Health Consultation

BARTON SPRINGS POOL

AUSTIN, TRAVIS COUNTY, TEXAS

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

EXECUTIVE SUMMARY

Barton Springs Pool is a 1.9 acre pool, fed from underground springs which discharge from the Barton Springs segment of the Edwards Aquifer. The pool is located within the confines of Barton Creek; however, water from the creek only enters the pool during flood events. The pool is located in downtown Austin and is used year round for recreation. Barton Springs Pool also is one of the only known habitats of the Barton Springs salamander (*Eurycea sosorum*) an endangered species. The City of Austin has been collecting water and sediment samples from Barton Springs Pool since 1991.

Recent articles in the local daily newspaper have raised safety concerns regarding environmental contaminants found in the pool. In response to these concerns, the City Manager closed the pool pending an analysis of the perceived human health risks associated with chemical exposures occurring while swimming in the pool.

We reviewed the results from water and sediment samples collected by the City of Austin, the United States Geological Survey, the Lower Colorado River Authority, and the Texas Commission on Environmental Quality. We reviewed over 14,500 individual data points, involving approximately 441 analytes, collected over the past 12 years.

We screened the contaminants by comparing reported concentrations to health-based screening values and selected twenty-seven contaminants for further consideration. Of those 27 contaminants, 20 were polycyclic aromatic hydrocarbons (PAHs). The others included arsenic, boron, cadmium, bis(2-ethylhexyl)phthalate, total petroleum hydrocarbons (TPH), thallium, and lead.

The potential public health implications of the selected contaminants were assessed by considering the toxicological properties of the contaminants, the probable routes of exposure, and the types of exposures that might occur. Conservative assumptions (those that err on the side of protecting the public) were used in these assessments. In some instances we compared contaminant concentrations in the pool water to public drinking water standards assuming that if the reported concentrations were deemed appropriate for drinking, cooking, and bathing, then they were appropriate for recreational activities.

We did not find any information to support contention that swimming every day in Barton Springs would result in adverse health effects. Thus, **we have concluded that swimming and playing in Barton Springs Pool poses no apparent public health hazard**. We recommend continued public health education to address any questions that the public may have concerning the risks associated with swimming in the pool.

During our investigation we did note elevated levels of certain contaminants in soil from a hill on the south side of the pool. On inspection of the sampling locations we discovered that the

samples were collected adjacent to creosote-treated posts used to control erosion. We recommend that the city investigate the potential for these posts to serve as a source of contaminants that might migrate into the pool.

One of the contaminants we evaluated, TPH, is a common fuel-related urban pollutant. Benzene, toluene, ethylbenzene, and xylenes (BTEX) are commonly associated with fuel related contamination. While the levels of TPH S or TPH components S measured are not expected to result in adverse health outcomes, at least one citizen indicated that he periodically detected a gasoline type odor while swimming in the pool. We recommend that the city continue to monitor water and sediment from the pool for TPH and BTEX and that the samples be analyzed in a manner suitable for comparison to the TCEQ's protective contaminant levels.

BACKGROUND

The Texas Department of Health (TDH) and the Agency for Toxic Substances and Disease Registry (ATSDR) were asked by the City of Austin (COA) to determine the public health significance of the polycyclic aromatic hydrocarbons (PAHs) detected in sediment from Barton Springs Pool. Samples were collected by the COA, the Texas Commission on Environmental Quality (TCEQ), the Lower Colorado River Authority (LCRA), and the United States Geological Survey (USGS). Recent articles in the local daily newspaper have raised concerns regarding some of the chemicals found in the pool. In response to these concerns, the city manager closed the pool pending an analysis of the perceived human health risks associated with chemical exposures occurring while swimming and playing in the pool.

Barton Springs Pool is a 1.9 acre pool, fed from underground springs that discharge from the Barton Springs segment of the Edwards Aquifer. Water discharging from Barton Springs originates from the contributing watersheds: Barton Creek, Onion Creek, and their tributaries. The average flow of the combined Barton Springs is 53 cubic feet per second or about 34 million gallons per day. The pool is located in downtown Austin within the confines of Barton Creek, which begins northeast of Dripping Springs in northern Hays County. The creek flows east for forty miles to its mouth on the Colorado River at Town Lake in southwest Austin. It bypasses Barton Springs Pool through a culvert that runs beneath the sidewalk on the north side of the pool. Although water from Barton Springs Pool empties into Barton Creek at the east end of the pool, water from Barton Creek only enters Barton Springs Pools during flood events severe enough to exceed the capacity of the bypass culvert causing creek water to flow over the upstream dam. During these brief periods in which Barton Creek flows over the upstream dam, water and suspended solids from the Barton Creek watershed enter the pool, with much of it being discharged downstream of the pool. The City of Austin routinely closes the pool for cleaning after flood events.

The shallow end of the pool consists primarily of limestone rock covered with algae that accumulates on the rock and is removed weekly. The deep end of the pool consists of a mixture of gravel, sediment, and rock. The depth of the shallowest portion of the deep end ranges from approximately 4 to 5 ½ feet. This area is frequently referred to as the “beach” area and also has a bottom that consists of a mixture of gravel, sediment, and rock (Figure 1). The pool is closed when water turbidity is high; the vast majority of these high turbidity events are associated with heavy rain events. Barton Springs Pool is one of the only known habitats of the Barton Springs salamander (*Eurycea sosorum*) and on May 30, 1997 (62 FR 23377), the U.S. Fish and Wildlife Service listed the salamander as an endangered species. A second blind salamander (*Eurycea waterlooensis*) was recently discovered to inhabit the spring.

The City of Austin Watershed Protection and Development Review Department has been collecting water and sediment samples from the Barton Springs Pool since 1991 and the United States Geological Survey (USGS) has been sampling since 1978. The majority of the city’s water samples were taken as close as possible to the spring outlets. Pool water data and analytes have varied over time but typically include field measurements and physical properties and then conventional pollutants (nutrients and ions) with toxics (metals, polychlorinated biphenyls (PCBs), pesticides, organics, and PAHs) on a less frequent schedule. The majority of the sediment samples were composited from the fissures and deeper portions of the pool which are potential Barton Springs Salamander habitat. These samples have been routinely analyzed for conventional pollutants, metals, pesticides, PCBs, and PAHs.

For this report, we reviewed the results from samples collected by the COA, the USGS, the LCRA, and the TCEQ. A complete list of the analytes included in the various sampling events are listed in Appendix A. Table 1 contains a list of the analytes for which at least one sample was reported above the detection limit in the sediment from the pool. Table 2 contains a list of the analytes for which at least one sample was reported above the detection limit in the water. Analytes not found above their respective detection limits in any of the samples have been omitted from further consideration. Many of the naturally occurring analytes found in the sediment were reported at concentrations equivalent to those normally reported for the Western United States (Tables 1 and 2). Analytes found within normal background ranges were omitted from further consideration; any potential risks associated with these contaminants, at Barton Springs Pool, would not be greater than those that would be experienced in any other natural water body used for recreational purposes.

PUBLIC HEALTH IMPLICATIONS

Introduction

Exposure to, or contact with, chemical contaminants drives both the ATSDR public health assessment and health consultation processes. People may be adversely affected by chemicals only if exposure occurs; that is, they must come into contact with the chemicals and absorb them into their bodies. The presence of chemical contaminants in the environment does not always result in contact and contact does not always result in the chemical being absorbed into the body. The most common ways people come into contact with chemicals are by inhalation (breathing), ingestion (eating or drinking), or by dermal contact (absorption through skin) with a substance containing the contaminant.

Pathways Analysis

Generally, for chemicals found in sediment or water, absorption through the gastrointestinal (GI) tract by incidental ingestion or through the skin by direct contact are the exposure pathways of greatest concern. Whether adverse health effects occur depends on: 1) the toxicological properties of the chemicals; 2) the manner in which the person contacts the chemical; 3) the concentration of the chemical; 4) how often the exposure occurs; 5) how long the exposure occurs; and 6) how much of the chemical is absorbed into the body during each exposure event.

The lack of significant sediment in the shallow end where children play, the sporadic nature of the contaminants in sediment from the deep end, and the general nature of the types of contact that people might have with sediment in the pool eliminate absorption through the skin as a plausible exposure pathway for contaminants in the sediment. Thus, at Barton Springs pool, the only reasonable route of exposure to contaminants in the sediment is through incidental ingestion of sediment in the water column while swimming and playing in the pool. For contaminants in the water, exposure to contaminants both through dermal absorption and incidental ingestion are possible.

To help determine how much sediment a person might ingest while swimming, the City of Austin collected water samples from selected locations in the pool as well as upstream and downstream of the pool. These samples were analyzed for the amount of sediment suspended in the water column. Samples were collected mid-afternoon during peak swim periods over consecutive days of a hot summer weekend and the Labor Day holiday. The city chose a busy weekend to reflect conditions favorable for re-suspending sediment from the bottom of the pool. According to the City, hundreds of swimmers were in the pool during the collection of the samples. Suspended sediment measurements in Barton Springs Pool ranged from 0.4[1] milligrams of sediment per liter of water (mg/L) to 4.95 mg/L with an arithmetic average concentration of 1.14 mg/L. Samples upstream and downstream of the pool were 0.8 and 2.55 mg/L, respectively [1].

Determining Contaminants of Concern

We screened contaminants for further consideration by comparing contaminant concentrations to media-specific health-based assessment comparison (HAC) values for non-cancer and cancer endpoints. Non-cancer screening values are based on ATSDR's minimal risk levels (MRLs) or EPA's reference doses (RfDs). MRLs and RfDs are based on the assumption that there is an identifiable threshold (both for the individual and for populations) below which there are no observable adverse effects. Thus, these values are estimates of a daily human exposure to a contaminant that is unlikely to cause adverse non-cancer health effects even if the exposure were to occur for a lifetime. For contaminants that are considered to be known human carcinogens, probable human carcinogens, or possible human carcinogens we calculated cancer risk evaluation guides (CREG) using EPA's chemical-specific cancer slope factors and an estimated excess lifetime cancer risk of one-in-one million persons exposed for a lifetime. For both non-cancer and cancer HAC values we used standard assumptions for body weight (70 kg adult and 15 kg child) and soil/sediment ingestion (100 mg/day for adults and 200 mg/day for a child) to calculate the HAC values.

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[1]For statistical purposes samples below detection limits (DL) were assumed to be 0.25 mg/L (½ DL)

The exposure assumptions used to establish these screening levels are chosen to be conservative with respect to protecting public health; thus, actual exposures are likely to be lower than those used to calculate the screening values. Thus, exceeding a screening value does not mean that a contaminant represents a public health threat, rather it suggests that the contaminant warrants further consideration. Assessing the public health significance of contaminants that exceed their respective screening levels involves reviewing and integrating relevant toxicological information with plausible exposures. We may estimate the magnitude of the public health significance by comparing the estimated exposures to reported "No Observed" and Lowest Observed" Adverse Effects Levels (NOAELs and LOAELs) in animals and to known effect levels in humans, when available.

In some instances, when MRL, RfD or CREG based HAC values are not available or when circumstances dictate that it is reasonable to do so, we use regulatory limits to screen the contaminants for further consideration. For instance, we may use EPA's maximum contaminant levels (MCLs) to screen contaminants in water, or the Texas Commission on Environmental Quality's (TCEQ) protective contaminant levels (PCLs) to screen contaminants in water, sediment, or soil. MCLs are chemical-specific maximum concentrations allowed in water delivered to the users of a public water system. Although MCLs are not solely health-based, they are considered protective of public health over a lifetime (70 years) of exposure at an ingestion rate of two liters per day. Although MCLs only apply to public water systems, we often use them to help assess the potential public health implications of contaminants found in water from other sources. Using MCLs to screen contaminants assumes that if the water is potable (safe for drinking, cooking, bathing), it also will be safe for recreation (swimming, boating, skiing, etc.). While PCLs are regulatory limits, they are generally calculated using conservative assumptions in order to protect public health. When applied appropriately S that is in a manner consistent with the scenarios for which they were developed S they can be used to screen contaminants for further consideration. As with other screening values, exceeding a regulatory limit does not mean that a contaminant represents a public health threat; rather, it suggests that the contaminant may warrant further consideration.

Table 3 contains a list of the contaminants selected for further consideration. This list consists of the PAHs, total petroleum hydrocarbons (TPH), and all contaminants for which at least one value exceeded the screening value. Thus, for some of the contaminants included in this table, only one value was above the screening value. The following sections discuss the potential public health implications of the contaminants selected for further consideration.

Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic aromatic hydrocarbons (PAHs) are very common in the environment. They may occur naturally and also are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. There are more than 100 different PAHs and they are generally found as mixtures, not as single compounds. While PAHs occur naturally, they also can be found in asphalt, crude oil, coal, coal tar pitch, creosote, and roofing tar. In general, PAHs do not dissolve well in water; rather, they tend to stick tightly to solid particles S such as soil/sediment S that can settle at the bottom of lakes, rivers, and creeks [2].

Because PAHs are so common in the environment, people are exposed to them everyday. The most common sources of exposure to PAHs are tobacco smoke, food, wood smoke, and ambient air. Exposure to PAHs via inhalation is estimated to range from 0.02 to 3 μg/day. Smoking one pack of unfiltered cigarettes per day increases this estimate by an additional 2 to 5 μg/day; chain smokers consuming three packs per day increase their exposure by an estimated 6 to 15 μg/day. The intake of carcinogenic PAHs from the average American diet has been estimated to range from 1 to 5 μg/day, mostly from the ingestion of unprocessed grains and cooked meats. This dietary estimate increases to 6 to 9 μg/day for individuals who eat large amounts of meat [2]. Estimated excess lifetime cancer risk estimates associated with common everyday exposures to PAHs are presented in Appendix D.

