exposure that, when combined with toxicity information, leads directly to the RME estimate of risk defined by EPA guidance (1992) as "… a plausible estimate of the individual risk for those persons at the upper end of the risk distribution. The intent of this description is to convey an estimate of risk in the upper range of the distribution, but to avoid estimates which are beyond the true distribution." The RME, an estimate of the upper range of exposure in a population, is based on a combination of the upper and central estimates of exposure parameters representing the 90th percentile or greater of actual expected exposure (EPA, 1995b).

Section 1.1 presents general exposure parameters common to all receptors. Sections 1.2 through 1.7 present the technical basis for the receptor-specific exposure parameter values used for each of the six receptors evaluated in the SSHHRA:

- 1.2 Swimmer
- 1.3 Wader
- 1.4 Boater
- 1.5 Angler
- 1.6 Resident
- 1.7 Worker

1.1 General Exposure Parameters

Exposure parameters common to all receptors and pathways (body weight and exposure duration) are discussed below.

1.1.1 Body Weight

In accordance with USEPA (1989b), the value for body weight is the average body weight over the exposure period. There is extensive data on human body weight, much of which has been compiled in *EFH* (USEPA 2011b). The *EFH* provides recommended body weights for adults and children, which are based on data derived from the National Health and Nutrition Examination Survey (NHANES) for the years 1999-2006. The NHANES study is a nationally representative sample of the U.S. population, with participants selected using a probability-based sampling design, and has been continuously conducted since 1999. Since the 2011 update to *EFH*, more recent anthropometric reference data for U.S. children and adults collected under NHANES for the years 2007-2010 have been published by the National Center for Health Statistics (Fryar et al. 2012)[1]. Not only are these data more recent, they are provided for each year of a child's age from birth to 19 years, unlike the body weight data in *EFH*, which are weighted averages for multi-year age groups (e.g., 3<6 yrs, 6<11 yrs). The use of single year body weight data rather than averages for multiple years of age allows for calculation of age group specific body weights on a more refined basis. Therefore, the NHANES 2007-2010 body weight data (Fryar et al. 2012) have been used to estimate body weights for all child age groups in the SSHHRA. Consistent with the approach in *EFH*, the average of the body weights for males and females for each year of age is used to calculate the average receptor body weight over the exposure period.

National values are typically used, unless a specific population that differs from the nation as a whole is targeted. Since the receptor population in the vicinity of the LPRSA is not expected to differ from the rest of the U.S., national average body weight values are used. Body weights are presented below for the following four child age groups evaluated in the SSHHRA:

- Young Child (1 to <7 years, from 1st birthday to the day before 7th birthday)
- Adolescent (7 to <19 years, from 7th birthday to the day before 19th birthday)
- Older Child (7 to <14 years, from 7th birthday to the day before 14th birthday) – boater scenario only
- Teenager (14 to <18 years, from 14th birthday to the day before 18th birthday) – boater scenario only

1.1.1.1 Young Child

The selected body weight for young children receptors is 17 kilograms (kg) and was calculated as follows:

[1] The NHANES 2007-2010 sample included participants of all ages. Those aged 60 and over, Hispanics, Blacks, and those with low incomes were oversampled to improve the precision of the statistical estimates for these groups (Fryar et al. 2012).

Age (Years)	Young Child (Age 1 to <7 years) (kg)
1<2 yr	11.1
2<3 yr	13.7
3<4 yr	16.0
4<5 yr	18.1
5<6 yr	21.2
6<7 yr	24.0
Average	17

1.1.1.2 Adolescent, Older Child, and Teenager

Adolescent receptors included in the SSHHRA include children ranging in age from 7 to <19. For the boater scenario only, the adolescent age group is split into two age groups (older child, age 7 to <14 and teen, age 14 to <18), which is consistent with the approach used in the BHHRA. The selected body weights for each age group were calculated as follows:

Age (Years)	Adolescent (Age 7 to <19 years) (kg)
7<8	26.8
8<9	31.6
9<10	36.1
10<11	40.6
11<12	47.1
12<13	51.9
13<14	58.0
14<15	62.8
15<16	66.7
16<17	68.8
17<18	70.6
18<19	73.4
Average	53

Age (years)	Older Child (Age 7 to <14 years) (kg)
7<8	26.8
8<9	31.6
9<10	36.1

Age (years)	Older Child (Age 7 to <14 years) (kg)
10<11	40.6
11<12	47.1
12<13	51.9
13<14	58.0
Average	42

Age (Years)	Teenager (Age 14 to <18 years) (kg)
14<15	62.8
15<16	66.7
16<17	68.9
17<18	70.6
Average	67

1.1.1.3 Adult

The selected body weight for adult receptors is 80 kg, which is the national average for male and female adults (USEPA 2011b, 2014). This adult body weight is 10 kg greater than the 70 kg body weight typically used in human health risk assessments for the past several decades, and will result in a lower but more realistic estimated potential risk. However, USEPA notes in the *EFH* that a body weight that best represents the population to be evaluated should be used. USEPA's 2011 *EFH* update suggests that body weight of US adults has increased over the past decades, and provides a recommended mean body weight for adults of 80 kg (USEPA 2011b). USEPA's recently published update to the Standard Default Exposure Factors also recommends a default body weight of 80 kg (USEPA 2014). According to health statistics published by the New Jersey Department of Health and Senior Services (NJDOH), the percentage of New Jersey resident adults who are overweight is one to two percentage points above the national rate (NJDOH 2014a). In addition, the mean (self-reported) body weight of anglers who were interviewed in the CPG's 2011-2012 CAS is 80 kg. For these reasons, 80 kg is the mean body weight that best represents adults at the LPRSA and is used in the site-specific risk calculations.[2]

1.1.2 Exposure Duration

Exposure duration (ED) is the estimate of the total time of exposure (in years) that a receptor engages in a particular activity that could result in exposure. To estimate residential exposure duration, both the total occupancy period for individuals in the target population and the likelihood that at the end of each occupancy period the individual moves out of the four-county LPRSA must be known. Estimating exposure duration (i.e., residence time/occupational mobility/exposure duration) is complicated by a number of factors, including data availability and the statistical treatment of the data. Few studies are available with which to estimate population mobility within a targeted area,

[2] Some carcinogenic toxicity factors are based on scaling from the body weight of test animals to a human body weight of 70 kg. Scaling of these values to a human body weight of 80 kg would result in lower (less toxic) carcinogenic toxicity factors. Using unadjusted carcinogenic toxicity factors with the current standard adult body weight of 80 kg results in a slightly more conservative risk estimate for these chemicals.

and the use of county data requires a detailed analysis that accounts for age at onset, mortality, and county-to-county mobility.

The *EFH* (USEPA 2011b) recommendation of 33 years for residential occupancy period is based on a methodology developed by Johnson & Capel (1992) to estimate the distribution of the residential occupancy period in the United States. Residential occupancy period is defined as the time between when a person moves into a residence and the time a person moves out or dies. A probabilistic approach was used to simulate the residential occupancy period for 500,000 people using 1987 data on population, mobility, and mortality. Based on these methods, a mean of 12 years and a 95th percentile of 33 years residential occupancy period were developed. In USEPA's 2014 recommended default exposure factors, USEPA identifies 26 years as the upper bound default for residential exposure duration (USEPA 2014). For the SSHHRA, the 95th percentile of 33 years is used because of the potential for someone to move to a new residence within the four-county Study Area, but still visit the LPRSA.

For the worker receptor, the value recommended by USEPA for occupational mobility for all ages (> 16 years, average of males and females), which is a median value of 6.6 years is used (Table 16-82, USEPA 2011b). The exposure durations selected for the SSHHRA are as follows:

Receptor	Age Group (years)	Exposure Duration (Years)	Notes
Swimmer, Wader, Angler, Resident	Young Child (age 1 to <7)	6	Based on age range of receptor
	Adolescent (age 7 to <19)	12	Based on age range of receptor
	Adult	15	Total of 33 years minus young child and adolescent
Boater	Older Child (age 7 to <14	7	Based on age range of receptor
	Teenager (age 14 to <18)	4	Based on age range of receptor
	Adult	33	The boater receptor is 3 separate individuals, such that cancer risks would not be cumulative across age groups. Therefore, the full 33 year exposure duration is applied to the adult boater.
Worker	Adult	6.6	Mean occupational tenure (USEPA 2011b)

Averaging time for potential carcinogens is equal to the assumed lifetime, which is 78 years for the United States[3], (USEPA 2011b) multiplied by 365 days. Averaging time for noncarcinogens is equal to the exposure duration multiplied by 365 days. Because of the differences in activity patterns and sensitivity to potential constituent exposures, various age groups for the recreational and residential receptors are evaluated as listed above. Since the

[3] Life expectancy for the four counties surrounding the LPRSA (Bergen, Essex, Hudson, and Passaic) is 79 years (males and females, all races and ethnicities) based on county level data from the New Jersey Department of Health (NJDOH 2014b).

averaging time for noncarcinogens is equal to the exposure duration, potential noncarcinogenic hazards will be calculated separately for each age group. Because carcinogenic effects are assumed to be additive over a lifetime, potential carcinogenic risks for the young child, adolescent, and adult age groups for each receptor are summed, except for the boater. As noted above, the age groups for the boater are assumed to be three separate receptors.

1.2 Swimmer

1.2.1 Exposure Frequency for Contact with Sediment and Surface Water

Based on the absence of areas conducive to swimming and other deterrents that are unlikely to change in the foreseeable future, it is assumed that adult and young child swimmers use the LPSRA for swimming once every two weeks during the 13 summer weeks in June, July and August (7 days/year). It is assumed that adolescent swimmers use the LPSRA for swimming once per week during the 13 summer weeks (13 days/year). The exposure frequency for the adolescent swimmer is higher than for the young child and adult, based on the assumption that older children are more likely to visit and play alongside the river independent of their parents than a young child. Swimmers are assumed to access the LPSRA once per day on the days they are assumed to be exposed.

1.2.2 Surface Water Exposure Time

In *Dermal Exposure Assessment: Principles and Applications* (USEPA 1992a), USEPA stated that no reliable data on swimming event duration (t_{event}) and frequency could be found and recommended that assessors make their own site-specific judgments, considering factors such as geography, proximity or availability of surface water for recreation, and seasonal factors. USEPA (1992a) concluded that a reasonable average value for a recreational swimmer may be 5 days/year for 0.5 hours per event (1 event/day). More recent data on human activity patterns obtained from the National Human Activity Pattern Survey (NHAPS) (USEPA 1996) included diary-based data on various activities, including swimming time." For the population of "doers only," (all ages, males and females combined) the median time spent swimming in a freshwater pool was 60 minutes per month, with 10th and 90th percentiles of 15 minutes and 180 minutes per month (Table 16-42, USEPA 2011b). However, these data are for freshwater swimming pools, and bear little relevance to an urban river environment, such as the LPRSA. Given the absence of areas in the LPRSA that are conducive to recreational swimming, the duration of a swimming event is assumed to be very brief (e.g., up to 15 minutes, or 0.25 hr/event). Note that t_{event} is relevant only to the calculation of dermal dose for surface water and is not used in estimating ingestion dose or dermal dose for sediment.

1.2.3 Sediment Ingestion Rate and Fraction Ingested

While swimming, it is assumed that a small amount of sediment may be inadvertently ingested due to sediment adhering to the skin while swimming and is subsequently ingested via hand-to-mouth contact. Due to a lack of studies of sediment ingestion, sediment ingestion rates are based on soil ingestion studies that involve skin adherence and subsequent oral ingestion (USEPA 2011b). The USEPA's default soil ingestion rates include both an outdoor soil and indoor [soil-derived] dust component. Since indoor dust exposure is not relevant for recreational outdoor sediment exposures (generation of dust is not expected for soil/sediment that is damp or wet), this component of the soil ingestion should not be included. In addition, most sediment is expected to wash off of exposed body parts during swimming and other water contact activities (USEPA 2004b). Thus, central tendency soil only ingestion rates for the general population are used to estimate sediment ingestion. A sediment ingestion rate of 20 milligrams per day (mg/day) is selected for the adult swimmer (USEPA 2011b). A sediment ingestion rate of 50 mg/day is selected for the child and adolescent swimmer, which is the recommended soil only central tendency rate for children aged 1 to <6 years and 6 to <21 years (USEPA 2011b). Because of the lack of relevant ingestion studies specific to sediment exposures, the above sediment ingestion rates are assumed to also apply to the wader, boater, angler, worker, and resident receptors under the site-specific alternate RME scenario.

USEPA guidance (1989b) allows for the use of a fraction ingested (FI) term to account for the possibility that not all of a receptor's daily exposure to an environmental medium occurs at the site. The use of FI is particularly relevant for evaluating receptors who visit a site and may receive only part of their total daily intake of soil/sediment during that

visit (e.g., recreators). For the SSHHRA, it is assumed that on days when the recreational receptors visit the LPRSA, one-half of their total soil/sediment intake is from the LPRSA, and one-half is from other off-site locations (e.g., residential yards, school). Therefore, the fraction of sediment assumed to be ingested from the LPSRA is 0.5 for all of the recreational receptors.

1.2.4 Surface Water Ingestion Rate

While swimming, it is assumed that a small amount of surface water may be inadvertently ingested. The *EFH* (USEPA 2011b) recommends a mean surface water ingestion rate of 49 mL/hour while swimming for children under 18. This estimate is based on a study of swimming pool experiments, but it is noted that swimming pool behavior may be similar for freshwater swimmers. Based on the hourly intake rate of 49 mL/hour for children and a 0.25 hour duration swimming event, the amount of surface water ingested per swimming event is 12.25 mL for young child and adolescent swimmers. For adults, the incidental ingestion rate is 21 mL/hour as recommended by USEPA (2011b).

1.2.5 Body Surface Area Exposed to Sediment

During swimming, it is assumed that the entire skin surface area will contact surface water. Consistent with USEPA's guidance (2004b, 2011b), the average whole body surface areas for the general U.S. population are used for this exposure variable (see Exhibit B-1 Tables 1 and 2 for body surface area calculations):

- Adults = 19,550 cm^2 (USEPA 2011b, mean of adult males and females,)
- Adolescents = 14,825 cm^2 (calculated per USEPA (2011b) using mean data specific to 7 to <19 year olds)
- Young Children = 7,500 cm^2 (calculated per USEPA (2011b) using mean data specific to 1 to < 7 year olds).

Swimmers may come into contact with sediment as they enter and leave the river, although most sediment is expected to wash off of the body upon exiting the water (USEPA 2004b). For the evaluation of potential risk from direct contact with sediment during swimming, it is assumed that some sediment remains adhered to the skin surface after the swimming event. For the adult and adolescent swimmers, sediment is assumed to remain in contact with the lower legs and feet. For the young child, more of the body surface is assumed to remain in contact with sediment, including the hands, forearms, lower legs, and feet.

The exposed body surface area calculations are presented below; Exhibit B-1, Table 1 presents the detailed calculation of the weighted averages for each body part for child and adolescent receptors. Exhibit B-1, Table 2 presents the calculation of the average male and female mean surface area for each body part for adult receptors. The exposed skin surface area of these body parts for adults is 3,800 square centimeters (cm^2), the average of the mean for adult males and females (USEPA 2011b). The exposed skin surface area for adolescents is 2,884 cm^2, based on the weighted average surface area for males and females aged 7 to < 19 years (USEPA 2011b). The exposed skin surface area for young children is 2,184 cm^2, based on the weighted average surface area for children aged 1 to < 7 years (USEPA 2011b).

Body Part	Calculation of Body Surface Area Exposed to Sediment for Swimmers (cm^2)		
	Young Child (a) (1-<7 years)	**Adolescent (a) (7 to <19 yrs)**	**Adult (b)**
Hands	421	NA	NA
Forearms (c)	451	NA	NA
Lower legs (c)	781	1,802	2,505
Feet	531	1,082	1,295
Totals	2,184	2,884	3,800

Body Part	Calculation of Body Surface Area Exposed to Sediment for Swimmers (cm^2)		
	Young Child (a) (1-<7 years)	Adolescent (a) (7 to <19 yrs)	Adult (b)
Notes: NA - Not applicable. Body part is not assumed to be exposed to sediment. (a) - Data from USEPA (2011b). Based on mean total body surface area males and females combined (Table 7-1) and mean percentages of total surface area for individual body parts (Table 7-2). See Exhibit B-1 Table 1 for detailed calculation of weighted averages for child body parts. (b) - Data from USEPA (2011b). Tables 7-12 and 7-13. Mean, average of males and females. See Exhibit B-1 Table 2 for calculations. (c) - In accordance with USEPA (2004b), 0.45 of arms surface area used for forearms and 0.40 of legs surface area used for lower legs.			

1.2.6 Sediment Dermal Adherence Factor

To account for differences in adherence for different parts of the body, an area-weighted adherence factor is calculated using body part-specific adherence levels. For each receptor, the skin surface area of each exposed body part is multiplied by its body part-specific adherence factor to yield a total mass adhered to that body part. The total masses are then summed for all exposed body parts, and then divided by the total body surface area exposed to derive the area-weighted adherence factor.

The *EFH* (USEPA 2011b) recommends sediment adherence factors for adolescents and children based on a study of children engaged in shoreline play on tidal flats. This activity most accurately reflects the anticipated activity of receptors along the Passaic River. However, review of the original study by Shoaf et al. (2005), and discussions with Dr. Shoaf, revealed that the sediment in the study had a higher grain size than is typically found in the sediment from the banks of the LPRSA; 71% of the sediment in the Shoaf et al. study (2005) was characterized as medium to very coarse sand (grain size of 0.25 to 1.999 mm). Only 0.77% of the total sample mass was characterized as clay or silt. In contrast, LPRSA sediment near the banks is typically soft, organically enriched silt; while firmer, coarser sediment is observed in the deeper mid-section of the river (Germano & Associates 2005). Site-specific grain size data (AECOM [in prep]) indicate that on average along the 17.4-mile study area more than 40% of surface sediment mass was characterized as fines (i.e., clay or silt). The adherence of sandy sediment as characterized in the Shoaf et al. (2005) study may not accurately reflect adherence of finer-grain sediment. USEPA (USEPA 2004b, 2011b) also recommends adherence data from several other studies, including children playing indoors, at daycare, in dry soil, in wet soil, in mud, during gardening, and while playing soccer. The activity and conditions that most closely align with receptor activities along the LPRSA is children playing in wet soil. Therefore, the adherence factor selected for children and adolescent receptors was calculated in Exhibit B-1, Table 3 based on the 50th percentile surface area weighted soil adherence data for children playing in wet soil (USEPA 2004b, Exhibit 3-3).[4] The soil-to-skin adherence factor (SAF) for children is 0.30 mg/m^2 and the SAF for adolescents is 0.26 mg/m^2.

[4] An implicit assumption in the dermal dose model is that exposure (and absorption of contaminants by the skin) occurs for each event in which soil/sediment contacts the exposed body surface area without regard to the duration of the exposure event. This is a conservative assumption, as desorption of contaminants from soil/sediment is a slow diffusive process driven by the magnitude of the concentration gradient between internal regions where contaminants are sequestered and the solid surface where a low concentration imaintained (Shor et al. 2004). Further, not all of the contaminant measured in the soil may be absorbed into the skin for various reasons, including matrix effects, volatilization, loading on skin, washing or abrasion of soil/sediment from skin, etc. (Spalt et al. 2009).

For adult receptors, the reed gatherer has been selected as the most appropriate high-end contact activity, and the geometric mean adherence data are used. The reed gatherer data is based on a study of adults on tidal flats. The calculation of the adherence factor of 0.32 mg/m^2 is presented in Exhibit B-1, Table 4.

1.3 Wader

1.3.1 Exposure Frequency for Contact with Sediment and Surface Water

It is assumed that an adult and young child wade in the LPSRA with equal frequency, once every two weeks during the 13 summer weeks (7 days/year). As with the swimmer receptor, the adolescent is assumed to wade in the LPSRA more often than the young child and adult receptor, at a frequency of three times every two weeks during the 13 summer weeks (20 days/year).

1.3.2 Surface Water Exposure Time

Waders are assumed to access the LPSRA once per day and wade for a brief period of time (up to 30 minutes, or 0.5 hr/event).

1.3.3 Sediment Ingestion Rate and Fraction Ingested

As discussed in Section 1.2.3, a sediment ingestion rate of 20 mg/day has been selected for adults (USEPA 2011b) and a sediment ingestion rate of 50 mg/day has been selected for children (USEPA 2011b), and the fraction of sediment ingested from the LPSRA is assumed to be 0.5. As noted in Section 1.2.3, the sediment ingestion rates are based on soil only, not including indoor dust ingestion.

1.3.4 Surface Water Ingestion Rate

Estimates of incidental water ingestion that occurs during water recreational activities other than swimming are not provided in USEPA guidance. However, a study of incidental water ingestion during limited-contact recreation was identified in the peer reviewed literature (Dorevitch et al. 2011). Self-reported estimates of incidental water ingestion were obtained from approximately 2,700 people (6 years of age or older) who were canoeing, kayaking and fishing in Chicago area surface waters. A second study evaluated 662 people in swimming pools involved in full contact (i.e., swimming) and limited contact recreational activities, such as canoeing, kayaking (including capsizing), simulated fishing, and wading/splashing. The surface water study was an observational design study with no time limit on the duration of the activity. The swimming pool study was a controlled exposure design of 60 minutes and a 24 hour subsequent urine analysis to measure levels of cyanuric acid (a tracer of swimming pool water). Of the surface water participants, less than 2% reported swallowing a teaspoon or more, and less than 0.5% reported swallowing a mouthful or more (Dorevitch et al. 2011). Overall, swimmers were about 25-50 times more likely to report swallowing a teaspoon of water compared to participants in limited-contact recreational activities.

The authors report mean and upper confidence limit for incidental surface water ingestion rates of 3-4 mL per event and 10-15 mL per event, respectively, for limited-contact recreational exposures to surface water (e.g., canoeing, kayaking, fishing) (Dorevitch et al. 2011). The midpoint of the upper confidence limit rate (13 mL per event) was adopted as the site-specific surface water ingestion rate for non-swimming exposure scenarios at the LPRSA. The surface water ingestion rate of 13 mL per event is selected for all non-swimming recreational receptors (wader, boater, resident) and age groups. .

1.3.5 Body Surface Area Exposed to Sediment and Surface Water

The exposed skin surface for sediment and surface water is assumed to be limited to the lower legs and feet for adult and adolescent receptors and the hands, forearms, lower legs, and feet for young child receptors. The exposed skin surface area of these body parts for adults is 3,800 cm^2, the average of the mean for adult males and females (USEPA 2011b). The exposed skin surface area for adolescents is 2,884 cm^2, based on the weighted average surface area for males and females aged 7 to < 19 years (USEPA 2011b). The exposed skin surface area for

children is 2,184 cm^2, based on the weighted average surface area for children aged 1 to < 7 years (USEPA 2011b). These are the same surface areas assumed for dermal contact with sediment for the swimmer; the calculation of these values was presented in Section 1.2.5.

1.3.6 Sediment Dermal Adherence Factor

Because the swimmer and the wader are assumed to be potentially exposed to sediment based on the same exposed body parts, the same adherence factors derived in Section 1.2.6 for the swimmer apply to the wader receptor:

- Adults - 0.32 mg/m^2
- Adolescents (7 to < 19) – 0.26 mg/m^2
- Young Children (1 to < 7) – 0.30 mg/m^2

1.4 Boater

1.4.1 Exposure Frequency for Contact with Surface Water

While canoeing and kayaking in the LPRSA is currently an occasional activity (National Park Service 2010), it is possible that paddling will increase in the future with increased access to boat docks and awareness of this sport. Thus, the exposure frequency selected for the canoe/kayak scenario is based on the assumption that future conditions may be more conducive to recreational paddling than current conditions. The older child boater (canoe/kayak scenario) is assumed to boat once a week during the three summer months (13 days/year). The teenage sculler is assumed to row on the LPRSA 98 days per year. This exposure frequency is based on a high school spring rowing season of 14 weeks (March through May), a fall rowing season of 10 weeks (September through mid-November) and as much as 4 to 5 days/week of rowing (Passaic River Rowing Association 2010; Nereid Boat Club 2010). Adult rowers may row from early spring until late fall (about 37 weeks). An avid rower may row several times per week or more during this period (Nereid Boat Club 2010), and a more recreational rower once per week. An exposure frequency of 148 days per year (4 days per week for 37 weeks) has been selected for the adult rower.

1.4.2 Exposure Frequency for Contact with Sediment

Because of differences in the ways in which canoes/kayaks and sculls/crew boats are boarded, the exposure frequencies for sediment are assumed to differ for these two boating scenarios. Rowers always use a dock for ingress and egress so their exposure to sediments and the water is less than paddlers who often use the existing shoreline to get onto and out of the water (National Park Service 2010). Because of that, there is a greater potential for paddlers to get their lower legs and hands wet and in contact with sediment on the shoreline and on the bottom of their boats. Note that sediment exposure for canoeists/kayakers is minimized in the LPRSA due the fact that most of the public access points below Dundee Dam are concrete ramps or docks (National Park Service 2010).

Based on the manner in which sculls are boarded, contact with sediment by rowers is expected to be limited to an occasional capsize event. The USEPA CTE estimates of 2 days per year for teenage rowers and 4 days per year for adult rowers are selected for sediment exposure frequency. The same exposure frequency selected for surface water exposure (13 days/year) is also selected for sediment exposure by canoe/kayakers.

1.4.3 Surface Water Exposure Time

Boaters are assumed to access the LPSRA once per day on the days they are assumed to be exposed. The duration of a canoe or kayak event for an older child boater is assumed to be two hours (2 hrs/event). The duration of a rowing event for an adult or teenage rower is also assumed to be two hours (2 hrs/event) based on typical rowing durations of one to two hours (Nereid Boat Club 2010). As noted previously, event duration is used only in the calculation of potential exposures to surface water via dermal contact.

1.4.4 Sediment Ingestion Rate and Fraction Ingested

As discussed in Section 1.2.3, a sediment ingestion rate of 20 mg/day has been selected for adults (USEPA 2011b) and a sediment ingestion rate of 50 mg/day has been selected for children (USEPA 2011b). As previously discussed, the fraction of sediment ingested from the LPSRA is assumed to be 0.5.

1.4.5 Surface Water Ingestion Rate

As discussed in Section 1.3.4, a surface water ingestion rate of 13 mL per event has been selected for non-swimming recreational exposure scenarios, applicable to all age groups.

1.4.6 Body Surface Area Exposed to Sediment and Surface Water

Boaters may get wet from the splashing of oars, rough water, or wakes (Passaic River Rowing Association 2010). For dermal contact with sediment and surface water, the teenage and adult boaters that participate in sculling typically wear shoes and have indicated that when splashed by water, their exposure is usually limited to the hands, forearms, and sometimes the face (Nereid Boat Club 2010). For the site-specific evaluation of the boater scenario, the body surface area of scullers in regular contact with surface water throughout the duration of the rowing event is assumed to be the hands and forearms. For the adult sculler, this equates to a skin surface area of 2,255 cm^2, the average of the mean for adult males and females (USEPA 2011b). For the teenage sculler, this equates to a skin surface area of 2,006 cm^2, based on the weighted average surface area for males and females aged 14 to < 18 years (USEPA 2011b). Recreational boaters participating in canoeing or kayaking on the river could have a different exposure pattern from that of the scullers. They are assumed to go boating less frequently but may have their lower legs and feet exposed in addition to the other body parts identified for the sculler. Therefore, under the site-specific scenario, it has been assumed that the hands, forearms, lower legs, and feet are exposed for older child recreational boater/paddler. The resulting surface area of 3,890 cm^2 is based on the weighted average surface area of these body parts for children aged 7 to < 14 years (USEPA 2011b). While exposure to sediment is less likely than exposure to surface water for boaters, the same exposed surface areas derived for surface water are assumed to apply to sediment. The calculations are presented below.

Body Part	Calculation of Body Surface Area Exposed to Sediment and Surface Water for Boater		
	Older Child Paddler [(a)] (7 to <14 yrs)	**Teenager Rower [(a)] (14 to <18 yrs)**	**Adult Rower [(b)]**
Hands	666	917.5	980
Forearms (c)	747	1,088	1,275
Lower Legs (c)	1,525	NA	NA
Feet	952	NA	NA
Totals	3,890	2,006	2,255

Notes:

NA - Not applicable. Body part is not assumed to be exposed to sediment or surface water.

(a) - Data from USEPA (2011b). Based on mean total body surface area males and females combined (Table 7-1) and mean percentages of total surface area for individual body parts (Table 7-2). See Exhibit B-1 Table 1 for calculation of weighted averages for child body parts.

(b) - Data from USEPA (2011b). Tables 7-12 and 7-13. Mean, average of males and females. See Exhibit B-1 Table 2 for calculations.

(c) - In accordance with USEPA (2004b), 0.45 of arms surface area used for forearms and 0.40 of legs surface area used for lower legs.

1.4.7 Sediment Dermal Adherence Factor

Dermal adherence factors were calculated in Exhibit B-1, Tables 3 and 4 for the boater receptors using the same methods as used for the swimmer and wader, but with data applicable to the body parts exposed. The dermal adherence factors are:

- Adult Rower - 0.31 mg/m^2
- Teenage Rower (14 to < 18) – 0.31 mg/m^2
- Older Child Paddler (to < 14) – 0.29 mg/m^2

1.5 Angler

1.5.1 Fish Consumption Rate

The fish consumption rates for the SSHHRA are based on the results of the CPG's CAS of the LPRSA (AECOM 2011a, AECOM 2014a,b). The CAS was administered from September 16, 2011 to September 15, 2012, and included angler counts and on-site interviews. On 164 survey days, observations of anglers fishing throughout the Study Area were recorded, including location, gender, approximate age, and whether previously observed. On 136 survey days, interview teams were stationed at access sites to intercept anglers and capture information on fishing patterns, catch, species preferences, preparation methods, sharing, advisory awareness, fishing outside the LPRSA, as well as demographic characteristics. Intercepted anglers were asked what months they fish and how many times they fished the Study Area in the prior two months. The assignment of interviewers to access sites was based on a stratified random sampling design that took into account sampling weights based on angling activity observed during the angler counts (i.e., sites with more angling activity were more heavily weighted than those with less activity). Some anglers were intercepted on multiple occasions, while others were intercepted once over the survey year. Based on the survey results, angler-specific profiles were developed that incorporated information on each angler's fishing and consuming behaviors, as well as demographic characteristics.

A total of 381 angler interviews were completed. After matching intercepts of the same angler, a total of 294 unique anglers were identified. Of these, 25 indicated they ate LPRSA fish or kept fish. The calculation of fish consumption rate for the SSHHRA is based on the data provided by these 25 consuming anglers. An additional analysis that considers individuals who refused interviews, but were observed leaving with catch (referred to as Missed Creel Reports (MCR)), is also evaluated.

The estimate of the RME consumption rate used in the SSHHRA is taken from the distribution of consumption rates for the population of consuming anglers. Sampling weights derived for each angler intercepted during the CAS (discussed below) are used to estimate the consumption rates for the entire population of consuming anglers. The consumption rates for the SSHHRA are taken from population statistics for consuming anglers. The 90th percentile rate is selected for the adult angler, which is consistent with the RME statistic selected by USEPA for the BHHRA (USEPA 2012b). The steps used to derive the adult fish consumption rate are summarized below. The approach follows the data analysis plan presented in the CAS Work Plan (AECOM 2011a). The calculation tables are provided in this Exhibit B-1, Tables 5 through 9.

1. <u>CALCULATION OF ANGLER CONSUMPTION RATES</u>

The calculation of the angler's annual fish consumption rate relies on the following:

A. number of fishing trips per year to the LPRSA
B. probability of catching fish
C. probability of keeping fish
D. edible catch per trip, which is based on:

- species preferences
- number of fish consumed
- weight of fish consumed
- parts of fish consumed
- number of people consuming fish

Each of these inputs varies across anglers, as well as for an individual angler who takes multiple fishing trips over time. For the SSHHRA, conservative but realistic values based on the CAS findings were used for the above inputs to calculate each angler's annual catch in grams per year. The approach used to estimate each of the above four variables is described below.

A. Number of Fishing Trips per Year to the LPRSA

The number of fishing trips per year to the LPRSA is taken from trip profiles for each intercepted angler that were developed using a statistical model. The trip profile provides the predicted number of LPRSA trips for each month of the year, and is based on:

- data reported by the angler during the interview(s) (e.g., months typically fish, number of trips to the LPRSA in the prior two months, types and times of day typically fish),
- intercepts and counts (observation but no interview) of the angler, and
- behaviors of other anglers with characteristics similar to the angler (e.g., age, race, distance from home, seasonal and daily fishing patterns, advisory awareness).

Based on the modeling analysis, the estimated number of LPRSA fishing trips for the group of consuming anglers that were interviewed ranges from 2 or 3 trips per year to nearly 50 trips per year.[5] Exhibit B-1 Table 5 presents the trip profiles for the consuming anglers that were interviewed during the CAS.

B. Probability of Catching Fish

The probability of catching fish on any trip is based on the survey data. Interviewed anglers reported catching fish on 149 of 374 trips, or approximately 40% of trips. Thus, the probability of catching fish on any trip is estimated to be 40%. In reality, the probability of catching a fish varies due to differences in the angler's ability, location, gear type, and trip duration, as well as species characteristics. Some species are present in the LPRSA on a seasonal basis (e.g., striped bass). Some species are more abundant and, therefore, easier to catch (e.g., white perch) and others are less abundant and harder to catch, assuming equal effort (e.g., northern pike). On average, however, the probability of catching any fish in the LPRSA over time is set at 40%.

[5] As part of the statistical modeling analysis, five different variance models were evaluated (0, 0.1, 0.5, 0.9, and 1.0), where 0 is the regression-based (R) estimate and 1 is the method-of-moments (D) estimate, and 0.1, 0.5, and 0.9 are hybrids that combine the two models. The method-of-moments based variance model leads to the lowest numbers of estimated trips and highest sampling weights (i.e., fewer trips, more anglers), while the regression-based variance model leads to the highest numbers of estimated trips and lowest sampling weights (i.e., more trips, fewer anglers). The hybrids (0.1, 0.5, 0.9) that combine R and D fall in-between. The estimates based on hybrid variance model 0.1 were selected for this analysis. The monthly trip estimates for hybrid variance model 0.1 are greater than the other two hybrid variance estimates and the method-of-moments estimates, but not as subject to potential bias as the full regression-based estimates. The impact of the other variance models on risk estimates is discussed in the uncertainty evaluation.

C. Probability of Keeping Fish

The probability of keeping fish if caught is also based on the survey data. Consuming anglers kept fish caught on half of the trips, indicating that not all fish caught by consuming anglers are kept. The reasons that fish were not kept included wrong species, too small, and health concerns (AECOM 2014b). For the site-specific risk calculations, the probability of keeping fish is conservatively set at 100%. The impact of assuming less than 100% probability of keeping fish is discussed in the risk characterization.

D. Edible Catch per Trip

Calculation of the angler's edible catch per trip depended on whether the angler was intercepted with kept catch. The general approach used in each case (with or without kept catch) is described below.