Under some circumstances, PAHs can be harmful. The harmful effects observed often depend on the type of exposure or the way that the contaminants enter the body. Absorption through the skin by direct contact, and through the gastrointestinal (GI) tract by incidental ingestion, are generally the exposure pathways of greatest concern when dealing with contaminated sediment. Adverse non-cancer effects have been noted in humans following intermediate-duration dermal exposure in patients with preexisting skin disorders. A solution of benzo[a]pyrene applied to the skin of patients with pemphigus vulgaris (a disease characterized by successive crops of blisters) caused local eruptions characteristic of the disease. The same type of solution applied to the skin of patients with xeroderma pigmentosum resulted in pigmentary changes and wart-like effects. When the solution was applied to patients with squamous cell cancer investigators observed a general improvement and/or retardation of the lesion. Adverse effects on the skin also have been observed in animals following dermal exposure to various PAHs [2].

While there is little evidence to indicate a relationship between ingestion of PAHs and adverse health effects in humans, animal studies have shown that ingestion of PAHs causes gastrointestinal (digestive system), hepatic (liver), reproductive, and developmental effects. The lowest doses associated with these effects have ranged from 40 milligrams per kilogram of body weight per day (40 mg/kg/day) to 700 mg/kg/day [2], levels that are orders of magnitude greater than those likely to occur at Barton Springs Pool.

Several of the PAHs also have been shown to cause tumors in laboratory animals when they breathed these substances in the air, when they ate them, or when they had prolonged skin contact with them. Benzo[a]pyrene (BaP) is perhaps the most toxicologically significant PAH and S along with several other PAHs S has been classified by the EPA as a "probable human carcinogen". This classification is based on animal data where repeated BaP administration in numerous strains of at least four species of rodents and several primates has been associated with increased incidences of total tumors and of tumors at the site of exposure. Human data specifically linking benzo[a]pyrene (BaP), or any of the other PAHs to a carcinogenic effect are lacking. Although lung cancer has been found in humans by exposure to various mixtures of polycyclic aromatic hydrocarbons known to contain BaP S including cigarette smoke, roofing tar, and coke oven emissions S it is not possible to conclude from this information that BaP or any other of the PAHs is the responsible agent. BaP also has produced positive results in numerous genotoxicity assays.

To assess the potential health risks associated with PAHs in sediment from the pool, we evaluated the toxicity of the contaminants with respect to exposures that might occur at the pool. We considered the incidental ingestion of sediment in the water while swimming as the primary pathway of exposure.

To assess this pathway, PAHs were converted to benzo(a)pyrene equivalents using established toxicity equivalency factors (Appendix B). The average benzo(a)pyrene equivalent of 1.46 mg/kg, for samples collected between 1991 and 2003 (Figure 2; Appendix C), was used in all subsequent calculations. To estimate a protective (with respect to public health) exposure scenario, we assumed that an individual would ingest 50 milliliters of pool water per hour, three hours per day, 7 days per week, 52 weeks per year, for 70 years. Using the average suspended sediment concentration (collected by the City of Austin during peak usage) we estimated the excess lifetime cancer risk associated with this pathway to be 2.6×10^{-8}, or about one (1) in 38 million (Table 4). Qualitatively, we would interpret this to be an insignificant increased risk. Although the dermal exposure pathway is unlikely, we did evaluate the potential public health significance of possible dermal exposure for a child (Appendix D). Qualitatively, we would estimate the risks associated with this pathway to be insignificant.

Arsenic

Arsenic is a naturally occurring element in the earth's crust and is usually found in combination with other elements. Arsenic compounds can be classified into three main groups: 1) inorganic arsenic compounds, 2) organic arsenic compounds, and 3) arsine gas. In the environment, arsenic is most often found as inorganic arsenic, which is formed when arsenic combines with other elements such as oxygen, sulfur, and chlorine. Organic forms of arsenic, which result when arsenic combines with carbon and hydrogen, are generally considered less toxic than the inorganic forms. Background concentrations of arsenic in soil range from 0.1 to 97 mg/kg with an average value of about 7.0 mg/kg [3]. EPA Region 6 considers an arsenic concentration range of 1.1 to 16.7 mg/kg to be typical of background concentrations. TCEQ Risk Reduction Rules suggest 5.9 mg/kg to be the mean background concentration for Texas soils.

Analysis of the toxic effects of inorganic arsenic in soil and sediment can be complicated by the fact that arsenic can exist in different valence states. A number of studies have noted differences in the relative toxicity of these compounds, with trivalent arsenites tending to be somewhat more toxic than the pentavalent arsenates [4, 5, 6, 7]. For this consultation, we have not emphasized the difference in toxicity between the arsenates and the arsenites because in most instances, this difference is relatively small (about 2–3 fold) and is often within the bounds of uncertainty regarding the NOAELs or LOAELs. In addition, the different forms of arsenic may be interconverted, both in the environment and in the body, and as in most cases involving human exposure, the precise chemical speciation at this site is not known.

To assess the potential health risks associated with arsenic in soil and sediment from Barton Springs Pool, we compared the concentrations to HAC values for both non-cancer and cancer endpoints for the more toxic form of the compound. The non-cancer HAC values for arsenic in soil (20 mg/kg for children and 200 mg/kg for adults) are based on EPA's reference dose (RfD) for arsenic of 0.3 µg/kg/day [19]. For arsenic, the RfD was derived by dividing the identified NOAEL of 0.8 µg/kg/day, obtained from human epidemiologic studies, by an uncertainty factor of three. The LOAEL associated with these epidemiologic studies was 14 µg/kg/day, where exposure to arsenic above this level resulted in hyperpigmentation of the skin, keratosis (patches of hardened skin), and possible vascular complications [8–10].

Arsenic was detected in 43 of the 48 sediment samples; however, only two sediment samples (22 and 23 mg/kg) exceeded the non-cancer HAC value for children (20 mg/kg). The average concentration in the sediment (8.2 mg/kg) was approximately ½ of the HAC value. Arsenic also was detected in 19 of the 136 water samples, and although one sample exceeded the MCL, the average concentration of 1.8 micrograms of arsenic per liter of water (µg/L), is five (5) times lower than the MCL.

Using the suspended sediment data collected by the City of Austin, we considered dermal absorption, incidental ingestion of sediment, and incidental ingestion of water as possible pathways of exposure.[1] A child spending three hours per day in the pool, ingesting 50 ml of water per hour could theoretically receive a combined daily dose of arsenic, from all three pathways, 14 times lower than the RfD, 36 times lower than the NOAEL, and 636 times lower than the LOAEL. Adults could theoretically receive a combined daily dose of arsenic 55 times lower than the RfD, 148 times lower than the NOAEL, and 2,592 times lower than the LOAEL. On the basis of these data, adverse non-cancer health effects from exposure to arsenic in the sediment are not likely.

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[1] Dermal $dose_{(water)}$ (mg/kg/d) = 1.0 x 10^{-3} (cm/h) x 1.8 x 10^{-6} (mg/cm^3) x 3 (h/d) x 10,000 (cm^2)/15 (kg)
Ingested $dose_{(water)}$ (mg/kg/d) =(0.0018 (mg/L) x 0.15 (L))/15 (kg);
Ingested $dose_{(sed)}$ (mg/kg/d) = (8.2 (mg/kg) x 1.71 x 10^{-7} (kg))/15 (kg); Dermal dose for adults was calculated using a body surface area of 20,000 cm^2 and a body weight of 70 kg; Risk = ((Dermal dose + Ingested dose sed + Ingested dose water) x 1.5 $(mg/kg/day)^{-1}$) x ((300 (d/y) x 30 (y))/(365 (d/y) x 70 (y))).

EPA classifies arsenic as a known human carcinogen on the basis of sufficient evidence from human data. An increase in lung cancer mortality was observed in multiple human populations exposed primarily through inhalation. Also, increased mortality from multiple internal organ cancers (liver, kidney, lung, and bladder) and an increased incidence of non-malignant skin cancers were observed in populations consuming water high in inorganic arsenic [9]. The carcinogenic HAC value for arsenic of 0.5 mg/kg is based on EPA's cancer slope factor (CSF) for skin cancer and an estimated excess lifetime cancer risk of one cancer in 1 million (1×10^{-6}) people exposed for 70 years.

Although the average concentration of arsenic found in the sediment was similar to normal background concentrations, it was above the carcinogenic HAC value. To estimate a conservative (with respect to protecting public health) value for the potential excess lifetime cancer risk associated with exposure to arsenic in the sediment and arsenic in the water, we assumed that an individual would ingest 50 milliliters of water for each hour spent in the water and that they would swim, three hours per day, seven days per week, 52 weeks per year. Based on these conservative assumptions we estimate a theoretical excess lifetime cancer risk, from all three pathways of exposure, of 2.8×10^{-6}, or about one in 350,000. Qualitatively, we would interpret this to represent an insignificant increased risk. Since the arsenic in the water would be deemed acceptable for drinking and bathing, we have concluded that the water is acceptable for recreational activities. Arsenic does occur naturally in the earth's crust and the reported concentrations are well within those normally found in the environment [9].

Boron

Boron is a naturally occurring element generally found combined with other elements throughout the environment. Boron is neither transformed nor degraded in the environment, but depending on environmental conditions the specific form of boron can change. Natural weathering is a significant source of environmental boron. Boron also can be found in several consumer products, including cosmetics, medicines, and insecticides. Populations residing in the western United States may be exposed to higher than average levels of boron due to natural boron-rich deposits. The most common routes of exposure to boron include ingestion of food (primarily fruits and vegetables) and water; however, occupational exposure to boron dusts also may be significant [11].

To assess the potential health risks associated with the boron in the water we compared the water concentrations to chronic- and intermediate-duration HAC values for non-cancer endpoints. The chronic duration, non-cancer HAC values for boron in water (900 µg/L for children and 3,000 µg/L for adults) are based on EPA's chronic RfD for boron of 0.09 mg/kg/day [12]. For boron, the chronic RfD was derived by dividing the identified NOAEL of 8.8 mg/kg/day, obtained from studies on dogs, by an uncertainty factor of 100. The intermediate duration, non-cancer HAC values for boron in water (100 µg/L for children and 400 µg/L for adults) are based on ATSDR's MRL for boron of 0.01 mg/kg/day [11]. For boron, the intermediate MRL was derived by dividing the identified LOAEL of 13.6 mg/kg/day (associated with reduced fetal body weight in rats) by an uncertainty factor of 1,000. Exposure to boron above this LOAEL was associated with reversible testicular atrophy.

Between 1987 and 1990, Boron was detected in 15 out of 15 water samples. Concentrations ranged from 60 µg/L to 560 µg/L with an average concentration of 149 µg/L. Neither the adult or child chronic HAC values were exceeded. Although the average concentration did exceed the intermediate HAC value for children, this HAC value is based on a child drinking one (1) liter of water per day. A child ingesting 150 ml of the water per day would receive a daily dose seven (7) times lower than the MRL and 9,100 times lower than the LOAEL. It also is important to note that the reported concentrations are well within the concentrations normally reported as background for the western United States. The average surface water concentration in the United States is about 100 µg/L; the concentration in the Western Gulf Basin has been reported to be 289 µg/L; the concentration of boron in seawater is reported to be about 4,500 µg/L. Groundwater concentrations in the western United States have ranged from 140 to 120,000 µg/L with a median concentration of 4,000 µg/L. Based on available information, exposure to the boron found in the water would not be expected to result in adverse health outcomes.

Cadmium

Cadmium is a naturally occurring metallic element that is present in small amounts in virtually all soils and rocks of the earth's crust. It is also present in coal and in both mineral and municipal sludge fertilizers. In its pure form, cadmium is a soft, silver-white metal that is easily cut with a knife. However, cadmium is not usually found in the environment as a pure metal, but instead is combined with other elements such as oxygen, chlorine, or sulfur. Cadmium concentrations in non-polluted soil are highly variable, depending upon sources of minerals and organic materials. The cadmium concentration of natural surface water and groundwater is usually less than 1.0 µg/L; however values of 405 µg/L have been reported [13]. The National Urban Runoff Program measured concentrations ranging from 0.1 to 14 µg/L in urban storm water runoff [13]. Most drinking water supplies in the United States probably do not contain more than 1.0 µg/L of cadmium, but concentrations may reach 10 µg/L.

People are exposed to cadmium everyday. Food is perhaps the major source of human exposure to cadmium in the general, non-smoking population. Average cadmium levels in U.S. food range from 1 to 42 parts of cadmium per billion parts of food (1-42 ppb). Adults consume approximately 30 µg of cadmium from food sources each day, absorbing approximately 1 to 3 µg. Of all food items, vegetables generally contain the highest levels of cadmium, particularly potatoes and leafy vegetables (with levels of 42 ppb and 33 ppb respectively). Grain and cereal products also contain elevated levels of cadmium approaching 24 ppb. Meats, fish, and poultry generally contain relatively low levels of cadmium (less than 6 ppb), except for organ meats such as kidney and liver, which, of course, concentrate cadmium and may have levels 10 to 100 times higher [13].

On a national level, inhalation is another major route of exposure to cadmium. Average concentrations in air range from less than 1 ng/m^3 in remote areas to 5 to 40 ng/m^3 in U.S. urban areas, with isolated measurements of 7,000 ng/m^3 in highly contaminated industrial areas [13]. Assuming an average air cadmium concentration of 10 ng/m^3 for indoor and outdoor air combined and a daily inhalation rate of 16 m^3 for an adult, the average cadmium intake by inhalation is 0.16 µg/day, of which about 25% or 0.04 µg/day will be absorbed. Another major source of inhalation exposure affects smokers, who absorb an additional 1 to 3 µg of cadmium per day for each pack of cigarettes smoked [13]. The toxic effects of chronic cadmium exposure occur primarily in the lungs and in the kidneys. Pulmonary effects are associated solely with inhalation exposures, while the kidney effects may occur after either oral or inhalation exposures. Long-term exposure to excessive cadmium can effect the kidneys, causing proximal tubular necrosis, lesions in the renal cortex, and kidney dysfunction [13, 14].

Cadmium was detected in seven (7) out of 146 water samples from the pool. Values ranged from non-detect to five (5) µg/L, with an average concentration of 1.08 µg/L. Although one sample was equivalent to EPA's MCL for cadmium, the average concentration was five (5) time lower than the MCL and well within the range normally found in surface and groundwater. ATSDR has established a chronic oral MRL for cadmium of 0.0002 mg/kg/day. Using the average concentration we considered both the incidental ingestion and dermal routes of exposure. A child using the pool three hours per day would receive a daily dose over 15 times lower than the MRL[2]. An adult who swam three hours per day would receive a theoretical dose approximately 60 times lower than the MRL. Based on the frequency of detection and the reported concentrations, exposure to cadmium in Barton Springs Pool would not be likely to result in adverse health outcomes. Additionally, since the concentration of cadmium in the water would be deemed acceptable for drinking and bathing, we have concluded that the water is acceptable for the types of recreational activities common to Barton Springs Pool.

Bis(2-ethylhexyl)Phthalate

Bis(2-ethylhexyl)phthalate (BEHP) is a manufactured chemical that is commonly added to plastics to make them flexible. It is present in many plastics, especially vinyl materials, which may contain up to 40% BEHP. BEHP is present in plastic products such as wall coverings, tablecloths, floor tiles, furniture upholstery, shower curtains, garden hoses, swimming pool liners, rain wear, baby pants, dolls, some toys, shoes, automobile upholstery, packaging film, sheathing for wire and cable, medical tubing, and blood storage bags [15].

BEHP enters the environment predominantly through disposal of industrial and municipal wastes in landfills. It tends to adsorb strongly to soil and sediment and bioaccumulates in aquatic organisms. Biodegradation does occur under aerobic conditions. When BEHP is present in the

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[2] Dermal dose (mg/kg/day) = (1.0 x 10^{-3} (cm/h) x 1.08 x 10^{-6} (mg/cm^3) x 3 (h/d) x 10,000 cm^2)/15 (kg)
Ingested dose (mg/kg/day) = (0.00108 (mg/L) x 0.05 (L/h) x 3 (h))/15 (kg)

environment, it is usually at very low levels; however, it often is difficult to measure these low levels accurately since BEHP is a very common laboratory contaminant, and laboratory contamination may cause false positives.

The principal route of exposure to BEHP is through ingestion. Recently, average total daily ambient exposures to BEHP of 3-30 μg/kg/day (70kg adult) have been proposed. These estimated general population exposures are 3-4 orders of magnitude lower than those observed to cause adverse health effects in animals. Information on the oral toxicity of BEHP in humans is limited to gastrointestinal symptoms (mild abdominal pain and diarrhea) in two individuals who ingested a single large dose of the compound. There is limited information available on the health effects of BEHP in humans or animals following dermal exposure. One dermal study found no indications of skin irritation or sensitization in humans or rabbits.

BEHP was detected in water from Barton Springs Pool in one (1) out of 11 samples. Concentrations ranged from non-detect to 5.6 μg/L with an average concentration of 3.9 μg/L. Although the concentration in this sample exceeded the CREG, the estimated excess lifetime cancer risk associated with long term exposure via both the dermal and incidental ingestion routes of exposure (5.8×10^{-7}) would be deemed insignificant.[1] Additionally, the sample concentration was below the MCL which is 6.0 μg/L. Since the concentration of BEHP in the water would be deemed acceptable for drinking and bathing, we have concluded that the water is acceptable for recreational activities. Based on available information, the BEHP found in water from Barton Springs Pool would not be likely to cause adverse health outcomes.

Total Petroleum Hydrocarbons

Water and sediment from Barton Springs were periodically tested for Total Petroleum Hydrocarbons (TPH). TPH is a term used to describe a broad family of several hundred compounds that originate from crude oil. Thus, TPH is really a mixture of many chemicals all of which are made almost entirely from hydrogen and carbon. The exact nature of the chemicals within any measurement of TPH varies with the specific products from which they originate. Most products that contain TPH will burn and many have characteristic gasoline, kerosene, or oily odors. Because of the common use of petroleum based products, contamination of the environment with TPH is quite common [16]. TPH is a common pollutant associated with urban runoff and at one public meeting, a citizen expressed a concern about sporadically detecting a gasoline type smell in the pool.

While the measurement of TPH may be a good general indicator of petroleum contamination

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[1] Estimated excess lifetime cancer risk of 5.8×10^{-7} based on incidental ingestion and dermal pathways.
Dermal dose (mg/kg/day) = (0.033 (cm/h) x 3.9×10^{-6} (mg/cm^3) x 3 (h/d) x 20,000 (cm^2))/70 (kg);
Ingested Dose (mg/kg/d) = (0.0039 (mg/L) x 0.05 (L/h) x 3 (h))/70 (kg)
Risk = ((Dermal dose + Ingested Dose) x 0.014 (mg/kg/day)$^{-1}$) x ((300 (d/y) x 30 (y))/(365 (d/y) x 70 (y)))

(i.e., used to estimate the effects of urban runoff), the large and varying number of hydrocarbons associated with any specific measurement of TPH makes it difficult to use this measurement to determine how the particular petroleum hydrocarbons in the sample may affect people. Although there is no one universally accepted method to make such an assessment, there are some general guidelines that can be applied, the application of which often may be affected by the specific nature of the samples.

One approach is to measure and assess individual compounds and while it is impractical to measure all the compounds potentially associated with TPH, it is reasonable to measure and assess surrogate compounds. Generally, some of the more common toxicologically significant compounds are chosen as surrogates. A number of the compounds that measured both in water and sediment from Barton Springs Pool are compounds often included in TPH. We were able to assess many of these compounds individually. These compounds include alkyl-benzenes

(benzene, biphenyl, butylbenzene, ethylbenzene, styrene, toluene, xylene), naphtheno-benzenes (acenaphthene, acenaphthylene, benzo[b]fluoranthene, benzo[k]fluoranthene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene), alkyl-naphthalenes (naphthalene, 2,6-dimethylnaphthalene), and polynuclear aromatics (anthracene, benzo[a]anthracene, benzo[a]pyrene), benzo[e]pyrene, benzo[g,h,i]perylene, chrysene, perylene, phenanthrene, and pyrene).

In addition to the assessing individual compounds we also were able to compare the PAH concentrations measured in both water and sediment to TCEQ media specific PCLs. The PCLs consider both the dermal and ingestion routes of exposure and for TPH they are available for both the aliphatic and aromatic components of TPH and vary with the length of the carbon chain (Table 5).

Petroleum hydrocarbon measurements broken down by carbon chain length were not available for water; however, TPH was detected in eight (8) out of 31 water samples. Concentrations ranged from non-detect to 14,000 µg/L, with an average concentration of 1,093 µg/L; this is well within the range of PCLs available for TPH in groundwater (700 to 48,900 µg/L). For sediment, measurements were available both for TPH and for three fractions (C12SC28, C6SC12, and C6SC35). TPH was found in 16 of the 18 sediment samples for which this parameter was measured. Reported concentrations ranged from non-detect to 1,100 mg/kg, with an average concentration of 177 mg/kg. The concentrations reported for the three fractions ranged from non-detect to 70 mg/kg, with average concentrations of 53.5 mg/kg, 40.1 mg/kg, and 64.8 mg/kg for the three fractions, respectively. All reported concentrations were well below the sediment PCLs and would not be expected to result in adverse health outcomes.

Thallium

Thallium is a naturally occurring element that is widely distributed in trace amounts in the earth's crust. It can be found in pure form or combined with other substances such as bromine, chlorine, fluorine, and iodine to form salts [17]. Thallium is present in air, water, and soil.

Thallium is used mainly in the manufacture of electronic devices, switches, and closures. It also has limited use in the manufacture of special glasses and for medical procedures that evaluate heart disease. Up until 1972, thallium was used as a rat poison. Thallium is no longer produced in the United States [17].

Although thallium is present at low levels in air water and soil, the greatest exposure occurs through food, mostly home-grown fruits and green vegetables contaminated with thallium. It has been estimated that the average person eats approximately two parts thallium per billion parts of food. Cigarette smoking also is a source of thallium exposure [17].

Exposure to too much thallium can result in adverse health effects. Exposure to large amounts over a short time can affect the nervous system, lung, heart, liver, and kidney. Temporary hair loss (alopecia), vomiting, and diarrhea also can occur. There is little information on the effects in humans after long term exposure to smaller amounts of thallium; however, based on rodent studies, the EPA has established chronic oral RfDs for various thallium salts that range from 0.00008 mg/kg/day to 0.00009 mg/kg/day. These values are based on an identified NOAEL for increased liver enzymes of 0.26 mg/kg/day and an uncertainty factor of 3,000.

Thallium was detected in one (1) of six (6) samples at a concentration of 6.0 μg/L, a concentration above the MCL (2.0 μg/L). Using ½ the detection limit for the non-detect values, the average concentration of 3.9 μg/L also was above the MCL. Considering both the dermal and incidental ingestion routes of exposure we estimate that a child swimming three hours per day, ingesting 150 ml of pool water per day could receive a daily dose of approximately 0.00004 mg-thallium/kg/day[1], a value below the range of RfDs established for thallium compounds. Based on the low frequency of detection and the reported concentrations, exposure to thallium in the water at Barton Springs Pool would not be expected to result in adverse health effects.

Lead

Lead occurs naturally in the environment; however, most of the high levels found throughout the environment come from human activities. It is used in batteries, in the production of ammunition, in some kinds of metal products, and in ceramic glazes. In the past lead also was used in housepaint and gasoline; however, its use in these products has been phased out.

Preschool-age children and fetuses are usually the most vulnerable segments of the population for exposure to lead. This increased vulnerability results from a combination of factors which include the following: 1) the developing nervous system of fetuses and neonates are more susceptible to the neurotoxic effects of lead; 2) young children are more likely to play in dirt and to place their hands and other objects in their mouths thereby increasing the opportunity for soil ingestion; and, 3) the efficiency of lead absorption from the gastrointestinal tract is greater in

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[1] Dermal dose (mg/kg/day) = (1.0 x 10^{-3} (cm/h) x 3.9 x 10^{-6} (mg/cm^3) x 3 (h/d) x 10,000 cm^2)/15 (kg)
Ingested dose (mg/kg/day) = (0.00039 (mg/kg) x 0.15 (L))/ 15 (kg)

children than in adults. The overall half-life of lead in blood is estimated to be 36 days ± 5 days [18]. In the United States, leaded paint continues to cause most of the severe lead poisoning in young children because it is the most widespread source and has the highest concentration of lead per unit of weight [18].

Chronic exposure to low lead levels has been shown to cause subtle effects on the central nervous system which manifest as deficits in intelligence, behavior, and school performance [18]. Available evidence is not sufficient to determine whether lead-associated deficits are irreversible. Although no threshold level for adverse health effects has been established, evidence suggests that adverse neurological and cognitive deficits occur at blood lead levels at least as low as 10 µg/dL. The Centers for Disease Control and Prevention (CDC) has determined that a blood lead level greater than or equal to 10 µg/dL in children indicates excessive lead absorption and constitutes the grounds for intervention. The 10 µg/dL level is based on observations of enzymatic abnormalities in the red blood cells at blood levels below 25 µg/dL and observations of neurologic and cognitive dysfunctions in children with blood lead levels between 10 and 15 µg/dL.

Lead is especially harmful to unborn children. Infants often are born with some lead in their bodies due to their mother's past exposure to lead. Exposure to lead during pregnancy has been correlated with premature births, low birth weight infants, and spontaneous abortions. While the impact of maternal and cord blood lead levels below 10 µg/dL have not been well-defined, reduced gestational age and reduced birth weight have been associated with blood lead levels of 10 to 15 µg/dL. In addition, lead has been found to lower intelligence quotient (I.Q.) scores, slow growth, and cause hearing problems in children. These adverse effects can persist and lead to decreased performance in school.

The most serious effect of acute high dose lead exposure is encephalopathy which is characterized initially by headache and drowsiness, and in more severe cases by coma, convulsions, and death. Virtually all children who recover from acute lead encephalopathy exhibit residual reduction in intelligence and behavioral dysfunction. Acute encephalopathy is usually associated with high blood lead levels (over 150 µg/dL). Another effect of acute high dose lead exposure is the Fanconi syndrome, an acute injury to the renal tubules, characterized by spillage of glucose, protein, amino acids, and phosphates into urine.