Anglers with Kept Catch

For anglers with kept catch, the calculation of edible catch per trip was based on the amount (in grams) of fish kept on the fishing trip, the parts consumed, and sharing. For anglers intercepted with kept catch, the number, species, and weight of each fish was recorded. The amount of edible catch per trip was estimated from the angler's responses regarding the parts of the fish that would be consumed and site-and species-specific data on fillet-whole body ratios. Edible catch for the angler was calculated by dividing edible catch per trip by the number of people the angler reported would be consuming the catch, assuming equal sharing (see Exhibit B-1 Table 6).

Anglers without Kept Catch

For anglers without kept catch, available data on species preferences and typical catch in terms of number of fish, size of fish, edible portion, and sharing were used to estimate edible catch per trip. For each species reported to be preferred by the angler, the following was performed (see Exhibit B-1 Table 7):

1. the number of that species of fish typically kept was estimated from the kept catch data,
2. the weight of the typical catch of that species was calculated by multiplying the number typically kept by the average weight of the species (based on CAS and LPRSA fish community survey data),
3. the edible weight of the catch was calculated using the site-specific fillet-whole body ratio, and
4. the edible weight of the catch was adjusted to account for sharing, if relevant for the species.

Angler responses regarding species preferences are summarized in a Technical Memorandum by AECOM (2014b). If the angler indicated a preference for only one species, the resulting edible catch weight for that species was used to impute edible catch per trip for all subsequent trips. If the angler indicated multiple species preferences, edible catch weight per species was summed for all preferred species and divided by the total number of species preferences.[6] This yielded an estimate of the average edible catch per trip based on the angler's preferred species (see Exhibit B-1 Table 8). Based on the survey data, on no occasion did an angler leave with more than two species of fish. Thus, for anglers with more than one species preference, the average edible catch per preferred species was multiplied by two to estimate edible catch per trip. This approach assumes the angler was successful at catching two different species of preferred fish on trips with catch, which is conservative. While catch is variable from trip to trip, use of an average catch per trip accounts for all species the angler may eat over a long period of time (i.e., years).

[6] Anglers were asked about their species preferences if they were intercepted with kept catch. For anglers without species preference data, the species most frequently reported as preferred by consuming anglers and for which tissue chemistry data are available, were assumed (catfish, carp, largemouth/smallmouth bass, and white perch).

The resulting estimate of the angler's edible catch per trip was used to impute edible catch per trip for all subsequent trips.

2. CALCULATION OF SAMPLING WEIGHTS

The statistical model was also used to estimate the sampling weight for each intercepted angler. The sampling weight is the inverse of the probability that the angler was interviewed one or more times during the survey. The angler's sampling weight is inversely proportional to avidity or the probability of being sampled. The more often the angler is predicted to fish, the higher the probability of being intercepted, and the lower the sampling weight. The sampling weights are used to estimate population statistics, including the consumption rate used in the SSHHRA, and the size of the target population(s). The use of statistical sampling weights to generalize the sample to the target population is discussed in USEPA guidance (2011b) and literature on angler survey data analysis (Ray et al. 2007a, Sheaffer et al. 2000, Price et al. 1994, Thomson 1991). The sampling weights derived for each angler are presented in Exhibit B-1 Table 9.

3. CALCULATION OF POPULATION STATISTICS

After calculating consumption rates for each intercepted consuming angler, the angler sampling weight was used to estimate consumption rates for the LPRSA consuming angler population. As previously noted, the sampling weight is a measure of the number of anglers in the total population that is represented by the angler sampled during the survey. The statistics of interest (mean, minimum, maximum, and 50th, 90th, and 95th percentiles) were calculated using the weighted consumption estimates.

In addition, by summing the sampling weights, the size of the consuming angler population is estimated to be 223 anglers with a standard error of 59.[7] The analysis of population consumption rates was also performed by including the six anglers who were observed leaving the LPRSA with catch but declined to be interviewed or were in a location that was not accessible to the interviewers (e.g., private property on the western side of Dundee Dam). The impact on consumption rates from including the MCR anglers with kept catch is negligible, as shown below in the table of population statistics. As previously noted, the 90th percentile consumption rate was used in the SSHHRA for the adult recreational angler. The use of the 90th percentile to represent the upper bound on recreational fish consumption is consistent with guidance (USEPA 1992b) and other risk assessments, including the Hudson River, Grasse River, and EPA's HHRA for the FFS of the lower 8 miles of the LPRSA.

	LPRSA Consuming Angler Population Statistics (grams/day)						
Population	**n**	**min**	**mean**	**percentile**			**Max**
				50th	**90th**	**95th**	
Consuming Anglers	223	0.9	5.7	4.8	8.4	21.0	29.9
Consuming Anglers + MCRs	270	0.9	6.0	5.7	8.6	13.0	29.9

[7]Based on the five variance models, the size of the population of LPRSA consuming anglers is estimated to range from approximately 178 to 306, and the size of the population of all LPRSA anglers is estimated to range from approximately 1456 to 3291. The consuming angler population size estimate of 223 is based on the hybrid variance model 0.1.

None of the anglers with kept catch reported that the fish would be shared with children. However, the SSHHRA has conservatively assumed that young children and adolescents also consume LPRSA fish brought home by their parents or that they caught themselves. The rates of fish consumption for young children and adolescents are assumed to be one-third and two thirds, respectively, of the adult rate, which is consistent with the approach used by USEPA (2012b).

1.5.2 Fraction Ingested for Fish

Since the fish consumption rate is based on anglers consuming LPRSA fish, the fraction of fish ingested from the source is assumed to be 1.

1.5.3 Cooking Loss for Fish

Loss of hydrophobic COPCs upon cooking is a recognized phenomenon that can have a significant effect on the calculated COPC exposure dose from tissue consumption by humans. Losses can vary with cooking method (e.g., broil, bake, pan fry), preparation method (e.g., trimmed/untrimmed, skin-on/skin-off), and species. It is unrealistic to assume that there is never any loss due to cooking or that the cooking juices are always consumed. Therefore, cooking loss factors for lipophilic organic chemicals in fish and crab tissue are used in the calculation of dose from consumption of fish and crab.

The following table summarizes the results of a detailed review of available studies on the mass loss of bioaccumulative organics from fish due to cooking. The chemicals included in the studies generally fell into one of three compound classes (PCBs, DDx, and PCDDs/PCDFs).

Statistic	Range of Mass Loss by Multiple Cooking Methods		
	PCBs	**Dioxin Compounds***	**DDx Compounds**
Median	0.30	0.48	0.32
Mean	0.32	0.48	0.34
Standard Deviation	0.17	0.12	0.18
Count of Values	79	11	70
Minimum	-0.17	0.28	0.03
10th Percentile	0.13	0.29	0.10
25th Percentile	0.20	0.46	0.21
50th Percentile	0.30	0.48	0.32
75th Percentile	0.42	0.55	0.41
90th Percentile	0.53	0.62	0.57
Maximum	0.74	0.63	0.80

Cooking method includes the following: deep frying, pan frying, baking/roasting, broiling/grilling, boiling/poaching, microwaving, and smoking. See AECOM (2012).

The studies, discussed in a Technical Memorandum by AECOM (2012), addressed a variety of fish species, including striped bass, carp, bass, catfish, perch, trout, flounder, salmon, walleye, and bluefish, and a variety of cooking methods, including baking/roasting, broiling, grilling, boiling, poaching, pan frying, deep frying, microwaving, and smoking. The data are sufficiently consistent and robust to support inclusion of a quantitative cooking loss factor in the assessment of exposure dose from consumption of fish. Based on the observation that the cooking loss results for each of the three categories of COPCs all fall into the same wide range, the case could be made for combining all studies into a single category of lipophilic organochlorine compounds and assigning one cooking loss factor to the entire set of compounds (with an expected value of approximately 0.34 when the data for all COPCs are fit to a probability distribution). However, in keeping with USEPA's approach of differentiating cooking losses between COPC classes, a similar approach was taken and median and mean cooking loss values were computed for the three

COPC classes. Based on analysis of the available data, the following estimates of cooking loss for each COPC were identified (AECOM 2012):

- **For total PCB mixtures**, cooking loss ranges from no loss to 74% loss across the 14 studies with relevant data. Median losses by cooking method ranged from 25% (bake/roast) to 39% (smoke), with a median of 30% when all PCB data are combined regardless of cooking method.
- **For dioxins, furans and coplanar PCBs**, cooking loss ranges from 28% to 63% across the four studies with relevant data. Median losses by cooking method range from 29% (boil/poach) to 57% (bake/roast), with a median of 48% when all dioxin and furan data (except an extreme value of 100%) are combined regardless of cooking method. Combining all dioxin, furan and dioxin-like PCB congener data also results in a median of 48%.
- **For DDx**, cooking loss range from 3% to 80% across the ten studies with relevant data. Median losses by cooking method range from 22% (boil/poach) to 45% (smoke), with a median of 32% when all DDx data are combined regardless of cooking method.

The median cooking loss values selected for use in the SSHHRA for estimating exposure dose from fish consumption are presented in the following table. Because of similarities in physical and chemical properties, the cooking loss value for DDx has also been used for the other organochlorine pesticides, including dieldrin, chlordane, and heptachlor epoxide.

Chemical	Cooking Loss
Chlordane	32%
Dieldrin	32%
DDx isomers	32%
Heptachlor epoxide	32%
Total PCBs	30%
TCDD-TEQ	48%

There is precedent for including cooking loss in the calculation of fish consumption risk, including for several large sediment site HHRAs. Cooking loss factors were included in the RME fish consumption scenarios at Housatonic River (25% for PCBs), Lower Fox River (50% for PCBs), and Kalamazoo River (50% for PCBs).

In its development of Fish Contaminant Goals (FCGs) and Advisory Tissue Levels, the State of California uses a cooking reduction factor to account for cooking loss for some chemicals:

> FCGs take into account organochlorine contaminant loss during the cooking process. The concentration of PCBs and other organic contaminants in fish are generally reduced by at least 30 percent, depending on cooking method… As such, a cooking reduction factor of 0.7 was included in the FCG equation for organic compounds (allowing for 70 percent of the contaminant to remain after cooking) (CalEPA 2008).

1.5.4 Consumption Rate for Crab

During the CPG's CAS, anglers were asked if they fish and/or crab in the LPRSA. Of the nearly 300 anglers interviewed, only three reported crabbing in the LPRSA, in addition to fishing (AECOM 2014a). Only one of the three anglers reported consuming LPRSA crab, and this angler reported that he was not aware of the advisory. The other two anglers reported that they do not eat LPRSA fish or crab. On the day interviewed, no anglers had any crabs in their possession. These site-specific data indicate that crabbing and crab consumption in the LPRSA is very limited.

Using the available data, however, it is possible to estimate a crab consumption rate for the intercepted angler who reported consuming LPRSA crab. The single angler that reported consuming LPRSA crab also fished in the LPRSA and was identified as a consuming angler. This angler was intercepted in August at Dundee Dam and reported crabbing in the LPRSA once last month (July) and once the month before that (June). This angler also reported fishing in the LPRSA twice last month (July) and four times the month before that (June). Assuming he crabs on one third of his LPRSA fishing trips (his predicted 5 total annual LPRSA fishing trips is 14.5 for the months of May, June, July and August), catches four to six crabs per trip, and the average edible tissue weight is 45 grams per crab, a crab consumption rate can be calculated. Using these conservative assumptions, and assuming no sharing, which is conservative as this angler reported sharing his fish catch with one other person, the resulting crab consumption rate is 2.4 to 3.5 grams of crab/day. This equates to about five LPRSA crab meals per year.

In comparison, USEPA (2012b) calculated a RME adult crab consumption rate of 21 grams/day based on the Newark Bay survey of Burger (2002), which is nearly ten times higher than the rate calculated for the LPRSA angler who reported eating LPRSA crab. The USEPA's crab consumption rate equates to harvesting 170 crabs per year from the LPRSA. Including the young child of the adult crabber, this equates to a total annual harvest of approximately 226 LPRSA crabs, or approximately 28 to 43 crab meals per year (assuming four to six 45 gram crabs per meal). This rate of crabbing is simply not supported by the LPRSA CAS or other angler surveys in the LPRSA.

During Tierra's 2000-2001 CAS of the lower six miles, five anglers reported catching crab; three reported catching them by accident, one caught two crabs but did not keep them, and the fifth kept three crabs on one of three intercepts (Ray et al. 2007b). This angler may have been keeping them for bait based on his response in an earlier intercept (Ray et al. 2007b). NJDEP has also found no crabbing occurring in the LPRSA. Based on unpublished data from 2002 and 2005 surveys of the Newark Bay Complex conducted by NJDEP, no LPRSA anglers or crabbers were observed or intercepted (AECOM 2011a).

The number of crabbers intercepted in Burger (2002) vs. the CPG's CAS further highlights the differences in level of crabbing between the two water bodies. A total of 110 Newark Bay crabbers and 33 anglers who fish and crab were interviewed during the four month survey (Burger 2002). In contrast, of the nearly 300 anglers interviewed during the CPG's year-long CAS, only three reported crabbing in the LPRSA, and only one of the three reported consuming LPRSA crab. The remaining 291 anglers reported only fishing in the LPRSA.

Based on the available data, crabbing activity in the LPRSA is and has been very limited, and this level of activity is unlikely to change in the foreseeable future, especially given the proximity of more desirable locations for crabbing. Thus, the use of consumption rates based on Newark Bay crabbing overestimates risk from LPRSA crab consumption. Given the limited data on crabbing and crab consumption in the LPRSA, this is addressed in the SSHHRA through the use of a fraction ingested for crab, as discussed below.

1.5.5 Fraction Ingested for Crab

Notwithstanding issues with the USEPA's analysis of Burger (2002) for developing a crab consumption rate (see AECOM 2011b and CPG's comments on the FFS), the rate is used in the SSHHRA in conjunction with a fraction ingested parameter to account for conditions in the LPRSA. A fraction ingested of 10% is used based on site-specific survey data indicating that crabbing in the LPRSA is extremely limited.

1.5.6 Cooking Loss for Crab

USEPA's FFS HHRA for crab consumption assumed that there is no loss of organic constituents from crab tissue during cooking or that the consumer always consumes the cooking juices. However, it is unrealistic to assume there is never any loss due to cooking or that the cooking juices are always consumed. Based on Zabik et al. (1992), an average of 30% of PCBs in crab muscle tissue are lost during cooking. Other lipophilic compounds are expected to behave similarly, based on similarities in their behaviors in other foods when cooked. Thus, a cooking loss factor of 30% cooking loss factor is used for all lipophilic organic constituents in crab tissue.

1.5.7 Exposure Frequency for Contact with Sediment and Surface Water

Most fishing in the LPRSA is from bulkheads, docks, bridges, or the river bank. On occasion, anglers may wade into the LPSRA while fishing and be exposed to river sediment and surface water. It is assumed that the adult wades while fishing once every week during the 13 summer weeks (13 days/year). The adolescent angler is assumed to wade in the LPSRA more often at a frequency of three times every week during the 13 summer weeks (39 days/year).

1.5.8 Surface Water Exposure Time

While the duration of fishing trips recorded during the CAS ranged from 10 to 15 minutes to 10 hours, the average fishing trip lasted approximately 2.4 hours (AECOM 2014a). It is unlikely that anglers would be in the water without waders or boots for the entire duration of their fishing trip. Anglers are assumed to enter the water and wade for one hour per fishing trip, or 1 hr/event.

1.5.9 Sediment Ingestion Rate and Fraction Ingested

As discussed in Section 1.2.3, a sediment ingestion rate of 20 mg/day has been selected for adults (USEPA 2011b) and a sediment ingestion rate of 50 mg/day has been selected for adolescents (USEPA 2011b), and the fraction of sediment ingested from the LPSRA is assumed to be 0.5.

1.5.10 Surface Water Ingestion Rate

As discussed in Section 1.3.4, a surface water ingestion rate of 13 mL per event has been selected for non-swimming recreational exposure scenarios, applicable to all age groups.

1.5.11 Body Surface Area Exposed to Sediment and Surface Water

As discussed in Section 1.3.5, the exposed skin surface area is 3,800 cm^2 for adults and 2,884 cm^2 for adolescents, which assumes the lower legs and feet are exposed (USEPA 2011b).

1.5.12 Sediment Dermal Adherence Factor

The same sediment dermal adherence factors derived in Section 1.2.6 for the swimmer apply to the angler receptor:

- Adults - 0.32 mg/m^2
- Adolescents (7 to < 19) – 0.26 mg/m^2

1.6 Resident

Residences and recreational areas (parks, ballparks) located within the floodplain of the LPR have experienced flooding in the past (e.g., Hurricane Irene) resulting in the potential deposition of river sediment in low-lying areas adjacent to the river. River sediment deposited on yards will become mixed with native soil over time by weathering, thereby reducing the potential for exposure. After Hurricane Irene, floodplain soil samples were collected by USEPA from several ballparks to estimate the potential concentrations of COPCs to which receptors could be exposed (USEPA 2011c, 2012c). These data have been used as a proxy for floodplain soil concentrations that could be present in residential yards adjacent to the LPR. Exposure assumptions for the floodplain soil scenario are discussed below.

1.6.1 Exposure Frequency for Floodplain Soil

It is assumed that the adult, adolescent and child resident is exposed to backyard floodplain soil on a regular basis, especially during warm weather days when people are more likely to engage in outdoor activities like gardening, landscaping, and play. A meteorological factor is generally used to account for the fraction of the year during which

exposure to constituents at the ground surface may occur (Sheehan et al. 1991; USEPA 1989b; IDEM 2012; PADEP 2002). It is reasonable to assume that direct contact with soil and dust generation will not occur during inclement weather, i.e., when it is raining or snowing, when the ground is wet or frozen, or when snow or ice (32 degrees F) are covering the ground. This does not imply that people are not outdoors on these days; simply that soils are not available for direct contact or as a source of dust generation on these days. Thus, the frequency of contact with soil is adjusted for these location-specific meteorological conditions (USEPA 1989b).

There are only a few metrics that can be used to describe the fraction of the year when meteorological conditions are likely to limit exposure. These include temperature and the amount of precipitation per day and per year, which includes rain, snow, and ice. The National Climatic Data Center (NCDC) provides daily temperature and precipitation data (NCDC 2013). It is assumed that exposure to soil is limited on days when the maximum temperature is less than 32 degrees F because the ground is frozen. The number of days with precipitation greater than 0.1 inches is selected as the best representation of when exposure is likely to be limited by snow, rain, or ice because the ground is wet or covered by snow/ice. The choice of a precipitation target of 0.1 inches is in keeping with guidance provided in the "Compilation of Air Pollution Emission Factors", which assumes that soil suspension will not occur on days with more than 0.01 inches of precipitation (USEPA 1995a). It is probable, however, that this metric both over- and under-estimates the potential exposure in some conditions. For example, it is possible that some exposure to soil may occur on days when it rains just over 0.1 inches in the early morning and then the ground dries during the course of the day. Alternatively, significant rainfall, such as greater than 1 inch, is likely to saturate the ground for consecutive days, and several inches of snow (which may fall all on one day with one storm) may cover the ground and inhibit direct contact for several days. With both of these considerations in mind, it is likely that a meteorological factor based on inclement days (i.e., days where the ground surface is unavailable for direct-contact) defined as precipitation greater than 0.1 inches and maximum temperatures less than 32 degrees F is reasonable.

Based on ten years of precipitation and temperature data (December 2003 to February 2013) for the National Weather Service (NWS) station at the Newark International Airport (NCDC 2013), a meteorological factor was derived for use in adjusting the exposure frequency for contact with floodplain soil in residential backyards. On the average, 64 days/year in this area receive 0.1 or greater inches of precipitation, and there are typically 13 days/year with a maximum temperature of 32 degrees Fahrenheit or below (i.e., the temperature never rises above freezing during the day). Accounting for days when both events occur (2 days), the number of inclement days, 75, can be calculated (64 +13 – 2). It is assumed that these days are evenly spaced throughout the course of the year. The meteorological factor is then calculated (75/350 = 21%)[8]. Thus, it is assumed that exposure to soil will not occur for the residential receptor on 21% of the assumed days of exposure (exposure frequency) due to the ground surface being unavailable for contact, not because receptors are not outdoors on these days. This results in an exposure frequency of 277 days per year for the RME residential floodplain soil scenario. The table below presents the derivation of the site-specific meteorological factor.

Precipitation Data (a)	
Station Location	Newark, NJ
Station ID (WBAN)	14734
Years	2003-2013
# Days/Year with Precipitation>=0.1 inch	63.8

[8] USEPA's default residential exposure frequency of 350 days/year is based on the presumption that residents are away from their home an average of two weeks of the year (USEPA 1991, 2014).

Temperature Data (a)	
Station Location	Newark, NJ
Station ID (WBAN)	14734
Years	2003-2013
# Days/Year with Max Temp<=32° F	12.5
Combined Data	
# Days/Year When Precipitation>=0.1" and Temp<=32° F	1.7
Calculations	
Met Factor To be Applied to Exposure Frequency (assuming 350 days/year)	21.3%

Notes:
(a) Hourly precipitation and temperature data were extracted from the Integrated Surface Database (ISD). The ISD was provided on ten separate CD/DVDs (one per year) by the National Climatic Data Center (NCDC), purchased at http://ols.nndc.noaa.gov/plolstore/plsql/olstore.prodspecific?prodnum=C00353-CDR-S0001. A description of the ISD can be found at http://www.ncdc.noaa.gov/oa/climate/isd/index.php.

The use of the meteorological factor does not imply that receptors are not outdoors on these days, only that exposure to the ground during those periods of precipitation greater than 0.1 inches and maximum temperatures less than 32 degrees F is negligible. It should be noted that this approach has precedence in regulatory risk assessment. Indiana (IDEM 2012) and Pennsylvania (PADEP 2002) have modified the default exposure frequency to 250 days per year to account for inclement weather in the development of soil screening levels for use in their environmental programs.

1.6.2 Floodplain Soil Ingestion Rate and Fraction Ingested

When characterizing RME exposures to residential soils, the USEPA's default upper-bound soil ingestion rates are 200 mg/day for young children (1 to 6 years of age) and 100 mg/day for older children and adults (USEPA 1991, 2014). These soil ingestion rates are intended to capture exposure to outdoor soil and household dust of outdoor soil origin (USEPA 1997, 2011b). The studies upon which these rates are based were conducted prior to USEPA's publication of the 1997 *EFH*. However, more recent and improved studies of soil ingestion published in the peer-reviewed literature indicate that these daily rates are overestimated. Because of improvements in study methodologies, the results of the more recent studies are more representative of potential backyard floodplain soil exposures to residential receptors. Specifically, two more recent studies published by the authors of the studies upon which USEPA based its upper-bound estimates provide the most objective information for use in deriving high-end estimates of daily soil intake.

Stanek et al. (1999) and Stanek and Calabrese (2000) published an updated study of soil ingestion by children. As described by Stanek and Calabrese (2000), this study implemented several improvements in study design and analytical procedures that occurred since the publication of their earlier papers. The advantages of this recent study included: (1) a relatively large study group (n = 64 children); (2) improved particle size measurements that focused attention on soil of smaller particle size; (3) a longer study duration (365 days); (4) randomized selection of participants; (5) the use of a relevant age group (1 to 4 year old children); (6) use of a random sample of the population for that age group; and (7) better control for input/output error. The soil ingestion rates reported by Stanek and Calabrese (2000) for these children were:

- A 95th percentile rate of 106 mg/day (when evaluated over a 365-day period);
- An arithmetic mean ingestion rate of 31 mg/day; and
- A median (50th percentile) ingestion rate of 17 mg/day.

This study also calculated the best linear unbiased predictors of the 95th percentile of soil ingestion over different time periods and reported the following results:

- Over a 7-day exposure period, the 95th percentile soil ingestion rate was 133 mg/day;
- Over a 30-day exposure period, the 95th percentile soil ingestion rate was 112 mg/day;
- Over a 90-day exposure period, the 95th percentile soil ingestion rate was 108 mg/day; and
- Over a 365-day exposure period, the 95th percentile soil ingestion rate was 106 mg/day.

These data suggest that, as the length of time that the children are studied increases and as the precision of the analysis improves (i.e., reduced uncertainty), the daily ingestion rates decline. This is reasonable due to the fact that daily fluctuations in soil ingestion rates will tend to average out over time. This narrowing of the distribution in the soil ingestion estimates when daily variability and uncertainty are reduced is not unexpected and is referred to as "regression to the mean" (Stanek and Calabrese 2000). As noted by Stanek and Calabrese (2000), these longer-term estimates are more appropriate when assessing risks and hazards associated with chronic exposure. Therefore, the upper-bound soil ingestion rate selected for the young child resident is 100 mg/day. The use of 100 mg/day as an upper-bound soil ingestion rate for children is consistent with the conclusions of Bierkens et al. 2011, who reviewed a variety of studies on soil and dust ingestion.

The same investigators have also published a more recent study of adults (Stanek et al. 1997). As with the child study, the more adult study included a number of improvements over the 1990 study upon which USEPA's default soil ingestion rates are based: (1) a larger number of subjects and days of participation; (2) improved study design that considered seven consecutive days of fecal sampling; (3) improved selection of soil tracers; (4) a broader range of soil ingestion validation; and (5) enhanced capacity for additional assessments including particle size of the soil ingested. The result was more reliable daily estimates of soil ingestion and a greater capacity for more reliable long-term modeling estimates. The study investigators have recommended that the upper 75th percentile of 50 mg/day from Stanek et al. (1997) is the most appropriate value to use as an estimate of high-end soil ingestion by adults due to an aberrant result causing the upper 95th percentile to be inflated. This adult rate is consistent with the mean soil ingestion rate of outdoor soil and indoor dust estimated by Davis and Mirick (2006). The adult data were more variable than the children data, possibly indicating an important occupational contribution of soil ingestion in some of the adults (Davis and Mirick 2006; USEPA 2011b).

Therefore, the upper-bound soil ingestion rate selected for the older child and adult resident is 50 mg/day.

1.6.3 Body Surface Area Exposed to Floodplain Soil

The body surface area exposed to backyard floodplain soil assumes that the amount of skin surface area in contact with soil varies with the season and weather conditions. A higher proportion of the skin surface area is likely to come into contact with soil in warm weather months than in cold weather months when more of the body is covered by clothing, shoes, etc. Thus, a weighted body surface area is used to account for seasonal differences in exposure. For the young child and adolescent resident, it is assumed that the face, hands, forearms, lower legs, and feet are exposed to backyard floodplain soil for the six warmer months of the year, and the hands and forearms are exposed for the six cooler months of the year. For the adult resident, it is assumed that the face, hands, forearms, and lower legs are exposed for the six warmer months (shoes are worn), and the hands and forearms are exposed for the six cooler months of the year. These body surface areas are expected to be very conservative estimates for several reasons:

- Residents are unlikely to contact soil on their property on every fair weather day;
- Children and adolescents are unlikely to go barefoot every day of exposure during the warm weather months;
- Residents are unlikely to wear shorts and/or short sleeve shirts on every day of exposure during the warm weather months; and

- River sediment deposited on yards will become mixed with native soil over time by weathering, thereby reducing the potential for exposure.

1.6.4 Floodplain Soil Dermal Adherence Factor

Due to a lack of site-specific data on the dermal adherence of floodplain soils, USEPA's dermal adherence rates for residential soil exposures are used (USEPA 2004b, 2011b). For adults, the rates are for gardeners and are applied on a body part specific basis, as shown in Exhibit B-1 Table 4. For children and adolescents, the rates are for children playing in wet soil and are also applied on a body part specific basis, as shown in Exhibit B-1 Table 3. The floodplain soil dermal adherence factors are as follows for the resident age groups:

- Adults - 0.07 mg/m^2
- Adolescents (7 to <19) – 0.25 mg/m^2
- Young Children (1 to < 7) – 0.26 mg/m^2

1.7 Worker

1.7.1 Exposure Frequency for Sediment

The worker is assumed to contact shoreline sediment once a week when the ground is not frozen or snow covered, or when such activity is not precluded by inclement weather. Based on ten years of local meteorological data from the National Climatic Data Center (2013), the ground is covered by snow, it is precipitating, or the daily maximum air temperature is below 32 degrees Fahrenheit on the majority of days in January and February. During these two winter months, the potential for direct contact with nearshore sediment is generally precluded due to weather conditions. Assuming a ten month period when sediment is potentially accessible for contact, an exposure frequency of 43 days/year is selected for the worker receptor.

1.7.2 Sediment Ingestion Rate and Fraction Ingested

As discussed in Section 1.2.3, a sediment ingestion rate of 20 mg/day has been selected for adults who incidentally contact sediment during non-intrusive outdoor activities (USEPA 2011b). The study upon which this rate is based included 38 adults whose daily activities over the 4-day diary period involved a range of recreational and occupational exposures to outdoor soil both at home and at work (Davis and Mirick 2006). Therefore, the outdoor soil ingestion rate of 20 mg/day derived from this study is appropriate for characterizing incidental ingestion of sediment for outdoor workers performing activities comparable to picking up trash, yard work, etc. For the SSHHRA, it is assumed that on days when the worker is engaged in outdoor activities along the shoreline, all of the worker's total soil/sediment intake is from the LPRSA.

1.7.3 Body Surface Area Exposed to Sediment

For dermal contact with sediment, the worker is assumed to wear a short-sleeved shirt, long pants, and shoes; therefore, the exposed skin surface is limited to the face, hands, and forearms. In reality, it is likely that workers wear long-sleeved shirts and jackets in colder weather. The resulting exposed skin surface area is 2,670cm^2, the average of the mean for adult males and females (USEPA 2011b), as indicated in the table below.

Body Part	Calculation of Body Surface Area Exposed to Sediment for Adult Worker[a] (cm^2)
Hands	980
Forearms[b]	1,275
Face[b]	415
Total	2,670

Notes:
(a) - Data from USEPA (2011b). Tables 7-12 and 7-13. Mean, average of males and females. See Exhibit B-1 Table 2 for calculations. (b) - In accordance with USEPA (2004b), 0.45 of arms surface area used for forearms and 0.33 of head surface area used for face.

1.7.4 Sediment Dermal Adherence Factor

An adherence factor of 0.27 mg/cm^2 was calculated in Exhibit B-1, Table 4, based on data presented in USEPA (2011b) for the reed gatherer.

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Exhibit B-1, Table 1
Calculation of Body Surface Area Exposed for Child and Adolescent Receptors
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Young Child (Age 1 to <7 Years)

Mean total surface area (EFH, Table 7-1)			Mean percent of total body surface area (Child EFH, Table 7-2)								
									(.4 leg)	(.45 arm)	(0.33 head)
Age	m^2 boy/girl	cm^2 boy/girl	Age	head	arms	hands	legs	feet	lower legs (a)	forearms (a)	face (a)
1<2	0.53	5,300	1<2	16.5	13.0	5.7	23.1	6.3	9.2	5.9	5.445
2<3	0.61	6,100	2<3	14.2	11.8	5.3	23.2	7.1	9.3	5.3	4.686
3<4 (data 3<6)	0.76	7,600	3<4 (data 3<6)	13.7	14.2	5.9	27.3	7.3	10.9	6.4	4.521
4<5 (data 3<6)	0.76	7,600	4<5 (data 3<6)	13.7	14.2	5.9	27.3	7.3	10.9	6.4	4.521
5<6 (data 3<6)	0.76	7,600	5<6 (data 3<6)	13.7	14.2	5.9	27.3	7.3	10.9	6.4	4.521
6<7 (data 6<11)	1.08	10,800	6<7 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
	Average Total:	**7,500**	**Average % of total**	**0.14**	**0.13**	**0.06**	**0.26**	**0.07**	**0.10**	**0.06**	**0.05**
			Average by Part (cm^2) (b)	**1,055**	**1,001**	**421**	**1,951**	**531**	**781**	**451**	**348**
hands, forearms, lower legs, feet =		**2,184**	**Used for Wader (Sediment and Surface Water) and Swimmer (Sediment only)**								
seasonally weighted body surface area =		**1,702**	**Used for Resident (Floodplain Soil in Backyard) (c)**								
whole body =		**7,500**	**Used for Swimmer (Surface Water only)**								

Adolescent (Age 7 to <19 Years)

Mean total surface area (EFH, Table 7-1)			Mean percent of total body surface area (Child EFH, Table 7-2)								
									(.4 leg)	(.45 arm)	(0.33 head)
Age	m^2 boy/girl	cm^2 boy/girl	Age	head	arms	hands	legs	feet	lower legs (a)	forearms (a)	face (a)
7<8 (data 6<11)	1.08	10,800	7<8 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
8<9 (data 6<11)	1.08	10,800	8<9 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
9<10 (data 6<11)	1.08	10,800	9<10 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
10<11 (data 6<11)	1.08	10,800	10<11 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
11<12 (data 11<16)	1.59	15,900	11<12 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
12<13 (data 11<16)	1.59	15,900	12<13 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
13<14 (data 11<16)	1.59	15,900	13<14 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
14<15 (data 11<16)	1.59	15,900	14<15 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
15<16 (data 11<16)	1.59	15,900	15<16 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
16<17 (data 16<21)	1.84	18,400	16<17 (data 16<21)	7.8	15.3	5.4	32.2	7.1	12.9	6.9	2.574
17<18 (data 16<21)	1.84	18,400	17<18 (data 16<21)	7.8	15.3	5.4	32.2	7.1	12.9	6.9	2.574
18<19 (data 16<21)	1.84	18,400	18<19 (data 16<21)	7.8	15.3	5.4	32.2	7.1	12.9	6.9	2.574
	Average Total:	**14,825**	**Average % of total**	**0.10**	**0.13**	**0.05**	**0.30**	**0.07**	**0.12**	**0.06**	**0.03**
			Average by Part (cm^2) (b)	**1,492**	**1,991**	**775**	**4,506**	**1,082**	**1,802**	**896**	**492**
lower legs, feet =		**2,884**	**Used for Wader, Angler (Sediment and Surface Water) and Swimmer (Sediment only)**								
seasonally weighted body surface area =		**3,359**	**Used for Resident (Floodplain Soil in Backyard) (c)**								
whole body =		**14,825**	**Used for Swimmer (Surface Water only)**								

Exhibit B-1, Table 1
Calculation of Body Surface Area Exposed for Child and Adolescent Receptors
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Older Child (Age 7 to <14 Years)

Mean total surface area (EFH, Table 7-1)			**Mean percent of total body surface area (Child EFH, Table 7-2)**								
									(.4 leg)	(.45 arm)	(0.33 head)
Age	m^2 boy/girl	cm^2 boy/girl	Age	head	arms	hands	legs	feet	lower legs (a)	forearms (a)	face (a)
7<8 (data 6<11)	1.08	10,800	7<8 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
8<9 (data 6<11)	1.08	10,800	8<9 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
9<10 (data 6<11)	1.08	10,800	9<10 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
10<11 (data 6<11)	1.08	10,800	10<11 (data 6<11)	12.6	12.7	5.0	27.9	7.2	11.2	5.7	4.158
11<12 (data 11<16)	1.59	15,900	11<12 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
12<13 (data 11<16)	1.59	15,900	12<13 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
13<14 (data 11<16)	1.59	15,900	13<14 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
	Average Total:	**12,986**	**Average % of total**	**0.11**	**0.13**	**0.05**	**0.29**	**0.07**	**0.12**	**0.06**	**0.04**
			Average by Part (cm^2) (b)	**1,458**	**1,660**	**666**	**3,812**	**952**	**1,525**	**747**	**481**
hands, forearms, feet, lower legs =		**3,890**	**Used for Boater (Paddler) (Sediment and Surface Water)**								

Teenager (Age 14 to <18 Years)

Mean total surface area (EFH, Table 7-1)			**Mean percent of total body surface area (Child EFH, Table 7-2)**								
Age	m^2 boy/girl	cm^2 boy/girl	Age	head	arms	hands	legs	feet	lower legs (a)	forearms (a)	face (a)
14<15 (data 11<16)	1.59	15,900	14<15 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
15<16 (data 11<16)	1.59	15,900	15<16 (data 11<16)	9.4	12.9	5.3	31.3	7.5	12.5	5.8	3.102
16<17 (data 16<21)	1.84	18,400	16<17 (data 16<21)	7.8	15.3	5.4	32.2	7.1	12.9	6.9	2.574
17<18 (data 16<21)	1.84	18,400	17<18 (data 16<21)	7.8	15.3	5.4	32.2	7.1	12.9	6.9	2.574
	Average Total:	**17,150**	**Average % of total**	**0.09**	**0.14**	**0.05**	**0.32**	**0.07**	**0.13**	**0.06**	**0.03**
			Average by Part (cm^2) (b)	**1,475**	**2,418**	**917.5**	**5,445**	**1,252**	**2,178**	**1,088.0**	**487**
hands, forearms =		**2,006**	**Used for Boater (Rower) (Sediment and Surface Water)**								

Notes:
EFH - 2011 Edition of the Exposure Factors Handbook.
(a) - In accordance with USEPA (2004, 2011b), 0.33 of head surface area used for face, 0.45 of arms surface area used for forearms, and 0.40 of legs surface area used for lower legs.
(b) - Average total body surface area for age group multiplied by average percentage of total for each body part.
(c) - Assumes face, hands, forearms, lower legs and feet are exposed during the six warmer months of the year, and the hands and forearms are exposed during the six cooler months of the year.