Anemia is the most serious effect of lead on the hematologic system. Lead-induced anemia occurs primarily by the lead-induced inhibition of several enzymes involved in the production of hemoglobin. Exposure to lead has been associated with hypertension, renal failure, and gout. Lead has not been shown to be carcinogenic in humans; however, high doses of lead have been found to produce kidney tumors in laboratory studies of rats and mice. The extremely high cumulative doses of lead used in animal studies are difficult to extrapolate to low-level exposure in humans, and do not provide a sufficient basis for quantitative risk assessment.

Barton Springs Pool

Lead was found in 34 of the 184 water samples taken from Barton Springs Pool at concentrations ranging from non-detect to 28.6 μg/L. It is important to note that in some instances the detection limits were higher than the highest reported value. The highest reported detection limit was 50 μg/L. Computing an average using the actual values and all non-detect represented as ½ the detection limit, the average concentration was 8.7 μg/L. EPA has established an action level for lead of 15 μg/L for public drinking water systems. This action level, which was established to reduce the lead level in drinking water at the consumers' tap, requires water system authorities to take specific actions when more than 10% of targeted tap samples exceed the action level. The estimated average concentration is below the action level for lead in drinking water. At Barton Springs Pool, only four (4) of the 184 samples actually exceeded the drinking water action level. Using EPA's Integrated Exposure Uptake Biokinetic Lead Model for children we estimate that chronic ingestion of drinking water containing 8.7 μg-lead/L would have an insignificant effect on a child's blood lead level.[1] The types of exposures possible at Barton Springs Pool would not be expected to result in adverse health outcomes.

DISCUSSION

We reviewed the results from water and sediment samples collected by: the City of Austin, the United States Geological Survey, the Lower Colorado River Authority, and the Texas Commission on Environmental Quality. This consisted of over 14,500 individual data points, involving about 441 analytes, collected over the past 12 years.

We screened the contaminants by comparing them to health-based screening values and selected twenty-seven (27) contaminants for further consideration. This screening process consisted of selecting all analytes for which any single value exceeded the screening level. Of the 27 contaminants, 20 were PAHs. The others included arsenic, boron, cadmium, bis(2Sethylhexyl)phthalate, total petroleum hydrocarbons, thallium, and lead.

The most likely route of exposure to the contaminants found in the pool is incidental ingestion of sediment while swimming. Based on our visit to the site, we would not expect absorption of contaminants through the skin by contact with sediment to be a major contributor to exposure. Even though children regularly play in the pool, the availability of sediment in the areas frequented by children is low. Additionally, the relative capacity of the contaminants, particularly the PAHs, to adhere to the sediment preferential to skin, further reduces this as a viable exposure pathway. For contaminants in the water we considered both the ingestion and dermal routes of exposure.

For most of the contaminants selected, the frequency of detection was low; however, in some instances this could have been an artifact of the detection limits used for some of the analyses. Thus, we did not omit contaminants from selection based on frequency of detection and we used ½ the detection limit for all reported non-detects in our calculation of the averages.

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[1] Using default parameters for all other sources of exposure the model predicts that chronic exposure to drinking water containing 8.7 μg-lead/L would result in an increase in a child's blood lead of less than 1.0 μg/dL.

Uncertainties

General Uncertainties

In preparing this report, we relied on the information provided and assumed adequate quality assurance/quality control (QA/QC) procedures were followed with regard to data collection, chain-of-custody, laboratory procedures, and data reporting. The analysis and conclusions in this report are valid only if the referenced information is valid and complete.

There always will be uncertainties associated with any presentation of risk. These uncertainties include toxicologic uncertainties, exposure uncertainties, and data uncertainties. We tried to account for some of these uncertainties through the use of conservative assumptions. That is, we chose assumptions that err on the side of protecting the public. For instance, we assumed that exposures would occur 365 days per year for 70 years; actual exposures would be less frequent and for shorter duration. We also assumed that 100% of every contaminant that came into contact with the body was absorbed by the body. While in rare instances this may occur, in general, absorption rates would be much less.

The original concerns regarding this site focused on possible exposure to PAHs; however, other contaminants were measured during the course of the various investigations. To provide a complete analysis of the public health implications of the contaminants measured in the pool we reviewed all available data; this consisted of the examination of over 14,500 individual data points. Determining public health implications of possible exposure to multiple contaminants will always result in some uncertainty, particularly when simultaneous exposure to a variety of contaminants may occur. Such exposures could be additive, multiplicative, or even subtractive. To some limited extent we have addressed this issue in our determination of the risks associated with exposure to the PAHs. Although we can not address all the contaminants in this manner, many of the contaminants were found at concentrations several orders of magnitude below the levels at which adverse health effects have been observed. Even when we combined the cancer risk estimates from all pathways for all contaminants, the cancer risk estimates would still be considered to be insignificant.[1] In some instances we compared the concentrations of contaminants found in pool water to public drinking water standards. While there are many factors that are considered when establishing these standards, such a comparison assumes that if water is deemed safe for drinking, cooking, and bathing; it should be safe for recreational uses such as swimming.

There always will be some uncertainties associated with the contaminants for which we were not able to find HAC values or other toxicological information. Fortunately, this was limited to only four (4) contaminants; A, A'-dimethylphenyethylamine, hentriacosane, nonacosane, and butyl hexadecanoate. These uncertainties are somewhat reduced by the fact that each of these contaminants only was found in one sample and at low concentrations. Given the relative

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[1] Cancer risk estimates for all contaminants PAHs, arsenic, and BEHP combined, all pathways, ranged from 8.0×10^{-6} (300 days/year for 70 years) to 1.9×10^{-7} (50 days/year for 10 years).

toxicity of other contaminants for which HAC values were available, the low frequency of detection of these contaminants, and the types of exposure scenarios that are likely to be encountered, we do not believe that these contaminants would pose a public health hazard.

Specific Uncertainties

There are specific uncertainties associated with some of the contaminants that we considered. For instance, there is considerable controversy associated with any estimate of risk (non-cancer or cancer) associated with exposure to arsenic. Both the RfD and the cancer slope factor (CSF) are based on human ecological studies that have recognized uncertainties with respect to exposure. In such studies it is difficult to avoid errors in assigning people to specific exposure groups. The studies upon which the RfD and the CSF are based also involved exposure to arsenic in drinking water. While we did consider arsenic in water, we also considered the risk associated with arsenic in sediment. The ability of the body to absorb arsenic in water is likely to be higher than the ability of the body to absorb arsenic in sediment. In our analysis we assumed that the arsenic in the sediment was 100% bioavailable. Studies conducted for EPA at various Superfund sites have found the bioavailability of the arsenic in the soil to be lower than 100 percent. Thus, assuming 100 % absorption is very conservative with respect to protecting public health and to some unknown degree overestimates the risk. We also did not consider the kinetics of arsenic in the body in our risk estimates. The RfD and the CSF are based on daily exposures over a lifetime. Since the half-life of arsenic in the body (the time it takes one-half of the arsenic to be excreted) is short (40-60 hours), the risk estimates for exposures that occur less frequently than everyday also may result in an overestimate of the risks.

With specific respect to the cancer risk estimates, the mechanisms through which arsenic causes cancer are not known; however, arsenic is not thought to act directly with DNA. Since the studies used to derive the CSF are based on exposure doses much higher than those likely to be encountered at this site, it is questionable whether it is appropriate to assume linearity for the dose-response assessment for arsenic at low doses. The actual dose-response curve at low doses may be sublinear which would mean that the above risk estimates overestimate the actual risks.

The use of toxicity equivalency factors (TEF) in our estimation of the risks associated with exposure to the PAHs also contributes a certain degree of uncertainty. While this is considered an acceptable practice, how well this procedure truly represents the toxicity is unknown.

Perhaps one of the biggest sources of uncertainty is associated with estimating risks associated with TPH. The shear number of possible contaminants that could be associated in any measurement of TPH makes trying to determine how the particular petroleum hydrocarbons in the sample may affect people very difficult. Where possible our evaluation individually considered some of the more toxic components of TPH. Additionally, the screening values that we used for TPH itself were, for the most part, based on the lowest ones available for surrogate compounds.

Children's Health Considerations

TDH and ATSDR recognize that the unique vulnerabilities of children demand special attention. Windows of vulnerability (critical periods) exist during development, particularly during early gestation, but also throughout pregnancy, infancy, childhood and adolescence -- periods when toxicants may permanently impair or alter structure and function [19]. Unique childhood vulnerabilities may be present because, at birth, many organs and body systems (including the lungs and the immune, endocrine, reproductive, and nervous systems) have not achieved structural or functional maturity. These organ systems continue to develop throughout childhood and adolescence. Children may exhibit differences in absorption, metabolism, storage, and excretion of toxicants, resulting in higher biologically-effective doses to target tissues. Depending on the affected media, they also may be more exposed than adults because of behavior patterns specific to children. In an effort to account for children's unique vulnerabilities, and in accordance with ATSDR's Child Health Initiative [20] and EPA's National Agenda to Protect Children's Health from Environmental Threats [21], TDH used the potential exposure of children as a guide in assessing the potential public health implications of the contaminants.

CONCLUSIONS

1. The information reviewed does not indicate that people who swim in Barton Springs Pool on a daily basis would be exposed to levels of contaminants that would be expected to cause adverse effects. This is either because contaminant concentrations are not great enough to be a public health threat, because exposure to the contaminants would be infrequent or limited, and/or because the contaminated media are not accessible. Qualitatively, we estimated the potential excess lifetime cancer risk associated with simultaneous exposure to the contaminants found in the pool to be insignificant. Based on available information, we have concluded that swimming in Barton Springs Pool on a daily basis poses no apparent public health hazard.

2. During the course of our investigation we noted elevated levels of PAHs in soil obtained from the hill on the south side of the pool. On further inspection, it was apparent that these samples were obtained from soil near vertical creosote-treated posts used to control erosion. Adverse health outcomes from exposure to this soil are not likely; however, the posts could be a contaminant source. As such, exposure to these soils does not pose a public health threat.

3. Total petroleum hydrocarbons, a common fuel-related pollutant associated with urban runoff, was detected both in water and sediment from the pool. Exposure to the reported levels are not expected to result in adverse health outcomes.

PUBLIC HEALTH ACTIONS

Actions Recommended

1. Continue to provide public health education to address concerns that the public may have concerning the risks associated with swimming in the pool.

2. Determine the potential for the creosote-treated posts to serve as a source of PAHs.

3. Continue to monitor the pool for TPH and BTEX and analyze the samples in a manner suitable for comparison with the TCEQ's PCLs. We are making this recommendation in response to a concern raised by a citizen at a public meeting about sporadically detecting a gasoline type smell in the pool.

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Table 1. **Analytes for which at least one sample was reported above the detection limit in Sediment/Soil. (All values presented in milligrams per kilogram)**

Analyte	Average[1]	Min - Max[*]	Frequency of Detection	Screening Value	Basis for Screening
Acenaphthene	0.42	ND[9] - 4.5[*]	2/45	3,000	RMEGc[2]
Acenaphthylene	0.33	ND - 0.97[*]	2/45	-	PAH Assessment[3]
Aluminum	29,873	2,380 - 89,000	23/23	100,000	EMEGc[4]
Anthracene	0.32	ND - 0.96[*]	9/45	20,000	PAH Assessment
Antimony	1.25	1.08 - 1.60	6/6	20	RMEGc
Aroclor 1260	0.05	ND - 0.25	1/11	1.0	RMEGc (Aroclor 1254)
Arsenic	8.24	ND - 23.0	43/48	20	EMEGc
Barium	238.5	210 - 285	6/6	4,000	RMEGc
Benzanthracene, 1,2-	0.50	0.43 - 0.62	3/3	-	PAH Assessment
Benzo(a)Anthracene	0.68	ND - 5.09	18/42	-	PAH Assessment
Benzo(a)pyrene	0.84	ND - 6.50	21/45	-	PAH Assessment
Benzo(b)Fluoranthene	1.02	ND - 8.70	23/45	-	PAH Assessment
Benzo(e)pyrene	0.95	0.41 - 1.39	5/5	-	PAH Assessment
Benzo(g,h,i)Perylene	0.64	ND - 4.55	18/43	-	PAH Assessment
Benzo(k)Fluoranthene	0.70	ND - 6.63	21/45	-	PAH Assessment
Benzoic Acid	1.69	ND - 4.79[*]	1/32	200,000	RMEGc
Beryllium	2.48	2.09 - 3.10	6/6	100	RMEGc
Bis(2-Ethylhexyl)Phthalate	0.66	ND - 3.00	17/34	50	CREG[5]
Bismuth	0.43	0.28 - 0.54	6/6	<5.0	Background[6]
Cadmium	0.82	ND - 3.39[*]	33/49	10	EMEGc
Cerium	75.2	64.0 - 100.0	6/6	36 - 101	Background
Chloronaphthalene, 1+2-	0.84	ND - 2.80	1/33	4,000	RMEGc
Chromium	20.6	ND - 83.0	43/44	200	RMEGc

Table 1. Analytes for which at least one sample was reported above the detection limit in Sediment/Soil. (All values presented in milligrams per kilogram)