Exhibit B-1, Table 2
Calculation of Body Surface Area Exposed for Adult Receptors
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Body Part	Mean Surface Area EFH Tables 7-12 and 7-13 Male m^2	Mean Surface Area EFH Tables 7-12 and 7-13 Female m^2		Average of Males and Females cm^2
Total Body Surface Area	2.06	1.85		19,550
Head	0.136	0.114		1,250
Face (a)	0.045	0.038		415
Trunk/Neck	0.827	0.654		7,405
Upper extremities	0.393	0.304		3,485
Arms	0.314	0.237		2,755
Upper arms	0.172	0.130	(b)	1,510
Forearms	0.148	0.107	(b)	1,275
Hands	0.107	0.089		980
Lower extremities	0.802	0.707		7,545
Legs	0.682	0.598		6,400
Thighs	0.412	0.364		3,880
Lower legs	0.268	0.233		2,505
Feet	0.137	0.122		1,295

Totals		
lower legs, feet (wader, angler, swimmer sediment) =		**3,800**
hands, forearms (boater) =		**2,255**
hands, forearms, face (worker) =		**2,670**
seasonally weighted body surface area (resident floodplain soil) =	**(c)**	**3,715**
whole body (swimmer surface water) =		**19,550**

Notes:
EFH - 2011 Edition of the Exposure Factors Handbook.
(a) - In accordance with USEPA (2004, 2011b), 1/3 of head surface area used for face.
(b) - In accordance with USEPA (2004, 2011b), 0.45 of arms surface area used as proxy for female forearms.
(c) - Assumes face, hands, forearms, and lower legs are exposed during the six warmer months of the year, and the hands and forearms are exposed during the six cooler months of the year.

Exhibit B-1, Table 3
Calculation of Sediment and Soil Adherence Factors for Child and Adolescent Receptors
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

	Swimmer, Wader - Sediment Young Child (Age 1 to <7 Years)			
Body Part (a)	**Body Surface Area Exposed to Sediment (a) (cm^2)**	**Soil Loading Rate (b) (mg/cm^2)**		**Total Soil Mass (mg)**
Hands	421	0.656		276
Forearms	451	0.015		7
Lower Legs	781	0.026		20
Feet	531	0.656	(c)	348
Total	2,184	–		652
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =				0.30

	Resident - Floodplain Soil Young Child (Age 1 to <7 Years)			
Body Part (a)	**Body Surface Area Exposed to Soil (a) (cm^2)**	**Soil Loading Rate (b) (mg/cm^2)**		**Total Soil Mass (mg)**
Face	348	0.004		1
Hands	421	0.656		276
Forearms	451	0.015		7
Lower Legs	781	0.026		20
Feet	531	0.656	(c)	348
Total	2,532	–		653
Area-Weighted Soil Adherence Factor (mg/cm2) = Soil mass/Surface area =				0.26

	Swimmer, Wader, Angler - Sediment Adolescent (Age 7 to <19 Years)			
Body Part (a)	**Body Surface Area Exposed to Sediment (a) (cm^2)**	**Soil Loading Rate (b) (mg/cm^2)**		**Total Soil Mass (mg)**
Lower Legs	1,802	0.026		47
Feet	1,082	0.656	(c)	710
Total	2,884	–		757
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =				0.26

Exhibit B-1, Table 3
Calculation of Sediment and Soil Adherence Factors for Child and Adolescent Receptors
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

	Resident - Floodplain Soil Adolescent (Age 7 to <19 Years)			
Body Part (a)	**Body Surface Area Exposed to Soil (a) (cm^2)**	**Soil Loading Rate (b) (mg/cm^2)**		**Total Soil Mass (mg)**
Face	492	0.004		2
Hands	775	0.656		508
Forearms	896	0.015		13
Lower Legs	1,802	0.026		47
Feet	1,082	0.656	(c)	710
Total	5,047	–		1,280
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =				0.25

	Boater (Paddler) Older Child Age (7 to <14 Years)			
Body Part (a)	**Body Surface Area Exposed to Sediment (a) (cm^2)**	**Soil Loading Rate (b) (mg/cm^2)**		**Total Soil Mass (mg)**
Hands	666	0.656		437
Forearms	747	0.015		11
Lower Legs	1,525	0.026		40
Feet	952	0.656	(c)	625
Total	3,890	–		1,112
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =				0.29

	Boater (Rower) Teenager (Age 14 to <18 Years)			
Body Part (a)	**Body Surface Area Exposed to Sediment (a) (cm^2)**	**Soil Loading Rate (b) (mg/cm^2)**		**Total Soil Mass (mg)**
Hands	918	0.656		602
Forearms	1,088	0.015		16
Total	2,006	–		618
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =				0.31

Notes:
(a) - Data from USEPA (2011b). Mean value, average of males and females. See Exhibit B-1, Table 1.
In accordance with USEPA (2004), 0.45 of arms surface area used for forearms, and 0.40 of legs surface area used for lower legs.
(b) - Data from USEPA (2004). Geometric mean value, children playing in wet soil.
(c) - Data for feet are not available. Therefore, hand data are used as a proxy.

Exhibit B-1, Table 4
Calculation of Sediment and Soil Adherence Factors for Adult Receptors
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

	Resident - Floodplain Soil Adult (>18 yrs)		
Body Part (a)	**Body Surface Area Exposed to (cm^2)**	**Soil Loading Rate Gardener (c) (mg/cm^2)**	**Total Soil Mass (mg)**
Face	415	0.05	21
Hands	980	0.19	186
Forearms	1,275	0.052	66
Lower Legs	2,505	0.033	83
Total	5,175	–	356
Area-Weighted Soil Adherence Factor (mg/cm2) = Soil mass/Surface area =			0.07

	Wader, Swimmer, Angler - Sediment Adult (>18 yrs)		
Body Part (a)	**Body Surface Area Exposed to (cm^2)**	**Soil Loading Rate Reed Gatherer (b) (mg/cm^2)**	**Total Soil Mass (mg)**
Lower Legs	2,505	0.16	401
Feet	1,295	0.63	816
Total	3,800	–	1,217
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =			0.32

	Boater - Sediment Adult (>18 yrs)		
Body Part (a)	**Body Surface Area Exposed to (cm^2)**	**Soil Loading Rate Reed Gatherer (b) (mg/cm^2)**	**Total Soil Mass (mg)**
Hands	980	0.66	647
Forearms	1,275	0.036	46
Total	2,255	–	693
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =			0.31

	Worker - Sediment Adult (>18 yrs)		
Body Part (a)	**Body Surface Area Exposed to (cm^2)**	**Soil Loading Rate Reed Gatherer (b) (mg/cm^2)**	**Total Soil Mass (mg)**
Hands	980	0.66	647
Forearms	1,275	0.036	46
Face	415	0.05 (d)	21
Total	2,670	–	713
Area-Weighted Sediment Adherence Factor (mg/cm2) = Soil mass/Surface area =			0.27

Notes:
(a) - Data from USEPA (2011b). Mean value, average of males and females. See Exhbibit B-1, Table 2.
In accordance with USEPA (2004), 0.33 of head surface area used for face, 0.45 of arms surface area used for forearms, and 0.40 of legs surface area used for lower legs.
(b) - Data from USEPA (2011b) Table 7-20. Geometric mean of values for reed gatherers.
(c) - Data from USEPA (2011b) Table 7-20. Geometric mean of values for gardeners #2.
(d) - Adherence factor for face based on gardeners due to lack of face adherence data for reed gatherers.

Exhibit B-1 Table 5
Trip Profiles for Consuming Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

	Estimated Number of LPRSA Fishing Trips per Month												
Angler ID	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total Annual Trips**
9005C	0	0	0	0.01	0.01	0.01	15.01	15.01	3.24	0.01	0	0	33.29
9009C	0	0	0	0.01	0.01	0.01	1.51	1.51	3.26	0	0	0	6.30
9023C	0	0	0.1	0.76	0.37	0.74	1.59	0.67	1.82	2.94	0	0	8.98
9062C	0	0	6	5.53	0	0	0	0	0.01	0	0	0	11.54
9104C	0	0	1	5	5.06	2.31	4.52	0	0	0	0	0	17.89
9108C	0	0	0	0	3.51	0	3.45	3.97	2.03	0	0	0	12.95
9138C	0	0	0	0.01	2.6	0.01	1.53	1.77	0.01	0.01	0.01	0	5.94
9147C	0	0	0	0	3	3.51	1.20	1.39	0.01	0	0	0	9.10
9148C	0	0	0	0	3	3.51	1.20	1.39	0.01	0	0	0	9.10
9149C	0	0	0	0	0	4.05	1.57	1.82	0	0	0	0	7.44
9194C	0	0	0	0	0	4.05	0	0	0	0	0	0	4.05
9195C	0	0	0	0	0	4.2	0	0	0	0	0	0	4.20
9221C	0	0	0	0	0	0	2.71	0	0	0	0	0	2.71
9228C	0	0	0	0	0	0	2.68	1.02	0.00	0	0	0	3.70
9229C	0	0	0	0	0	0	2.69	1.03	0.00	0	0	0	3.71
9238C	0	0	0	0.01	0	0	6.05	3.32	0.01	0.01	0.01	0	9.41
9243C	0	0	0	0	10	10	3.38	2.46	1.39	0	0	0	27.22
9256C	0	0	0	0	4	4	1	5.47	0	0	0	0	14.47
9258C	0	0	0	0.01	0.01	0	1.78	5.39	2.46	0.01	0.01	0	9.66
9268C	0	0	0	0.01	0.01	4	4.79	4.94	0.01	0.01	0	0	13.77
9269C	0	0	0	0.01	0.01	12	4.33	4.90	6.01	10	3.49	0	40.74
9270C	0	0	0	0.01	0.01	20	5.96	2.93	6.01	10	2.63	0	47.54
9274C	0	0	0	0	0.47	6	3.84	5.24	1.73	0	0	0	17.28
9276C	0	0	0	0.01	0.01	25	5.02	6.43	0.01	0	0	0	36.48
9287C	0	0	0	3	10.12	0.01	5.85	6.54	5.75	0	0	0	31.26

Notes:

The number of monthly LPRSA fishing trips for each angler was taken from a joint model analysis that incorporates trip reports, counts, and intercept, and demographic data to predict trips for months where trip reports are not available (the number of trips taken in a month as reported by the angler was used when available). Estimates for hybrid variance model 0.1 are used (see text).

If the angler reported he did not typically fish in certain months, 0 trips was assumed for those months.

The CAS was administered from September 2011 through September 2012. Because the CAS asked anglers to report on trips in the prior two months, trip data are available for 15 months (July 2011 through September 2012) and trip profiles were estimated for each month during this time period; however, in this table and subsequent calculations using trip profiles, trip profile averages were calculated and used for months with overlap (July, August, September) in order to produce a standard 12-month year.

Exhibit B-1 Table 6
Summary of Kept Catch for Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

	Kept Catch (a)		Preparation Method (b)					Edible Portion Analysis							
								EPA 1989 (c)		Meredith 1996 (d)		Ray et al 2007 (e)		FSP2 Ratio (f)	
Angler ID	Species	Weight (grams)	Trim fat?	Eat head?	Eat tailfin?	Eat internal organs?	Eat skin?	Fraction edible portion	Edible portion (grams)	Fraction edible portion	Edible portion (grams)	Fraction edible portion	Edible portion (grams)	Fraction edible portion	Edible portion (grams)
9009C	Brown bullhead	380	belly	N	N	N	N	0.3	114	0.41	155.8	0.40	152.0	0.30	115.8
	Channel catfish	450	belly	N	N	N	N	0.3	135	0.44	198.0	0.40	180.0	0.30	137.1
	sum	*830*							*249*		*353.8*		*332.0*		**252.9**
9149C	Carp	1700	*NA*	N	Y	N	N	0.3	510	0.40	680.0	0.45	765.0	0.35	589.8
	Carp	3250	*NA*	N	Y	N	N	0.3	975	0.40	1300.0	0.45	1462.5	0.35	1127.6
	sum	*4950*							*1485*		*1980.0*		*2227.5*		***1717.4***
9274C	Carp	1600	belly, back, lateral	*NA*	*NA*	N	N	0.3	480	0.25	400.0	0.40	640.0	0.35	555.1
	sum	*1600*							*480*		*400.0*		*640.0*		***555.1***
9256C	Carp	3200	no	*NA*	*NA*	*NA*	Y	0.3	960	0.54	1728.0	0.45	1440.0	0.35	1110.2
	Carp	3200	no	*NA*	*NA*	*NA*	Y	0.3	960	0.54	1728.0	0.45	1440.0	0.35	1110.2
	American eel	900	no	*NA*	*NA*	*NA*	N	0.3	270	0.30	270.0	0.40	360.0	0.34	304.0
	average	***3650***							*1095*		*1863.0*		*1620.0*		***1262.2***
9238C	Smallmouth bass	870	belly, back, lateral	N	N	N	N	0.3	261	0.30	261.0	0.40	348.0	0.37	325.3
	Smallmouth bass	730	belly, back, lateral	N	N	N	N	0.3	219	0.30	219.0	0.40	292.0	0.37	272.9
	sum	*1600*							*480*		*480.0*		*640.0*		***598.2***
9104C	White perch	70	no	N	N	N	Y	0.3	21	0.55	38.5	0.45	31.5	0.35	24.8
	White perch	70	no	N	N	N	Y	0.3	21	0.55	38.5	0.45	31.5	0.35	24.8
	White perch	100	no	N	N	N	Y	0.3	30	0.55	55.0	0.45	45.0	0.35	35.4
	White perch	75	no	N	N	N	Y	0.3	22.5	0.55	41.3	0.45	33.8	0.35	26.6
	White perch	75	no	N	N	N	Y	0.3	22.5	0.55	41.3	0.45	33.8	0.35	26.6
	White perch	70	no	N	N	N	Y	0.3	21	0.55	38.5	0.45	31.5	0.35	24.8
	sum	*460*							*138*		*253.0*		*207.0*		***163.0***

See notes on following page.

Exhibit B-1 Table 6
Summary of Kept Catch for Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Notes:

(a) Kept catch for each angler was documented via a single intercept for each angler with the exception of Angler 9256C. Angler 9256C's kept catch was reported via postcard that documented two fishing trips with kept catch. For this angler, the American eel was caught on a separate trip from two carp; therefore, the average catch per trip was calculated.
(b) Preparation method determined from angler's answers to interview questions or postcard entries; Y=yes, N=no, NA=no answer.
(c) Edible portion assumed to be 30% of total fish weight (EPA 1989).
(d) Edible portion based on cleaning method and species as reported in Meredith (1996) and fit to angler reported preparation method as follows:

	Edible % of Fish by Cleaning Method					
Species	A (Whole fish-gutted only)	B (Whole fish-gutted, scaled, head off)	C (Whole fish-skinned, head off)	E (Fillet without rib bones)	F (Fillet with rib bones)	Surrogate
Largemouth bass	69	52	40	30	45	Smallmouth bass
White bass	72	55	40	32	47	White perch
Channel catfish	70	59	44	30	38	--
Bullhead catfish	65	53	41	27	35	--
Carp	67	54	40	25	44	--

Note that a surrogate for eel was not assigned and an edible percentage of 30% was used. Meredith (1996) did not report edible precentages for these species using method D (steaks).

(e) Edible portion based on Ray et al (2007) and fit to angler reported preparation method as follows (body part-weight fraction of edible portion): body-0.4, head-0.3, internal organs-0.2, skin-0.05, tail-0.05.

(f) Ratio of fillet to whole body weight from specimens collected during RI/FS FSP2 fish survey. FSP2 species fillets processed as follows: skinless: American eel, catfish (channel catfish and white catfish); skin-on: carp, largemouth bass, northern pike, smallmouth bass, white perch. Processing of FSP2 fish was consistent with reported consumption practices for anglers with kept catch (with the exception of Angler 9149C who reported tail may be consumed).

Exhibit B-1 Table 7
Calculation of Edible Catch Per Trip by Species
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Species	Average of species weight (grams) (a)	Ratio Fillet/Whole Body Weight (b)	Edible weight (grams) (c)	Average number kept per trip (d)	Sharing (e)	Notes on Average number kept per trip and Sharing	Total edible catch per trip (grams/trip) (f)
American eel	247.59	0.34	83.64	1	2	actual	41.82
Brown bullhead	293.14	0.30	89.31	1	2	actual	44.65
Channel catfish	815.50	0.30	248.44	1.3	2	actual	161.49
Common carp	2840.20	0.35	985.39	1.2	2	actual	591.23
Largemouth bass	338.50	0.40	135.05	2	1	assumed based on SMB	270.11
Largemouth and smallmouth bass (g)	335.14	0.39	129.51	2	1	assumed based on SMB	259.02
Northern pike (h)	1793.75	0.44	789.25	1	2	assumed based on size	394.63
Pumpkinseed (i)	75.00	0.35	26.57	3.3	1	assumed based on WP	87.69
Smallmouth bass	331.78	0.37	124.05	2	1	actual	248.09
Striped bass	901.18	0.40	359.55	1	2	assumed based on size	179.78
White catfish	904.79	0.31	278.35	1.3	2	assumed based on CC	180.93
White perch (j)	101.06	0.35	35.80	3.3	1	actual	118.16
Catfish (k)	671.14	0.30	204.46	1.7	2	average of actual BB and CC	173.79

Notes:
BB - Brown bullhead.
CC- Channel catfish.
FSP2 - Field Sampling Plan 2, conducted under RI/FS for the LPRSA.
SMB - Smallmouth bass.
WP - White perch.

(a) Sources for specimen weight data are: kept catch weights collected during the 2011-2012 CAS (American eel, brown bullhead, channel catfish, common carp, smallmouth bass, and white perch), and RI/FS fish survey data collected from the LPRSA in 2009 to 2012. Data for northern pike caught during RI/FS sampling above Dundee Dam were combined with the single RI/FS northern pike specimen from the LPRSA (a small [160 g, 330 mm] LPRSA northern pike specimen was excluded). Due to lack of FSP2 striped bass data, weight estimates were based on average striped bass weights from the 2000-2001 Tierra CAS and the BBL ESP samples from Fall 1999 and Spring 2000.

(b) Species-specific fillet:whole body ratios recorded during processing of RI/FS FSP2 fish specimens. Upper 90th percentile values. For species lacking fillet data, ratio for a similar species used as surrogate, as follows: channel catfish for bullhead, largemouth bass for striped bass, white perch for pumpkinseed. The site- and species-specific ratios are corroborated by USEPA (1989a) and Ray et al (2007b), and consistent with consuming practices reported by anglers in the CAS (AECOM 2014a).

(c) Edible weight calculated by multiplying average species whole body weight by species-specific fillet:whole body ratios.

(d) Average number of fish kept per trip by species as recorded in CAS, including interviews, MCRs, counts, and postcard.

(e) Sharing as reported by anglers with kept catch of that species. Where species-specific data on sharing was not available, sharing behavior was assumed based on similar species and size.

(f) Total edible catch per trip equals edible catch by species multiplied by the average number kept per trip and divided by the number sharing the catch.

(g) Average of largemouth and smallmouth bass average weights.

(h) Northern pike used as surrogate for musky.

(i) Pumpkinseed used as surrogate for sunfish.

(j) White perch used as surrogate for yellow perch.

(k) Average of bullhead, channel catfish, and white catfish average weights.

Exhibit B-1 Table 8
Species Preferences of Consuming Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Angler ID	American eel	Catfish	Common carp	LM/SM bass	Northern pike	Striped bass	Sunfish	White perch	Total Species Preferences	Average Edible Catch per Trip (grams/trip) (a)	Notes
9005C						1			1	179.78	
9009C		1							1	173.79	(b)
9023C		1	1	1				1	4	285.55	(c)
9062C		1		1		1	1	1	5	163.69	
9104C		1						1	2	145.97	(b)
9108C		1	1	1				1	4	285.55	(c)
9138C	1				1	1			3	205.41	
9147C			1						1	591.23	
9148C			1						1	591.23	
9149C			1						1	591.23	(b)
9194C			1						1	591.23	
9195C			1						1	591.23	
9221C		1	1	1				1	4	285.55	(c)
9228C		1	1	1				1	4	285.55	(c)
9229C		1	1	1				1	4	285.55	(c)
9238C				1		1		1	3	185.65	(b)
9243C		1							1	173.79	
9256C	1	1	1						3	268.95	(b)
9258C	1	1	1	1	1	1	1	1	8	230.76	
9268C		1	1	1	1	1		1	6	286.10	
9269C					1	1			2	287.20	
9270C					1	1			2	287.20	
9274C		1	1						2	382.51	(b)
9276C		1	1			1			3	314.93	
9287C			1						1	591.23	

Notes:

(a) - Average edible catch per trip is the sum of total edible catch per trip by species (see Exhibit B-1 Table 7) divided by the angler's number of species preferences. For anglers with more than one species preference, average edible catch per trip is multiplied by two to calculate the total average edible catch per trip to impute for the calculation of consumption rate.

(b) - Kept catch data available for this angler.

(c) - Due to lack of species preference data for this angler, the four species most frequently preferred by other anglers and with tissue chemistry data are assumed (catfish, carp, LM/SM bass and white perch).

Exhibit B-1 Table 9
Sampling Weights for Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Angler ID	Sampling Weight
9001N	4.77
9002N	1
9003N	2.48
9004N	4.49
9005C	34.56
9006N	3.95
9007N	1.16
9008N	3.94
9009C	34.29
9010N	23.38
9011N	27.51
9012N	11.74
9013N	36.49
9014N	83.39
9015N	4.48
9016N	3.95
9017N	4.06
9018N	5.75
9019N	20.16
9020N	12.35
9021N	1.48
9022N	1.24
9023C	6.01
9024N	18.16
9025N	6.33
9026N	4.13
9027N	10.99
9028N	3.85
9029N	2.14
9030N	3.89
9031N	18.21
9032N	15.33
9033N	12.77
9034N	4.09
9035N	2.22
9036N	5.86
9037N	13.32
9038N	4.49
9039N	1
9040N	1.75
9041N	1.76
9042N	1.46
9043N	16.42
9044N	12.52
9045N	2.35

Angler ID	Sampling Weight
9046N	4.07
9047N	1.84
9048N	1.45
9049N	19.92
9050N	4.57
9051N	1
9052N	2.75
9053N	4.89
9054N	5.35
9055N	6.33
9056N	3.91
9057N	5.51
9058N	10.57
9059N	9.62
9060N	4.2
9061N	2.54
9062C	5.33
9063N	3.82
9064N	3.51
9065N	3.57
9066N	3.23
9067N	9.66
9068N	1.63
9069N	2.64
9070N	4.41
9071N	2.51
9072N	4.23
9073N	1.6
9074N	2.66
9075N	1.83
9076N	1.01
9077N	4.06
9078N	8.5
9079N	2.18
9080N	7.7
9081N	3.89
9082N	8.15
9083N	5.83
9084N	2.02
9085N	3.85
9086N	4.12
9087N	5.23
9088N	2.25
9089N	3.29
9090N	3.23

Exhibit B-1 Table 9
Sampling Weights for Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Angler ID	Sampling Weight
9091N	3.26
9092N	2.94
9093N	4.25
9094N	2.17
9095N	7.41
9096N	2.83
9097N	3.96
9098N	1
9099N	2.32
9100N	4.49
9101N	2.72
9102N	3.74
9103N	3.32
9104C	3.16
9105N	2.29
9106N	6.76
9107N	2.39
9108C	4.55
9109N	4
9110N	8.56
9111N	2.46
9112N	4.31
9113N	3.75
9114N	3.75
9115N	3.3
9116N	3.83
9117N	2.76
9118N	2.61
9119N	2.57
9120N	2.32
9121N	2.81
9122N	4.1
9123N	2.04
9124N	8.76
9125N	5.75
9126N	2.52
9127N	2.86
9128N	1.27
9129N	2.99
9130N	2.02
9131N	2.64
9132N	6.1
9133N	3.98
9134N	12.79
9135N	12.69

Angler ID	Sampling Weight
9136N	14.36
9137N	8.91
9138C	14.1
9139N	3.74
9140N	5.11
9141N	7.36
9142N	2.03
9143N	6.14
9144N	1.94
9145N	5.12
9146N	6.46
9147C	7.69
9148C	7.69
9149C	6.76
9150N	4.38
9151N	4.56
9152N	3.08
9153N	4.64
9154N	4.64
9155N	1.96
9156N	2.39
9157N	6.92
9158N	1.45
9159N	11.58
9160N	9.38
9161N	2.08
9162N	3.12
9163N	5.07
9164N	5.61
9165N	3.17
9166N	4.44
9167N	1.48
9168N	2.53
9169N	2.72
9170N	4.44
9171N	3.27
9172N	2.03
9173N	1.78
9174N	1.62
9175N	1.78
9176N	2.51
9177N	6.37
9178N	4.23
9179N	3.39
9180N	6.45

Exhibit B-1 Table 9
Sampling Weights for Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Angler ID	Sampling Weight
9181N	5.62
9182N	2.89
9183N	4.39
9184N	10.83
9185N	2.75
9186N	3.06
9187N	7.37
9188N	3.34
9189N	5.32
9190N	2.43
9191N	2.72
9192N	2.96
9193N	3.56
9194C	6.78
9195C	6.54
9196N	2.25
9197N	4.13
9198N	9
9199N	10.73
9200N	3.17
9201N	5.43
9202N	8.91
9203N	2.45
9204N	4
9205N	9.26
9206N	2.19
9207N	5.31
9208N	6.92
9209N	2.58
9210N	9.43
9211N	5.06
9212N	3.24
9213N	9.08
9214N	1.94
9215N	2.54
9216N	2.67
9217N	6.63
9218N	3.14
9219N	11.16
9220N	2.52
9221C	11.79
9222N	3.84
9223N	9.3
9224N	4.02
9225N	3.22

Angler ID	Sampling Weight
9226N	3.87
9227N	1.34
9228C	11.43
9229C	11.41
9230N	10.93
9231N	3.98
9232N	6.65
9233N	4.45
9234N	10.85
9235N	3.97
9236N	7.31
9237N	12.43
9238C	6.61
9239N	3.96
9241N	3.99
9242N	4.85
9243C	3.42
9244N	5.34
9245N	2.52
9246N	1.61
9247N	4.24
9248N	3.23
9249N	7.73
9250N	3.33
9251N	17.81
9252N	11.83
9253N	14.38
9254N	6.53
9255N	5.75
9256C	3.92
9257N	4.65
9258C	7.55
9259N	6.8
9260N	2.62
9261N	1.67
9262N	13.23
9263N	9.41
9264N	9.43
9265N	8.26
9266N	9.41
9267N	6.85
9268C	11.62
9269C	3.3
9270C	4.21
9271N	2.43

Exhibit B-1 Table 9
Sampling Weights for Anglers Interviewed in LPRSA CAS (Sept. 2011 - Sept. 2012)
Lower Passaic River Study Area
Site-Specific Human Health Risk Assessment

Angler ID	Sampling Weight
9272N	8.61
9273N	4.79
9274C	3.54
9275N	2.37
9276C	4.3
9277N	3.13
9278N	3.79
9279N	5.68
9280N	2.98
9281N	6.97
9282N	14.76
9283N	4.85
9284N	34.43
9285N	7.36
9287C	2.37
9288N	5.03
9289N	5.17
9290N	2.08
9291N	3.94
9292N	4.09
9293N	3.29
9294N	2.47
9295N	16.58
9296N	5.34

Notes:
Sampling weights for each angler are taken from a joint model analysis that incorporates trip reports, counts, and intercept data to predict trips for months where trip reports are not available.

Exhibit B-2
Supporting Documentation for Risk Calculations

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	2.97E-04	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	5.53E-05	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	1.39E-03	9.61E-08
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.62E-09	1.22E-13
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	9.60E-08
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	1.30E-06
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	1.32E-07
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	7.26E-09
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	4.10E-05	1.76E-09
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	1.45E-09
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	6.91E-06	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	8.86E-06	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	8.62E-06	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.69E-04	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.70E-05	3.87E-08
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	2.03E-06	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	1.30E-09
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	7.47E-04	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	9.86E-05	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	1.48E-07
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	1.95E-05	2.40E-09
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	7.05E-08
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	3.81E-04	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.24E-04	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	3.27E-06	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	1.78E-02	1.09E-07
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	8.21E-02	1.15E-06
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	4.91E-04	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	7.56E-05	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	2.52E-03	NA
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.09E-07	9.60E-13
Sediment	RM0-3	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.51E-04	NA
Sediment	**RM0-3**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.07E-01**	**3.15E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	2.75E-05	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	5.13E-06	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	3.65E-04	3.15E-08
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.36E-10	1.42E-14
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	1.53E-08
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	2.07E-07
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	2.09E-08
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	1.15E-09
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	1.25E-05	6.73E-10
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	2.31E-10
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	2.20E-06	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	2.82E-06	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	2.74E-06	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	4.19E-05	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.22E-06	1.79E-09
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	1.88E-07	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	2.07E-10
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	6.93E-05	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	9.15E-06	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	2.35E-08
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	5.96E-06	9.17E-10
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	1.12E-08
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	3.53E-05	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.07E-05	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	1.04E-06	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	5.71E-03	4.39E-08
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	1.86E-02	3.26E-07
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	4.55E-05	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	2.31E-05	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	7.69E-04	NA
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.01E-08	4.45E-14
Sediment	RM0-3	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.41E-05	NA
Sediment	**RM0-3**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.58E-02**	**6.84E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	1.57E-05	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	2.93E-06	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	1.32E-04	2.52E-08
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	1.92E-10	1.79E-14
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	1.15E-08
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	1.56E-07
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	1.58E-08
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	8.71E-10
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	4.34E-06	5.14E-10
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	1.74E-10
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	7.55E-07	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	9.67E-07	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	9.40E-07	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.55E-05	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	3.55E-06	2.25E-09
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	1.08E-07	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	1.56E-10
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	3.96E-05	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	5.23E-06	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	1.78E-08
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	2.07E-06	7.00E-10
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	8.46E-09
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	2.02E-05	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	1.18E-05	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	3.57E-07	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	1.95E-03	3.30E-08
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	7.09E-03	2.73E-07
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	2.60E-05	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	8.01E-06	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	2.67E-04	NA
Sediment	RM0-3	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	5.75E-09	5.60E-14
Sediment	RM0-3	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	8.03E-06	NA
Sediment	**RM0-3**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.61E-03**	**5.46E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	2.43E-04	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	4.54E-05	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	1.48E-03	5.99E-08
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	2.97E-09	5.86E-14
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	7.72E-08
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	1.05E-06
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	1.06E-07
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	5.84E-09
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	4.63E-05	1.16E-09
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	1.17E-09
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	7.95E-06	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	1.02E-05	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	9.91E-06	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.77E-04	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	5.50E-05	2.22E-08
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	1.66E-06	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	1.04E-09
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	6.13E-04	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	8.09E-05	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	1.19E-07
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	2.21E-05	1.59E-09
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	5.67E-08
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	3.12E-04	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	1.83E-04	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	3.76E-06	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	2.05E-02	7.36E-08
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	8.34E-02	6.81E-07
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	4.03E-04	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	8.55E-05	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	2.85E-03	NA
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	8.90E-08	5.51E-13
Sediment	RM0-3	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.24E-04	NA
Sediment	**RM0-3**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.11E-01**	**2.25E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	2.35E-05	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	4.38E-06	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	9.85E-05	2.27E-09
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	2.86E-10	3.23E-15
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	1.75E-09
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	2.37E-08
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	2.40E-09
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	1.32E-10
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	2.83E-06	4.06E-11
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	2.65E-11
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	4.73E-07	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	6.06E-07	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	5.89E-07	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.22E-05	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	5.30E-06	8.16E-10
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	1.61E-07	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	2.37E-11
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	5.91E-05	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	7.80E-06	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	2.70E-09
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	1.35E-06	5.53E-11
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	1.28E-09
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	3.01E-05	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	1.77E-05	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	2.23E-07	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	1.21E-03	2.48E-09
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	5.97E-03	2.78E-08
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	3.88E-05	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	5.21E-06	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	1.74E-04	NA
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	8.59E-09	2.03E-14
Sediment	RM0-3	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.20E-05	NA
Sediment	**RM0-3**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**7.67E-03**	**6.56E-08**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	1.93E-04	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	3.60E-05	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	9.02E-04	6.25E-08
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	2.35E-09	7.96E-14
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	6.24E-08
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	8.46E-07
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	8.56E-08
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	4.72E-09
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	2.66E-05	1.15E-09
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	9.44E-10
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	4.49E-06	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	5.76E-06	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	5.60E-06	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.10E-04	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	4.36E-05	2.51E-08
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	1.32E-06	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	8.44E-10
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	4.86E-04	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	6.41E-05	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	9.61E-08
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	1.27E-05	1.56E-09
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	4.58E-08
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	2.47E-04	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	1.45E-04	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	2.12E-06	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	1.15E-02	7.10E-08
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	5.33E-02	7.47E-07
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	3.19E-04	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	4.91E-05	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	1.64E-03	NA
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	7.06E-08	6.24E-13
Sediment	RM0-3	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	9.85E-05	NA
Sediment	**RM0-3**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**6.93E-02**	**2.05E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	2.75E-05	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	5.13E-06	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	3.65E-04	3.15E-08
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.36E-10	1.42E-14
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	1.53E-08
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	2.07E-07
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	2.09E-08
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	1.15E-09
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	1.25E-05	6.73E-10
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	2.31E-10
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	2.20E-06	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	2.82E-06	NA
Sediment	RM0-3	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	2.74E-06	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	4.19E-05	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.22E-06	1.79E-09
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	1.88E-07	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	2.07E-10
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	6.93E-05	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	9.15E-06	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	2.35E-08
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	5.96E-06	9.17E-10
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	1.12E-08
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	3.53E-05	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.07E-05	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	1.04E-06	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	5.71E-03	4.39E-08
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	1.86E-02	3.26E-07
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	4.55E-05	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	2.31E-05	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	7.69E-04	NA
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.01E-08	4.45E-14
Sediment	RM0-3	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.41E-05	NA
Sediment	**RM0-3**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.58E-02**	**6.84E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	3.24E-04	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	6.04E-05	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	1.40E-03	4.84E-08
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.95E-09	6.68E-14
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	7.91E-08
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	1.07E-06
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	1.09E-07
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	5.98E-09
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	4.05E-05	8.71E-10
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	1.20E-09
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	6.79E-06	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	8.70E-06	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	8.46E-06	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.72E-04	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	7.31E-05	3.54E-08
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	2.21E-06	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	1.07E-09
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	8.15E-04	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	1.08E-04	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	1.22E-07
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	1.93E-05	1.19E-09
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	5.81E-08
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	4.15E-04	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.44E-04	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	3.21E-06	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	1.74E-02	5.35E-08
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	8.42E-02	5.89E-07
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	5.36E-04	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	7.47E-05	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	2.49E-03	NA
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.18E-07	8.80E-13
Sediment	RM0-3	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.65E-04	NA
Sediment	**RM0-3**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.09E-01**	**2.18E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	2.97E-04	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	5.53E-05	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	1.39E-03	9.61E-08
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.62E-09	1.22E-13
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	9.60E-08
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	1.30E-06
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	1.32E-07
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	7.26E-09
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	4.10E-05	1.76E-09
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	1.45E-09
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	6.91E-06	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	8.86E-06	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	8.62E-06	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.69E-04	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.70E-05	3.87E-08
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	2.03E-06	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	1.30E-09
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	7.47E-04	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	9.86E-05	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	1.48E-07
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	1.95E-05	2.40E-09
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	7.05E-08
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	3.81E-04	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.24E-04	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	3.27E-06	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	1.78E-02	1.09E-07
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	8.21E-02	1.15E-06
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	4.91E-04	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	7.56E-05	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	2.52E-03	NA
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.09E-07	9.60E-13
Sediment	RM0-3	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.51E-04	NA
Sediment	**RM0-3**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.07E-01**	**3.15E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	2.75E-05	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	5.13E-06	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	3.65E-04	3.15E-08
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.36E-10	1.42E-14
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	1.53E-08
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	2.07E-07
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	2.09E-08
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	1.15E-09
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	1.25E-05	6.73E-10
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	2.31E-10
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	2.20E-06	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	2.82E-06	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	2.74E-06	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	4.19E-05	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.22E-06	1.79E-09
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	1.88E-07	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	2.07E-10
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	6.93E-05	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	9.15E-06	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	2.35E-08
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	5.96E-06	9.17E-10
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	1.12E-08
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	3.53E-05	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.07E-05	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	1.04E-06	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	5.71E-03	4.39E-08
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	1.86E-02	3.26E-07
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	4.55E-05	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	2.31E-05	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	7.69E-04	NA
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.01E-08	4.45E-14
Sediment	RM0-3	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.41E-05	NA
Sediment	**RM0-3**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.58E-02**	**6.84E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	3.24E-04	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	6.04E-05	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	1.40E-03	4.84E-08
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.95E-09	6.68E-14
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	7.91E-08
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	1.07E-06
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	1.09E-07
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	5.98E-09
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	4.05E-05	8.71E-10
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	1.20E-09
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	6.79E-06	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	8.70E-06	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	8.46E-06	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	1.72E-04	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	7.31E-05	3.54E-08
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	2.21E-06	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	1.07E-09
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	8.15E-04	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	1.08E-04	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	1.22E-07
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	1.93E-05	1.19E-09
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	5.81E-08
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	4.15E-04	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.44E-04	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	3.21E-06	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	1.74E-02	5.35E-08
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	8.42E-02	5.89E-07
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	5.36E-04	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	7.47E-05	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	2.49E-03	NA
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.18E-07	8.80E-13
Sediment	RM0-3	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.95E+01	mg/kg	1.65E-04	NA
Sediment	**RM0-3**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.09E-01**	**2.18E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.15E+04	mg/kg	3.38E-04	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	8.56E-01	mg/kg	6.30E-05	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.07E+01	mg/kg	1.77E-03	6.75E-08
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	4.12E-09	7.68E-14
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.70E+00	mg/kg	NA	2.79E-08
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.66E+00	mg/kg	NA	3.79E-07
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.70E+00	mg/kg	NA	3.83E-08
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.04E+00	mg/kg	NA	2.11E-09
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	7.92E+00	mg/kg	5.37E-05	1.27E-09
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.08E+00	mg/kg	NA	4.22E-10
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.09E+00	mg/kg	9.14E-06	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.40E+00	mg/kg	1.17E-05	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.36E+00	mg/kg	1.14E-05	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.98E+00	mg/kg	2.14E-04	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	7.64E-05	9.69E-09
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.18E+02	mg/kg	2.31E-06	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.65E+00	mg/kg	NA	3.78E-10
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.67E+00	mg/kg	8.51E-04	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.53E+02	mg/kg	1.12E-04	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.16E-01	mg/kg	NA	4.30E-08
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	9.45E-03	mg/kg	2.56E-05	1.73E-09
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.98E+00	mg/kg	NA	2.05E-08
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	3.54E+02	mg/kg	4.34E-04	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.60E+00	mg/kg	2.55E-04	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.16E-01	mg/kg	4.32E-06	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.64E+00	mg/kg	2.35E-02	7.96E-08
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.17E-03	mg/kg	1.02E-01	7.89E-07
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.90E-01	mg/kg	5.60E-04	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.19E+03	mg/kg	9.92E-05	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.44E+02	mg/kg	3.31E-03	NA
Sediment	RM0-3	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	2.10E-03	mg/kg	1.24E-07	2.41E-13
Sediment	**RM0-3**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.34E-01**	**1.46E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	3.05E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.61E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	1.20E-03	8.34E-08
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	1.69E-07
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	1.42E-06
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	1.58E-07
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	7.06E-09
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	2.71E-04	1.17E-08
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	3.11E-09
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	1.14E-05	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	2.02E-05	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.54E-05	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.81E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	4.64E-05	2.68E-08
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.32E-06	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	2.54E-09
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	8.08E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.21E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	1.42E-07
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	1.14E-05	1.40E-09
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	8.07E-08
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	4.91E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.41E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	8.42E-06	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	9.89E-03	6.09E-08
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	3.43E-02	4.80E-07
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	5.25E-04	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	9.30E-05	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	3.10E-03	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.52E-04	NA
Sediment	**RM3-6**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.21E-02**	**2.64E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	2.83E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.50E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	3.16E-04	2.74E-08
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	2.68E-08
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	2.26E-07
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	2.52E-08
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	1.12E-09
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	8.28E-05	4.46E-09
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	4.95E-10
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	3.61E-06	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	6.43E-06	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	4.91E-06	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	6.94E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	4.31E-06	1.24E-09
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.16E-07	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	4.04E-10
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	7.49E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.12E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	2.26E-08
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	3.48E-06	5.36E-10
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	1.28E-08
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	4.55E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.24E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	2.68E-06	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	3.18E-03	2.45E-08
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	7.79E-03	1.36E-07
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	4.87E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	2.84E-05	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	9.46E-04	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.41E-05	NA
Sediment	**RM3-6**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.27E-02**	**5.09E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	1.62E-05	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	8.54E-06	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	1.15E-04	2.19E-08
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	2.03E-08
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	1.70E-07
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	1.90E-08
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	8.48E-10
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	2.87E-05	3.40E-09
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	3.74E-10
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	1.24E-06	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	2.21E-06	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.68E-06	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.57E-05	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	2.46E-06	1.56E-09
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	1.23E-07	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	3.05E-10
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	4.28E-05	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	6.42E-06	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	1.71E-08
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	1.21E-06	4.09E-10
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	9.68E-09
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	2.60E-05	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	1.28E-05	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	9.19E-07	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	1.09E-03	1.84E-08
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	2.96E-03	1.14E-07
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	2.78E-05	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	9.85E-06	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	3.28E-04	NA
Sediment	RM3-6	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	8.06E-06	NA
Sediment	**RM3-6**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.72E-03**	**3.97E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	2.50E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.32E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	1.29E-03	5.20E-08
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	1.36E-07
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	1.14E-06
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	1.27E-07
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	5.68E-09
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	3.07E-04	7.71E-09
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	2.50E-09
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	1.30E-05	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	2.32E-05	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.77E-05	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.94E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	3.81E-05	1.54E-08
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	1.91E-06	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	2.04E-09
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	6.63E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	9.93E-05	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	1.14E-07
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	1.29E-05	9.26E-10
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	6.49E-08
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	4.02E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	1.98E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	9.68E-06	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	1.14E-02	4.10E-08
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	3.49E-02	2.85E-07
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	4.30E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	1.05E-04	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	3.51E-03	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.25E-04	NA
Sediment	**RM3-6**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.42E-02**	**1.99E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	2.41E-05	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.28E-05	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	8.55E-05	1.97E-09
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	3.08E-09
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	2.58E-08
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	2.88E-09
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	1.29E-10
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	1.87E-05	2.69E-10
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	5.67E-11
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	7.76E-07	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	1.38E-06	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.05E-06	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.01E-05	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	3.67E-06	5.65E-10
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	1.84E-07	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	4.63E-11
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	6.39E-05	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	9.58E-06	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	2.59E-09
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	7.87E-07	3.23E-11
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	1.47E-09
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	3.88E-05	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	1.91E-05	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	5.76E-07	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	6.75E-04	1.38E-09
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	2.49E-03	1.16E-08
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	4.15E-05	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	6.42E-06	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	2.14E-04	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.20E-05	NA
Sediment	**RM3-6**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.74E-03**	**5.20E-08**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	1.98E-04	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.05E-04	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	7.83E-04	5.42E-08
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	1.10E-07
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	9.21E-07
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	1.03E-07
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	4.59E-09
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	1.76E-04	7.59E-09
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	2.02E-09
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	7.38E-06	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	1.31E-05	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.00E-05	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	1.83E-04	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	3.02E-05	1.74E-08
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	1.51E-06	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	1.65E-09
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	5.25E-04	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	7.87E-05	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	9.24E-08
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	7.42E-06	9.13E-10
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	5.24E-08
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	3.19E-04	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	1.57E-04	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	5.47E-06	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	6.43E-03	3.96E-08
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	2.23E-02	3.12E-07
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	3.41E-04	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	6.05E-05	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	2.02E-03	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	9.89E-05	NA
Sediment	**RM3-6**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.38E-02**	**1.72E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	2.83E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.50E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	3.16E-04	2.74E-08
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	2.68E-08
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	2.26E-07
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	2.52E-08
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	1.12E-09
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	8.28E-05	4.46E-09
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	4.95E-10
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	3.61E-06	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	6.43E-06	NA
Sediment	RM3-6	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	4.91E-06	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	6.94E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	4.31E-06	1.24E-09
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.16E-07	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	4.04E-10
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	7.49E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.12E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	2.26E-08
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	3.48E-06	5.36E-10
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	1.28E-08
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	4.55E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.24E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	2.68E-06	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	3.18E-03	2.45E-08
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	7.79E-03	1.36E-07
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	4.87E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	2.84E-05	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	9.46E-04	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.41E-05	NA
Sediment	**RM3-6**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.27E-02**	**5.09E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	3.33E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.76E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	1.21E-03	4.21E-08
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	1.39E-07
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	1.17E-06
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	1.30E-07
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	5.82E-09
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	2.68E-04	5.77E-09
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	2.57E-09
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	1.11E-05	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	1.98E-05	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.51E-05	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.85E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	5.07E-05	2.46E-08
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.54E-06	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	2.09E-09
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	8.82E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.32E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	1.17E-07
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	1.13E-05	6.94E-10
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	6.65E-08
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	5.35E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.63E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	8.27E-06	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	9.69E-03	2.98E-08
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	3.52E-02	2.46E-07
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	5.73E-04	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	9.19E-05	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	3.06E-03	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.66E-04	NA
Sediment	**RM3-6**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.30E-02**	**1.98E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	3.05E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.61E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	1.20E-03	8.34E-08
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	1.69E-07
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	1.42E-06
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	1.58E-07
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	7.06E-09
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	2.71E-04	1.17E-08
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	3.11E-09
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	1.14E-05	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	2.02E-05	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.54E-05	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.81E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	4.64E-05	2.68E-08
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.32E-06	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	2.54E-09
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	8.08E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.21E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	1.42E-07
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	1.14E-05	1.40E-09
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	8.07E-08
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	4.91E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.41E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	8.42E-06	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	9.89E-03	6.09E-08
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	3.43E-02	4.80E-07
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	5.25E-04	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	9.30E-05	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	3.10E-03	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.52E-04	NA
Sediment	**RM3-6**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.21E-02**	**2.64E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	2.83E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.50E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	3.16E-04	2.74E-08
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	2.68E-08
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	2.26E-07
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	2.52E-08
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	1.12E-09
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	8.28E-05	4.46E-09
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	4.95E-10
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	3.61E-06	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	6.43E-06	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	4.91E-06	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	6.94E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	4.31E-06	1.24E-09
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.16E-07	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	4.04E-10
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	7.49E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.12E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	2.26E-08
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	3.48E-06	5.36E-10
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	1.28E-08
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	4.55E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.24E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	2.68E-06	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	3.18E-03	2.45E-08
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	7.79E-03	1.36E-07
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	4.87E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	2.84E-05	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	9.46E-04	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.41E-05	NA
Sediment	**RM3-6**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.27E-02**	**5.09E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	3.33E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.76E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	1.21E-03	4.21E-08
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	1.39E-07
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	1.17E-06
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	1.30E-07
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	5.82E-09
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	2.68E-04	5.77E-09
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	2.57E-09
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	1.11E-05	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	1.98E-05	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	1.51E-05	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.85E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	5.07E-05	2.46E-08
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.54E-06	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	2.09E-09
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	8.82E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.32E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	1.17E-07
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	1.13E-05	6.94E-10
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	6.65E-08
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	5.35E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.63E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	8.27E-06	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	9.69E-03	2.98E-08
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	3.52E-02	2.46E-07
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	5.73E-04	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	9.19E-05	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	3.06E-03	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.66E-04	NA
Sediment	**RM3-6**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.30E-02**	**1.98E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.18E+04	mg/kg	3.47E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.50E+00	mg/kg	1.84E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.32E+00	mg/kg	1.54E-03	5.86E-08
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NA	mg/kg	NA	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.75E+00	mg/kg	NA	4.91E-08
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.99E+00	mg/kg	NA	4.12E-07
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.45E+00	mg/kg	NA	4.60E-08
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.99E+00	mg/kg	NA	2.06E-09
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	5.25E+01	mg/kg	3.56E-04	8.43E-09
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	8.76E+00	mg/kg	NA	9.06E-10
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.79E+00	mg/kg	1.50E-05	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	3.19E+00	mg/kg	2.67E-05	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.44E+00	mg/kg	2.04E-05	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	3.55E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	5.39E+00	mg/kg	5.29E-05	6.72E-09
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.35E+02	mg/kg	2.65E-06	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.15E+00	mg/kg	NA	7.39E-10
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.38E+00	mg/kg	9.21E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.87E+02	mg/kg	1.38E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.00E-01	mg/kg	NA	4.14E-08
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	5.52E-03	mg/kg	1.50E-05	1.01E-09
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.27E+00	mg/kg	NA	2.35E-08
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.56E+02	mg/kg	5.59E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.80E+00	mg/kg	2.75E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	1.33E+00	mg/kg	1.11E-05	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.47E+00	mg/kg	1.31E-02	4.44E-08
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.89E-04	mg/kg	4.28E-02	3.30E-07
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.03E-01	mg/kg	5.98E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.70E+03	mg/kg	1.22E-04	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	3.00E+02	mg/kg	4.07E-03	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NA	mg/kg	NA	NA
Sediment	RM3-6	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.97E+01	mg/kg	1.73E-04	NA
Sediment	**RM3-6**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**6.57E-02**	**1.02E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.32E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.37E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	1.94E-03	1.34E-07
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.68E-09	5.69E-14
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	1.62E-07
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	1.92E-06
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	2.36E-07
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	8.15E-09
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.68E-04	7.23E-09
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	1.63E-09
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	1.07E-05	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	1.43E-05	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	1.82E-05	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	5.61E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	5.76E-06	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	1.74E-09
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	7.88E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.94E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	2.71E-07
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	5.29E-05	6.51E-09
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	1.30E-07
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	5.59E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	4.84E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	2.26E-05	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	4.94E-02	3.04E-07
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	8.42E-01	1.18E-05
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	6.36E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.47E-04	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	4.90E-03	NA
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.58E-07	2.29E-12
Sediment	RM6-9	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	2.17E-04	NA
Sediment	**RM6-9**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.02E-01**	**1.50E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.08E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.27E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	5.10E-04	4.42E-08
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.56E-10	6.59E-15
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	2.57E-08
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	3.06E-07
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	3.75E-08
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	1.30E-09
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	5.12E-05	2.76E-09
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	2.60E-10
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	3.39E-06	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	4.55E-06	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	5.78E-06	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	1.39E-04	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	5.34E-07	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	2.77E-10
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	7.31E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.80E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	4.32E-08
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	1.62E-05	2.49E-09
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	2.06E-08
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	5.19E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	4.49E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	7.18E-06	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	1.59E-02	1.22E-07
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	1.91E-01	3.34E-06
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	5.90E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	4.49E-05	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	1.50E-03	NA
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.40E-08	1.06E-13
Sediment	RM6-9	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	2.01E-05	NA
Sediment	**RM6-9**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.09E-01**	**3.95E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	1.76E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	7.26E-06	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	1.85E-04	3.52E-08
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	8.90E-11	8.29E-15
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	1.94E-08
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	2.31E-07
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	2.83E-08
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	9.78E-10
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.78E-05	2.10E-09
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	1.96E-10
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	1.16E-06	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	1.56E-06	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	1.98E-06	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	5.13E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	3.05E-07	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	2.09E-10
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	4.17E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.03E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	3.26E-08
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	5.60E-06	1.90E-09
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	1.56E-08
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	2.96E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	2.57E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	2.46E-06	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	5.43E-03	9.19E-08
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	7.27E-02	2.80E-06
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	3.37E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.56E-05	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	5.19E-04	NA
Sediment	RM6-9	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	1.37E-08	1.33E-13
Sediment	RM6-9	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	1.15E-05	NA
Sediment	**RM6-9**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**7.91E-02**	**3.26E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	2.72E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.12E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	2.08E-03	8.38E-08
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.38E-09	2.72E-14
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	1.30E-07
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	1.55E-06
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	1.90E-07
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	6.55E-09
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.90E-04	4.77E-09
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	1.31E-09
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	1.23E-05	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	1.64E-05	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	2.09E-05	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	5.87E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	4.72E-06	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	1.40E-09
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	6.46E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.59E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	2.18E-07
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	5.98E-05	4.30E-09
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	1.04E-07
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	4.59E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	3.97E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	2.59E-05	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	5.70E-02	2.05E-07
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	8.55E-01	6.99E-06
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	5.22E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.66E-04	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	5.54E-03	NA
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.12E-07	1.31E-12
Sediment	RM6-9	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	1.78E-04	NA
Sediment	**RM6-9**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.24E-01**	**9.48E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	2.62E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.08E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	1.38E-04	3.18E-09
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.33E-10	1.50E-15
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	2.95E-09
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	3.50E-08
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	4.30E-09
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	1.48E-10
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.16E-05	1.66E-10
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	2.98E-11
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	7.29E-07	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	9.78E-07	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	1.24E-06	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	4.02E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	4.56E-07	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	3.18E-11
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	6.23E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.53E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	4.94E-09
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	3.65E-06	1.50E-10
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	2.36E-09
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	4.42E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	3.83E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	1.54E-06	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	3.37E-03	6.91E-09
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	6.12E-02	2.86E-07
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	5.03E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.01E-05	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	3.38E-04	NA
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.04E-08	4.82E-14
Sediment	RM6-9	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	1.72E-05	NA
Sediment	**RM6-9**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**6.54E-02**	**3.46E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	2.16E-04	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	8.90E-05	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	1.26E-03	8.74E-08
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.09E-09	3.70E-14
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	1.05E-07
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	1.25E-06
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	1.53E-07
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	5.29E-09
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.09E-04	4.70E-09
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	1.06E-09
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	6.93E-06	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	9.30E-06	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	1.18E-05	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	3.64E-04	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	3.74E-06	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	1.13E-09
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	5.12E-04	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.26E-04	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	1.76E-07
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	3.44E-05	4.23E-09
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	8.43E-08
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	3.63E-04	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	3.15E-04	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	1.47E-05	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	3.21E-02	1.98E-07
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	5.47E-01	7.66E-06
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	4.13E-04	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	9.56E-05	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	3.19E-03	NA
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	1.68E-07	1.49E-12
Sediment	RM6-9	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	1.41E-04	NA
Sediment	**RM6-9**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.87E-01**	**9.73E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.08E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.27E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	5.10E-04	4.42E-08
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.56E-10	6.59E-15
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	2.57E-08
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	3.06E-07
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	3.75E-08
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	1.30E-09
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	5.12E-05	2.76E-09
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	2.60E-10
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	3.39E-06	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	4.55E-06	NA
Sediment	RM6-9	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	5.78E-06	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	1.39E-04	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	5.34E-07	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	2.77E-10
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	7.31E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.80E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	4.32E-08
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	1.62E-05	2.49E-09
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	2.06E-08
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	5.19E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	4.49E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	7.18E-06	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	1.59E-02	1.22E-07
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	1.91E-01	3.34E-06
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	5.90E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	4.49E-05	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	1.50E-03	NA
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.40E-08	1.06E-13
Sediment	RM6-9	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	2.01E-05	NA
Sediment	**RM6-9**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.09E-01**	**3.95E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.62E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.49E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	1.96E-03	6.78E-08
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.83E-09	3.10E-14
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	1.33E-07
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	1.58E-06
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	1.94E-07
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	6.72E-09
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.66E-04	3.57E-09
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	1.35E-09
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	1.05E-05	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	1.40E-05	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	1.78E-05	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	5.70E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	6.29E-06	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	1.44E-09
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	8.60E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	2.12E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	2.24E-07
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	5.23E-05	3.22E-09
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	1.07E-07
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	6.10E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	5.28E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	2.22E-05	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	4.84E-02	1.49E-07
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	8.64E-01	6.05E-06
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	6.94E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.45E-04	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	4.84E-03	NA
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.82E-07	2.10E-12
Sediment	RM6-9	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	2.37E-04	NA
Sediment	**RM6-9**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.23E-01**	**8.52E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.32E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.37E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	1.94E-03	1.34E-07
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.68E-09	5.69E-14
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	1.62E-07
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	1.92E-06
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	2.36E-07
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	8.15E-09
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.68E-04	7.23E-09
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	1.63E-09
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	1.07E-05	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	1.43E-05	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	1.82E-05	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	5.61E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	5.76E-06	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	1.74E-09
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	7.88E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.94E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	2.71E-07
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	5.29E-05	6.51E-09
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	1.30E-07
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	5.59E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	4.84E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	2.26E-05	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	4.94E-02	3.04E-07
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	8.42E-01	1.18E-05
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	6.36E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.47E-04	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	4.90E-03	NA
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.58E-07	2.29E-12
Sediment	RM6-9	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	2.17E-04	NA
Sediment	**RM6-9**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.02E-01**	**1.50E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.08E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.27E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	5.10E-04	4.42E-08
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.56E-10	6.59E-15
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	2.57E-08
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	3.06E-07
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	3.75E-08
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	1.30E-09
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	5.12E-05	2.76E-09
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	2.60E-10
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	3.39E-06	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	4.55E-06	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	5.78E-06	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	1.39E-04	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	5.34E-07	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	2.77E-10
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	7.31E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	1.80E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	4.32E-08
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	1.62E-05	2.49E-09
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	2.06E-08
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	5.19E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	4.49E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	7.18E-06	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	1.59E-02	1.22E-07
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	1.91E-01	3.34E-06
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	5.90E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	4.49E-05	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	1.50E-03	NA
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.40E-08	1.06E-13
Sediment	RM6-9	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	2.01E-05	NA
Sediment	**RM6-9**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.09E-01**	**3.95E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.62E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.49E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	1.96E-03	6.78E-08
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.83E-09	3.10E-14
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	1.33E-07
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	1.58E-06
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	1.94E-07
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	6.72E-09
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	1.66E-04	3.57E-09
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	1.35E-09
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	1.05E-05	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	1.40E-05	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	1.78E-05	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	5.70E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	6.29E-06	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	1.44E-09
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	8.60E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	2.12E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	2.24E-07
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	5.23E-05	3.22E-09
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	1.07E-07
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	6.10E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	5.28E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	2.22E-05	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	4.84E-02	1.49E-07
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	8.64E-01	6.05E-06
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	6.94E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.45E-04	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	4.84E-03	NA
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.82E-07	2.10E-12
Sediment	RM6-9	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	4.24E+01	mg/kg	2.37E-04	NA
Sediment	**RM6-9**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.23E-01**	**8.52E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.28E+04	mg/kg	3.78E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.12E+00	mg/kg	1.56E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.50E+01	mg/kg	2.48E-03	9.45E-08
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.91E-09	3.56E-14
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.55E+00	mg/kg	NA	4.71E-08
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	5.40E+00	mg/kg	NA	5.59E-07
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.63E+00	mg/kg	NA	6.86E-08
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.29E+00	mg/kg	NA	2.37E-09
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	3.25E+01	mg/kg	2.20E-04	5.21E-09
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	4.59E+00	mg/kg	NA	4.75E-10
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.69E+00	mg/kg	1.41E-05	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.26E+00	mg/kg	1.89E-05	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	2.87E+00	mg/kg	2.40E-05	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	9.86E+00	mg/kg	7.09E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.34E+02	mg/kg	6.56E-06	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.90E+00	mg/kg	NA	5.07E-10
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.14E+00	mg/kg	8.98E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.00E+02	mg/kg	2.21E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	7.63E-01	mg/kg	NA	7.89E-08
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	2.56E-02	mg/kg	6.94E-05	4.70E-09
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	3.65E+00	mg/kg	NA	3.77E-08
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.19E+02	mg/kg	6.37E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	5.62E+00	mg/kg	5.52E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	3.57E+00	mg/kg	2.98E-05	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	7.35E+00	mg/kg	6.55E-02	2.22E-07
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.20E-02	mg/kg	1.05E+00	8.09E-06
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.46E-01	mg/kg	7.25E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	4.27E+03	mg/kg	1.93E-04	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	4.74E+02	mg/kg	6.43E-03	NA
Sediment	RM6-9	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.00E-03	mg/kg	2.95E-07	5.73E-13
Sediment	**RM6-9**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.13E+00**	**9.21E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.44E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.77E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	2.35E-03	1.63E-07
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.68E-09	5.69E-14
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	1.36E-07
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	1.62E-06
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	1.93E-07
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	8.93E-09
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	2.12E-04	9.12E-09
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	1.25E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	1.83E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	2.38E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	7.82E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	1.05E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	1.85E-09
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	8.01E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.16E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	1.97E-07
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	7.96E-05	9.80E-09
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	9.49E-08
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	5.86E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	7.63E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	4.12E-06	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	6.68E-02	4.11E-07
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	1.25E+00	1.75E-05
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	7.11E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	1.98E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	6.59E-03	NA
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.81E-07	1.60E-12
Sediment	RM 6-9 East Bank	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.34E-04	NA
Sediment	**RM 6-9 East Bank**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.33E+00**	**2.03E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.20E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.64E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	6.17E-04	5.34E-08
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.56E-10	6.59E-15
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	2.16E-08
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	2.57E-07
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	3.08E-08
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	1.42E-09
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	6.46E-05	3.48E-09
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	3.98E-06	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	5.81E-06	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	7.56E-06	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	1.93E-04	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	9.78E-07	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	2.94E-10
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	7.43E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.01E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	3.13E-08
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	2.43E-05	3.74E-09
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	1.51E-08
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	5.43E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	7.08E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	1.31E-06	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	2.15E-02	1.65E-07
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	2.83E-01	4.96E-06
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	6.59E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	6.03E-05	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	2.01E-03	NA
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.68E-08	7.42E-14
Sediment	RM 6-9 East Bank	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.10E-05	NA
Sediment	**RM 6-9 East Bank**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.08E-01**	**5.54E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	1.83E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	9.37E-06	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	2.24E-04	4.27E-08
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	8.90E-11	8.29E-15
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	1.63E-08
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	1.94E-07
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	2.32E-08
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	1.07E-09
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	2.24E-05	2.66E-09
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	1.37E-06	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	1.99E-06	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	2.59E-06	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	7.15E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	5.59E-07	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	2.22E-10
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	4.25E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	1.15E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	2.36E-08
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	8.43E-06	2.85E-09
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	1.14E-08
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	3.10E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	4.05E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	4.49E-07	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	7.35E-03	1.24E-07
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	1.08E-01	4.15E-06
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	3.77E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	2.09E-05	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	6.97E-04	NA
Sediment	RM 6-9 East Bank	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	9.59E-09	9.33E-14
Sediment	RM 6-9 East Bank	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	1.77E-05	NA
Sediment	**RM 6-9 East Bank**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.16E-01**	**4.60E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	2.83E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.45E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	2.51E-03	1.01E-07
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.38E-09	2.72E-14
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	1.09E-07
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	1.30E-06
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	1.56E-07
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	7.19E-09
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	2.39E-04	6.01E-09
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	1.44E-05	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	2.10E-05	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	2.73E-05	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	8.18E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	8.65E-06	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	1.49E-09
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	6.57E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	1.77E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	1.58E-07
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	9.00E-05	6.46E-09
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	7.64E-08
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	4.80E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	6.26E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	4.73E-06	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	7.71E-02	2.77E-07
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	1.27E+00	1.04E-05
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	5.83E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	2.23E-04	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	7.45E-03	NA
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.48E-07	9.19E-13
Sediment	RM 6-9 East Bank	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	2.74E-04	NA
Sediment	**RM 6-9 East Bank**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.36E+00**	**1.26E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	2.73E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.40E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	1.67E-04	3.85E-09
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.33E-10	1.50E-15
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	2.48E-09
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	2.95E-08
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	3.52E-09
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	1.63E-10
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	1.46E-05	2.10E-10
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	8.56E-07	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	1.25E-06	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	1.62E-06	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	5.61E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	8.34E-07	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	3.37E-11
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	6.34E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	1.71E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	3.59E-09
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	5.49E-06	2.25E-10
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	1.73E-09
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	4.63E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	6.04E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	2.81E-07	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	4.56E-03	9.35E-09
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	9.08E-02	4.24E-07
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	5.62E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	1.36E-05	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	4.54E-04	NA
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.43E-08	3.38E-14
Sediment	RM 6-9 East Bank	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	2.64E-05	NA
Sediment	**RM 6-9 East Bank**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.64E-02**	**4.78E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	2.24E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.15E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	1.53E-03	1.06E-07
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.09E-09	3.70E-14
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	8.83E-08
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	1.05E-06
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	1.26E-07
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	5.81E-09
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	1.38E-04	5.93E-09
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	8.14E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	1.19E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	1.54E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	5.08E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	6.86E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	1.20E-09
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	5.21E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	1.41E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	1.28E-07
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	5.17E-05	6.37E-09
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	6.17E-08
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	3.81E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	4.96E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	2.67E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	4.34E-02	2.67E-07
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	8.12E-01	1.14E-05
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	4.62E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	1.28E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	4.28E-03	NA
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.18E-07	1.04E-12
Sediment	RM 6-9 East Bank	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	2.17E-04	NA
Sediment	**RM 6-9 East Bank**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**8.64E-01**	**1.32E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.20E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.64E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	6.17E-04	5.34E-08
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.56E-10	6.59E-15
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	2.16E-08
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	2.57E-07
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	3.08E-08
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	1.42E-09
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	6.46E-05	3.48E-09
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	3.98E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	5.81E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	7.56E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	1.93E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	9.78E-07	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	2.94E-10
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	7.43E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.01E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	3.13E-08
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	2.43E-05	3.74E-09
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	1.51E-08
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	5.43E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	7.08E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	1.31E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	2.15E-02	1.65E-07
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	2.83E-01	4.96E-06
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	6.59E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	6.03E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	2.01E-03	NA
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.68E-08	7.42E-14
Sediment	RM 6-9 East Bank	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.10E-05	NA
Sediment	**RM 6-9 East Bank**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.08E-01**	**5.54E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.76E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.93E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	2.37E-03	8.21E-08
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.83E-09	3.10E-14
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	1.12E-07
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	1.33E-06
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	1.59E-07
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	7.37E-09
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	2.09E-04	4.50E-09
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	1.23E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	1.79E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	2.33E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	7.94E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	1.15E-05	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	1.53E-09
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	8.74E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.36E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	1.62E-07
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	7.86E-05	4.84E-09
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	7.82E-08
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	6.39E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	8.33E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	4.04E-06	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	6.55E-02	2.01E-07
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	1.28E+00	8.97E-06
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	7.76E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	1.95E-04	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	6.51E-03	NA
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.97E-07	1.47E-12
Sediment	RM 6-9 East Bank	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.65E-04	NA
Sediment	**RM 6-9 East Bank**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.36E+00**	**1.11E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.44E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.77E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	2.35E-03	1.63E-07
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.68E-09	5.69E-14
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	1.36E-07
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	1.62E-06
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	1.93E-07
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	8.93E-09
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	2.12E-04	9.12E-09
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	1.25E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	1.83E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	2.38E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	7.82E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	1.05E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	1.85E-09
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	8.01E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.16E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	1.97E-07
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	7.96E-05	9.80E-09
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	9.49E-08
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	5.86E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	7.63E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	4.12E-06	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	6.68E-02	4.11E-07
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	1.25E+00	1.75E-05
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	7.11E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	1.98E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	6.59E-03	NA
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.81E-07	1.60E-12
Sediment	RM 6-9 East Bank	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.34E-04	NA
Sediment	**RM 6-9 East Bank**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.33E+00**	**2.03E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.20E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.64E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	6.17E-04	5.34E-08
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.56E-10	6.59E-15
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	2.16E-08
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	2.57E-07
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	3.08E-08
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	1.42E-09
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	6.46E-05	3.48E-09
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	3.98E-06	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	5.81E-06	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	7.56E-06	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	1.93E-04	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	9.78E-07	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	2.94E-10
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	7.43E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.01E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	3.13E-08
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	2.43E-05	3.74E-09
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	1.51E-08
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	5.43E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	7.08E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	1.31E-06	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	2.15E-02	1.65E-07
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	2.83E-01	4.96E-06
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	6.59E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	6.03E-05	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	2.01E-03	NA
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.68E-08	7.42E-14
Sediment	RM 6-9 East Bank	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.10E-05	NA
Sediment	**RM 6-9 East Bank**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.08E-01**	**5.54E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.76E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	1.93E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	2.37E-03	8.21E-08
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.83E-09	3.10E-14
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	1.12E-07
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	1.33E-06
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	1.59E-07
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	7.37E-09
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	2.09E-04	4.50E-09
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	1.23E-05	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	1.79E-05	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	2.33E-05	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	7.94E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	1.15E-05	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	1.53E-09
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	8.74E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.36E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	1.62E-07
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	7.86E-05	4.84E-09
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	7.82E-08
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	6.39E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	8.33E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	4.04E-06	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	6.55E-02	2.01E-07
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	1.28E+00	8.97E-06
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	7.76E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	1.95E-04	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	6.51E-03	NA
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	1.97E-07	1.47E-12
Sediment	RM 6-9 East Bank	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.65E-04	NA
Sediment	**RM 6-9 East Bank**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.36E+00**	**1.11E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	1.33E+04	mg/kg	3.93E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	2.74E+00	mg/kg	2.02E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	1.82E+01	mg/kg	3.00E-03	1.14E-07
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	2.60E-04	mg/kg	1.91E-09	3.56E-14
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.82E+00	mg/kg	NA	3.95E-08
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	4.55E+00	mg/kg	NA	4.71E-07
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.44E+00	mg/kg	NA	5.62E-08
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.51E+00	mg/kg	NA	2.60E-09
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	4.10E+01	mg/kg	2.78E-04	6.58E-09
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	NA	mg/kg	NA	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.98E+00	mg/kg	1.66E-05	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	2.88E+00	mg/kg	2.41E-05	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.75E+00	mg/kg	3.14E-05	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.38E+01	mg/kg	9.89E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.12E+02	mg/kg	1.20E-05	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	5.21E+00	mg/kg	NA	5.39E-10