Analyte	Average[1]	Min - Max[*]	Frequency of Detection	Screening Value	Basis for Screening
Chrysene	0.88	ND - 6.92	24/45	-	PAH Assessment
Cobalt	12.7	11.0 - 16.0	6/6	500	EMEGc
Copper	99.7	3.8 - 1,200	48/48	2,000	EMEGc
Coronene	0.18	0.17 - 0.20	2/2	-	PAH Assessment
Cresol, M+P-	0.62	ND - 3.11	4/31	3,000	RMEGc
Cresols, Total	0.38	ND - 1.80	1/22	3,000	RMEGc
DDE, 4,4'-	0.01	ND - 0.25[*]	1/32	2.0	CREG
Dibenzanthracene, 1,2,5,6-	0.37	0.23 - 0.62	3/3	-	PAH Assessment
Dibenzo(a,h)Anthracene	0.36	ND - 0.96[*]	5/42	-	PAH Assessment
Dieldrin	0.01	ND - 0.25[*]	1/32	0.04	CREG
Dimethylnaphthalene, 2,6-	0.08	ND - 0.12	2/3	4,900	PCL
Dimethylphenyethylamine, A,A'-	1.08	ND - 1.52	1/7	-	-
Di-N-Butyl Phthalate	0.51	ND - 2.77	2/35	5,000	RMEGc
Di-N-Octyl Phthalate	0.44	ND - 1.08	1/35	20,000	EMEGc
Fluoranthene	1.28	ND - 13.3	26/45	-	PAH Assessment
Fluorene	0.35	0.00005 - 0.97[*]	2/2	-	PAH Assessment
Gallium	17.7	14.0 - 21.3	6/6	<5 - 70	Background
Hentriacosane	1.9	1.90	1/1	-	-
Indeno(1,2,3-cd)Pyrene	0.67	ND - 4.51	19/43	-	PAH Assessment
Iron	16,495	1,170 - 43,000	24/24	1,000 - 100,000	Background
Lanthanum	39.3	32.0 - 52.0	6/6	30 - 200	Background
Lead	14.6	1.79 - 40.0	50/50	400	EPA[7]
Lithium	58.2	50.5 - 69.5	6/6	5 - 130	Background

Table 1. Analytes for which at least one sample was reported above the detection limit in Sediment/Soil. (All values presented in milligrams per kilogram)

Analyte	Average[1]	Min - Max[*]	Frequency of Detection	Screening Value	Basis for Screening
Manganese	944	743 - 1,200	6/6	3,000	RMEGc
Mercury	0.07	ND - 0.28	17/45	<0.01 - 4.6	Background
Methylphenanthrene, 1-	0.01	ND - 0.02	2/3	-	PAH Assessment
Molybdenum	1.7	1.50 - 2.06	6/6	300	RMEGc
Naphthalene	0.33	ND - 0.97[*]	2/45	1,000	RMEGc
Nickel	17.4	1.67 - 44.0	41/41	1,000	RMEGc
Niobium	21.6	17.0 - 32.0	6/6	<10 - 100	Background
Nonacosane	4.8	4.80	1/1	-	-
Perylene	0.34	0.29 - 0.42	3/3	-	PAH Assessment
Petroleum Hydrocarbons, C6-C12	40.1	19.0 - 69.0	3/3	-	PCL (Table-Text)[10]
Petroleum Hydrocarbons, C6-C35	64.8	ND - 70.0	2/3	-	PCL (Table-Text)
Petroleum Hydrocarbons, C12-C28	53.5	ND - 70.0	2/3	-	PCL (Table-Text)
Petroleum Hydrocarbons, Total	177.0	ND - 1,100	16/18	-	PCL (Table-Text)
Phenanthrene	0.55	ND - 3.61	19/45	-	PAH Assessment
Polychlorinated Biphenyl	0.07	ND - 0.50[*]	1/30	0.4	CREG
Pyrene	1.19	ND - 12.7	25/45	-	PAH Assessment
Scandium	12.4	9.8 - 15.0	6/6	5 - 50	Background
Silver	1.95	ND - 6.80[*]	18/38	300	RMEGc
Strontium	332.5	120 - 796	6/6	30,000	RMEGc
Tantalum	1.58	1.10 - 2.08	6/6	<1.0	Background[8]
Thorium	12.7	10.6 - 17.0	6/6	1.4 - 18.5	Background[8]
Titanium	2,987	1,650 - 5,100	9/9	-	Background
Uranium	2.80	2.50 - 3.12	6/6	0.68 - 7.9	Background

Table 1. Analytes for which at least one sample was reported above the detection limit in Sediment/Soil. (All values presented in milligrams per kilogram)

Analyte	Average[1]	Min - Max[*]	Frequency of Detection	Screening Value	Basis for Screening
Vanadium	115.8	99.0 - 136.0	6/6	200	EMEGc
Yttrium	26.4	21.5 - 38.0	6/6	10 - 150	Background
Zinc	44.4	ND - 130.0	47/48	20,000	EMEGc

[1] Non-detects were included in the calculation of the averages as ½ the detection limit.
[2] RMEGc based on EPA reference dose, child scenario
[3] Considered in assessment of PAH carcinogenic risk
[4] EMEGc based on ATSDR minimal risk level, child scenario
[5] CREG based on EPA cancer slope factor and one in one million risk level
[6] Naturally occurring analyte. Sources: U.S. Geological Survey (ATSDR, Health Assessment Guidance Manual)
[7] Residential soil screening level from EPA Integrated Uptake Biokinetic Model.
[8] U.S. Geological Survey (5 and 95 %tiles) from http://water.usgs.gov/pubs/wri/wri994185/html/element.htm
[9] Non-detect
[10] TCEQ protective contaminant levels
[*] Max value is the highest non-detect value, actual maximum reported value was lower than the value listed here.

Table 2. Analytes for which at least one sample was reported above the detection limit in water. (All values presented in micrograms per Liter)

Analyte	Average[1]	Min - Max[*]	Frequency of Detection	Screening Value	Basis for Screening
Aluminum	24.0	1.69 - 46.4	2/2	20,000	EMEGc[3]
Arsenic	1.77	ND[2] - 46.0	19/136	10	MCL[4]
Atrazine	0.18	ND - 2.50[*]	22/36	3	MCL
Barium	65.8	ND - 600	80/87	700	RMEGc[5]
Benzene	0.71	ND - 2.50[*]	1/40	5	MCL
Beryillium	0.35	ND - 1.50[*]	1/44	4	MCL
Bis(2-Ethylhexyl)Phthalate	3.87	ND - 5.60	1/11	3	CREG[6]
Boron	149	60 - 560	15/15	100	EMEGc
Butyl Hexadecanoate	11.0	11.0	1/1	-	-
Cadmium	1.08	ND - 5.0	7/146	5	MCL
Carbaryl	0.36	ND - 2.50[*]	7/33	1,000	RMEGc
Chromium	3.36	ND - 30.0	11/98	100	MCL
Cobalt	1.92	ND - 6.0[*]	1/38	100	MCL
Copper	2.63	ND - 17.0	35/157	300	EMEGc
De-Ethyl Atrazine	0.02	0.006 - 0.05[*]	22/223	3	MCL (Atrazine)
Diazinon	0.12	ND - 1.0[*]	10/51	2	EMEGc
Fluoride	208	ND - 650	218/221	2,000	EPA NSDWR[7]
Iron	25.7	ND - 622	70/146	300	EPA NSDWR
Lead	8.72	ND - 50[*]	34/184	10	MCL
Lithium	11.8	ND - 31.0	34/37	490	PCL (Residential)
Manganese	2.40	ND - 37.0	19/104	600	RMEGc
Mercury	0.06	ND - 0.20	5/99	2	MCL
Methylene Chloride	1.05	ND - 5.0[*]	1/39	5	MCL
Metolochlor	0.02	ND - 0.10[*]	1/32	2,000	RMEGc
Molybdenum	7.76	ND - 30.0[*]	3/44	50	RMEGc
Nickel	3.97	ND - 20.0[*]	8/85	200	RMEGc

Table 2. **Analytes for which at least one sample was reported above the detection limit in water. (All values presented in micrograms per Liter)**

Analyte	Average[1]	Min - Max[*]	Frequency of Detection	Screening Value	Basis for Screening
Petroleum Hydrocarbons, Total	1,093	ND - 14,000	8/31	-	PCL (Table-Text)[8]
Prometon	0.03	ND - 0.10	2/35	200	RMEGc
Selenium	0.63	ND - 2.50[*]	8/90	50	MCL
Silica	11,175	9,300 - 12,900	137/137	-	Low toxicity by this route
Silver	0.59	ND - 4.0	6/96	50	RMEGc
Simazine	0.02	ND - 0.08	12/35	4	MCL
Strontium	1,124	500 - 3,200	42/42	6,000	RMEGc
Tetrachloroethylene	0.92	ND - 2.50[*]	12/40	5	MCL
Thallium	3.92	ND - 6.0	1/6	2	MCL
Toluene	0.77	ND - 2.50[*]	1/40	200	EMEGc
Triazines, Total	0.02	ND - 0.03	1/3	3	MCL (Atrazine)
Trichloroethane, 1,1,1-	0.92	ND - 3.90[*]	2/40	200	MCL
Trichloroethylene	0.80	ND - 2.50[*]	1/35	5	MCL
Trichloromethane	0.83	ND - 2.65[*]	1/40	80	MCL
Xylenes, Total	1.81	ND - 2.90[*]	1/10	10,000	MCL
Zinc	6.74	ND - 98.1	55/170	3,000	EMEGc

[1] Non-detects were included in the calculation of the averages as ½ the detection limit.
[2] Non-detect
[3] EMEGc based on ATSDR minimal risk level, child scenario
[4] EPA primary drinking water standad
[5] RMEGc based on EPA reference dose, child scenario
[6] CREG based on EPA cancer slope factor and one in one million risk level
[7] EPA National secondary drinking water regulation
[8] TCEQ protective contaminant level
[*] Max value is the highest non-detect value, actual maximum reported value lower than the value listed here.

Table 3. Analytes Selected for Further Consideration.
(Analytes were selected when any single value exceeded a screening value)

Analyte	Media	Basis for Selection
Acenaphthylene	Sediment	PAH Cancer Risk Assessment
Anthracene	Sediment	PAH Cancer Risk Assessment
Benzo(a)anthracene	Sediment	PAH Cancer Risk Assessment
Benzo(a)pyrene	Sediment	PAH Cancer Risk Assessment
Benzo(b)Fluoranthene	Sediment	PAH Cancer Risk Assessment
Benzo(e)pyrene	Sediment	PAH Cancer Risk Assessment
Benzo(g,h,i)Perylene	Sediment	PAH Cancer Risk Assessment
Benzo(k)Fluoranthene	Sediment	PAH Cancer Risk Assessment
Benzanthracene, 1,2-	Sediment	PAH Cancer Risk Assessment
Chrysene	Sediment	PAH Cancer Risk Assessment
Dibenzanthracene, 1,2,5,6-	Sediment	PAH Cancer Risk Assessment
Dibenzo(a,h)Anthracene	Sediment	PAH Cancer Risk Assessment
Fluoranthene	Sediment	PAH Cancer Risk Assessment
Fluorene	Sediment	PAH Cancer Risk Assessment
Indeno(1,2,3-cd)Pyrene	Sediment	PAH Cancer Risk Assessment
Phenanthrene	Sediment	PAH Cancer Risk Assessment
Pyrene	Sediment	PAH Cancer Risk Assessment
Coronene	Sediment	PAH Cancer Risk Assessment
Methylphenanthrene, 1-	Sediment	PAH Cancer Risk Assessment
Perylene	Sediment	PAH Cancer Risk Assessment
Petroleum Hydrocarbons, Total	Sediment/Water	Complex Mixture
Arsenic	Sediment/Water	Maximum value exceeds Screen
Bis(2-Ethylhexyl)Phthalate	Water	Maximum value exceeds Screen
Boron	Water	Average value exceeds Screen
Cadmium	Water	Maximum value equals Screen
Thallium	Water	Maximum value exceeds Screen
Lead	Water	Maximum value exceeds Screen

Table 4.	**Cancer Risk from Swimming at Barton Creek Pool Associated with exposure to Polycyclic Aromatic Hydrocarbons (PAHs) in sediment from Barton Springs Pool. Benzo(a)pyrene equivalent concentrations based on the average seen in the pool over the last eight (8) years.**				
Parameter Description		**Lower Parameter Value**	**Median Parameter Value**	**Upper Parameter Value**	**Parameter Units**
Quantity of water ingested per hour while swimming (milliliters per hour)		50.0	50.0	50.0	ml/hr
Average # hours person swims per day (hr/day)		3.0	3.0	3.0	hr/day
Quantity of sediment suspended in pool water (mg/l)		0.40	1.14	4.95	mg. Sed/l
Conversion factor: ml -> l		0.001	0.001	0.001	l/ml
Quantity of sediment ingested per visit to pool (mg)		0.060	0.171	0.743	mg Sed/day
Concentration of BaP TEQ in sediment (ppb)		1,460	1,460	1,460	ug BaP/kg Sed
Conversion factor: mg Sed -> kg Sed		0.000001	0.000001	0.000001	kg Sed/mg Sed
Quantity of BaP TEQ ingested per visit to pool		0.000088	0.000250	0.001084	ug BAP/day
Conversion factor: ug BaP -> mg BaP		0.001	0.001	0.001	mg BaP/ug BaP
Quantity of BaP TEQ ingested per visit to pool		8.758E-08	2.496E-07	1.084E-06	mg BaP/day
Percent of ingested BaP TEQ absorbed by body		100%	100%	100%	Percent
Slope factor for BaP		7.3	7.3	7.3	per mg BaP/kg BW/day
Body Weight		70.0	70.0	70.0	kg BW
Ca risk from daily exposure for 70 years		9.133E-09	2.603E-08	1.130E-07	Ca risk
Number of days per week exposed		7	7	7	days exp/week
Number of weeks per year exposed		52	52	52	weeks exp/year
Number of years exposed		70	70	70	years exp
Ca risk from limited exposure specified above		9.133E-09	2.603E-08	1.130E-07	Ca Risk
Odds of getting Ca from exposure:	1 in	109,489,437	38,417,346	8,847,631	Ca Odds