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	9.30E+00	mg/kg	9.13E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	3.35E+02	mg/kg	2.47E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	5.54E-01	mg/kg	NA	5.73E-08
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	3.85E-02	mg/kg	1.04E-04	7.07E-09
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.67E+00	mg/kg	NA	2.76E-08
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.44E+02	mg/kg	6.67E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	8.86E+00	mg/kg	8.70E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	6.50E-01	mg/kg	5.44E-06	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	9.95E+00	mg/kg	8.85E-02	3.00E-07
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	1.78E-02	mg/kg	1.56E+00	1.20E-05
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	2.75E-01	mg/kg	8.10E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	5.73E+03	mg/kg	2.59E-04	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	6.37E+02	mg/kg	8.64E-03	NA
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.50E-03	mg/kg	2.06E-07	4.01E-13
Sediment	RM 6-9 East Bank	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	6.52E+01	mg/kg	3.81E-04	NA
Sediment	**RM 6-9 East Bank**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.67E+00**	**1.31E-05**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	2.09E-04	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	2.01E-04	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	6.16E-04	4.27E-08
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	9.91E-08
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	1.16E-06
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	2.15E-07
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	1.03E-08
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	7.22E-05	3.11E-09
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	1.19E-09
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	6.04E-06	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	6.32E-06	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	6.00E-06	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	1.24E-04	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.23E-06	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	1.51E-09
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	5.61E-04	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	7.85E-05	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	1.39E-07
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.73E-05	2.13E-09
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	7.40E-08
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	5.74E-04	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.19E-04	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	3.57E-06	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	6.84E-03	4.21E-08
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	2.96E-02	4.15E-07
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	3.15E-04	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	4.88E-05	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.63E-03	NA
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.63E-07	2.32E-12
Sediment	RM9-12	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	1.19E-04	NA
Sediment	**RM9-12**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.12E-02**	**2.21E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	1.94E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	1.87E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	1.62E-04	1.40E-08
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	1.58E-08
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	1.85E-07
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	3.42E-08
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	1.63E-09
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	2.20E-05	1.19E-09
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	1.89E-10
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	1.92E-06	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	2.01E-06	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	1.91E-06	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	3.05E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.14E-07	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	2.40E-10
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	5.21E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	7.28E-06	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	2.22E-08
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	5.27E-06	8.12E-10
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	1.18E-08
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	5.32E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.11E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	1.14E-06	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	2.20E-03	1.69E-08
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	6.72E-03	1.18E-07
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	2.92E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	1.49E-05	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	4.97E-04	NA
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.44E-08	1.08E-13
Sediment	RM9-12	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	1.10E-05	NA
Sediment	**RM9-12**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.86E-03**	**4.21E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	1.11E-05	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	1.07E-05	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	5.87E-05	1.12E-08
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	1.19E-08
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	1.39E-07
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	2.58E-08
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	1.23E-09
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	7.64E-06	9.05E-10
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	1.43E-10
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	6.59E-07	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	6.90E-07	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	6.55E-07	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	1.13E-05	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	6.54E-08	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	1.81E-10
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	2.98E-05	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	4.16E-06	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	1.67E-08
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.83E-06	6.19E-10
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	8.89E-09
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	3.04E-05	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	6.33E-06	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	3.90E-07	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	7.52E-04	1.27E-08
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	2.56E-03	9.85E-08
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	1.67E-05	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	5.17E-06	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.72E-04	NA
Sediment	RM9-12	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	1.39E-08	1.35E-13
Sediment	RM9-12	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	6.31E-06	NA
Sediment	**RM9-12**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.69E-03**	**3.28E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	1.72E-04	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	1.65E-04	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	6.58E-04	2.66E-08
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	7.98E-08
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	9.35E-07
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	1.73E-07
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	8.26E-09
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	8.16E-05	2.05E-09
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	9.55E-10
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	6.94E-06	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	7.26E-06	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	6.90E-06	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	1.29E-04	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.01E-06	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	1.21E-09
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	4.60E-04	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	6.44E-05	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	1.12E-07
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.95E-05	1.40E-09
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	5.96E-08
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	4.71E-04	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	9.79E-05	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	4.10E-06	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	7.90E-03	2.83E-08
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	3.01E-02	2.46E-07
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	2.59E-04	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	5.52E-05	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.84E-03	NA
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.15E-07	1.33E-12
Sediment	RM9-12	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	9.77E-05	NA
Sediment	**RM9-12**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.26E-02**	**1.67E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	1.65E-05	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	1.59E-05	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	4.38E-05	1.01E-09
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	1.81E-09
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	2.12E-08
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	3.92E-09
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	1.87E-10
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	4.98E-06	7.15E-11
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	2.16E-11
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	4.13E-07	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	4.32E-07	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	4.10E-07	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	8.86E-06	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	9.76E-08	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	2.75E-11
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	4.44E-05	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	6.21E-06	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	2.54E-09
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.19E-06	4.89E-11
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	1.35E-09
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	4.54E-05	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	9.45E-06	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	2.44E-07	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	4.66E-04	9.57E-10
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	2.15E-03	1.00E-08
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	2.49E-05	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	3.37E-06	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.12E-04	NA
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.08E-08	4.90E-14
Sediment	RM9-12	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	9.42E-06	NA
Sediment	**RM9-12**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.97E-03**	**4.32E-08**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	1.36E-04	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	1.31E-04	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	4.01E-04	2.77E-08
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	6.44E-08
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	7.55E-07
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	1.40E-07
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	6.67E-09
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	4.69E-05	2.02E-09
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	7.72E-10
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	3.93E-06	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	4.11E-06	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	3.90E-06	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	8.03E-05	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	8.02E-07	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	9.80E-10
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	3.65E-04	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	5.10E-05	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	9.06E-08
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.12E-05	1.38E-09
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	4.81E-08
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	3.73E-04	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	7.76E-05	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	2.32E-06	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	4.45E-03	2.74E-08
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	1.92E-02	2.69E-07
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	2.05E-04	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	3.17E-05	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.06E-03	NA
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	1.71E-07	1.51E-12
Sediment	RM9-12	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	7.74E-05	NA
Sediment	**RM9-12**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.67E-02**	**1.43E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	1.94E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	1.87E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	1.62E-04	1.40E-08
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	1.58E-08
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	1.85E-07
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	3.42E-08
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	1.63E-09
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	2.20E-05	1.19E-09
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	1.89E-10
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	1.92E-06	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	2.01E-06	NA
Sediment	RM9-12	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	1.91E-06	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	3.05E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.14E-07	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	2.40E-10
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	5.21E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	7.28E-06	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	2.22E-08
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	5.27E-06	8.12E-10
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	1.18E-08
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	5.32E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.11E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	1.14E-06	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	2.20E-03	1.69E-08
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	6.72E-03	1.18E-07
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	2.92E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	1.49E-05	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	4.97E-04	NA
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.44E-08	1.08E-13
Sediment	RM9-12	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	1.10E-05	NA
Sediment	**RM9-12**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.86E-03**	**4.21E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	2.28E-04	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	2.20E-04	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	6.21E-04	2.15E-08
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	8.17E-08
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	9.58E-07
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	1.77E-07
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	8.46E-09
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	7.13E-05	1.54E-09
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	9.79E-10
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	5.93E-06	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	6.20E-06	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	5.89E-06	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	1.26E-04	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.35E-06	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	1.24E-09
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	6.13E-04	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	8.57E-05	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	1.15E-07
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.71E-05	1.05E-09
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	6.10E-08
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	6.26E-04	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.30E-04	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	3.51E-06	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	6.70E-03	2.06E-08
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	3.04E-02	2.13E-07
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	3.44E-04	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	4.82E-05	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.61E-03	NA
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.87E-07	2.13E-12
Sediment	RM9-12	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	1.30E-04	NA
Sediment	**RM9-12**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.20E-02**	**1.66E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	2.09E-04	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	2.01E-04	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	6.16E-04	4.27E-08
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	9.91E-08
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	1.16E-06
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	2.15E-07
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	1.03E-08
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	7.22E-05	3.11E-09
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	1.19E-09
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	6.04E-06	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	6.32E-06	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	6.00E-06	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	1.24E-04	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.23E-06	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	1.51E-09
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	5.61E-04	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	7.85E-05	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	1.39E-07
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.73E-05	2.13E-09
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	7.40E-08
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	5.74E-04	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.19E-04	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	3.57E-06	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	6.84E-03	4.21E-08
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	2.96E-02	4.15E-07
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	3.15E-04	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	4.88E-05	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.63E-03	NA
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.63E-07	2.32E-12
Sediment	RM9-12	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	1.19E-04	NA
Sediment	**RM9-12**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.12E-02**	**2.21E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	1.94E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	1.87E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	1.62E-04	1.40E-08
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	1.58E-08
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	1.85E-07
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	3.42E-08
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	1.63E-09
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	2.20E-05	1.19E-09
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	1.89E-10
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	1.92E-06	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	2.01E-06	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	1.91E-06	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	3.05E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.14E-07	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	2.40E-10
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	5.21E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	7.28E-06	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	2.22E-08
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	5.27E-06	8.12E-10
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	1.18E-08
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	5.32E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.11E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	1.14E-06	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	2.20E-03	1.69E-08
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	6.72E-03	1.18E-07
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	2.92E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	1.49E-05	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	4.97E-04	NA
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.44E-08	1.08E-13
Sediment	RM9-12	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	1.10E-05	NA
Sediment	**RM9-12**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.86E-03**	**4.21E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	2.28E-04	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	2.20E-04	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	6.21E-04	2.15E-08
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	8.17E-08
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	9.58E-07
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	1.77E-07
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	8.46E-09
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	7.13E-05	1.54E-09
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	9.79E-10
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	5.93E-06	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	6.20E-06	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	5.89E-06	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	1.26E-04	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.35E-06	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	1.24E-09
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	6.13E-04	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	8.57E-05	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	1.15E-07
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	1.71E-05	1.05E-09
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	6.10E-08
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	6.26E-04	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.30E-04	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	3.51E-06	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	6.70E-03	2.06E-08
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	3.04E-02	2.13E-07
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	3.44E-04	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	4.82E-05	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	1.61E-03	NA
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.87E-07	2.13E-12
Sediment	RM9-12	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.32E+01	mg/kg	1.30E-04	NA
Sediment	**RM9-12**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.20E-02**	**1.66E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.09E+03	mg/kg	2.38E-04	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	3.12E+00	mg/kg	2.29E-04	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	4.77E+00	mg/kg	7.87E-04	3.00E-08
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.79E+00	mg/kg	NA	2.88E-08
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.27E+00	mg/kg	NA	3.38E-07
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	6.05E+00	mg/kg	NA	6.26E-08
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.89E+00	mg/kg	NA	2.99E-09
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.40E+01	mg/kg	9.47E-05	2.24E-09
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.34E+00	mg/kg	NA	3.45E-10
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	9.54E-01	mg/kg	7.99E-06	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	9.98E-01	mg/kg	8.36E-06	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	9.48E-01	mg/kg	7.94E-06	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.17E+00	mg/kg	1.56E-04	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	7.16E+01	mg/kg	1.41E-06	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.24E+00	mg/kg	NA	4.39E-10
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.52E+00	mg/kg	6.40E-04	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.22E+02	mg/kg	8.95E-05	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.92E-01	mg/kg	NA	4.05E-08
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	8.36E-03	mg/kg	2.27E-05	1.53E-09
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.08E+00	mg/kg	NA	2.15E-08
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	5.33E+02	mg/kg	6.54E-04	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	1.39E+00	mg/kg	1.36E-04	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.64E-01	mg/kg	4.72E-06	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.02E+00	mg/kg	9.06E-03	3.07E-08
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	4.22E-04	mg/kg	3.70E-02	2.85E-07
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.22E-01	mg/kg	3.59E-04	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.42E+03	mg/kg	6.41E-05	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.57E+02	mg/kg	2.13E-03	NA
Sediment	RM9-12	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	5.08E-03	mg/kg	2.99E-07	5.82E-13
Sediment	**RM9-12**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.18E-02**	**8.44E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.15E-04	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	6.24E-05	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	4.45E-04	3.08E-08
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	8.69E-08
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	8.62E-07
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	1.16E-07
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	5.32E-09
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	8.21E-05	3.54E-09
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	5.38E-10
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	5.34E-06	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	3.65E-06	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	2.50E-06	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	1.16E-04	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.11E-06	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	1.12E-09
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	5.64E-04	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	6.35E-05	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	1.32E-07
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	1.43E-05	1.76E-09
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	6.82E-08
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	7.93E-04	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.92E-04	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	3.18E-06	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	1.18E-02	7.26E-08
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	2.39E-02	3.34E-07
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.69E-04	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	7.78E-05	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	2.59E-03	NA
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	1.06E-04	NA
Sediment	**RM12-15**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.13E-02**	**1.71E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.00E-05	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	5.79E-06	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	1.17E-04	1.01E-08
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	1.38E-08
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	1.37E-07
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	1.84E-08
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	8.47E-10
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	2.50E-05	1.35E-09
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	8.56E-11
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	1.70E-06	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	1.16E-06	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	7.96E-07	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	2.88E-05	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.03E-07	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	1.78E-10
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	5.24E-05	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	5.89E-06	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	2.10E-08
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	4.37E-06	6.73E-10
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	1.08E-08
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	7.36E-05	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.78E-05	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	1.01E-06	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	3.79E-03	2.92E-08
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	5.41E-03	9.47E-08
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.49E-05	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	2.37E-05	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	7.91E-04	NA
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	9.87E-06	NA
Sediment	**RM12-15**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.04E-02**	**3.38E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	1.14E-05	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	3.31E-06	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	4.24E-05	8.07E-09
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	1.04E-08
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	1.03E-07
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	1.39E-08
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	6.39E-10
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	8.69E-06	1.03E-09
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	6.46E-11
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	5.83E-07	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	3.98E-07	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	2.73E-07	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	1.07E-05	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	5.91E-08	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	1.34E-10
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	2.99E-05	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	3.37E-06	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	1.58E-08
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	1.52E-06	5.13E-10
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	8.19E-09
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	4.21E-05	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.02E-05	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	3.47E-07	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	1.30E-03	2.19E-08
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	2.06E-03	7.93E-08
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	1.42E-05	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	8.23E-06	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	2.75E-04	NA
Sediment	RM12-15	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	5.64E-06	NA
Sediment	**RM12-15**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.83E-03**	**2.64E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	1.77E-04	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	5.12E-05	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	4.75E-04	1.92E-08
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	6.99E-08
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	6.93E-07
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	9.30E-08
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	4.28E-09
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	9.28E-05	2.33E-09
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	4.33E-10
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	6.14E-06	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	4.19E-06	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	2.87E-06	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	1.22E-04	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	9.14E-07	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	8.98E-10
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	4.63E-04	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	5.21E-05	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	1.06E-07
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	1.62E-05	1.16E-09
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	5.49E-08
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	6.51E-04	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.58E-04	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	3.65E-06	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	1.36E-02	4.89E-08
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	2.42E-02	1.98E-07
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.20E-04	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	8.79E-05	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	2.93E-03	NA
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	8.73E-05	NA
Sediment	**RM12-15**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.35E-02**	**1.29E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	1.70E-05	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	4.94E-06	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	3.16E-05	7.29E-10
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	1.58E-09
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	1.57E-08
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	2.11E-09
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	9.70E-11
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	5.66E-06	8.13E-11
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	9.81E-12
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	3.65E-07	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	2.49E-07	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	1.71E-07	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	8.36E-06	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	8.82E-08	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	2.03E-11
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	4.47E-05	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	5.02E-06	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	2.40E-09
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	9.88E-07	4.05E-11
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	1.24E-09
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	6.28E-05	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.52E-05	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	2.17E-07	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	8.04E-04	1.65E-09
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	1.73E-03	8.09E-09
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.13E-05	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	5.36E-06	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	1.79E-04	NA
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	8.42E-06	NA
Sediment	**RM12-15**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.95E-03**	**3.38E-08**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	1.40E-04	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	4.06E-05	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	2.89E-04	2.00E-08
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	5.65E-08
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	5.60E-07
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	7.51E-08
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	3.46E-09
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	5.33E-05	2.30E-09
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	3.50E-10
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	3.47E-06	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	2.37E-06	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	1.63E-06	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	7.57E-05	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	7.25E-07	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	7.25E-10
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	3.67E-04	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	4.13E-05	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	8.57E-08
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	9.31E-06	1.15E-09
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	4.43E-08
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	5.16E-04	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.25E-04	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	2.07E-06	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	7.66E-03	4.72E-08
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	1.55E-02	2.17E-07
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	1.75E-04	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	5.05E-05	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	1.69E-03	NA
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	6.92E-05	NA
Sediment	**RM12-15**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.68E-02**	**1.11E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.00E-05	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	5.79E-06	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	1.17E-04	1.01E-08
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	1.38E-08
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	1.37E-07
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	1.84E-08
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	8.47E-10
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	2.50E-05	1.35E-09
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	8.56E-11
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	1.70E-06	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	1.16E-06	NA
Sediment	RM12-15	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	7.96E-07	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	2.88E-05	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.03E-07	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	1.78E-10
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	5.24E-05	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	5.89E-06	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	2.10E-08
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	4.37E-06	6.73E-10
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	1.08E-08
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	7.36E-05	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.78E-05	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	1.01E-06	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	3.79E-03	2.92E-08
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	5.41E-03	9.47E-08
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.49E-05	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	2.37E-05	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	7.91E-04	NA
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	9.87E-06	NA
Sediment	**RM12-15**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.04E-02**	**3.38E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.35E-04	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	6.81E-05	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	4.48E-04	1.55E-08
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	7.17E-08
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	7.11E-07
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	9.53E-08
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	4.39E-09
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	8.11E-05	1.75E-09
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	4.44E-10
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	5.25E-06	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	3.58E-06	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	2.45E-06	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	1.18E-04	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.22E-06	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	9.20E-10
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	6.16E-04	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	6.93E-05	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	1.09E-07
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	1.42E-05	8.71E-10
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	5.62E-08
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	8.66E-04	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	2.10E-04	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	3.12E-06	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	1.16E-02	3.56E-08
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	2.45E-02	1.71E-07
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.93E-04	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	7.68E-05	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	2.56E-03	NA
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	1.16E-04	NA
Sediment	**RM12-15**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.18E-02**	**1.27E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.15E-04	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	6.24E-05	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	4.45E-04	3.08E-08
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	8.69E-08
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	8.62E-07
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	1.16E-07
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	5.32E-09
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	8.21E-05	3.54E-09
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	5.38E-10
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	5.34E-06	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	3.65E-06	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	2.50E-06	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	1.16E-04	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.11E-06	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	1.12E-09
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	5.64E-04	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	6.35E-05	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	1.32E-07
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	1.43E-05	1.76E-09
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	6.82E-08
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	7.93E-04	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.92E-04	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	3.18E-06	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	1.18E-02	7.26E-08
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	2.39E-02	3.34E-07
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.69E-04	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	7.78E-05	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	2.59E-03	NA
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	1.06E-04	NA
Sediment	**RM12-15**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.13E-02**	**1.71E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.00E-05	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	5.79E-06	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	1.17E-04	1.01E-08
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	1.38E-08
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	1.37E-07
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	1.84E-08
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	8.47E-10
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	2.50E-05	1.35E-09
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	8.56E-11
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	1.70E-06	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	1.16E-06	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	7.96E-07	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	2.88E-05	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.03E-07	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	1.78E-10
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	5.24E-05	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	5.89E-06	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	2.10E-08
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	4.37E-06	6.73E-10
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	1.08E-08
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	7.36E-05	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	1.78E-05	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	1.01E-06	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	3.79E-03	2.92E-08
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	5.41E-03	9.47E-08
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.49E-05	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	2.37E-05	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	7.91E-04	NA
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	9.87E-06	NA
Sediment	**RM12-15**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.04E-02**	**3.38E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.35E-04	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	6.81E-05	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	4.48E-04	1.55E-08
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	7.17E-08
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	7.11E-07
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	9.53E-08
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	4.39E-09
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	8.11E-05	1.75E-09
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	4.44E-10
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	5.25E-06	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	3.58E-06	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	2.45E-06	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	1.18E-04	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.22E-06	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	9.20E-10
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	6.16E-04	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	6.93E-05	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	1.09E-07
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	1.42E-05	8.71E-10
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	5.62E-08
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	8.66E-04	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	2.10E-04	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	3.12E-06	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	1.16E-02	3.56E-08
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	2.45E-02	1.71E-07
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	2.93E-04	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	7.68E-05	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	2.56E-03	NA
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	1.16E-04	NA
Sediment	**RM12-15**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.18E-02**	**1.27E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	8.34E+03	mg/kg	2.46E-04	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	9.66E-01	mg/kg	7.11E-05	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	3.44E+00	mg/kg	5.68E-04	2.16E-08
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	2.45E+00	mg/kg	NA	2.53E-08
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	2.42E+00	mg/kg	NA	2.51E-07
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	3.25E+00	mg/kg	NA	3.36E-08
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	1.50E+00	mg/kg	NA	1.55E-09
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.59E+01	mg/kg	1.08E-04	2.55E-09
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	1.51E+00	mg/kg	NA	1.57E-10
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.44E-01	mg/kg	7.07E-06	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	5.76E-01	mg/kg	4.82E-06	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	3.95E-01	mg/kg	3.31E-06	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	2.05E+00	mg/kg	1.47E-04	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	6.47E+01	mg/kg	1.27E-06	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	3.14E+00	mg/kg	NA	3.25E-10
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	6.55E+00	mg/kg	6.43E-04	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	9.83E+01	mg/kg	7.24E-05	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	3.71E-01	mg/kg	NA	3.84E-08
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.93E-03	mg/kg	1.88E-05	1.27E-09
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	1.92E+00	mg/kg	NA	1.98E-08
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	7.37E+02	mg/kg	9.04E-04	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.23E+00	mg/kg	2.19E-04	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	5.02E-01	mg/kg	4.20E-06	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.76E+00	mg/kg	1.56E-02	5.29E-08
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	3.40E-04	mg/kg	2.98E-02	2.29E-07
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.04E-01	mg/kg	3.06E-04	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.26E+03	mg/kg	1.02E-04	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.51E+02	mg/kg	3.40E-03	NA
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM12-15	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.08E+01	mg/kg	1.21E-04	NA
Sediment	**RM12-15**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**5.23E-02**	**6.78E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.14E-04	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	2.86E-04	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	7.78E-04	5.39E-08
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	1.54E-07
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	2.33E-06
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	1.80E-07
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	8.21E-09
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	5.61E-06	2.42E-10
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	1.05E-09
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	5.69E-06	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	6.80E-06	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	8.15E-06	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	7.74E-05	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	5.27E-07	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	2.52E-09
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	3.60E-04	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	4.61E-05	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	3.62E-07
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	1.30E-05	1.60E-09
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	8.50E-08
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	4.56E-04	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	5.49E-05	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	2.91E-06	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	9.14E-03	5.62E-08
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	4.84E-04	6.77E-09
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	2.14E-04	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	5.43E-05	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	1.81E-03	NA
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.55E-08	1.37E-13
Sediment	RM15-17.4	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	6.86E-05	NA
Sediment	**RM15-17.4**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.40E-02**	**3.25E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.06E-05	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	2.65E-05	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	2.04E-04	1.77E-08
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	2.45E-08
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	3.71E-07
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	2.86E-08
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	1.31E-09
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	1.71E-06	9.22E-11
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	1.67E-10
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	1.81E-06	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	2.16E-06	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	2.59E-06	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	1.91E-05	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	4.89E-08	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	4.01E-10
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	3.34E-05	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	4.28E-06	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	5.75E-08
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	3.97E-06	6.11E-10
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	1.35E-08
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	4.23E-05	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	5.09E-06	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	9.25E-07	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	2.94E-03	2.26E-08
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	1.10E-04	1.92E-09
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	1.99E-05	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	1.66E-05	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	5.53E-04	NA
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.44E-09	6.36E-15
Sediment	RM15-17.4	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	6.36E-06	NA
Sediment	**RM15-17.4**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.00E-03**	**5.40E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	6.03E-06	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	1.51E-05	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	7.42E-05	1.41E-08
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	1.85E-08
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	2.80E-07
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	2.16E-08
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	9.86E-10
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	5.94E-07	7.04E-11
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	1.26E-10
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	6.21E-07	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	7.42E-07	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	8.89E-07	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	7.08E-06	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	2.79E-08	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	3.02E-10
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	1.91E-05	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	2.44E-06	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	4.34E-08
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	1.38E-06	4.66E-10
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	1.02E-08
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	2.41E-05	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	2.91E-06	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	3.17E-07	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	1.00E-03	1.70E-08
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	4.18E-05	1.61E-09
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	1.14E-05	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	5.75E-06	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	1.92E-04	NA
Sediment	RM15-17.4	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	8.22E-10	8.00E-15
Sediment	RM15-17.4	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	3.63E-06	NA
Sediment	**RM15-17.4**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.41E-03**	**4.09E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	9.33E-05	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	2.34E-04	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	8.32E-04	3.36E-08
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	1.24E-07
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	1.88E-06
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	1.45E-07
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	6.61E-09
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	6.35E-06	1.59E-10
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	8.45E-10
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	6.54E-06	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	7.82E-06	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	9.37E-06	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	8.10E-05	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	4.32E-07	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	2.03E-09
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	2.95E-04	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	3.78E-05	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	2.91E-07
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	1.47E-05	1.06E-09
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	6.84E-08
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	3.74E-04	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	4.50E-05	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	3.34E-06	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	1.05E-02	3.79E-08
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	4.91E-04	4.01E-09
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	1.76E-04	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	6.14E-05	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	2.05E-03	NA
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.27E-08	7.88E-14
Sediment	RM15-17.4	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	5.62E-05	NA
Sediment	**RM15-17.4**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.54E-02**	**2.59E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	9.00E-06	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	2.26E-05	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	5.53E-05	1.28E-09
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	2.81E-09
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	4.26E-08
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	3.28E-09
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	1.50E-10
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	3.87E-07	5.56E-12
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	1.91E-11
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	3.89E-07	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	4.65E-07	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	5.57E-07	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	5.56E-06	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	4.17E-08	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	4.59E-11
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	2.85E-05	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	3.65E-06	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	6.59E-09
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	8.97E-07	3.68E-11
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	1.55E-09
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	3.60E-05	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	4.34E-06	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	1.99E-07	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	6.23E-04	1.28E-09
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	3.52E-05	1.64E-10
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	1.69E-05	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	3.75E-06	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	1.25E-04	NA
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.23E-09	2.89E-15
Sediment	RM15-17.4	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	5.42E-06	NA
Sediment	**RM15-17.4**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.77E-04**	**5.98E-08**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	7.40E-05	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	1.86E-04	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	5.06E-04	3.50E-08
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	1.00E-07
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	1.52E-06
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	1.17E-07
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	5.34E-09
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	3.65E-06	1.57E-10
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	6.83E-10
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	3.70E-06	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	4.42E-06	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	5.30E-06	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	5.03E-05	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	3.43E-07	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	1.64E-09
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	2.34E-04	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	3.00E-05	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	2.35E-07
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	8.45E-06	1.04E-09
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	5.53E-08
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	2.96E-04	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	3.57E-05	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	1.89E-06	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	5.94E-03	3.66E-08
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	3.14E-04	4.40E-09
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	1.39E-04	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	3.53E-05	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	1.18E-03	NA
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.01E-08	8.92E-14
Sediment	RM15-17.4	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	4.46E-05	NA
Sediment	**RM15-17.4**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.09E-03**	**2.11E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.06E-05	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	2.65E-05	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	2.04E-04	1.77E-08
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	2.45E-08
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	3.71E-07
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	2.86E-08
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	1.31E-09
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	1.71E-06	9.22E-11
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	1.67E-10
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	1.81E-06	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	2.16E-06	NA
Sediment	RM15-17.4	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	2.59E-06	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	1.91E-05	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	4.89E-08	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	4.01E-10
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	3.34E-05	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	4.28E-06	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	5.75E-08
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	3.97E-06	6.11E-10
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	1.35E-08
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	4.23E-05	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	5.09E-06	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	9.25E-07	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	2.94E-03	2.26E-08
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	1.10E-04	1.92E-09
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	1.99E-05	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	1.66E-05	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	5.53E-04	NA
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.44E-09	6.36E-15
Sediment	RM15-17.4	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	6.36E-06	NA
Sediment	**RM15-17.4**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.00E-03**	**5.40E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.24E-04	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	3.12E-04	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	7.85E-04	2.72E-08
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	1.27E-07
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	1.92E-06
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	1.48E-07
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	6.77E-09
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	5.54E-06	1.19E-10
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	8.66E-10
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	5.59E-06	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	6.67E-06	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	8.00E-06	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	7.87E-05	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	5.75E-07	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	2.08E-09
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	3.93E-04	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	5.03E-05	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	2.98E-07
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	1.28E-05	7.91E-10
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	7.01E-08
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	4.97E-04	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	5.99E-05	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	2.85E-06	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	8.95E-03	2.76E-08
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	4.96E-04	3.47E-09
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	2.34E-04	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	5.37E-05	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	1.79E-03	NA
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.69E-08	1.26E-13
Sediment	RM15-17.4	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	7.48E-05	NA
Sediment	**RM15-17.4**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.39E-02**	**2.64E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.14E-04	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	2.86E-04	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	7.78E-04	5.39E-08
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	1.54E-07
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	2.33E-06
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	1.80E-07
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	8.21E-09
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	5.61E-06	2.42E-10
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	1.05E-09
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	5.69E-06	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	6.80E-06	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	8.15E-06	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	7.74E-05	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	5.27E-07	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	2.52E-09
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	3.60E-04	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	4.61E-05	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	3.62E-07
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	1.30E-05	1.60E-09
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	8.50E-08
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	4.56E-04	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	5.49E-05	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	2.91E-06	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	9.14E-03	5.62E-08
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	4.84E-04	6.77E-09
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	2.14E-04	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	5.43E-05	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	1.81E-03	NA
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.55E-08	1.37E-13
Sediment	RM15-17.4	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	6.86E-05	NA
Sediment	**RM15-17.4**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.40E-02**	**3.25E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.06E-05	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	2.65E-05	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	2.04E-04	1.77E-08
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	2.45E-08
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	3.71E-07
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	2.86E-08
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	1.31E-09
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	1.71E-06	9.22E-11
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	1.67E-10
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	1.81E-06	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	2.16E-06	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	2.59E-06	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	1.91E-05	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	4.89E-08	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	4.01E-10
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	3.34E-05	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	4.28E-06	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	5.75E-08
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	3.97E-06	6.11E-10
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	1.35E-08
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	4.23E-05	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	5.09E-06	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	9.25E-07	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	2.94E-03	2.26E-08
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	1.10E-04	1.92E-09
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	1.99E-05	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	1.66E-05	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	5.53E-04	NA
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.44E-09	6.36E-15
Sediment	RM15-17.4	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	6.36E-06	NA
Sediment	**RM15-17.4**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.00E-03**	**5.40E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.24E-04	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	3.12E-04	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	7.85E-04	2.72E-08
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	1.27E-07
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	1.92E-06
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	1.48E-07
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	6.77E-09
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	5.54E-06	1.19E-10
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	8.66E-10
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	5.59E-06	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	6.67E-06	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	8.00E-06	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	7.87E-05	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	5.75E-07	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	2.08E-09
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	3.93E-04	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	5.03E-05	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	2.98E-07
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	1.28E-05	7.91E-10
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	7.01E-08
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	4.97E-04	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	5.99E-05	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	2.85E-06	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	8.95E-03	2.76E-08
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	4.96E-04	3.47E-09
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	2.34E-04	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	5.37E-05	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	1.79E-03	NA
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.69E-08	1.26E-13
Sediment	RM15-17.4	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	7.48E-05	NA
Sediment	**RM15-17.4**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.39E-02**	**2.64E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	4.40E+03	mg/kg	1.30E-04	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	4.42E+00	mg/kg	3.25E-04	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	6.02E+00	mg/kg	9.94E-04	3.79E-08
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	NC	mg/kg	#VALUE!	#VALUE!
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	4.33E+00	mg/kg	NA	4.48E-08
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	6.57E+00	mg/kg	NA	6.79E-07
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	5.05E+00	mg/kg	NA	5.23E-08
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.31E+00	mg/kg	NA	2.39E-09
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	1.09E+00	mg/kg	7.36E-06	1.74E-10
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	2.95E+00	mg/kg	NA	3.06E-10
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	8.99E-01	mg/kg	7.53E-06	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.07E+00	mg/kg	8.99E-06	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.29E+00	mg/kg	1.08E-05	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	1.36E+00	mg/kg	9.79E-05	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	3.06E+01	mg/kg	6.01E-07	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	7.08E+00	mg/kg	NA	7.33E-10
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	4.18E+00	mg/kg	4.10E-04	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	7.14E+01	mg/kg	5.25E-05	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	1.02E+00	mg/kg	NA	1.05E-07
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	6.29E-03	mg/kg	1.71E-05	1.15E-09
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.39E+00	mg/kg	NA	2.47E-08
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.23E+02	mg/kg	5.19E-04	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	6.37E-01	mg/kg	6.25E-05	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	4.59E-01	mg/kg	3.84E-06	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	1.36E+00	mg/kg	1.21E-02	4.10E-08
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	6.89E-06	mg/kg	6.04E-04	4.65E-09
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	8.29E-02	mg/kg	2.44E-04	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	1.58E+03	mg/kg	7.13E-05	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	1.75E+02	mg/kg	2.38E-03	NA
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	3.00E-04	mg/kg	1.77E-08	3.44E-14
Sediment	RM15-17.4	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	1.34E+01	mg/kg	7.81E-05	NA
Sediment	**RM15-17.4**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.81E-02**	**9.94E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.55E-04	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	8.46E-05	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	1.24E-03	8.60E-08
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.62E-09	1.22E-13
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	1.17E-07
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	1.37E-06
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	1.63E-07
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	7.60E-09
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	1.26E-04	5.41E-09
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	1.36E-09
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	7.13E-06	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	1.05E-05	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	1.06E-05	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.81E-04	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.70E-05	3.87E-08
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	2.93E-06	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	1.65E-09
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	6.89E-04	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.16E-04	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	1.53E-07
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.52E-05	1.87E-09
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	8.37E-08
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	4.83E-04	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.51E-04	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	6.08E-06	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.65E-02	1.02E-07
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.73E-01	2.42E-06
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	4.21E-04	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	8.71E-05	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	2.90E-03	NA
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	8.74E-08	7.73E-13
Sediment	SiteWide	Angler (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.42E-04	NA
Sediment	**SiteWide**	**Angler (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.96E-01**	**4.55E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.37E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	7.85E-06	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	3.26E-04	2.82E-08
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.36E-10	1.42E-14
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	1.86E-08
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	2.18E-07
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	2.59E-08
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	1.21E-09
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	3.84E-05	2.07E-09
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	2.16E-10
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	2.27E-06	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	3.34E-06	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	3.38E-06	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	6.94E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.22E-06	1.79E-09
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	2.72E-07	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	2.63E-10
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	6.39E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.08E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	2.43E-08
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	4.64E-06	7.13E-10
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	1.33E-08
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	4.48E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.33E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	1.93E-06	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	5.31E-03	4.09E-08
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	3.92E-02	6.85E-07
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	3.91E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	2.66E-05	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	8.86E-04	NA
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	8.10E-09	3.58E-14
Sediment	SiteWide	Angler (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.32E-05	NA
Sediment	**SiteWide**	**Angler (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.61E-02**	**1.06E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	1.35E-05	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	4.49E-06	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	1.18E-04	2.25E-08
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	1.92E-10	1.79E-14
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	1.41E-08
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	1.65E-07
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	1.95E-08
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	9.12E-10
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	1.33E-05	1.58E-09
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	1.63E-10
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	7.78E-07	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	1.15E-06	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	1.16E-06	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.57E-05	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	3.55E-06	2.25E-09
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	1.55E-07	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	1.99E-10
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	3.65E-05	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	6.16E-06	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	1.83E-08
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.61E-06	5.45E-10
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	1.01E-08
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	2.56E-05	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	1.33E-05	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	6.63E-07	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.82E-03	3.08E-08
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.49E-02	5.74E-07
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	2.23E-05	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	9.22E-06	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	3.07E-04	NA
Sediment	SiteWide	Boater (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	4.63E-09	4.51E-14
Sediment	SiteWide	Boater (Adult)	*Sediment*	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	7.52E-06	NA
Sediment	**SiteWide**	**Boater (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.73E-02**	**8.59E-07**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.09E-04	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	6.94E-05	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	1.33E-03	5.36E-08
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	2.97E-09	5.86E-14
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	9.43E-08
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	1.10E-06
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	1.31E-07
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	6.12E-09
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	1.42E-04	3.57E-09
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	1.09E-09
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	8.20E-06	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	1.21E-05	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	1.22E-05	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.94E-04	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	5.50E-05	2.22E-08
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	2.41E-06	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	1.33E-09
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	5.65E-04	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	9.53E-05	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	1.23E-07
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.72E-05	1.23E-09
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	*Sediment*	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	6.74E-08
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	3.96E-04	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.06E-04	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	6.99E-06	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.91E-02	6.85E-08
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.75E-01	1.43E-06
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	3.46E-04	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	9.84E-05	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	3.28E-03	NA
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	7.17E-08	4.44E-13
Sediment	SiteWide	Boater (Older Child 7-13 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.16E-04	NA
Sediment	**SiteWide**	**Boater (Older Child 7-13 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.02E-01**	**3.11E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.02E-05	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	6.70E-06	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	8.82E-05	2.04E-09
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	2.86E-10	3.23E-15
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	2.14E-09
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	2.50E-08
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	2.96E-09
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	1.39E-10
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	8.67E-06	1.24E-10
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	2.48E-11
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	4.87E-07	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	7.18E-07	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	7.25E-07	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.01E-05	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	5.30E-06	8.16E-10
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	2.32E-07	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	3.02E-11
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	5.45E-05	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	9.19E-06	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	2.78E-09
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.05E-06	4.30E-11
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	1.53E-09
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	3.82E-05	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	1.99E-05	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	4.15E-07	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.13E-03	2.31E-09
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.25E-02	5.86E-08
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	3.33E-05	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	6.01E-06	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	2.00E-04	NA
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	6.91E-09	1.63E-14
Sediment	SiteWide	Boater (Teen 14-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.12E-05	NA
Sediment	**SiteWide**	**Boater (Teen 14-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.42E-02**	**9.85E-08**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	1.66E-04	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	5.50E-05	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	8.07E-04	5.59E-08
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	2.35E-09	7.96E-14
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	7.61E-08
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	8.91E-07
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	1.06E-07
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	4.94E-09
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	8.17E-05	3.52E-09
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	8.84E-10
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	4.63E-06	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	6.83E-06	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	6.90E-06	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	1.82E-04	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	4.36E-05	2.51E-08
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	1.91E-06	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	1.08E-09
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	4.48E-04	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	7.55E-05	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	9.91E-08
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	9.88E-06	1.22E-09
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	5.44E-08
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	3.14E-04	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	1.63E-04	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	3.95E-06	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.07E-02	6.61E-08
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.12E-01	1.57E-06
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	2.74E-04	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	5.66E-05	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	1.89E-03	NA
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	5.68E-08	5.02E-13
Sediment	SiteWide	Swimmer (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	9.22E-05	NA
Sediment	**SiteWide**	**Swimmer (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.28E-01**	**2.96E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.37E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	7.85E-06	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	3.26E-04	2.82E-08
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.36E-10	1.42E-14
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	1.86E-08
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	2.18E-07
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	2.59E-08
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	1.21E-09
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	3.84E-05	2.07E-09
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	2.16E-10
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	2.27E-06	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	3.34E-06	NA
Sediment	SiteWide	Swimmer (Adult)	*Sediment*	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	3.38E-06	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	6.94E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.22E-06	1.79E-09
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	2.72E-07	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	2.63E-10
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	6.39E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.08E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	2.43E-08
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	4.64E-06	7.13E-10
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	1.33E-08
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	4.48E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.33E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	1.93E-06	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	5.31E-03	4.09E-08
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	3.92E-02	6.85E-07
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	3.91E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	2.66E-05	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	8.86E-04	NA
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	8.10E-09	3.58E-14
Sediment	SiteWide	Swimmer (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.32E-05	NA
Sediment	**SiteWide**	**Swimmer (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.61E-02**	**1.06E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.79E-04	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	9.24E-05	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	1.25E-03	4.34E-08
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.95E-09	6.68E-14
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	9.66E-08
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	1.13E-06
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	1.34E-07
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	6.27E-09
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	1.24E-04	2.67E-09
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	1.12E-09
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	7.00E-06	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	1.03E-05	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	1.04E-05	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.85E-04	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	7.31E-05	3.54E-08
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	3.20E-06	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	1.36E-09
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	7.52E-04	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.27E-04	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	1.26E-07
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.50E-05	9.24E-10
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	6.90E-08
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	5.27E-04	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.74E-04	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	5.97E-06	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.62E-02	4.98E-08
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.77E-01	1.24E-06
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	4.60E-04	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	8.60E-05	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	2.87E-03	NA
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	9.53E-08	7.08E-13
Sediment	SiteWide	Swimmer (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.55E-04	NA
Sediment	**SiteWide**	**Swimmer (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.01E-01**	**2.94E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.55E-04	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	8.46E-05	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	1.24E-03	8.60E-08
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.62E-09	1.22E-13
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	1.17E-07
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	1.37E-06
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	1.63E-07
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	7.60E-09
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	1.26E-04	5.41E-09
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	1.36E-09
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	7.13E-06	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	1.05E-05	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	1.06E-05	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.81E-04	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.70E-05	3.87E-08
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	2.93E-06	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	1.65E-09
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	6.89E-04	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.16E-04	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	1.53E-07
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.52E-05	1.87E-09
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	8.37E-08
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	4.83E-04	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.51E-04	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	6.08E-06	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.65E-02	1.02E-07
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.73E-01	2.42E-06
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	*Sediment*	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	4.21E-04	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	8.71E-05	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	2.90E-03	NA
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	8.74E-08	7.73E-13
Sediment	SiteWide	Wader (Adolescent 7-18 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.42E-04	NA
Sediment	**SiteWide**	**Wader (Adolescent 7-18 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.96E-01**	**4.55E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.37E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	7.85E-06	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	3.26E-04	2.82E-08
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.36E-10	1.42E-14
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	1.86E-08
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	2.18E-07
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	2.59E-08
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	1.21E-09
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	3.84E-05	2.07E-09
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	2.16E-10
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	2.27E-06	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	3.34E-06	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	3.38E-06	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	6.94E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	6.22E-06	1.79E-09
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	2.72E-07	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	2.63E-10
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	6.39E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.08E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	2.43E-08
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	4.64E-06	7.13E-10
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	1.33E-08
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	4.48E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.33E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	1.93E-06	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	5.31E-03	4.09E-08
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	3.92E-02	6.85E-07
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	3.91E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	2.66E-05	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	8.86E-04	NA
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	8.10E-09	3.58E-14
Sediment	SiteWide	Wader (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.32E-05	NA
Sediment	**SiteWide**	**Wader (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.61E-02**	**1.06E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.79E-04	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	9.24E-05	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	1.25E-03	4.34E-08
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	3.95E-09	6.68E-14
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	9.66E-08
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	1.13E-06
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	1.34E-07
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	6.27E-09
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	1.24E-04	2.67E-09
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	1.12E-09
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	7.00E-06	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	1.03E-05	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	1.04E-05	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	2.85E-04	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	7.31E-05	3.54E-08
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	3.20E-06	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	1.36E-09
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	7.52E-04	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.27E-04	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	1.26E-07
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.50E-05	9.24E-10
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	6.90E-08
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	5.27E-04	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.74E-04	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	5.97E-06	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	1.62E-02	4.98E-08
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	1.77E-01	1.24E-06
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	4.60E-04	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	8.60E-05	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	2.87E-03	NA
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	9.53E-08	7.08E-13
Sediment	SiteWide	Wader (Child 1-6 yrs)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.55E-04	NA
Sediment	**SiteWide**	**Wader (Child 1-6 yrs)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.01E-01**	**2.94E-06**

EXHIBIT B-2 TABLE 1

ACCESSIBLE SURFACE SEDIMENT RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	ExposureArea	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Aluminum	9.88E+03	mg/kg	2.91E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Antimony	1.31E+00	mg/kg	9.65E-05	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Arsenic, total	9.61E+00	mg/kg	1.59E-03	6.04E-08
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzene	5.60E-04	mg/kg	4.12E-09	7.68E-14
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)anthracene	3.30E+00	mg/kg	NA	3.41E-08
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(a)pyrene	3.86E+00	mg/kg	NA	3.99E-07
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(b)fluoranthene	4.57E+00	mg/kg	NA	4.73E-08
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Benzo(k)fluoranthene	2.14E+00	mg/kg	NA	2.21E-09
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Bis(2-ethylhexyl) phthalate	2.43E+01	mg/kg	1.65E-04	3.91E-09
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Benzanthracene/chrysenes	3.83E+00	mg/kg	NA	3.96E-10
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C2-Naphthalene	1.13E+00	mg/kg	9.43E-06	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C3-Naphthalene	1.66E+00	mg/kg	1.39E-05	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	C4-Naphthalene	1.68E+00	mg/kg	1.40E-05	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cadmium, diet	4.94E+00	mg/kg	3.55E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, hexavalent	7.78E+00	mg/kg	7.64E-05	9.69E-09
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chromium, total	1.70E+02	mg/kg	3.34E-06	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Chrysene	4.65E+00	mg/kg	NA	4.81E-10
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Cobalt	8.00E+00	mg/kg	7.85E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Copper	1.80E+02	mg/kg	1.32E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dibenz(a,h)anthracene	4.29E-01	mg/kg	NA	4.44E-08
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Dieldrin	7.35E-03	mg/kg	1.99E-05	1.35E-09
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Indeno(1,2,3-cd)pyrene	2.36E+00	mg/kg	NA	2.44E-08
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Manganese, nondiet	4.49E+02	mg/kg	5.51E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Mercury, inorganic	2.92E+00	mg/kg	2.87E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Naphthalene	9.60E-01	mg/kg	8.04E-06	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	PCBs, total	2.46E+00	mg/kg	2.19E-02	7.41E-08
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TCDD-TEQ	2.46E-03	mg/kg	2.15E-01	1.66E-06
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Thallium	1.63E-01	mg/kg	4.80E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C19-C40	2.53E+03	mg/kg	1.14E-04	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	TPH C9-C18	2.81E+02	mg/kg	3.81E-03	NA
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Trichloroethene	1.69E-03	mg/kg	9.95E-08	1.94E-13
Sediment	SiteWide	Worker (Adult)	Sediment	Accessible Surface Sed, RME	Vanadium	2.77E+01	mg/kg	1.62E-04	NA
Sediment	**SiteWide**	**Worker (Adult)**	**Sediment**	**Accessible Surface Sed, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.46E-01**	**2.36E-06**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	1.29E-06	7.93E-11
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	8.18E-06	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	4.73E-05	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	7.91E-05	5.48E-09
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	1.66E-06	5.61E-11
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	5.92E-08
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	1.35E-06
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	1.83E-07
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	7.50E-05	3.23E-09
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	1.08E-06	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	6.34E-07	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	1.99E-05	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	5.45E-07
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	7.72E-06	9.50E-10
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	1.26E-07
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	3.66E-04	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	6.62E-07	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	1.79E-03	2.20E-09
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	4.15E-03	5.81E-08
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	1.37E-05	NA
SW	Angler (Adolescent 7-18 yrs)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	4.79E-05	4.24E-10
SW	**Angler (Adolescent 7-18 yrs)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**6.61E-03**	**2.33E-06**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Angler (Adult)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	3.92E-07	3.01E-11
SW	Angler (Adult)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	2.01E-06	NA
SW	Angler (Adult)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	1.30E-05	NA
SW	Angler (Adult)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	1.94E-05	1.68E-09
SW	Angler (Adult)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	4.86E-07	2.06E-11
SW	Angler (Adult)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	9.04E-09
SW	Angler (Adult)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	2.06E-07
SW	Angler (Adult)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	2.79E-08
SW	Angler (Adult)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	2.28E-05	1.23E-09
SW	Angler (Adult)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	3.11E-07	NA
SW	Angler (Adult)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	1.91E-07	NA
SW	Angler (Adult)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	4.73E-06	NA
SW	Angler (Adult)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	8.32E-08
SW	Angler (Adult)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	2.34E-06	3.59E-10
SW	Angler (Adult)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	1.93E-08
SW	Angler (Adult)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	1.08E-04	NA
SW	Angler (Adult)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	2.00E-07	NA
SW	Angler (Adult)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	5.46E-04	8.41E-10
SW	Angler (Adult)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	1.26E-03	2.20E-08
SW	Angler (Adult)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	3.36E-06	NA
SW	Angler (Adult)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	1.41E-05	6.24E-11
SW	**Angler (Adult)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.00E-03**	**3.71E-07**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Boater (Adult)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	7.21E-06	1.22E-09
SW	Boater (Adult)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	4.42E-05	NA
SW	Boater (Adult)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	3.10E-04	NA
SW	Boater (Adult)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	4.27E-04	8.14E-08
SW	Boater (Adult)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	9.87E-06	9.19E-10
SW	Boater (Adult)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	3.53E-07
SW	Boater (Adult)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	8.03E-06
SW	Boater (Adult)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	1.09E-06
SW	Boater (Adult)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	4.06E-04	4.81E-08
SW	Boater (Adult)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	6.07E-06	NA
SW	Boater (Adult)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	4.76E-06	NA
SW	Boater (Adult)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	1.02E-04	NA
SW	Boater (Adult)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	3.25E-06
SW	Boater (Adult)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	4.17E-05	1.41E-08
SW	Boater (Adult)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	7.53E-07
SW	Boater (Adult)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	2.65E-03	NA
SW	Boater (Adult)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	3.67E-06	NA
SW	Boater (Adult)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	9.70E-03	3.28E-08
SW	Boater (Adult)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	2.24E-02	8.63E-07
SW	Boater (Adult)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	7.41E-05	NA
SW	Boater (Adult)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	2.67E-04	2.60E-09
SW	**Boater (Adult)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.65E-02**	**1.45E-05**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	2.07E-06	7.42E-11
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	8.78E-06	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	7.81E-05	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	8.49E-05	3.43E-09
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	2.69E-06	5.31E-11
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	6.48E-08
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	1.47E-06
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	2.00E-07
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	1.16E-04	2.92E-09
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	1.59E-06	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	1.35E-06	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	1.86E-05	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	5.97E-07
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	1.18E-05	8.50E-10
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	1.38E-07
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	7.31E-04	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	1.04E-06	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	2.79E-03	2.01E-09
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	6.39E-03	5.22E-08
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	1.47E-05	NA
SW	Boater (Older Child 7-13 yrs)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	7.26E-05	4.49E-10
SW	**Boater (Older Child 7-13 yrs)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.03E-02**	**2.54E-06**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	5.08E-06	1.04E-10
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	3.40E-05	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	2.26E-04	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	3.28E-04	7.58E-09
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	7.06E-06	7.96E-11
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	6.02E-08
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	1.37E-06
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	1.86E-07
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	2.86E-04	4.11E-09
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	4.38E-06	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	3.37E-06	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	7.96E-05	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	5.54E-07
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	2.95E-05	1.21E-09
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	1.28E-07
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	1.89E-03	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	2.59E-06	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	6.83E-03	2.80E-09
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	1.58E-02	7.39E-08
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	5.69E-05	NA
SW	Boater (Teen 14-18 yrs)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	1.91E-04	4.50E-10
SW	**Boater (Teen 14-18 yrs)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**2.58E-02**	**2.39E-06**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	2.13E-06	1.31E-10
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	5.34E-06	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	3.53E-05	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	5.16E-05	3.58E-09
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	2.38E-06	8.04E-11
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	9.87E-08
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	2.25E-06
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	3.05E-07
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	1.24E-04	5.33E-09
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	1.52E-06	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	5.22E-07	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	1.26E-05	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	9.10E-07
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	1.26E-05	1.55E-09
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	2.11E-07
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	2.93E-04	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	1.08E-06	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	2.98E-03	3.67E-09
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	6.79E-03	9.51E-08
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	8.95E-06	NA
SW	Swimmer (Adolescent 7-18 yrs)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	7.22E-05	6.39E-10
SW	**Swimmer (Adolescent 7-18 yrs)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.04E-02**	**3.88E-06**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Swimmer (Adult)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	9.95E-07	7.66E-11
SW	Swimmer (Adult)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	1.21E-06	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	1.29E-05	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	1.17E-05	1.01E-09
SW	Swimmer (Adult)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	1.07E-06	4.51E-11
SW	Swimmer (Adult)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	2.32E-08
SW	Swimmer (Adult)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	5.28E-07
SW	Swimmer (Adult)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	7.16E-08
SW	Swimmer (Adult)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	5.79E-05	3.12E-09
SW	Swimmer (Adult)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	6.62E-07	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	2.39E-07	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	2.35E-06	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	2.14E-07
SW	Swimmer (Adult)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	5.84E-06	8.99E-10
SW	Swimmer (Adult)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	4.96E-08
SW	Swimmer (Adult)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	1.27E-04	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	5.00E-07	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	1.40E-03	2.15E-09
SW	Swimmer (Adult)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	3.17E-03	5.54E-08
SW	Swimmer (Adult)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	2.03E-06	NA
SW	Swimmer (Adult)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	3.25E-05	1.44E-10
SW	**Swimmer (Adult)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.82E-03**	**9.50E-07**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	1.82E-06	5.59E-11
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	7.94E-06	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	3.96E-05	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	7.68E-05	2.66E-09
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	2.15E-06	3.65E-11
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	7.05E-08
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	1.60E-06
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	2.17E-07
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	1.06E-04	2.28E-09
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	1.43E-06	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	4.61E-07	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	1.99E-05	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	6.49E-07
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	1.08E-05	6.66E-10
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	1.50E-07
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	2.77E-04	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	9.28E-07	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	2.54E-03	1.56E-09
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	5.84E-03	4.08E-08
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	1.33E-05	NA
SW	Swimmer (Child 1-6 yrs)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	6.51E-05	4.84E-10
SW	**Swimmer (Child 1-6 yrs)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**9.00E-03**	**2.74E-06**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	9.18E-07	5.65E-11
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	7.44E-06	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	3.32E-05	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	7.19E-05	4.98E-09
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	1.20E-06	4.08E-11
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	4.19E-08
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	9.53E-07
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	1.29E-07
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	5.35E-05	2.30E-09
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	8.47E-07	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	3.35E-07	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	1.91E-05	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	3.86E-07
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	5.55E-06	6.84E-10
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	8.94E-08
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	2.11E-04	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	4.77E-07	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	1.27E-03	1.56E-09
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	2.97E-03	4.16E-08
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	1.25E-05	NA
SW	Wader (Adolescent 7-18 yrs)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	3.61E-05	3.19E-10
SW	**Wader (Adolescent 7-18 yrs)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**4.70E-03**	**1.65E-06**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Wader (Adult)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	2.79E-07	2.14E-11
SW	Wader (Adult)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	1.78E-06	NA
SW	Wader (Adult)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	8.74E-06	NA
SW	Wader (Adult)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	1.72E-05	1.49E-09
SW	Wader (Adult)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	3.48E-07	1.47E-11
SW	Wader (Adult)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	6.39E-09
SW	Wader (Adult)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	1.45E-07
SW	Wader (Adult)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	1.97E-08
SW	Wader (Adult)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	1.62E-05	8.74E-10
SW	Wader (Adult)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	2.38E-07	NA
SW	Wader (Adult)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	9.96E-08	NA
SW	Wader (Adult)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	4.49E-06	NA
SW	Wader (Adult)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	5.89E-08
SW	Wader (Adult)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	1.67E-06	2.57E-10
SW	Wader (Adult)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	1.36E-08
SW	Wader (Adult)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	6.03E-05	NA
SW	Wader (Adult)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	1.44E-07	NA
SW	Wader (Adult)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	3.87E-04	5.96E-10
SW	Wader (Adult)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	8.99E-04	1.57E-08
SW	Wader (Adult)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	2.98E-06	NA
SW	Wader (Adult)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	1.05E-05	4.63E-11
SW	**Wader (Adult)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**1.41E-03**	**2.63E-07**