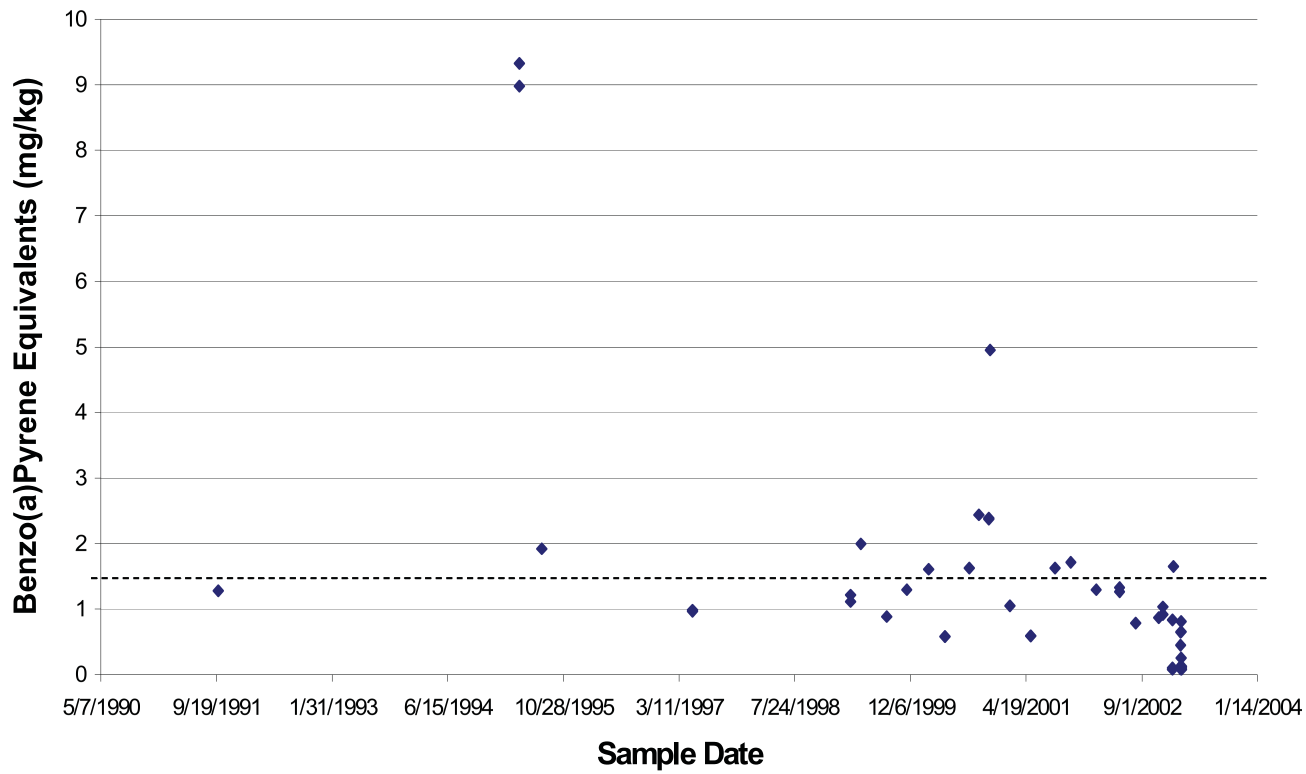
Table 5. TCEQ PCLs for Total Petroleum Hydrocarbon (TPH) Fractions		
Carbon Chain Length	**Water (µg/L)**	**Sediment (mg/kg)**
Aliphatics		
C6	1,500	44,100
C6SC8	1,500	44,100
C8SC10	2,400	73,500
C10SC12	2,400	15,309
C12SC16	2,400	15,309
C16SC21	48,900	306,182
Aromatics		
C7SC8	2,400	73,500
C8SC10	1,000	29,400
C10SC12	1,000	6,124
C12SC16	1,000	6,124
C16SC21	700	3,711
C21SC35	700	3,711

TCEQ - Texas Commission on Environmental Quality
PCLs - Protective Contaminant Levels
µg/L - micrograms per liter
mg/kg - milligrams per kilogram

Figure 1. Barton Springs Pool

Figure 2.

Average Concentrations of Benzo(a)Pyrene Equivalents in Barton Springs Pool Sediment by Sampling Date



PREPARERS OF THE REPORT

John F. Villanacci, Ph.D., EMT
Director
Environmental Epidemiology and Toxicology Division

Richard A. Beauchamp, M.D.
Senior Medical Toxicologist
Environmental Epidemiology and Toxicology Division

ATSDR REGIONAL REPRESENTATIVE

Karl V. Markiewicz, Ph.D.
Regional Representative
ATSDR - Region 6

ATSDR TECHNICAL PROJECT OFFICER

Robert Knowles, M.S., REHS
Environmental Health Scientist
Division of Health Assessment and Consultation
Superfund Site Assessment Branch
Sate Programs Section

CERTIFICATION

This public health consultation was prepared by the Texas Department of Health (TDH) under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

Technical Project Officer, SPS, SSAB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation and concurs with its findings.

Chief, State Programs Section, SSAB, DHAC, ATSDR

Appendix A

List of Analytes

Barton Springs Pool

	Analyte
1	Acenaphthene
2	Acenaphthylene
3	Acetochlor
4	Acetone
5	Acetophenone
6	Acid Volatile Sulfide
7	Acifluorfen
8	Acrolein
9	Acrylonitrile
10	Alachlor
11	Aldicarb
12	Aldicarb Sulfone
13	Aldicarb Sulfoxide
14	Aldrin
15	Allyl Chloride
16	Aluminum
17	Ametryn
18	Aminobiphenyl, 4-
19	Aniline
20	Anthracene
21	Antimony
22	Aroclor 1016
23	Aroclor 1221
24	Aroclor 1232
25	Aroclor 1242
26	Aroclor 1248
27	Aroclor 1254
28	Aroclor 1260
29	Aroclor 1260-1
30	Aroclor 1260-2
31	Aroclor 1260-3
32	Aroclor 1260-4
33	Aroclor 1260-5
34	Arsenic
35	Atrazine
36	Azinphos-Ethyl
37	Azinphos-Methyl
38	Azobenzene
39	Barium
40	Benfluralin
41	Benzanthracene, 1,2-
42	Benzene
43	Benzidine
44	Benzo(a)Anthracene
45	Benzo(a)Pyrene
46	Benzo(b)Fluoranthene
47	Benzo(b+k)Fluoranthene
48	Benzo(e)Pyrene

	Analyte
49	Benzo(g,h,i)Perylene
50	Benzo(k)Fluoranthene
51	Benzoic Acid
52	Benzopyrene Isomer
53	Benzyl Alcohol
54	Beryllium
55	Biphenyl
56	Bis(2-Chloroethoxy)Methane
57	Bis(2-Chloroethyl)Ether
58	Bis(2-Chloroisopropyl)Ether
59	Bis(2-Ethylhexyl)Phthalate
60	Bismuth
61	Boron
62	Bromacil
63	Bromobenzene
64	Bromochloromethane
65	Bromodichloromethane
66	Bromoethene
67	Bromomethane
68	Bromophenyl Phenyl Ether, 4-
69	Butachlor
70	Butanone, 2-
71	Butyl Benzyl Phthalate
72	Butyl Hexadecanoate
73	Butylate
74	Butylbenzene, N-
75	Butylbenzene, Sec-
76	Butylbenzene, Tert-
77	C1-Chrysenes
78	C1-Dibenzothiophenes
79	C1-Fluoranthenes And Pyrenes
80	C1-Fluorenes
81	C1-Naphthalenes
82	C1-Phenanthrenes
83	C2-Chrysenes
84	C2-Dibenzothiophenes
85	C2-Fluorenes
86	C2-Naphthalenes
87	C2-Phenanthrenes
88	C3-Chrysenes
89	C3-Dibenzothiophenes
90	C3-Fluorenes
91	C3-Naphthalenes
92	C3-Phenanthrenes
93	C4-Chrysenes
94	C4-Naphthalenes
95	C4-Phenanthrenes
96	Cadmium

Barton Springs Pool

Analyte	
97	Carbaryl
98	Carbazole
99	Carbofuran
100	Carbon Disulfide
101	Carbon Tetrachloride
102	Carbophenothion
103	Carboxin
104	Cerium
105	Chloramben
106	Chlordane, Alpha-
107	Chlordane, Gamma-
108	Chlordane, Technical
109	Chlordane, Total
110	Chloro-3-Methylphenol, 4-
111	Chloroaniline, 4-
112	Chlorobenzene
113	Chloroethane
114	Chloroethyl Vinyl Ether, 2-
115	Chloromethane
116	Chloronaphthalene, 1+2-
117	Chloronaphthalene, 2-
118	Chlorophenol, 2-
119	Chlorophenyl Phenyl Ether, 4-
120	Chlorotoluene, 2-
121	Chlorotoluene, 4-
122	Chlorpyrifos
123	Chromium
124	Chrysene
125	Cobalt
126	Copper
127	Coronene
128	Coumaphos
129	Cresol, M+P-
130	Cresol, O-
131	Cresol, P-
132	Cresols, Total
133	Cumene
134	Cyanazine
135	Cycloate
136	Dalapon
137	DCPA
138	DDD
139	DDD, 2,4'-
140	DDD, 4,4'-
141	DDE
142	DDE, 2,4'-
143	DDE, 4,4'-
144	DDT

Analyte	
145	DDT, 2,4'-
146	DDT, 4,4'-
147	De-Ethyl Atrazine
148	De-Ethyl Ether
149	Demeton
150	Demeton, O+S-
151	Demeton-O
152	Demeton-S
153	Desulfinylfipronil
154	Diazinon
155	Dibenzanthracene, 1,2,5,6-
156	Dibenzo(a,h)Anthracene
157	Dibenzo(a,j)Aciridine
158	Dibenzofuran
159	Dibenzothiophene
160	Dibromo-3-Chloropropane, 1,2-
161	Dibromochloromethane
162	Dibromochloropropane
163	Dibromoethane, 1,2-
164	Dibromoethylene, 1,2-
165	Dibromomethane
166	Dicamba
167	Dichloro-2-Butene, 1,4-
168	Dichlorobenzene, 1,2-
169	Dichlorobenzene, 1,3-
170	Dichlorobenzene, 1,4-
171	Dichlorobenzidine, 3,3'-
172	Dichlorobenzoic Acid, 3,5-
173	Dichlorobromoethane
174	Dichlorodifluoromethane
175	Dichloroethane, 1,1-
176	Dichloroethane, 1,2-
177	Dichloroethene, 1,1-
178	Dichloroethene, Cis-1,2-
179	Dichloroethene, Trans-1,2-
180	Dichlorophenol, 2,4-
181	Dichlorophenol, 2,6-
182	Dichlorophenoxy)Butyric Acid, 4-(2,4-
183	Dichlorophenoxy)Propionic Acid, 2-(2,4-
184	Dichlorophenoxyacetic Acid, 2,4-
185	Dichloropropane, 1,2-
186	Dichloropropane, 1,3-
187	Dichloropropane, 2,2-
188	Dichloropropene, 1,1-
189	Dichloropropene, 1,3-
190	Dichloropropene, Cis-1,3-
191	Dichloropropene, Trans-1,3-
192	Dichlorvos

Barton Springs Pool

Analyte

193 Dieldrin
194 Diethyl Phthalate
195 Diethylaniline, 2,6-
196 Di-Isopropyl Ether
197 Dimethoate
198 Dimethyl Phthalate
199 Dimethylaminoazobenzene, P-
200 Dimethylbenzo(a)Anthracene, 7,12-
201 Dimethylnaphthalene, 2,6-
202 Dimethylphenethylamine, A,A-
203 Dimethylphenol, 2,4-
204 Di-N-Butyl Phthalate
205 Dinitro-2-Methylphenol, 4,6-
206 Dinitrophenol, 2,4-
207 Dinitrotoluene, 2,4-
208 Dinitrotoluene, 2,6-
209 Di-N-Octyl Phthalate
210 Dinoseb
211 Dioxane, 1,4-
212 Diphenamid
213 Diphenylhydrazine, 1,2-
214 Disulfoton
215 Disyston
216 Endosulfan
217 Endosulfan I
218 Endosulfan II
219 Endosulfan Sulfate
220 Endrin
221 Endrin Aldehyde
222 Endrin Ketone
223 EPN
224 Ethalfluralin
225 Ethion
226 Ethoprophos
227 Ethoxy-2-Methylpropane, 2-
228 Ethyl Dipropylthiocarbamate, S-
229 Ethyl Methacrylate
230 Ethylbenzene
231 Ethylmethane Sulfonate
232 Fenchlorphos
233 Fensulfothion
234 Fenthion
235 Fipronil
236 Fipronil Degradate RPA105048
237 Fipronil Sulfide
238 Fipronil Sulfone
239 Fluoranthene
240 Fluorene