EXHIBIT B-2 TABLE 2

SURFACE WATER RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	1,1-Biphenyl	9.20E-05	mg/L	7.65E-07	2.35E-11
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Aluminum	4.98E-01	mg/L	7.92E-06	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Antimony	5.68E-04	mg/L	3.25E-05	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Arsenic, Total	1.45E-03	mg/L	7.66E-05	2.65E-09
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Benzene	8.00E-05	mg/L	1.07E-06	1.81E-11
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Benzo(a)anthracene	3.78E-05	mg/L	NA	2.91E-08
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Benzo(a)pyrene	5.05E-05	mg/L	NA	6.62E-07
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Benzo(b)fluoranthene	6.74E-05	mg/L	NA	8.97E-08
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Bis(2-ethylhexyl) phthalate	2.19E-03	mg/L	4.46E-05	9.60E-10
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Chloroform	2.04E-04	mg/L	7.72E-07	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Chromium, Total	3.92E-03	mg/L	2.86E-07	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Cobalt	4.08E-04	mg/L	2.06E-05	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Dibenz(a,h)anthracene	1.32E-05	mg/L	NA	2.68E-07
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Dieldrin	1.20E-06	mg/L	4.67E-06	2.88E-10
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Indeno(1,2,3-cd)pyrene	4.49E-05	mg/L	NA	6.21E-08
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Manganese, nondiet	9.97E-02	mg/L	1.89E-04	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Naphthalene	4.41E-05	mg/L	4.02E-07	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	PCBs, total	2.00E-05	mg/L	1.05E-03	6.48E-10
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	TCDD-TEQ	7.00E-09	mg/L	2.49E-03	1.74E-08
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Thallium	8.35E-06	mg/L	1.33E-05	NA
SW	Wader (Child 1-6 yrs)	SW	Surface Water, RME	Trichloroethene	2.77E-04	mg/L	3.18E-05	2.36E-10
SW	**Wader (Child 1-6 yrs)**	**SW**	**Surface Water, RME**	**Ttl Cumulative Risk**	**na**	**na**	**3.97E-03**	**1.13E-06**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDD	5.42E-02	mg/kg	7.79E-03	1.44E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDE	1.25E-01	mg/kg	1.80E-02	4.70E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDT	7.79E-03	mg/kg	1.12E-03	2.93E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Benzo(a)pyrene	8.80E-04	mg/kg	NA	2.61E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Bis(2-ethylhexyl) phthalate	1.40E+00	mg/kg	7.40E-03	3.19E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Chromium, total	7.16E-02	mg/kg	5.04E-06	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	cis-Chlordane	4.98E-02	mg/kg	7.16E-03	1.93E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	cis-Nonachlor	1.81E-02	mg/kg	2.60E-03	7.00E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Dieldrin	3.53E-02	mg/kg	5.07E-02	6.24E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Gamma-chlordane	1.05E-02	mg/kg	1.51E-03	4.06E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Heptachlor epoxide	1.30E-02	mg/kg	7.18E-02	1.31E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Hexachlorobenzene	5.39E-03	mg/kg	7.12E-04	1.40E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Mercury, Inorganic	3.22E-02	mg/kg	1.13E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Methyl mercury	4.84E-01	mg/kg	5.11E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Oxychlordane	3.81E-02	mg/kg	5.47E-03	1.47E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	PCBs, total	1.30E+00	mg/kg	4.79E+00	2.95E-05
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Selenium	6.53E-01	mg/kg	1.38E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	TCDD-TEQ	1.71E-05	mg/kg	1.34E+00	1.88E-05
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Thallium	6.30E-03	mg/kg	6.66E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	trans-Nonachlor	1.14E-02	mg/kg	1.64E-03	4.41E-08
Mixed Fish Diets	**Angler (Adolescent 7-18 yrs)**	**Fish Tissue**	**American Eel, RME**	**Skinless fillet**	**Ttl Cumulative Risk**	**na**	**na**	**6.92E+00**	**5.77E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDD	2.29E-02	mg/kg	3.29E-03	6.08E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDE	5.62E-03	mg/kg	8.08E-04	2.11E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDT	1.93E-03	mg/kg	2.77E-04	7.25E-09
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDD	7.05E-02	mg/kg	1.01E-02	1.87E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDE	1.34E-01	mg/kg	1.93E-02	5.04E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDT	8.01E-03	mg/kg	1.15E-03	3.01E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Aldrin	7.49E-05	mg/kg	1.79E-04	1.41E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Antimony	8.04E-03	mg/kg	2.12E-03	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Benzo(a)anthracene	1.63E-03	mg/kg	NA	4.84E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Benzo(a)pyrene	4.04E-04	mg/kg	NA	1.20E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Bis(2-ethylhexyl) phthalate	1.40E+00	mg/kg	7.40E-03	3.19E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Chromium, total	8.23E-02	mg/kg	5.80E-06	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	cis-Chlordane	5.71E-02	mg/kg	8.21E-03	2.21E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	cis-Nonachlor	2.42E-02	mg/kg	3.48E-03	9.36E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Cobalt	1.12E-02	mg/kg	3.94E-03	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Dieldrin	2.67E-02	mg/kg	3.84E-02	4.72E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Gamma-chlordane	2.40E-02	mg/kg	3.45E-03	9.29E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Heptachlor epoxide	1.24E-02	mg/kg	6.85E-02	1.25E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Hexachlorobenzene	5.79E-03	mg/kg	7.65E-04	1.51E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Mercury, Inorganic	5.12E-02	mg/kg	1.80E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Methyl mercury	3.32E-01	mg/kg	3.51E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Oxychlordane	2.76E-02	mg/kg	3.97E-03	1.07E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	PCBs, total	2.51E+00	mg/kg	9.28E+00	5.71E-05
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Selenium	5.42E-01	mg/kg	1.15E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	TCDD-TEQ	1.32E-04	mg/kg	1.04E+01	1.45E-04
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Thallium	1.79E-03	mg/kg	1.89E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	trans-Nonachlor	2.13E-02	mg/kg	3.06E-03	8.24E-08
Mixed Fish Diets	**Angler (Adolescent 7-18 yrs)**	**Fish Tissue**	**Bottom Feeder Species, RME**	**Fillet**	**Ttl Cumulative Risk**	**na**	**na**	**2.02E+01**	**2.11E-04**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	4,4'-DDD	5.21E-02	mg/kg	7.49E-03	1.38E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	4,4'-DDE	7.16E-02	mg/kg	1.03E-02	2.69E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Aldrin	1.25E-04	mg/kg	2.98E-04	2.34E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Chromium, total	7.18E-02	mg/kg	5.06E-06	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	cis-Chlordane	4.03E-02	mg/kg	5.79E-03	1.56E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	cis-Nonachlor	1.50E-02	mg/kg	2.16E-03	5.80E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Dieldrin	1.95E-02	mg/kg	2.80E-02	3.45E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Gamma-chlordane	1.95E-02	mg/kg	2.80E-03	7.54E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Heptachlor epoxide	8.95E-03	mg/kg	4.95E-02	9.00E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Hexachlorobenzene	6.68E-03	mg/kg	8.82E-04	1.74E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Mercury, Inorganic	4.55E-02	mg/kg	1.60E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Methyl mercury	2.05E-01	mg/kg	2.17E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Oxychlordane	1.62E-02	mg/kg	2.33E-03	6.27E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	PCBs, total	7.22E-01	mg/kg	2.67E+00	1.64E-05
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	TCDD-TEQ	4.28E-05	mg/kg	3.36E+00	4.70E-05
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Thallium	1.64E-03	mg/kg	1.73E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	trans-Nonachlor	1.82E-02	mg/kg	2.62E-03	7.04E-08
Mixed Fish Diets	**Angler (Adolescent 7-18 yrs)**	**Fish Tissue**	**Channel Catfish, RME**	**Skinless fillet**	**Ttl Cumulative Risk**	**na**	**na**	**6.39E+00**	**6.88E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDD	7.88E-02	mg/kg	1.13E-02	2.09E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDE	3.18E-02	mg/kg	4.57E-03	1.20E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDT	1.07E-02	mg/kg	1.54E-03	4.02E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDD	2.41E-01	mg/kg	3.46E-02	6.39E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDE	3.99E-01	mg/kg	5.73E-02	1.50E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDT	7.28E-03	mg/kg	1.05E-03	2.74E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Aldrin	4.36E-04	mg/kg	1.04E-03	8.19E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Antimony	9.20E-02	mg/kg	2.43E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Benzo(a)anthracene	6.66E-03	mg/kg	NA	1.98E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Chromium, total	1.46E-01	mg/kg	1.03E-05	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	cis-Chlordane	1.55E-01	mg/kg	2.23E-02	6.00E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	cis-Nonachlor	4.85E-02	mg/kg	6.97E-03	1.88E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Cobalt	4.72E-02	mg/kg	1.66E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Dieldrin	5.14E-02	mg/kg	7.39E-02	9.09E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Gamma-chlordane	8.48E-02	mg/kg	1.22E-02	3.28E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Heptachlor epoxide	2.10E-02	mg/kg	1.16E-01	2.11E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Hexachlorobenzene	1.41E-02	mg/kg	1.86E-03	3.67E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Mercury, Inorganic	2.48E-02	mg/kg	8.73E-03	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Methyl mercury	1.56E-01	mg/kg	1.65E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Oxychlordane	2.25E-02	mg/kg	3.23E-03	8.70E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	PCBs, total	7.11E+00	mg/kg	2.63E+01	1.62E-04
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Selenium	6.73E-01	mg/kg	1.42E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	TCDD-TEQ	4.07E-04	mg/kg	3.19E+01	4.47E-04
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Thallium	2.77E-02	mg/kg	2.93E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	trans-Nonachlor	6.32E-02	mg/kg	9.08E-03	2.45E-07
Mixed Fish Diets	**Angler (Adolescent 7-18 yrs)**	**Fish Tissue**	**Common Carp, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**5.91E+01**	**6.25E-04**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	4,4'-DDE	1.02E-02	mg/kg	1.47E-03	3.83E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Chromium, total	2.70E-01	mg/kg	1.90E-05	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Dieldrin	2.88E-03	mg/kg	4.14E-03	5.09E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Heptachlor epoxide	8.66E-04	mg/kg	4.79E-03	8.71E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Mercury, Inorganic	1.28E-01	mg/kg	4.51E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Methyl mercury	5.27E-01	mg/kg	5.57E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	PCBs, total	3.61E-01	mg/kg	1.34E+00	8.22E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	TCDD-TEQ	8.94E-06	mg/kg	7.01E-01	9.82E-06
Mixed Fish Diets	**Angler (Adolescent 7-18 yrs)**	**Fish Tissue**	**LM & SM Bass, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**2.65E+00**	**1.87E-05**
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	4,4'-DDE	1.61E-02	mg/kg	2.31E-03	6.05E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	Chromium, total	2.51E-01	mg/kg	1.77E-05	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	cis-Chlordane	8.90E-03	mg/kg	1.28E-03	3.44E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	Dieldrin	4.24E-03	mg/kg	6.09E-03	7.50E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	Heptachlor epoxide	2.06E-03	mg/kg	1.14E-02	2.07E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	Mercury, Inorganic	1.19E-01	mg/kg	4.19E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	Methyl mercury	5.99E-01	mg/kg	6.33E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	PCBs, total	2.95E-01	mg/kg	1.09E+00	6.71E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	Predator Species, RME	Fillet	TCDD-TEQ	8.71E-06	mg/kg	6.84E-01	9.57E-06
Mixed Fish Diets	**Angler (Adolescent 7-18 yrs)**	**Fish Tissue**	**Predator Species, RME**	**Fillet**	**Ttl Cumulative Risk**	**na**	**na**	**2.47E+00**	**1.73E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	2,4-DDD	9.33E-03	mg/kg	1.34E-03	2.48E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	4,4'-DDD	2.02E-02	mg/kg	2.90E-03	5.36E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	4,4'-DDE	3.48E-02	mg/kg	5.00E-03	1.31E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Benzo(a)pyrene	6.00E-04	mg/kg	NA	1.78E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Chromium, total	3.06E-01	mg/kg	2.16E-05	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	cis-Chlordane	2.47E-01	mg/kg	3.55E-02	9.56E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	cis-Nonachlor	7.21E-03	mg/kg	1.04E-03	2.79E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Dieldrin	1.05E-02	mg/kg	1.51E-02	1.86E-06
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Gamma-chlordane	7.76E-03	mg/kg	1.12E-03	3.00E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Heptachlor epoxide	3.96E-03	mg/kg	2.19E-02	3.98E-07
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Hexachlorobenzene	2.10E-03	mg/kg	2.77E-04	5.46E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Mercury, Inorganic	1.52E-01	mg/kg	5.35E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Methyl mercury	2.21E-01	mg/kg	2.34E-01	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Oxychlordane	7.73E-03	mg/kg	1.11E-03	2.99E-08
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	PCBs, total	7.12E-01	mg/kg	2.63E+00	1.62E-05
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Selenium	1.10E+00	mg/kg	2.32E-02	NA
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	TCDD-TEQ	5.24E-05	mg/kg	4.12E+00	5.76E-05
Mixed Fish Diets	Angler (Adolescent 7-18 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	trans-Nonachlor	9.08E-03	mg/kg	1.30E-03	3.51E-08
Mixed Fish Diets	**Angler (Adolescent 7-18 yrs)**	**Fish Tissue**	**White Perch, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**7.15E+00**	**7.76E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDD	5.42E-02	mg/kg	7.74E-03	1.79E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDE	1.25E-01	mg/kg	1.79E-02	5.84E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDT	7.79E-03	mg/kg	1.11E-03	3.64E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Benzo(a)pyrene	8.80E-04	mg/kg	NA	1.30E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Bis(2-ethylhexyl) phthalate	1.40E+00	mg/kg	7.35E-03	3.96E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Chromium, total	7.16E-02	mg/kg	5.01E-06	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	cis-Chlordane	4.98E-02	mg/kg	7.11E-03	2.39E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	cis-Nonachlor	1.81E-02	mg/kg	2.58E-03	8.70E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Dieldrin	3.53E-02	mg/kg	5.04E-02	7.76E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Gamma-chlordane	1.05E-02	mg/kg	1.50E-03	5.05E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Heptachlor epoxide	1.30E-02	mg/kg	7.14E-02	1.62E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Hexachlorobenzene	5.39E-03	mg/kg	7.07E-04	1.74E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Mercury, Inorganic	3.22E-02	mg/kg	1.13E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Methyl mercury	4.84E-01	mg/kg	5.08E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Oxychlordane	3.81E-02	mg/kg	5.44E-03	1.83E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	PCBs, total	1.30E+00	mg/kg	4.76E+00	3.66E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Selenium	6.53E-01	mg/kg	1.37E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	TCDD-TEQ	1.71E-05	mg/kg	1.34E+00	2.34E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	Thallium	6.30E-03	mg/kg	6.62E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	American Eel, RME	Skinless fillet	trans-Nonachlor	1.14E-02	mg/kg	1.63E-03	5.48E-08
Mixed Fish Diets	**Angler (Adult)**	**Fish Tissue**	**American Eel, RME**	**Skinless fillet**	**Ttl Cumulative Risk**	**na**	**na**	**6.87E+00**	**7.15E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDD	2.29E-02	mg/kg	3.27E-03	7.55E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDE	5.62E-03	mg/kg	8.03E-04	2.62E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDT	1.93E-03	mg/kg	2.76E-04	9.01E-09
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDD	7.05E-02	mg/kg	1.01E-02	2.32E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDE	1.34E-01	mg/kg	1.91E-02	6.26E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDT	8.01E-03	mg/kg	1.14E-03	3.74E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Aldrin	7.49E-05	mg/kg	1.78E-04	1.75E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Antimony	8.04E-03	mg/kg	2.11E-03	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Benzo(a)anthracene	1.63E-03	mg/kg	NA	2.40E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Benzo(a)pyrene	4.04E-04	mg/kg	NA	5.96E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Bis(2-ethylhexyl) phthalate	1.40E+00	mg/kg	7.35E-03	3.96E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Chromium, total	8.23E-02	mg/kg	5.76E-06	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	cis-Chlordane	5.71E-02	mg/kg	8.15E-03	2.74E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	cis-Nonachlor	2.42E-02	mg/kg	3.46E-03	1.16E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Cobalt	1.12E-02	mg/kg	3.92E-03	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Dieldrin	2.67E-02	mg/kg	3.81E-02	5.87E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Gamma-chlordane	2.40E-02	mg/kg	3.43E-03	1.15E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Heptachlor epoxide	1.24E-02	mg/kg	6.81E-02	1.55E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Hexachlorobenzene	5.79E-03	mg/kg	7.60E-04	1.87E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Mercury, Inorganic	5.12E-02	mg/kg	1.79E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Methyl mercury	3.32E-01	mg/kg	3.49E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Oxychlordane	2.76E-02	mg/kg	3.94E-03	1.33E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	PCBs, total	2.51E+00	mg/kg	9.22E+00	7.10E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Selenium	5.42E-01	mg/kg	1.14E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	TCDD-TEQ	1.32E-04	mg/kg	1.03E+01	1.81E-04
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Thallium	1.79E-03	mg/kg	1.88E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Bottom Feeder Species, RME	Fillet	trans-Nonachlor	2.13E-02	mg/kg	3.04E-03	1.02E-07
Mixed Fish Diets	**Angler (Adult)**	**Fish Tissue**	**Bottom Feeder Species, RME**	**Fillet**	**Ttl Cumulative Risk**	**na**	**na**	**2.01E+01**	**2.61E-04**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	4,4'-DDD	5.21E-02	mg/kg	7.44E-03	1.72E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	4,4'-DDE	7.16E-02	mg/kg	1.02E-02	3.34E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Aldrin	1.25E-04	mg/kg	2.96E-04	2.91E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Chromium, total	7.18E-02	mg/kg	5.03E-06	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	cis-Chlordane	4.03E-02	mg/kg	5.75E-03	1.94E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	cis-Nonachlor	1.50E-02	mg/kg	2.14E-03	7.21E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Dieldrin	1.95E-02	mg/kg	2.78E-02	4.28E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Gamma-chlordane	1.95E-02	mg/kg	2.78E-03	9.37E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Heptachlor epoxide	8.95E-03	mg/kg	4.92E-02	1.12E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Hexachlorobenzene	6.68E-03	mg/kg	8.77E-04	2.16E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Mercury, Inorganic	4.55E-02	mg/kg	1.59E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Methyl mercury	2.05E-01	mg/kg	2.15E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Oxychlordane	1.62E-02	mg/kg	2.31E-03	7.79E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	PCBs, total	7.22E-01	mg/kg	2.65E+00	2.04E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	TCDD-TEQ	4.28E-05	mg/kg	3.34E+00	5.84E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Thallium	1.64E-03	mg/kg	1.72E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Channel Catfish, RME	Skinless fillet	trans-Nonachlor	1.82E-02	mg/kg	2.60E-03	8.75E-08
Mixed Fish Diets	**Angler (Adult)**	**Fish Tissue**	**Channel Catfish, RME**	**Skinless fillet**	**Ttl Cumulative Risk**	**na**	**na**	**6.35E+00**	**8.55E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDD	7.88E-02	mg/kg	1.13E-02	2.60E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDE	3.18E-02	mg/kg	4.54E-03	1.48E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDT	1.07E-02	mg/kg	1.53E-03	5.00E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDD	2.41E-01	mg/kg	3.44E-02	7.94E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDE	3.99E-01	mg/kg	5.70E-02	1.86E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDT	7.28E-03	mg/kg	1.04E-03	3.40E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Aldrin	4.36E-04	mg/kg	1.04E-03	1.02E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Antimony	9.20E-02	mg/kg	2.42E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Benzo(a)anthracene	6.66E-03	mg/kg	NA	9.82E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Chromium, total	1.46E-01	mg/kg	1.02E-05	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	cis-Chlordane	1.55E-01	mg/kg	2.21E-02	7.45E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	cis-Nonachlor	4.85E-02	mg/kg	6.93E-03	2.33E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Cobalt	4.72E-02	mg/kg	1.65E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Dieldrin	5.14E-02	mg/kg	7.34E-02	1.13E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Gamma-chlordane	8.48E-02	mg/kg	1.21E-02	4.08E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Heptachlor epoxide	2.10E-02	mg/kg	1.15E-01	2.62E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Hexachlorobenzene	1.41E-02	mg/kg	1.85E-03	4.56E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Mercury, Inorganic	2.48E-02	mg/kg	8.68E-03	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Methyl mercury	1.56E-01	mg/kg	1.64E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Oxychlordane	2.25E-02	mg/kg	3.21E-03	1.08E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	PCBs, total	7.11E+00	mg/kg	2.61E+01	2.01E-04
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Selenium	6.73E-01	mg/kg	1.41E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	TCDD-TEQ	4.07E-04	mg/kg	3.17E+01	5.55E-04
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	Thallium	2.77E-02	mg/kg	2.91E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Common Carp, RME	Fillet with skin	trans-Nonachlor	6.32E-02	mg/kg	9.02E-03	3.04E-07
Mixed Fish Diets	**Angler (Adult)**	**Fish Tissue**	**Common Carp, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**5.87E+01**	**7.76E-04**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	4,4'-DDE	1.02E-02	mg/kg	1.46E-03	4.76E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Chromium, total	2.70E-01	mg/kg	1.89E-05	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Dieldrin	2.88E-03	mg/kg	4.11E-03	6.33E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Heptachlor epoxide	8.66E-04	mg/kg	4.76E-03	1.08E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Mercury, Inorganic	1.28E-01	mg/kg	4.48E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Methyl mercury	5.27E-01	mg/kg	5.53E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	PCBs, total	3.61E-01	mg/kg	1.33E+00	1.02E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	TCDD-TEQ	8.94E-06	mg/kg	6.97E-01	1.22E-05
Mixed Fish Diets	**Angler (Adult)**	**Fish Tissue**	**LM & SM Bass, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**2.63E+00**	**2.32E-05**
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	4,4'-DDE	1.61E-02	mg/kg	2.30E-03	7.52E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	Chromium, total	2.51E-01	mg/kg	1.76E-05	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	cis-Chlordane	8.90E-03	mg/kg	1.27E-03	4.28E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	Dieldrin	4.24E-03	mg/kg	6.05E-03	9.31E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	Heptachlor epoxide	2.06E-03	mg/kg	1.13E-02	2.57E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	Mercury, Inorganic	1.19E-01	mg/kg	4.17E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	Methyl mercury	5.99E-01	mg/kg	6.29E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	PCBs, total	2.95E-01	mg/kg	1.08E+00	8.34E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	Predator Species, RME	Fillet	TCDD-TEQ	8.71E-06	mg/kg	6.79E-01	1.19E-05
Mixed Fish Diets	**Angler (Adult)**	**Fish Tissue**	**Predator Species, RME**	**Fillet**	**Ttl Cumulative Risk**	**na**	**na**	**2.45E+00**	**2.15E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	2,4-DDD	9.33E-03	mg/kg	1.33E-03	3.07E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	4,4'-DDD	2.02E-02	mg/kg	2.88E-03	6.66E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	4,4'-DDE	3.48E-02	mg/kg	4.97E-03	1.62E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Benzo(a)pyrene	6.00E-04	mg/kg	NA	8.84E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Chromium, total	3.06E-01	mg/kg	2.14E-05	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	cis-Chlordane	2.47E-01	mg/kg	3.53E-02	1.19E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	cis-Nonachlor	7.21E-03	mg/kg	1.03E-03	3.46E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Dieldrin	1.05E-02	mg/kg	1.50E-02	2.31E-06
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Gamma-chlordane	7.76E-03	mg/kg	1.11E-03	3.73E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Heptachlor epoxide	3.96E-03	mg/kg	2.17E-02	4.95E-07
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Hexachlorobenzene	2.10E-03	mg/kg	2.76E-04	6.78E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Mercury, Inorganic	1.52E-01	mg/kg	5.32E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Methyl mercury	2.21E-01	mg/kg	2.32E-01	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Oxychlordane	7.73E-03	mg/kg	1.10E-03	3.71E-08
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	PCBs, total	7.12E-01	mg/kg	2.62E+00	2.01E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	Selenium	1.10E+00	mg/kg	2.31E-02	NA
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	TCDD-TEQ	5.24E-05	mg/kg	4.09E+00	7.16E-05
Mixed Fish Diets	Angler (Adult)	Fish Tissue	White Perch, RME	Fillet with skin	trans-Nonachlor	9.08E-03	mg/kg	1.30E-03	4.36E-08
Mixed Fish Diets	**Angler (Adult)**	**Fish Tissue**	**White Perch, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**7.10E+00**	**9.63E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDD	5.42E-02	mg/kg	1.21E-02	1.12E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDE	1.25E-01	mg/kg	2.80E-02	3.66E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	4,4'-DDT	7.79E-03	mg/kg	1.74E-03	2.28E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Benzo(a)pyrene	8.80E-04	mg/kg	NA	3.42E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Bis(2-ethylhexyl) phthalate	1.40E+00	mg/kg	1.15E-02	2.48E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Chromium, total	7.16E-02	mg/kg	7.86E-06	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	cis-Chlordane	4.98E-02	mg/kg	1.12E-02	1.50E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	cis-Nonachlor	1.81E-02	mg/kg	4.05E-03	5.46E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Dieldrin	3.53E-02	mg/kg	7.91E-02	4.87E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Gamma-chlordane	1.05E-02	mg/kg	2.35E-03	3.17E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Heptachlor epoxide	1.30E-02	mg/kg	1.12E-01	1.02E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Hexachlorobenzene	5.39E-03	mg/kg	1.11E-03	1.09E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Mercury, Inorganic	3.22E-02	mg/kg	1.77E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Methyl mercury	4.84E-01	mg/kg	7.97E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Oxychlordane	3.81E-02	mg/kg	8.53E-03	1.15E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	PCBs, total	1.30E+00	mg/kg	7.47E+00	2.30E-05
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Selenium	6.53E-01	mg/kg	2.15E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	TCDD-TEQ	1.71E-05	mg/kg	2.10E+00	1.47E-05
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	Thallium	6.30E-03	mg/kg	1.04E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	American Eel, RME	Skinless fillet	trans-Nonachlor	1.14E-02	mg/kg	2.55E-03	3.44E-08
Mixed Fish Diets	**Angler (Child 1-6 yrs)**	**Fish Tissue**	**American Eel, RME**	**Skinless fillet**	**Ttl Cumulative Risk**	**na**	**na**	**1.08E+01**	**4.51E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDD	2.29E-02	mg/kg	5.13E-03	4.74E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDE	5.62E-03	mg/kg	1.26E-03	1.65E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	2,4-DDT	1.93E-03	mg/kg	4.32E-04	5.65E-09
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDD	7.05E-02	mg/kg	1.58E-02	1.46E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDE	1.34E-01	mg/kg	3.00E-02	3.93E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	4,4'-DDT	8.01E-03	mg/kg	1.79E-03	2.35E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Aldrin	7.49E-05	mg/kg	2.80E-04	1.10E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Antimony	8.04E-03	mg/kg	3.31E-03	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Benzo(a)anthracene	1.63E-03	mg/kg	NA	6.33E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Benzo(a)pyrene	4.04E-04	mg/kg	NA	1.57E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Bis(2-ethylhexyl) phthalate	1.40E+00	mg/kg	1.15E-02	2.48E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Chromium, total	8.23E-02	mg/kg	9.04E-06	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	cis-Chlordane	5.71E-02	mg/kg	1.28E-02	1.72E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	cis-Nonachlor	2.42E-02	mg/kg	5.42E-03	7.30E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Cobalt	1.12E-02	mg/kg	6.15E-03	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Dieldrin	2.67E-02	mg/kg	5.98E-02	3.68E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Gamma-chlordane	2.40E-02	mg/kg	5.38E-03	7.24E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Heptachlor epoxide	1.24E-02	mg/kg	1.07E-01	9.72E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Hexachlorobenzene	5.79E-03	mg/kg	1.19E-03	1.17E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Mercury, Inorganic	5.12E-02	mg/kg	2.81E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Methyl mercury	3.32E-01	mg/kg	5.47E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Oxychlordane	2.76E-02	mg/kg	6.18E-03	8.32E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	PCBs, total	2.51E+00	mg/kg	1.45E+01	4.45E-05
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Selenium	5.42E-01	mg/kg	1.79E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	TCDD-TEQ	1.32E-04	mg/kg	1.62E+01	1.13E-04
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	Thallium	1.79E-03	mg/kg	2.95E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Bottom Feeder Species, RME	Fillet	trans-Nonachlor	2.13E-02	mg/kg	4.77E-03	6.42E-08
Mixed Fish Diets	**Angler (Child 1-6 yrs)**	**Fish Tissue**	**Bottom Feeder Species, RME**	**Fillet**	**Ttl Cumulative Risk**	**na**	**na**	**3.16E+01**	**1.64E-04**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	4,4'-DDD	5.21E-02	mg/kg	1.17E-02	1.08E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	4,4'-DDE	7.16E-02	mg/kg	1.60E-02	2.10E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Aldrin	1.25E-04	mg/kg	4.65E-04	1.82E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Chromium, total	7.18E-02	mg/kg	7.88E-06	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	cis-Chlordane	4.03E-02	mg/kg	9.03E-03	1.22E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	cis-Nonachlor	1.50E-02	mg/kg	3.36E-03	4.52E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Dieldrin	1.95E-02	mg/kg	4.37E-02	2.69E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Gamma-chlordane	1.95E-02	mg/kg	4.37E-03	5.88E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Heptachlor epoxide	8.95E-03	mg/kg	7.71E-02	7.02E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Hexachlorobenzene	6.68E-03	mg/kg	1.38E-03	1.35E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Mercury, Inorganic	4.55E-02	mg/kg	2.50E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Methyl mercury	2.05E-01	mg/kg	3.38E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Oxychlordane	1.62E-02	mg/kg	3.63E-03	4.88E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	PCBs, total	7.22E-01	mg/kg	4.16E+00	1.28E-05
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	TCDD-TEQ	4.28E-05	mg/kg	5.24E+00	3.67E-05
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	Thallium	1.64E-03	mg/kg	2.70E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Channel Catfish, RME	Skinless fillet	trans-Nonachlor	1.82E-02	mg/kg	4.08E-03	5.49E-08
Mixed Fish Diets	**Angler (Child 1-6 yrs)**	**Fish Tissue**	**Channel Catfish, RME**	**Skinless fillet**	**Ttl Cumulative Risk**	**na**	**na**	**9.96E+00**	**5.37E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDD	7.88E-02	mg/kg	1.77E-02	1.63E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDE	3.18E-02	mg/kg	7.12E-03	9.31E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	2,4-DDT	1.07E-02	mg/kg	2.40E-03	3.13E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDD	2.41E-01	mg/kg	5.40E-02	4.98E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDE	3.99E-01	mg/kg	8.94E-02	1.17E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	4,4'-DDT	7.28E-03	mg/kg	1.63E-03	2.13E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Aldrin	4.36E-04	mg/kg	1.63E-03	6.39E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Antimony	9.20E-02	mg/kg	3.79E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Benzo(a)anthracene	6.66E-03	mg/kg	NA	2.59E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Chromium, total	1.46E-01	mg/kg	1.60E-05	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	cis-Chlordane	1.55E-01	mg/kg	3.47E-02	4.67E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	cis-Nonachlor	4.85E-02	mg/kg	1.09E-02	1.46E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Cobalt	4.72E-02	mg/kg	2.59E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Dieldrin	5.14E-02	mg/kg	1.15E-01	7.09E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Gamma-chlordane	8.48E-02	mg/kg	1.90E-02	2.56E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Heptachlor epoxide	2.10E-02	mg/kg	1.81E-01	1.65E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Hexachlorobenzene	1.41E-02	mg/kg	2.90E-03	2.86E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Mercury, Inorganic	2.48E-02	mg/kg	1.36E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Methyl mercury	1.56E-01	mg/kg	2.57E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Oxychlordane	2.25E-02	mg/kg	5.04E-03	6.78E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	PCBs, total	7.11E+00	mg/kg	4.10E+01	1.26E-04
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Selenium	6.73E-01	mg/kg	2.22E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	TCDD-TEQ	4.07E-04	mg/kg	4.98E+01	3.49E-04
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	Thallium	2.77E-02	mg/kg	4.56E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Common Carp, RME	Fillet with skin	trans-Nonachlor	6.32E-02	mg/kg	1.42E-02	1.91E-07
Mixed Fish Diets	**Angler (Child 1-6 yrs)**	**Fish Tissue**	**Common Carp, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**9.21E+01**	**4.87E-04**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	4,4'-DDE	1.02E-02	mg/kg	2.28E-03	2.99E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Chromium, total	2.70E-01	mg/kg	2.96E-05	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Dieldrin	2.88E-03	mg/kg	6.45E-03	3.97E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Heptachlor epoxide	8.66E-04	mg/kg	7.46E-03	6.79E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Mercury, Inorganic	1.28E-01	mg/kg	7.03E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	Methyl mercury	5.27E-01	mg/kg	8.68E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	PCBs, total	3.61E-01	mg/kg	2.08E+00	6.40E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	LM & SM Bass, RME	Fillet with skin	TCDD-TEQ	8.94E-06	mg/kg	1.09E+00	7.65E-06
Mixed Fish Diets	**Angler (Child 1-6 yrs)**	**Fish Tissue**	**LM & SM Bass, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**4.13E+00**	**1.46E-05**
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	4,4'-DDE	1.61E-02	mg/kg	3.61E-03	4.72E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	Chromium, total	2.51E-01	mg/kg	2.76E-05	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	cis-Chlordane	8.90E-03	mg/kg	1.99E-03	2.68E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	Dieldrin	4.24E-03	mg/kg	9.50E-03	5.84E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	Heptachlor epoxide	2.06E-03	mg/kg	1.77E-02	1.62E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	Mercury, Inorganic	1.19E-01	mg/kg	6.53E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	Methyl mercury	5.99E-01	mg/kg	9.87E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	PCBs, total	2.95E-01	mg/kg	1.70E+00	5.23E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	Predator Species, RME	Fillet	TCDD-TEQ	8.71E-06	mg/kg	1.07E+00	7.46E-06
Mixed Fish Diets	**Angler (Child 1-6 yrs)**	**Fish Tissue**	**Predator Species, RME**	**Fillet**	**Ttl Cumulative Risk**	**na**	**na**	**3.85E+00**	**1.35E-05**

EXHIBIT B-2 TABLE 3

RISK TOOL OUTPUT BY FISH SPECIES

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	2,4-DDD	9.33E-03	mg/kg	2.09E-03	1.93E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	4,4'-DDD	2.02E-02	mg/kg	4.52E-03	4.18E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	4,4'-DDE	3.48E-02	mg/kg	7.80E-03	1.02E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Benzo(a)pyrene	6.00E-04	mg/kg	NA	2.33E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Chromium, total	3.06E-01	mg/kg	3.36E-05	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	cis-Chlordane	2.47E-01	mg/kg	5.53E-02	7.45E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	cis-Nonachlor	7.21E-03	mg/kg	1.62E-03	2.17E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Dieldrin	1.05E-02	mg/kg	2.35E-02	1.45E-06
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Gamma-chlordane	7.76E-03	mg/kg	1.74E-03	2.34E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Heptachlor epoxide	3.96E-03	mg/kg	3.41E-02	3.10E-07
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Hexachlorobenzene	2.10E-03	mg/kg	4.32E-04	4.26E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Mercury, Inorganic	1.52E-01	mg/kg	8.35E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Methyl mercury	2.21E-01	mg/kg	3.64E-01	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Oxychlordane	7.73E-03	mg/kg	1.73E-03	2.33E-08
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	PCBs, total	7.12E-01	mg/kg	4.10E+00	1.26E-05
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	Selenium	1.10E+00	mg/kg	3.62E-02	NA
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	TCDD-TEQ	5.24E-05	mg/kg	6.42E+00	4.49E-05
Mixed Fish Diets	Angler (Child 1-6 yrs)	Fish Tissue	White Perch, RME	Fillet with skin	trans-Nonachlor	9.08E-03	mg/kg	2.03E-03	2.74E-08
Mixed Fish Diets	**Angler (Child 1-6 yrs)**	**Fish Tissue**	**White Perch, RME**	**Fillet with skin**	**Ttl Cumulative Risk**	**na**	**na**	**1.11E+01**	**6.06E-05**

EXHIBIT B-2 TABLE 4
CUMULATIVE EXCESS LIFETIME CANCER RISKS FOR ANGLER RECEPTOR
CONSUMPTION OF SITE-SPECIFIC MIXED FISH DIET (b)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

	Angler (Child 1-6 yrs)		Angler (Adolescent 7-18 yrs)		Angler (Adult)		Combined Adult/Child (a)	
COPC	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**
2,4-DDD	3.67E-09	0.00%	4.70E-09	0.00%	5.84E-09	0.00%	1.42E-08	0.00%
2,4'-DDE	7.24E-09	0.01%	4.70E-09	0.00%	1.15E-08	0.01%	2.35E-08	0.01%
2,4'-DDT	2.49E-09	0.00%	9.29E-09	0.01%	3.96E-09	0.00%	1.57E-08	0.00%
4,4'-DDD	7.21E-08	0.08%	9.25E-08	0.08%	1.15E-07	0.08%	2.79E-07	0.08%
4,4'-DDE	2.10E-07	0.24%	2.69E-07	0.24%	3.34E-07	0.24%	8.12E-07	0.24%
4,4'-DDT	1.03E-08	0.01%	1.32E-08	0.012%	1.65E-08	0.012%	4.00E-08	0.012%
Aldrin	4.83E-09	0.01%	6.20E-09	0.01%	7.70E-09	0.01%	1.87E-08	0.01%
Antimony	NA	NA	6.20E-09	0.01%	NA	NA	NA	NA
Benzo(a)anthracene	2.79E-08	0.03%	NA	NA	1.06E-08	0.01%	NA	NA
Benzo(a)pyrene	1.13E-07	0.13%	8.66E-08	0.08%	4.30E-08	0.03%	2.43E-07	0.07%
Bis(2-ethylhexyl) phthalate	1.09E-07	0.12%	1.40E-07	0.12%	1.74E-07	0.12%	4.24E-07	0.12%
Chromium, total	NA	NA	NA	NA	NA	NA	NA	NA
cis-Chlordane	2.27E-07	0.26%	2.92E-07	0.26%	3.62E-07	0.26%	8.81E-07	0.26%
cis-Nonachlor	3.62E-08	0.04%	4.65E-08	0.04%	5.78E-08	0.04%	1.40E-07	0.04%
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	2.11E-06	2.38%	2.71E-06	2.380%	3.36E-06	2.381%	8.18E-06	2.38%
Gamma-chlordane	3.63E-08	0.04%	4.66E-08	0.04%	5.78E-08	0.04%	1.41E-07	0.04%
Heptachlor epoxide	5.46E-07	0.62%	7.01E-07	0.62%	8.71E-07	0.62%	2.12E-06	0.62%
Hexachlorobenzene	5.97E-08	0.07%	7.66E-08	0.07%	9.52E-08	0.07%	2.32E-07	0.07%
Mercury, Inorganic	NA	NA	NA	NA	NA	NA	NA	NA
Methyl mercury	NA	NA	NA	NA	NA	NA	NA	NA
Oxychlordane	4.10E-08	0.05%	5.27E-08	0.05%	6.54E-08	0.05%	1.59E-07	0.05%
PCBs, total	2.39E-05	26.96%	3.07E-05	26.98%	3.81E-05	26.99%	9.28E-05	26.99%
Selenium	NA	NA	NA	NA	NA	NA	NA	NA
TCDD-TEQ	6.12E-05	68.92%	7.85E-05	68.98%	9.75E-05	69.01%	2.37E-04	68.98%
Thallium	NA	NA	NA	NA	NA	NA	NA	NA
trans-Nonachlor	3.35E-08	0.04%	4.29E-08	0.04%	5.33E-08	0.04%	1.30E-07	0.04%
Total Cumulative Risk	**8.87E-05**	**100%**	**1.14E-04**	**100%**	**1.41E-04**	**100%**	**3.44E-04**	**100%**

Notes:

COPC - Chemical of Potential Concern.

NA - Not applicable.

TEQ - Toxicity Equivalence.

(a) For calculation of site-specific cancer risk, adult, adolescent, and young child risks are summed.

(b) Site-specific mixed fish diet consists of:

Bottomfeeders = 44%

Predators = 37%

Intermediate = 19% (white perch)

EXHIBIT B-2 TABLE 5
CUMULATIVE NONCANCER RISKS FOR ANGLER RECEPTOR
CONSUMPTION OF SITE-SPECIFIC MIXED FISH DIET (a)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

	Angler (Child 1-6 yrs)		Angler (Adolescent 7-18 yrs)		Angler (Adult)	
COPC	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**
2,4-DDD	3.97E-04	0.00%	2.55E-04	0.00%	2.53E-04	0.00%
2,4'-DDE	5.54E-04	0.00%	3.55E-04	0.00%	3.53E-04	0.00%
2,4'-DDT	1.90E-04	0.00%	1.22E-04	0.00%	1.21E-04	0.00%
4,4'-DDD	7.81E-03	0.04%	5.01E-03	0.04%	4.98E-03	0.04%
4,4'-DDE	1.60E-02	0.09%	1.03E-02	0.09%	1.02E-02	0.09%
4,4'-DDT	7.89E-04	0.005%	5.06E-04	0.005%	5.03E-04	0.005%
Aldrin	1.23E-04	0.001%	7.90E-05	0.001%	7.85E-05	0.001%
Antimony	1.46E-03	0.01%	9.34E-04	0.01%	9.29E-04	0.01%
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	5.07E-03	0.03%	3.25E-03	0.03%	3.23E-03	0.03%
Chromium, total	1.04E-05	0.0001%	6.65E-06	0.0001%	6.60E-06	0.0001%
cis-Chlordane	1.69E-02	0.10%	1.08E-02	0.10%	1.08E-02	0.10%
cis-Nonachlor	2.69E-03	0.02%	1.73E-03	0.02%	1.72E-03	0.02%
Cobalt	2.71E-03	0.02%	1.74E-03	0.02%	1.72E-03	0.02%
Dieldrin	3.43E-02	0.20%	2.20E-02	0.20%	2.19E-02	0.20%
Gamma-chlordane	2.70E-03	0.02%	1.73E-03	0.02%	1.72E-03	0.02%
Heptachlor epoxide	6.01E-02	0.34%	3.85E-02	0.34%	3.83E-02	0.34%
Hexachlorobenzene	6.07E-04	0.00%	3.89E-04	0.00%	3.87E-04	0.00%
Mercury, Inorganic	5.24E-02	0.30%	3.36E-02	0.30%	3.34E-02	0.30%
Methyl mercury	6.75E-01	3.87%	4.33E-01	3.87%	4.30E-01	3.87%
Oxychlordane	3.05E-03	0.02%	1.96E-03	0.02%	1.94E-03	0.02%
PCBs, total	7.78E+00	44.62%	4.99E+00	44.62%	4.96E+00	44.62%
Selenium	1.47E-02	0.08%	9.45E-03	0.08%	9.39E-03	0.08%
TCDD-TEQ	8.74E+00	50.14%	5.61E+00	50.14%	5.57E+00	50.14%
Thallium	1.30E-02	0.07%	8.32E-03	0.07%	8.27E-03	0.07%
trans-Nonachlor	2.49E-03	0.01%	1.59E-03	0.01%	1.58E-03	0.01%
Total Cumulative Risk	**1.74E+01**	**100%**	**1.12E+01**	**100%**	**1.11E+01**	**100%**

Notes:

COPC - Chemical of Potential Concern.

NA - Not applicable.

TEQ - Toxicity Equivalence.

(a) Site-specific mixed fish diet consists of:

Bottomfeeders = 44%

Predators = 37%

Intermediate = 19% (white perch)

EXHIBIT B-2 TABLE 6
CUMULATIVE EXCESS LIFETIME CANCER RISKS FOR ANGLER RECEPTOR
CONSUMPTION OF MIXED FISH DIET WITHOUT CARP (b)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

	Angler (Child 1-6 yrs)		Angler (Adolescent 7-18 yrs)		Angler (Adult)		Combined Adult/Child (a)	
COPC	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**
2,4-DDD	4.82E-09	0.01%	6.19E-09	0.01%	7.69E-09	0.01%	1.87E-08	0.01%
4,4'-DDD	6.54E-08	0.15%	8.39E-08	0.15%	1.04E-07	0.15%	2.54E-07	0.15%
4,4'-DDE	1.77E-07	0.41%	2.27E-07	0.41%	2.82E-07	0.41%	6.86E-07	0.41%
4,4'-DDT	5.70E-09	0.013%	7.32E-09	0.013%	9.09E-09	0.013%	2.21E-08	0.013%
Aldrin	4.56E-09	0.01%	5.85E-09	0.01%	7.27E-09	0.01%	1.77E-08	0.01%
Benzo(a)pyrene	1.44E-07	0.33%	1.10E-07	0.20%	5.45E-08	0.08%	3.08E-07	0.18%
Bis(2-ethylhexyl) phthalate	6.21E-08	0.14%	7.97E-08	0.14%	9.89E-08	0.14%	2.41E-07	0.14%
Chromium, total	NA	NA	NA	NA	NA	NA	NA	NA
cis-Chlordane	2.54E-07	0.58%	3.26E-07	0.59%	4.05E-07	0.59%	9.85E-07	0.59%
cis-Nonachlor	3.04E-08	0.07%	3.90E-08	0.07%	4.84E-08	0.07%	1.18E-07	0.07%
Dieldrin	2.35E-06	5.404%	3.01E-06	5.411%	3.74E-06	5.418%	9.11E-06	5.41%
Gamma-chlordane	2.85E-08	0.07%	3.65E-08	0.07%	4.54E-08	0.07%	1.10E-07	0.07%
Heptachlor epoxide	5.25E-07	1.21%	6.73E-07	1.21%	8.36E-07	1.21%	2.03E-06	1.21%
Hexachlorobenzene	7.18E-08	0.17%	9.21E-08	0.17%	1.14E-07	0.17%	2.78E-07	0.17%
Mercury, Inorganic	NA	NA	NA	NA	NA	NA	NA	NA
Methyl mercury	NA	NA	NA	NA	NA	NA	NA	NA
Oxychlordane	4.68E-08	0.11%	6.00E-08	0.11%	7.45E-08	0.11%	1.81E-07	0.11%
PCBs, total	1.37E-05	31.52%	1.76E-05	31.57%	2.18E-05	31.60%	5.31E-05	31.57%
Selenium	NA	NA	NA	NA	NA	NA	NA	NA
TCDD-TEQ	2.60E-05	59.74%	3.33E-05	59.82%	4.14E-05	59.89%	1.01E-04	59.83%
Thallium	NA	NA	NA	NA	NA	NA	NA	NA
trans-Nonachlor	2.92E-08	0.07%	3.74E-08	0.07%	4.65E-08	0.07%	1.13E-07	0.07%
Total Cumulative Risk	**4.35E-05**	**100%**	**5.57E-05**	**100%**	**6.91E-05**	**100%**	**1.68E-04**	**100%**

Notes:

COPC - Chemical of Potential Concern.

EPC - Exposure Point Concentration.

NA - Not applicable.

QAPP - Quality Assurance Project Plan.

TEQ - Toxicity Equivalence.

(a) For calculation of site-specific cancer risk, adult and young child risks are summed.

(b) Mixed fish diet without carp assumed to consist of equal fractions (25%) of four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, and largemouth bass.

EXHIBIT B-2 TABLE 7
CUMULATIVE NONCANCER RISKS FOR ANGLER RECEPTOR
CONSUMPTION OF MIXED FISH DIET WITHOUT CARP (a)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

	Angler (Child 1-6 yrs)		Angler (Adolescent 7-18 yrs)		Angler (Adult)	
COPC	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**
2,4-DDD	5.22E-04	0.01%	3.35E-04	0.01%	3.33E-04	0.01%
4,4'-DDD	7.08E-03	0.08%	4.54E-03	0.08%	4.52E-03	0.08%
4,4'-DDE	1.35E-02	0.15%	8.68E-03	0.15%	8.63E-03	0.15%
4,4'-DDT	4.36E-04	0.005%	2.80E-04	0.005%	2.78E-04	0.005%
Aldrin	1.16E-04	0.001%	7.46E-05	0.001%	7.41E-05	0.001%
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	2.88E-03	0.03%	1.85E-03	0.03%	1.84E-03	0.03%
Chromium, total	1.97E-05	0.0002%	1.27E-05	0.0002%	1.26E-05	0.0002%
cis-Chlordane	1.89E-02	0.21%	1.21E-02	0.21%	1.20E-02	0.21%
cis-Nonachlor	2.26E-03	0.03%	1.45E-03	0.03%	1.44E-03	0.03%
Dieldrin	3.82E-02	0.42%	2.45E-02	0.42%	2.43E-02	0.42%
Gamma-chlordane	2.11E-03	0.02%	1.36E-03	0.02%	1.35E-03	0.02%
Heptachlor epoxide	5.77E-02	0.64%	3.70E-02	0.64%	3.68E-02	0.64%
Hexachlorobenzene	7.29E-04	0.01%	4.68E-04	0.01%	4.65E-04	0.01%
Mercury, Inorganic	4.91E-02	0.55%	3.15E-02	0.55%	3.13E-02	0.55%
Methyl mercury	5.92E-01	6.57%	3.80E-01	6.57%	3.77E-01	6.57%
Oxychlordane	3.47E-03	0.04%	2.23E-03	0.04%	2.21E-03	0.04%
PCBs, total	4.45E+00	49.48%	2.86E+00	49.48%	2.84E+00	49.48%
Selenium	1.44E-02	0.16%	9.26E-03	0.16%	9.20E-03	0.16%
TCDD-TEQ	3.71E+00	41.21%	2.38E+00	41.21%	2.37E+00	41.21%
Thallium	3.27E-02	0.36%	2.10E-02	0.36%	2.08E-02	0.36%
trans-Nonachlor	2.17E-03	0.02%	1.39E-03	0.02%	1.38E-03	0.02%
Total Cumulative Risk	**9.00E+00**	**100%**	**5.78E+00**	**100%**	**5.74E+00**	**100%**

Notes:

COPC - Chemical of Potential Concern.

EPC - Exposure Point Concentration.

NA - Not applicable.

QAPP - Quality Assurance Project Plan.

TEQ - Toxicity Equivalence.

(a) Mixed fish diet without carp assumed to consist of equal fractions (25%) of four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, andlargemouth bass.

EXHIBIT B-2 TABLE 8
CUMULATIVE EXCESS LIFETIME CANCER RISKS FOR ANGLER RECEPTOR
CONSUMPTION OF MIXED FISH DIET WITH CARP (b)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

	Angler (Child 1-6 yrs)		Angler (Adolescent 7-18 yrs)		Angler (Adult)		Combined Adult/Child (a)	
COPC	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Cancer Risk**	**Contribution to Cumulative Risk**
2,4-DDD	3.64E-08	0.03%	4.68E-08	0.03%	5.81E-08	0.03%	1.41E-07	0.03%
2,4-DDE	1.86E-08	0.01%	2.39E-08	0.01%	2.97E-08	0.01%	7.22E-08	0.01%
2,4-DDT	6.27E-09	0.00%	8.04E-09	0.00%	9.99E-09	0.00%	2.43E-08	0.00%
4,4'-DDD	1.52E-07	0.11%	1.95E-07	0.12%	2.42E-07	0.12%	5.89E-07	0.12%
4,4'-DDE	3.75E-07	0.28%	4.82E-07	0.28%	5.98E-07	0.28%	1.45E-06	0.28%
4,4'-DDT	8.83E-09	0.007%	1.13E-08	0.007%	1.41E-08	0.007%	3.42E-08	0.007%
Aldrin	1.64E-08	0.01%	2.11E-08	0.01%	2.62E-08	0.01%	6.37E-08	0.01%
Antimony	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	5.17E-08	0.04%	3.95E-08	0.02%	1.96E-08	0.01%	1.11E-07	0.02%
Benzo(a)pyrene	1.15E-07	0.09%	8.78E-08	0.05%	4.36E-08	0.02%	2.46E-07	0.05%
Bis(2-ethylhexyl) phthalate	4.97E-08	0.04%	6.37E-08	0.04%	7.92E-08	0.04%	1.93E-07	0.04%
Chromium, total	NA	NA	NA	NA	NA	NA	NA	NA
cis-Chlordane	2.97E-07	0.22%	3.81E-07	0.22%	4.73E-07	0.22%	1.15E-06	0.22%
cis-Nonachlor	5.36E-08	0.04%	6.87E-08	0.04%	8.54E-08	0.04%	2.08E-07	0.04%
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	3.30E-06	2.49%	4.23E-06	2.49%	5.25E-06	2.50%	1.28E-05	2.50%
Gamma-chlordane	7.39E-08	0.06%	9.48E-08	0.06%	1.18E-07	0.06%	2.87E-07	0.06%
Heptachlor epoxide	7.49E-07	0.57%	9.61E-07	0.57%	1.19E-06	0.57%	2.90E-06	0.57%
Hexachlorobenzene	1.15E-07	0.09%	1.47E-07	0.09%	1.83E-07	0.09%	4.44E-07	0.09%
Mercury, Inorganic	NA	NA	NA	NA	NA	NA	NA	NA
Methyl mercury	NA	NA	NA	NA	NA	NA	NA	NA
Oxychlordane	5.10E-08	0.04%	6.54E-08	0.04%	8.12E-08	0.04%	1.98E-07	0.04%
PCBs, total	3.62E-05	27.37%	4.64E-05	27.39%	5.77E-05	27.40%	1.40E-04	27.39%
Selenium	NA	NA	NA	NA	NA	NA	NA	NA
TCDD-TEQ	9.05E-05	68.45%	1.16E-04	68.48%	1.44E-04	68.51%	3.51E-04	68.48%
Thallium	NA	NA	NA	NA	NA	NA	NA	NA
trans-Nonachlor	6.14E-08	0.05%	7.88E-08	0.05%	9.79E-08	0.05%	2.38E-07	0.05%
Total Cumulative Risk	**1.32E-04**	**100%**	**1.70E-04**	**100%**	**2.10E-04**	**100%**	**5.12E-04**	**100%**

Notes:

COPC - Chemical of Potential Concern.

EPC - Exposure Point Concentration.

NA - Not applicable.

QAPP - Quality Assurance Project Plan.

TEQ - Toxicity Equivalence.

(a) For calculation of site-specific cancer risk, adult and young child risks are summed.

(b) Mixed fish diet with carp assumed to consist of equal fractions (20%) of common carp and four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, and largemouth bass.

EXHIBIT B-2 TABLE 9
CUMULATIVE NONCANCER RISKS FOR ANGLER RECEPTOR
CONSUMPTION OF MIXED FISH DIET WITH CARP (a)
LOWER PASSAIC RIVER STUDY AREA
SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

	Angler (Child 1-6 yrs)		Angler (Adolescent 7-18 yrs)		Angler (Adult)	
COPC	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**	**Site-Specific Noncancer Risk**	**Contribution to Cumulative Risk**
2,4-DDD	3.95E-03	0.02%	2.53E-03	0.02%	2.52E-03	0.02%
2,4-DDE	1.42E-03	0.006%	9.14E-04	0.006%	9.08E-04	0.01%
2,4-DDT	4.79E-04	0.002%	3.08E-04	0.002%	3.06E-04	0.002%
4,4'-DDD	1.65E-02	0.06%	1.06E-02	0.06%	1.05E-02	0.06%
4,4'-DDE	2.87E-02	0.11%	1.84E-02	0.11%	1.83E-02	0.11%
4,4'-DDT	6.75E-04	0.003%	4.33E-04	0.003%	4.30E-04	0.003%
Aldrin	4.19E-04	0.002%	2.69E-04	0.002%	2.67E-04	0.002%
Antimony	7.58E-03	0.03%	4.86E-03	0.03%	4.83E-03	0.03%
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	2.31E-03	0.01%	1.48E-03	0.01%	1.47E-03	0.01%
Chromium, total	1.90E-05	0.00007%	1.22E-05	0.00007%	1.21E-05	0.00007%
cis-Chlordane	2.20E-02	0.09%	1.41E-02	0.09%	1.41E-02	0.09%
cis-Nonachlor	3.98E-03	0.02%	2.55E-03	0.02%	2.54E-03	0.02%
Cobalt	5.18E-03	0.02%	3.32E-03	0.02%	3.30E-03	0.02%
Dieldrin	5.36E-02	0.21%	3.44E-02	0.21%	3.42E-02	0.21%
Gamma-chlordane	5.49E-03	0.02%	3.52E-03	0.02%	3.50E-03	0.02%
Heptachlor epoxide	8.23E-02	0.32%	5.28E-02	0.32%	5.25E-02	0.32%
Hexachlorobenzene	1.16E-03	0.005%	7.47E-04	0.005%	7.42E-04	0.005%
Mercury, Inorganic	4.20E-02	0.16%	2.69E-02	0.16%	2.68E-02	0.16%
Methyl mercury	5.25E-01	2.05%	3.37E-01	2.05%	3.35E-01	2.05%
Oxychlordane	3.79E-03	0.01%	2.43E-03	0.01%	2.41E-03	0.01%
PCBs, total	1.18E+01	45.88%	7.54E+00	45.88%	7.50E+00	45.88%
Selenium	1.60E-02	0.06%	1.02E-02	0.06%	1.02E-02	0.06%
TCDD-TEQ	1.29E+01	50.43%	8.29E+00	50.43%	8.24E+00	50.43%
Thallium	1.17E-01	0.46%	7.53E-02	0.46%	7.48E-02	0.46%
trans-Nonachlor	4.56E-03	0.02%	2.93E-03	0.02%	2.91E-03	0.02%
Total Cumulative Risk	**2.56E+01**	**100%**	**1.64E+01**	**100%**	**1.63E+01**	**100%**

Notes:

COPC - Chemical of Potential Concern.

EPC - Exposure Point Concentration.

NA - Not applicable.

QAPP - Quality Assurance Project Plan.

TEQ - Toxicity Equivalence.

(a) Mixed fish diet with carp assumed to consist of equal fractions (20%) of common carp and four human health target fish species identified in LPRSA Fish/Decapod QAPP (Windward, 2009a): American eel, white perch, channel catfish, and largemouth bass.

EXHIBIT B-2 TABLE 10

CRAB TISSUE RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	4,4'-DDE	1.52E-02	mg/kg	5.62E-04	1.47E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Arsenic, inorganic	1.85E-02	mg/kg	1.63E-03	1.13E-07
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Arsenic, organic/other forms	1.28E+00	mg/kg	1.69E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Benzo(a)pyrene	1.49E-03	mg/kg	NA	1.11E-07
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Chromium, total	1.69E+00	mg/kg	2.97E-05	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Copper	1.68E+01	mg/kg	1.11E-02	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Dieldrin	2.17E-03	mg/kg	8.02E-04	9.88E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Heptachlor epoxide	9.79E-04	mg/kg	1.39E-03	2.53E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Mercury, inorganic	3.91E-02	mg/kg	3.44E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Methyl mercury	1.88E-01	mg/kg	4.97E-02	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	PCBs, total	5.42E-02	mg/kg	5.01E-02	3.08E-07
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Selenium	7.42E-01	mg/kg	3.92E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	TCDD-TEQ	1.03E-05	mg/kg	2.71E-01	3.80E-06
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Thallium	5.40E-03	mg/kg	1.43E-02	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle Only	Zinc	4.01E+01	mg/kg	3.53E-03	NA
Crab	**Angler (Adolescent 7-18 yrs)**	**Crab Tissue**	**Crab, RME**	**Muscle Only**	**Ttl Cumulative Risk**	**na**	**na**	**4.14E-01**	**4.47E-06**

EXHIBIT B-2 TABLE 10

CRAB TISSUE RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	4,4'-DDE	1.52E-02	mg/kg	5.59E-04	1.83E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Arsenic, inorganic	1.85E-02	mg/kg	1.62E-03	1.40E-07
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Arsenic, organic/other forms	1.28E+00	mg/kg	1.68E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Benzo(a)pyrene	1.49E-03	mg/kg	NA	5.49E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Chromium, total	1.69E+00	mg/kg	2.95E-05	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Copper	1.68E+01	mg/kg	1.10E-02	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Dieldrin	2.17E-03	mg/kg	7.97E-04	1.23E-07
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Heptachlor epoxide	9.79E-04	mg/kg	1.38E-03	3.15E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Mercury, inorganic	3.91E-02	mg/kg	3.42E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Methyl mercury	1.88E-01	mg/kg	4.94E-02	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	PCBs, total	5.42E-02	mg/kg	4.98E-02	3.83E-07
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Selenium	7.42E-01	mg/kg	3.90E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	TCDD-TEQ	1.03E-05	mg/kg	2.70E-01	4.72E-06
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Thallium	5.40E-03	mg/kg	1.42E-02	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle Only	Zinc	4.01E+01	mg/kg	3.51E-03	NA
Crab	**Angler (Adult)**	**Crab Tissue**	**Crab, RME**	**Muscle Only**	**Ttl Cumulative Risk**	**na**	**na**	**4.11E-01**	**5.47E-06**

EXHIBIT B-2 TABLE 10

CRAB TISSUE RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	4,4'-DDE	1.52E-02	mg/kg	8.76E-04	1.15E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Arsenic, inorganic	1.85E-02	mg/kg	2.54E-03	8.79E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Arsenic, organic/other forms	1.28E+00	mg/kg	2.63E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Benzo(a)pyrene	1.49E-03	mg/kg	NA	1.45E-07
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Chromium, total	1.69E+00	mg/kg	4.63E-05	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Copper	1.68E+01	mg/kg	1.73E-02	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Dieldrin	2.17E-03	mg/kg	1.25E-03	7.70E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Heptachlor epoxide	9.79E-04	mg/kg	2.17E-03	1.98E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Mercury, inorganic	3.91E-02	mg/kg	5.37E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Methyl mercury	1.88E-01	mg/kg	7.74E-02	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	PCBs, total	5.42E-02	mg/kg	7.81E-02	2.40E-07
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Selenium	7.42E-01	mg/kg	6.11E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	TCDD-TEQ	1.03E-05	mg/kg	4.23E-01	2.96E-06
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Thallium	5.40E-03	mg/kg	2.22E-02	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle Only	Zinc	4.01E+01	mg/kg	5.50E-03	NA
Crab	**Angler (Child 1-6 yrs)**	**Crab Tissue**	**Crab, RME**	**Muscle Only**	**Ttl Cumulative Risk**	**na**	**na**	**6.45E-01**	**3.54E-06**

EXHIBIT B-2 TABLE 10

CRAB TISSUE RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDD	2.08E-02	mg/kg	7.69E-04	1.42E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDE	4.95E-02	mg/kg	1.83E-03	4.79E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDT	4.05E-03	mg/kg	1.50E-04	3.92E-09
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Antimony	2.46E-02	mg/kg	1.62E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Arsenic, inorganic	1.69E-02	mg/kg	1.49E-03	1.03E-07
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Arsenic, organic/other forms	1.06E+00	mg/kg	1.40E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(a)anthracene	2.88E-03	mg/kg	NA	2.14E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(a)pyrene	1.74E-03	mg/kg	NA	1.29E-07
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(b)fluoranthene	3.95E-03	mg/kg	NA	2.93E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Cadmium, diet	1.12E-01	mg/kg	2.96E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Chromium, total	9.79E-01	mg/kg	1.72E-05	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	cis-Chlordane	5.35E-03	mg/kg	1.98E-04	5.33E-09
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	cis-Nonachlor	7.86E-03	mg/kg	2.91E-04	7.83E-09
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Cobalt	4.56E-02	mg/kg	4.02E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Copper	2.43E+01	mg/kg	1.61E-02	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Dieldrin	9.39E-03	mg/kg	3.47E-03	4.27E-07
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Heptachlor epoxide	1.00E-02	mg/kg	1.42E-02	2.59E-07
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Hexachlorobenzene	3.01E-03	mg/kg	9.94E-05	1.96E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Indeno(1,2,3-cd)pyrene	1.69E-03	mg/kg	NA	1.25E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Manganese, diet	8.38E+00	mg/kg	1.58E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Mercury, inorganic	3.01E-02	mg/kg	2.65E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Methyl mercury	1.40E-01	mg/kg	3.70E-02	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Oxychlordane	3.57E-02	mg/kg	1.32E-03	3.55E-08
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	PCBs, total	3.64E-01	mg/kg	3.37E-01	2.07E-06
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Selenium	7.68E-01	mg/kg	4.06E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	TCDD-TEQ	5.96E-05	mg/kg	1.57E+00	2.20E-05
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Thallium	1.61E-03	mg/kg	4.25E-03	NA
Crab	Angler (Adolescent 7-18 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Zinc	4.12E+01	mg/kg	3.63E-03	NA
Crab	**Angler (Adolescent 7-18 yrs)**	**Crab Tissue**	**Crab, RME**	**Muscle/Hepato**	**Ttl Cumulative Risk**	**na**	**na**	**2.01E+00**	**2.52E-05**

EXHIBIT B-2 TABLE 10

CRAB TISSUE RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDD	2.08E-02	mg/kg	7.64E-04	1.76E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDE	4.95E-02	mg/kg	1.82E-03	5.95E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDT	4.05E-03	mg/kg	1.49E-04	4.87E-09
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Antimony	2.46E-02	mg/kg	1.61E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Arsenic, inorganic	1.69E-02	mg/kg	1.48E-03	1.28E-07
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Arsenic, organic/other forms	1.06E+00	mg/kg	1.39E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(a)anthracene	2.88E-03	mg/kg	NA	1.06E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(a)pyrene	1.74E-03	mg/kg	NA	6.41E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(b)fluoranthene	3.95E-03	mg/kg	NA	1.46E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Cadmium, diet	1.12E-01	mg/kg	2.94E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Chromium, total	9.79E-01	mg/kg	1.71E-05	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	cis-Chlordane	5.35E-03	mg/kg	1.97E-04	6.62E-09
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	cis-Nonachlor	7.86E-03	mg/kg	2.89E-04	9.72E-09
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Cobalt	4.56E-02	mg/kg	3.99E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Copper	2.43E+01	mg/kg	1.60E-02	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Dieldrin	9.39E-03	mg/kg	3.45E-03	5.31E-07
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Heptachlor epoxide	1.00E-02	mg/kg	1.41E-02	3.22E-07
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Hexachlorobenzene	3.01E-03	mg/kg	9.88E-05	2.43E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Indeno(1,2,3-cd)pyrene	1.69E-03	mg/kg	NA	6.23E-09
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Manganese, diet	8.38E+00	mg/kg	1.57E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Mercury, inorganic	3.01E-02	mg/kg	2.63E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Methyl mercury	1.40E-01	mg/kg	3.68E-02	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Oxychlordane	3.57E-02	mg/kg	1.31E-03	4.42E-08
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	PCBs, total	3.64E-01	mg/kg	3.34E-01	2.57E-06
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Selenium	7.68E-01	mg/kg	4.03E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	TCDD-TEQ	5.96E-05	mg/kg	1.56E+00	2.74E-05
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Thallium	1.61E-03	mg/kg	4.23E-03	NA
Crab	Angler (Adult)	Crab Tissue	Crab, RME	Muscle/Hepato	Zinc	4.12E+01	mg/kg	3.61E-03	NA
Crab	**Angler (Adult)**	**Crab Tissue**	**Crab, RME**	**Muscle/Hepato**	**Ttl Cumulative Risk**	**na**	**na**	**2.00E+00**	**3.12E-05**

EXHIBIT B-2 TABLE 10

CRAB TISSUE RISK TOOL OUTPUT

LOWER PASSAIC RIVER STUDY AREA

SITE-SPECIFIC HUMAN HEALTH RISK ASSESSMENT

Scenario	Receptor	Exposure Medium	Specific Exposure Medium	Medium Detail	COPC	EPC	EPC Unit	Site-Specific Noncancer Risk	Site-Specific Cancer Risk
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDD	2.08E-02	mg/kg	1.20E-03	1.11E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDE	4.95E-02	mg/kg	2.85E-03	3.73E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	4,4'-DDT	4.05E-03	mg/kg	2.33E-04	3.05E-09
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Antimony	2.46E-02	mg/kg	2.53E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Arsenic, inorganic	1.69E-02	mg/kg	2.32E-03	8.03E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Arsenic, organic/other forms	1.06E+00	mg/kg	2.19E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(a)anthracene	2.88E-03	mg/kg	NA	2.80E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(a)pyrene	1.74E-03	mg/kg	NA	1.69E-07
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Benzo(b)fluoranthene	3.95E-03	mg/kg	NA	3.84E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Cadmium, diet	1.12E-01	mg/kg	4.61E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Chromium, total	9.79E-01	mg/kg	2.69E-05	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	cis-Chlordane	5.35E-03	mg/kg	3.08E-04	4.15E-09
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	cis-Nonachlor	7.86E-03	mg/kg	4.53E-04	6.10E-09
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Cobalt	4.56E-02	mg/kg	6.26E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Copper	2.43E+01	mg/kg	2.51E-02	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Dieldrin	9.39E-03	mg/kg	5.41E-03	3.33E-07
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Heptachlor epoxide	1.00E-02	mg/kg	2.22E-02	2.02E-07
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Hexachlorobenzene	3.01E-03	mg/kg	1.55E-04	1.53E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Indeno(1,2,3-cd)pyrene	1.69E-03	mg/kg	NA	1.64E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Manganese, diet	8.38E+00	mg/kg	2.46E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Mercury, inorganic	3.01E-02	mg/kg	4.13E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Methyl mercury	1.40E-01	mg/kg	5.76E-02	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Oxychlordane	3.57E-02	mg/kg	2.06E-03	2.77E-08
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	PCBs, total	3.64E-01	mg/kg	5.25E-01	1.61E-06
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Selenium	7.68E-01	mg/kg	6.32E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	TCDD-TEQ	5.96E-05	mg/kg	2.45E+00	1.72E-05
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Thallium	1.61E-03	mg/kg	6.63E-03	NA
Crab	Angler (Child 1-6 yrs)	Crab Tissue	Crab, RME	Muscle/Hepato	Zinc	4.12E+01	mg/kg	5.66E-03	NA
Crab	**Angler (Child 1-6 yrs)**	**Crab Tissue**	**Crab, RME**	**Muscle/Hepato**	**Ttl Cumulative Risk**	**na**	**na**	**3.14E+00**	**1.98E-05**

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
CARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

Receptors Evaluated:	
Receptor 1:	Child (1 to <7 yrs)
Receptor 2:	Adolescent (7 to <19 yrs)
Receptor 3:	Adult

Pathways Evaluated:	
Media:	FLOODPLAIN SOIL
Pathway 1:	Incidental Ingestion
Pathway 2:	Dermal Contact

Parameter	Receptor	Assumed Value	Units	Calculated Value
Soil Ingestion Rate	Child (1 to <7 yrs)	100	(mg soil/day)	
Soil Ingestion Rate	Adolescent (7 to <19 yrs)	50	(mg soil/day)	
Soil Ingestion Rate	Adult	50	(mg soil/day)	
Adherence Factor	Child (1 to <7 yrs)	0.26	(mg/cm^2)	
Adherence Factor	Adolescent (7 to <19 yrs)	0.25	(mg/cm^2)	
Adherence Factor	Adult	0.07	(mg/cm^2)	
Skin Exposed	Child (1 to <7 yrs)	1702	(cm^2)	
Skin Exposed	Adolescent (7 to <19 yrs)	3359	(cm^2)	
Skin Exposed	Adult	3715	(cm^2)	
Body Weight	Child (1 to <7 yrs)	17	(kg)	
Body Weight	Adolescent (7 to <19 yrs)	53	(kg)	
Body Weight	Adult	80	(kg)	
Exposure Frequency	Child (1 to <7 yrs)	277	(days)/365(days) =	7.59E-01
Exposure Frequency	Adolescent (7 to <19 yrs)	277	(days)/365(days) =	7.59E-01
Exposure Frequency	Adult	277	(days)/365(days) =	7.59E-01
Exposure Duration	Child (1 to <7 yrs)	6	(years)/78(years) =	7.69E-02
Exposure Duration	Adolescent (7 to <19 yrs)	12	(years)/78(years) =	1.54E-01
Exposure Duration	Adult	15	(years)/78(years) =	1.92E-01
Lifetime		78	(years)	
Unit Conversion Factor		1.00E-06	(kg/mg)	

Age-Dependant Adjustment Factors (ADAFs)		
Age Group	Potentially Mutagenic	Non-Mutagenic
Child (1 to <7 yrs)	4.2	1
Adolescent (7 to <19 yrs	2.5	1
Adult	1	1

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
CARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

	Compound Parameters					Average Daily Dose (mg/kg-day)							
						Ingestion				Dermal Contact			
Compound	Concentration In Soil (mg/kg)	Dermal - Soil Absorption Adjustment Factor	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Dermal Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Potentially Mutagenic?	Child (1 to <7 yrs)	Adolescent (7 to <19 yrs)	Adult	Lifetime	Child (1 to <7 yrs)	Adolescent (7 to <19 yrs)	Adult	Lifetime
Total TEQ	2.00E-05	3.00E-02	1.30E+05	1.30E+05	No	6.86E-12	2.20E-12	1.82E-12	1.09E-11	9.11E-13	1.11E-12	2.84E-13	2.30E-12
PCBs, total	5.15E-02	1.40E-01	2.00E+00	2.00E+00	No	1.77E-08	5.68E-09	4.70E-09	2.81E-08	1.10E-08	1.33E-08	3.42E-09	2.77E-08
Mercury	2.19E-01	NA	NA	NA	No	7.51E-08	2.41E-08	2.00E-08	1.19E-07	NC	NC	NC	NC

Notes:
CAS - Chemical Abstracts Service.
mg/kg - Milligrams per Kilogram.
NA - Not Applicable.
NC - Not Calculated.
yrs - Years.

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	Potential Excess Lifetime Cancer Risk											
	Ingestion				Dermal Contact				Total			
Compound	Child (1 to <7 yrs)	Adolescent (7 to <19 yrs)	Adult	Lifetime	Child (1 to <7 yrs)	Adolescent (7 to <19 yrs)	Adult	Lifetime	Child (1 to <7 yrs)	Adolescent (7 to <19 yrs)	Adult	Lifetime
Total TEQ	8.92E-07	2.86E-07	2.37E-07	1.42E-06	1.18E-07	1.44E-07	3.70E-08	3.00E-07	1.01E-06	4.30E-07	2.74E-07	1.72E-06
PCBs, total	3.54E-08	1.14E-08	9.40E-09	5.62E-08	2.19E-08	2.67E-08	6.85E-09	5.55E-08	5.73E-08	3.81E-08	1.62E-08	1.12E-07
Mercury	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
								Total:	**1.07E-06**	**4.68E-07**	**2.90E-07**	**1.83E-06**

Notes:
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yrs - Years.

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
NONCARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

Receptors Evaluated:

Receptor 1: Young Child (1 to <7 yrs)

Pathways Evaluated:

Media: FLOODPLAIN SOIL
Pathway 1: Incidental Ingestion
Pathway 2: Dermal Contact

Parameter	Receptor	Assumed Value	Units	Calculated Value
Soil Ingestion Rate	Young Child (1 to <7 yrs)	100	(mg soil/day)	
Adherence Factor	Young Child (1 to <7 yrs)	0.26	(mg/cm^2)	
Skin Exposed	Young Child (1 to <7 yrs)	1702	(cm^2)	
Body Weight	Young Child (1 to <7 yrs)	17	(kg)	
Exposure Frequency	Young Child (1 to <7 yrs)	277	(days)/365(days) =	7.59E-01
Exposure Duration (noncancer)	Young Child (1 to <7 yrs)	6	(years)/6(years) =	1.00E+00
Unit Conversion Factor		1.00E-06	(kg/mg)	

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
NONCARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

	Compound Parameters				Average Daily Dose - Young Child (1-<7 yrs)			Potential Hazard Index - Young Child (1-<7 yrs)		
Compound	Concentration In Soil (mg/kg)	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	Dermal Reference Dose (mg/kg-day)	Ingestion (mg/kg-day)	Dermal Contact (mg/kg-day)	Total (mg/kg-day)	Ingestion	Dermal Contact	Total
Total TEQ	2.00E-05	3.00E-02	7.00E-10	7.00E-10	8.92E-11	1.18E-11	1.01E-10	1.27E-01	1.69E-02	1.44E-01
PCBs, total	5.15E-02	1.40E-01	2.00E-05	2.00E-05	2.30E-07	1.43E-07	3.73E-07	1.15E-02	7.13E-03	1.86E-02
Mercury	2.19E-01	NA	3.00E-04	2.10E-05	9.77E-07	NA	9.77E-07	3.26E-03	NA	3.26E-03
							Total:	**1.42E-01**	**2.40E-02**	**1.66E-01**

Notes:
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mg/kg - Milligrams per Kilogram.
NA - Not Applicable.
NC - Not Calculated.
yrs - Years.

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
NONCARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

Receptors Evaluated:

Receptor 1: Adolescent (7 to <19 yrs)

Pathways Evaluated:

Media: FLOODPLAIN SOIL
Pathway 1: Incidental Ingestion
Pathway 2: Dermal Contact

Parameter	Receptor	Assumed Value	Units	Calculated Value
Soil Ingestion Rate	Adolescent (7 to <19 yrs)	50	(mg soil/day)	
Adherence Factor	Adolescent (7 to <19 yrs)	0.25	(mg/cm^2)	
Skin Exposed	Adolescent (7 to <19 yrs)	3359	(cm^2)	
Body Weight	Adolescent (7 to <19 yrs)	53	(kg)	
Exposure Frequency	Adolescent (7 to <19 yrs)	277	(days)/365(days) =	7.59E-01
Exposure Duration (noncancer)	Adolescent (7 to <19 yrs)	12	(years)/12(years) =	1.00E+00
Unit Conversion Factor		1.00E-06	(kg/mg)	

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
NONCARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

	Compound Parameters				Average Daily Dose - Adolescent (7 to <19 yrs			Potential Hazard Index - Adolescent (7 to <19 yrs)		
Compound	Concentration In Soil (mg/kg)	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	Dermal Reference Dose (mg/kg-day)	Ingestion (mg/kg-day)	Dermal Contact (mg/kg-day)	Total (mg/kg-day)	Ingestion	Dermal Contact	Total
Total TEQ	2.00E-05	3.00E-02	7.00E-10	7.00E-10	1.43E-11	7.21E-12	2.15E-11	2.04E-02	1.03E-02	3.07E-02
PCBs, total	5.15E-02	1.40E-01	2.00E-05	2.00E-05	3.69E-08	8.68E-08	1.24E-07	1.85E-03	4.34E-03	6.18E-03
Mercury	2.19E-01	NA	3.00E-04	2.10E-05	1.57E-07	NA	1.57E-07	5.22E-04	NA	5.22E-04
							Total:	**2.28E-02**	**1.46E-02**	**3.74E-02**

Notes:
CAS - Chemical Abstracts Service.
mg/kg - Milligrams per Kilogram.
NA - Not Applicable.
NC - Not Calculated.
yrs - Years.

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
NONCARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

Receptors Evaluated:	
Receptor 1:	Adult

Pathways Evaluated:	
Media:	FLOODPLAIN SOIL
Pathway 1:	Incidental Ingestion
Pathway 2:	Dermal Contact

Parameter	Receptor	Assumed Value	Units	Calculated Value
Soil Ingestion Rate	Adult	50	(mg soil/day)	
Adherence Factor	Adult	0.07	(mg/cm^2)	
Skin Exposed	Adult	3715	(cm^2)	
Body Weight	Adult	80	(kg)	
Exposure Frequency	Adult	277	(days)/365(days) =	7.59E-01
Exposure Duration (noncancer)	Adult	15	(years)/15(years) =	1.00E+00
Unit Conversion Factor		1.00E-06	(kg/mg)	

SITE SPECIFIC RISK ASSESSMENT
LOWER PASSAIC RIVER STUDY AREA
NONCARCINOGENIC ASSESSMENT FOR RESIDENT
INGESTION AND DERMAL CONTACT WITH FLOODPLAIN SOIL

	Compound Parameters				Average Daily Dose -Adult			Potential Hazard Index - Adult		
Compound	Concentration In Soil (mg/kg)	Dermal - Soil Absorption Adjustment Factor	Oral Reference Dose (mg/kg-day)	Dermal Reference Dose (mg/kg-day)	Ingestion (mg/kg-day)	Dermal Contact (mg/kg-day)	Total (mg/kg-day)	Ingestion	Dermal Contact	Total
Total TEQ	2.00E-05	3.00E-02	7.00E-10	7.00E-10	9.48E-12	1.48E-12	1.10E-11	1.35E-02	2.11E-03	1.57E-02
PCBs, total	5.15E-02	1.40E-01	2.00E-05	2.00E-05	2.44E-08	1.78E-08	4.22E-08	1.22E-03	8.90E-04	2.11E-03
Mercury	2.19E-01	NA	3.00E-04	2.10E-05	1.04E-07	NA	1.04E-07	3.46E-04	NA	3.46E-04
							Total:	**1.51E-02**	**3.00E-03**	**1.81E-02**

Notes:
CAS - Chemical Abstracts Service.
mg/kg - Milligrams per Kilogram.
NA - Not Applicable.
NC - Not Calculated.
yrs - Years.
PCB - Polychlorinated biphenyl.

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A *Fortune 500* company, AECOM serves clients in more than 130 countries and has annual revenue in excess of $8.0 billion.

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