Analyte

241 Fluorene, 9h-
242 Fluoride
243 Fonofos
244 Gallium
245 Hentriacosane
246 Heptachlor
247 Heptachlor Epoxide
248 Hexachlorobenzene
249 Hexachlorobutadiene
250 Hexachlorocyclohexane, Alpha-
251 Hexachlorocyclohexane, Beta-
252 Hexachlorocyclohexane, Delta-
253 Hexachlorocyclohexane, Gamma-
254 Hexachlorocyclopentadiene
255 Hexachloroethane
256 Hexachlorophene
257 Hexanone, 2-
258 Hexazinone
259 Hydrocarbon (Oil), Unknown
260 Hydroxy Carbofuran, 3-
261 Hydroxydicamba, 5-
262 Indeno(1,2,3-cd)Pyrene
263 Iodomethane
264 Iron
265 Isodurene
266 Isophorone
267 Isopropyl Toluene, P-
268 Lanthanum
269 Lead
270 Linuron
271 Lithium
272 Malathion
273 Manganese
274 Mecoprop
275 Mercury
276 Merphos
277 Methacrylonitrile
278 Methomyl
279 Methoxy-2-Methylbutane, 2-
280 Methoxy-2-Methylpropane, 2-
281 Methoxychlor
282 Methyl 2-Propenoic Acid Ethyl Ester, 2-
283 Methyl Isobutyl Ketone
284 Methyl Methacrylate
285 Methyl Methane Sulfonate
286 Methyl Parathion
287 Methyl T-Butyl Ether
288 Methyl Trithion

Barton Springs Pool

Analyte	
289	Methyl-2-Chlorobenzene, 1-
290	Methyl-2-Ethylbenzene, 1-
291	Methyl-2-Pentanone, 4-
292	Methyl-4-Chlorobenzene, 1-
293	Methyl-4-Chlorophenoxyacetic Acid, 2-
294	Methyl-4-Isopropylbenzene, 1-
295	Methylcholanthrene, 3-
296	Methylene Chloride
297	Methylnaphthalene, 1-
298	Methylnaphthalene, 2-
299	Methylphenanthrene, 1-
300	Methylpyridine, 2-
301	Metolachlor
302	Metribuzin
303	Mevinphos
304	Mirex
305	Molinate
306	Molybdenum
307	Monocrotophos
308	Naled
309	Naphthalene
310	Naphthylamine, 1-
311	Naphthylamine, 2-
312	Napropamide
313	Nickel
314	Niobium
315	Nitroaniline, 2-
316	Nitroaniline, 3-
317	Nitroaniline, 4-
318	Nitrobenzene
319	Nitrodibutylamine, N-
320	Nitrophenol, 2-
321	Nitrophenol, 4-
322	Nitrosodiethylamine, N-
323	Nitrosodimethylamine, N-
324	Nitrosodi-N-Butylamine, N-
325	Nitrosodi-N-Propylamine, N-
326	Nitrosodiphenylamine, N-
327	Nitrosopiperidine, N-
328	Nonachlor, Cis-
329	Nonachlor, Trans-
330	Nonacosane
331	Oxamyl
332	Oxychlordane
333	Parathion
334	Pebulate
335	Pendimethalin
336	Pentachlorobenzene

Analyte	
337	Pentachloronitrobenzene
338	Pentachlorophenol
339	Permethrin
340	Permethrin, Cis-
341	Perthane
342	Perylene
343	Petroleum Hydrocarbons, C06-C12
344	Petroleum Hydrocarbons, C06-C35
345	Petroleum Hydrocarbons, C12-C28
346	Petroleum Hydrocarbons, C28-C35
347	Petroleum Hydrocarbons, Total
348	Petroleum Hydrocarbons, Total Diesel
349	Petroleum Hydrocarbons, Total Motor Oil
350	Phenacetin
351	Phenanthrene
352	Phenol
353	Phentermine
354	Phorate
355	Picloram
356	Picoline, 2-
357	Polychlorinated Biphenyl
358	Polychlorinated Naphthalenes
359	Polycyclic Aromatic Hydrocarbons
360	Prehnitene
361	Profenofos
362	Prometon
363	Prometryn
364	Pronamide
365	Propachlor
366	Propanil
367	Propargite
368	Propazine
369	Propham
370	Propylbenzene, N-
371	Prothiofos
372	Pyrene
373	Pyridine
374	Reactive Sulfide
375	Scandium
376	Selenium
377	Silica
378	Silver
379	Simazine
380	Simetryne
381	Strontium
382	Styrene
383	Sulfotep
384	Sulprofos

Barton Springs Pool

Analyte	
385	Tantalum
386	Tebuthiuron
387	Terbacil
388	Terbufos
389	Terbuthylazine
390	Terbutryn
391	Tetrachlorobenzene, 1,2,4,5-
392	Tetrachloroethane, 1,1,1,2-
393	Tetrachloroethane, 1,1,2,2-
394	Tetrachloroethene, 1,1,2,2-
395	Tetrachloroethylene
396	Tetrachlorophenol, 2,3,4,6-
397	Tetrachlorvinphos
398	Tetraethylpyrophosphate
399	Tetrahydrofuran
400	Thallium
401	Thiobencarb
402	Thorium
403	Titanium
404	Toluene
405	Toxaphene
406	Triallate
407	Triazines, Total
408	Tribromomethane
409	Tributyl Phosphorotrithioate, S,S,S-
410	Trichloro-1, 2,2,2-
411	Trichloro-1,2,2-Trifluoroethane, 1,1,2-
412	Trichlorobenzene, 1,2,3-
413	Trichlorobenzene, 1,2,4-
414	Trichloroethane, 1,1,1-
415	Trichloroethane, 1,1,2-
416	Trichloroethene, 1,1,2-
417	Trichloroethylene
418	Trichlorofluoromethane
419	Trichloromethane
420	Trichloronate
421	Trichlorophenol, 2,4,5-
422	Trichlorophenol, 2,4,6-
423	Trichlorophenoxyacetic Acid, 2,4,5-
424	Trichlorophenoxypropionic Acid, 2,4,5-
425	Trichloropropane, 1,2,3-
426	Trifluralin
427	Trifluraline
428	Trimethylbenzene, 1,2,3-
429	Trimethylbenzene, 1,2,4-
430	Trimethylbenzene, 1,3,5-
431	Trimethylnapthalene, 2,3,5-
432	Uranium

Analyte	
433	Vanadium
434	Vernolate
435	Vinyl Acetate
436	Vinyl Chloride
437	Xylene, M+P-
438	Xylene, O-
439	Xylenes, Total
440	Yttrium
441	Zinc

Appendix B

PAH Toxicity Equivalency Factors

Barton Springs Pool

PAH Toxicity Equivalency Factors (TEF)	
PAH Name	**TEF**
Acenaphthene	0.001
Acenaphthylene	0.001
Anthracene	0.01
Benzanthracene, 1,2-	0.1
Benzo(a)Anthracene	0.1
Benzo(a)Pyrene	1
Benzo(b)Fluoranthene	0.1
Benzo(b+k)Fluoranthene	1
Benzo(e)Pyrene	1.001
Benzo(g,h,i)Perylene	0.01
Benzo(k)Fluoranthene	0.01
Chrysene	0.001
Coronene	0
Dibenzanthracene, 1,2,5,6-	1
Dibenzo(a,h)Anthracene	1
Dimethylbenzo(a)Anthracene, 7, 12-	0
Dimethylnaphthalene, 2, 6-	0
Fluoranthene	0.001
Fluorene	0.001
Indeno(1,2,3-cd)Pyrene	0.1
Methylcholanthrene, 3-	0
Methylnaphthalene, 1-	0
Methylnaphthalene, 2-	0
MethylPhananthrene, 1-	0.001
Naphthalene	0
Perylene	0
Phenanthrene	0.001
Pyrene	0.001
Trimethylnaphthalene, 2,3,5-	0

Appendix C

Calculation of Benzo(a)Pyrene Equivalents

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/8/97	219805	ERM	35	Barton Spring	Acenaphthene	<	16	8	0.001	0.01
5/8/97	219805	ERM	35	Barton Spring	Acenaphthylene	<	16	8	0.001	0.01
5/8/97	219805	ERM	35	Barton Spring	Anthracene		28	28	0.01	0.28
5/8/97	219805	ERM	35	Barton Spring	Benzanthracene, 1,2-		453	453	0.1	45.30
5/8/97	219805	ERM	35	Barton Spring	Benzo(a)Pyrene		544	544	1	544.00
5/8/97	219805	ERM	35	Barton Spring	Benzo(b)Fluoranthene		959	959	0.1	95.90
5/8/97	219805	ERM	35	Barton Spring	Benzo(e)Pyrene		442	442	0.001	0.44
5/8/97	219805	ERM	35	Barton Spring	Benzo(g,h,i)Perylene		524	524	0.01	5.24
5/8/97	219805	ERM	35	Barton Spring	Benzo(k)Fluoranthene		292	292	0.01	2.92
5/8/97	219805	ERM	35	Barton Spring	Chrysene		518	518	0.001	0.52
5/8/97	219805	ERM	35	Barton Spring	Dibenzanthracene, 1,2,5,6-		232	232	1	232.00
5/8/97	219805	ERM	35	Barton Spring	Dimethylnaphthalene, 2,6-		114	114	0	0.00
5/8/97	219805	ERM	35	Barton Spring	Fluoranthene		865	865	0.001	0.87
5/8/97	219805	ERM	35	Barton Spring	Fluorene	<	16	8	0.001	0.01
5/8/97	219805	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene		575	575	0.1	57.50
5/8/97	219805	ERM	35	Barton Spring	Methylnaphthalene, 1-	<	16	8	0	0.00
5/8/97	219805	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	16	8	0	0.00
5/8/97	219805	ERM	35	Barton Spring	Methylphenanthrene, 1-		16	16	0.001	0.02
5/8/97	219805	ERM	35	Barton Spring	Naphthalene	<	16	8	0	0.00
5/8/97	219805	ERM	35	Barton Spring	Perylene		294	294	0	0.00
5/8/97	219805	ERM	35	Barton Spring	Phenanthrene		231	231	0.001	0.23
5/8/97	219805	ERM	35	Barton Spring	Pyrene		692	692	0.001	0.69
5/8/97	219805	ERM	35	Barton Spring	Trimethylnapthalene, 2,3,5-	<	16	8	0	0.00
									0	0.00
									0	0.00
5/8/97	219805	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		6,891	6,835		**985.93**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/8/97	219806	ERM	35	Barton Spring	Acenaphthene	<	16	8	0.001	0.01
5/8/97	219806	ERM	35	Barton Spring	Acenaphthylene	<	16	8	0.001	0.01
5/8/97	219806	ERM	35	Barton Spring	Anthracene		28	28	0.01	0.28
5/8/97	219806	ERM	35	Barton Spring	Benzanthracene, 1,2-		433	433	0.1	43.30
5/8/97	219806	ERM	35	Barton Spring	Benzo(a)Pyrene		521	521	1	521.00
5/8/97	219806	ERM	35	Barton Spring	Benzo(b)Fluoranthene		770	770	0.1	77.00
5/8/97	219806	ERM	35	Barton Spring	Benzo(e)Pyrene		414	414	0.001	0.41
5/8/97	219806	ERM	35	Barton Spring	Benzo(g,h,i)Perylene		558	558	0.01	5.58
5/8/97	219806	ERM	35	Barton Spring	Benzo(k)Fluoranthene		248	248	0.01	2.48
5/8/97	219806	ERM	35	Barton Spring	Chrysene		558	558	0.001	0.56
5/8/97	219806	ERM	35	Barton Spring	Dibenzanthracene, 1,2,5,6-		258	258	1	258.00
5/8/97	219806	ERM	35	Barton Spring	Dimethylnaphthalene, 2,6-		118	118	0	0.00
5/8/97	219806	ERM	35	Barton Spring	Fluoranthene		908	908	0.001	0.91
5/8/97	219806	ERM	35	Barton Spring	Fluorene	<	16	8	0.001	0.01
5/8/97	219806	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene		595	595	0.1	59.50
5/8/97	219806	ERM	35	Barton Spring	Methylnaphthalene, 1-	<	16	8	0	0.00
5/8/97	219806	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	16	8	0	0.00
5/8/97	219806	ERM	35	Barton Spring	Methylphenanthrene, 1-		18	18	0.001	0.02
5/8/97	219806	ERM	35	Barton Spring	Naphthalene	<	16	8	0	0.00
5/8/97	219806	ERM	35	Barton Spring	Perylene		296	296	0	0.00
5/8/97	219806	ERM	35	Barton Spring	Phenanthrene		227	227	0.001	0.23
5/8/97	219806	ERM	35	Barton Spring	Pyrene		748	748	0.001	0.75
5/8/97	219806	ERM	35	Barton Spring	Trimethylnapthalene, 2,3,5-	<	16	8	0	0.00
									0	0.00
									0	0.00
5/8/97	219806	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		6,810	6,754		**970.04**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
3/22/99	73602	ERM	35	Barton Spring	Acenaphthene	<	1040.2	520.1	0.001	0.52
3/22/99	73602	ERM	35	Barton Spring	Acenaphthylene	<	1040.2	520.1	0.001	0.52
3/22/99	73602	ERM	35	Barton Spring	Anthracene	<	1040.2	520.1	0.01	5.20
3/22/99	73602	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1040.2	520.1	0.1	52.01
3/22/99	73602	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1040.2	520.1	1	520.10
3/22/99	73602	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1040.2	520.1	0.1	52.01
3/22/99	73602	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1040.2	520.1	0.01	5.20
3/22/99	73602	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1040.2	520.1	0.01	5.20
3/22/99	73602	ERM	35	Barton Spring	Chrysene	<	1040.2	520.1	0.001	0.52
3/22/99	73602	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1040.2	520.1	1	520.10
3/22/99	73602	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1040.2	520.1	0	0.00
3/22/99	73602	ERM	35	Barton Spring	Fluoranthene	<	1040.2	520.1	0.001	0.52
3/22/99	73602	ERM	35	Barton Spring	Fluorene	<	1040.2	520.1	0.001	0.52
3/22/99	73602	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1040.2	520.1	0.1	52.01
3/22/99	73602	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1040.2	520.1	0	0.00
3/22/99	73602	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1040.2	520.1	0	0.00
3/22/99	73602	ERM	35	Barton Spring	Naphthalene	<	1040.2	520.1	0	0.00
3/22/99	73602	ERM	35	Barton Spring	Phenanthrene	<	1040.2	520.1	0.001	0.52
3/22/99	73602	ERM	35	Barton Spring	Pyrene	<	1040.2	520.1	0.001	0.52
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
3/22/99	73602	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		19,764	9,882		**1,215.47**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/5/99	73590	ERM	35	Barton Spring	Acenaphthene	<	1026	513	0.001	0.51
5/5/99	73590	ERM	35	Barton Spring	Acenaphthylene	<	1026	513	0.001	0.51
5/5/99	73590	ERM	35	Barton Spring	Anthracene	<	1026	513	0.01	5.13
5/5/99	73590	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1026	513	0.1	51.30
5/5/99	73590	ERM	35	Barton Spring	Benzo(a)Pyrene		1194	1194	1	1,194.00
5/5/99	73590	ERM	35	Barton Spring	Benzo(b)Fluoranthene		1612	1612	0.1	161.20
5/5/99	73590	ERM	35	Barton Spring	Benzo(g,h,i)Perylene		1198	1198	0.01	11.98
5/5/99	73590	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1026	513	0.01	5.13
5/5/99	73590	ERM	35	Barton Spring	Chrysene		1165	1165	0.001	1.17
5/5/99	73590	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1026	513	1	513.00
5/5/99	73590	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1026	513	0	0.00
5/5/99	73590	ERM	35	Barton Spring	Fluoranthene		1992	1992	0.001	1.99
5/5/99	73590	ERM	35	Barton Spring	Fluorene	<	1026	513	0.001	0.51
5/5/99	73590	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1026	513	0.1	51.30
5/5/99	73590	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1026	513	0	0.00
5/5/99	73590	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1026	513	0	0.00
5/5/99	73590	ERM	35	Barton Spring	Naphthalene	<	1026	513	0	0.00
5/5/99	73590	ERM	35	Barton Spring	Phenanthrene	<	1026	513	0.001	0.51
5/5/99	73590	ERM	35	Barton Spring	Pyrene		1869	1869	0.001	1.87
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
5/5/99	73590	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		22,368	15,699		**2,000.12**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
8/26/99	78835	ERM	35	Barton Spring	Acenaphthene	<	762	381	0.001	0.38
8/26/99	78835	ERM	35	Barton Spring	Acenaphthylene	<	762	381	0.001	0.38
8/26/99	78835	ERM	35	Barton Spring	Anthracene	<	762	381	0.01	3.81
8/26/99	78835	ERM	35	Barton Spring	Benzo(a)Anthracene	<	762	381	0.1	38.10
8/26/99	78835	ERM	35	Barton Spring	Benzo(a)Pyrene	<	762	381	1	381.00
8/26/99	78835	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	762	381	0.1	38.10
8/26/99	78835	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	762	381	0.01	3.81
8/26/99	78835	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	762	381	0.01	3.81
8/26/99	78835	ERM	35	Barton Spring	Chrysene	<	762	381	0.001	0.38
8/26/99	78835	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	762	381	1	381.00
8/26/99	78835	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	762	381	0	0.00
8/26/99	78835	ERM	35	Barton Spring	Fluoranthene	<	762	381	0.001	0.38
8/26/99	78835	ERM	35	Barton Spring	Fluorene	<	762	381	0.001	0.38
8/26/99	78835	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	762	381	0.1	38.10
8/26/99	78835	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	762	381	0	0.00
8/26/99	78835	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	762	381	0	0.00
8/26/99	78835	ERM	35	Barton Spring	Naphthalene	<	762	381	0	0.00
8/26/99	78835	ERM	35	Barton Spring	Phenanthrene	<	762	381	0.001	0.38
8/26/99	78835	ERM	35	Barton Spring	Pyrene	<	762	381	0.001	0.38
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
8/26/99	78835	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		14,478	7,239		**890.40**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
11/19/99	87931	ERM	35	Barton Spring	Acenaphthene	<	1110	555	0.001	0.56
11/19/99	87931	ERM	35	Barton Spring	Acenaphthylene	<	1110	555	0.001	0.56
11/19/99	87931	ERM	35	Barton Spring	Anthracene	<	1110	555	0.01	5.55
11/19/99	87931	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1110	555	0.1	55.50
11/19/99	87931	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1110	555	1	555.00
11/19/99	87931	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1110	555	0.1	55.50
11/19/99	87931	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1110	555	0.01	5.55
11/19/99	87931	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1110	555	0.01	5.55
11/19/99	87931	ERM	35	Barton Spring	Chrysene	<	1110	555	0.001	0.56
11/19/99	87931	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1110	555	1	555.00
11/19/99	87931	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1110	555	0	0.00
11/19/99	87931	ERM	35	Barton Spring	Fluoranthene	<	1110	555	0.001	0.56
11/19/99	87931	ERM	35	Barton Spring	Fluorene	<	1110	555	0.001	0.56
11/19/99	87931	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1110	555	0.1	55.50
11/19/99	87931	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1110	555	0	0.00
11/19/99	87931	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1110	555	0	0.00
11/19/99	87931	ERM	35	Barton Spring	Naphthalene	<	1110	555	0	0.00
11/19/99	87931	ERM	35	Barton Spring	Phenanthrene	<	1110	555	0.001	0.56
11/19/99	87931	ERM	35	Barton Spring	Pyrene	<	1110	555	0.001	0.56
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
11/19/99	87931	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		21,090	10,545		**1,297.04**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/23/00	87930	ERM	35	Barton Spring	Acenaphthene	<	1380	690	0.001	0.69
2/23/00	87930	ERM	35	Barton Spring	Acenaphthylene	<	1380	690	0.001	0.69
2/23/00	87930	ERM	35	Barton Spring	Anthracene	<	1380	690	0.01	6.90
2/23/00	87930	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1380	690	0.1	69.00
2/23/00	87930	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1380	690	1	690.00
2/23/00	87930	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1380	690	0.1	69.00
2/23/00	87930	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1380	690	0.01	6.90
2/23/00	87930	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1380	690	0.01	6.90
2/23/00	87930	ERM	35	Barton Spring	Chrysene	<	1380	690	0.001	0.69
2/23/00	87930	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1380	690	1	690.00
2/23/00	87930	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1380	690	0	0.00
2/23/00	87930	ERM	35	Barton Spring	Fluoranthene	<	1380	690	0.001	0.69
2/23/00	87930	ERM	35	Barton Spring	Fluorene	<	1380	690	0.001	0.69
2/23/00	87930	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1380	690	0.1	69.00
2/23/00	87930	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1380	690	0	0.00
2/23/00	87930	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1380	690	0	0.00
2/23/00	87930	ERM	35	Barton Spring	Naphthalene	<	1380	690	0	0.00
2/23/00	87930	ERM	35	Barton Spring	Phenanthrene	<	1380	690	0.001	0.69
2/23/00	87930	ERM	35	Barton Spring	Pyrene	<	1380	690	0.001	0.69
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/23/00	87930	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		26,220	13,110		**1,612.53**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/3/00	87947	ERM	35	Barton Spring	Acenaphthene	<	500	250	0.001	0.25
5/3/00	87947	ERM	35	Barton Spring	Acenaphthylene	<	500	250	0.001	0.25
5/3/00	87947	ERM	35	Barton Spring	Anthracene	<	500	250	0.01	2.50
5/3/00	87947	ERM	35	Barton Spring	Benzo(a)Anthracene	<	500	250	0.1	25.00
5/3/00	87947	ERM	35	Barton Spring	Benzo(a)Pyrene	<	500	250	1	250.00
5/3/00	87947	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	500	250	0.1	25.00
5/3/00	87947	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	500	250	0.01	2.50
5/3/00	87947	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	500	250	0.01	2.50
5/3/00	87947	ERM	35	Barton Spring	Chrysene		514	514	0.001	0.51
5/3/00	87947	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	500	250	1	250.00
5/3/00	87947	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	500	250	0	0.00
5/3/00	87947	ERM	35	Barton Spring	Fluoranthene		1230	1230	0.001	1.23
5/3/00	87947	ERM	35	Barton Spring	Fluorene	<	500	250	0.001	0.25
5/3/00	87947	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	500	250	0.1	25.00
5/3/00	87947	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	500	250	0	0.00
5/3/00	87947	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	500	250	0	0.00
5/3/00	87947	ERM	35	Barton Spring	Naphthalene	<	500	250	0	0.00
5/3/00	87947	ERM	35	Barton Spring	Phenanthrene	<	500	250	0.001	0.25
5/3/00	87947	ERM	35	Barton Spring	Pyrene		705	705	0.001	0.71
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
5/3/00	87947	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		10,449	6,449		**585.95**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/3/00	87948	ERM	35	Barton Spring	Acenaphthene	<	498	249	0.001	0.25
5/3/00	87948	ERM	35	Barton Spring	Acenaphthylene	<	498	249	0.001	0.25
5/3/00	87948	ERM	35	Barton Spring	Anthracene	<	498	249	0.01	2.49
5/3/00	87948	ERM	35	Barton Spring	Benzo(a)Anthracene	<	498	249	0.1	24.90
5/3/00	87948	ERM	35	Barton Spring	Benzo(a)Pyrene	<	498	249	1	249.00
5/3/00	87948	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	498	249	0.1	24.90
5/3/00	87948	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	498	249	0.01	2.49
5/3/00	87948	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	498	249	0.01	2.49
5/3/00	87948	ERM	35	Barton Spring	Chrysene	<	498	249	0.001	0.25
5/3/00	87948	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	498	249	1	249.00
5/3/00	87948	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	498	249	0	0.00
5/3/00	87948	ERM	35	Barton Spring	Fluoranthene	<	498	249	0.001	0.25
5/3/00	87948	ERM	35	Barton Spring	Fluorene	<	498	249	0.001	0.25
5/3/00	87948	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	498	249	0.1	24.90
5/3/00	87948	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	498	249	0	0.00
5/3/00	87948	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	498	249	0	0.00
5/3/00	87948	ERM	35	Barton Spring	Naphthalene	<	498	249	0	0.00
5/3/00	87948	ERM	35	Barton Spring	Phenanthrene	<	498	249	0.001	0.25
5/3/00	87948	ERM	35	Barton Spring	Pyrene	<	498	249	0.001	0.25
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
5/3/00	87948	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		9,462	4,731		**581.91**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
9/27/00	218761	USFWS	35	Barton Spring	Acenaphthene	<	0.1	0.05	0.001	0.00
9/27/00	218761	USFWS	35	Barton Spring	Acenaphthylene	<	0.1	0.05	0.001	0.00
9/27/00	218761	USFWS	35	Barton Spring	Anthracene	<	0.1	0.05	0.01	0.00
9/27/00	218761	USFWS	35	Barton Spring	Benzanthracene, 1,2-		621.4689	621.4689	0.1	62.15
9/27/00	218761	USFWS	35	Barton Spring	Benzo(a)Pyrene		1468.927	1468.927	1	1,468.93
9/27/00	218761	USFWS	35	Barton Spring	Benzo(b)Fluoranthene		1129.944	1129.944	0.1	112.99
9/27/00	218761	USFWS	35	Barton Spring	Benzo(e)Pyrene		1158.192	1158.192	0.001	1.16
9/27/00	218761	USFWS	35	Barton Spring	Benzo(g,h,i)Perylene		1553.672	1553.672	0.01	15.54
9/27/00	218761	USFWS	35	Barton Spring	Benzo(k)Fluoranthene		621.4689	621.4689	0.01	6.21
9/27/00	218761	USFWS	35	Barton Spring	Chrysene		536.7232	536.7232	0.001	0.54
9/27/00	218761	USFWS	35	Barton Spring	Dibenzanthracene, 1,2,5,6-		621.4689	621.4689	1	621.47
9/27/00	218761	USFWS	35	Barton Spring	Dimethylnaphthalene, 2,6-	<	0.1	0.05	0	0.00
9/27/00	218761	USFWS	35	Barton Spring	Fluoranthene		1158.192	1158.192	0.001	1.16
9/27/00	218761	USFWS	35	Barton Spring	Fluorene	<	0.1	0.05	0.001	0.00
9/27/00	218761	USFWS	35	Barton Spring	Indeno(1,2,3-cd)Pyrene		1525.424	1525.424	0.1	152.54
9/27/00	218761	USFWS	35	Barton Spring	Methylnaphthalene, 1-	<	0.1	0.05	0	0.00
9/27/00	218761	USFWS	35	Barton Spring	Methylnaphthalene, 2-	<	0.1	0.05	0	0.00
9/27/00	218761	USFWS	35	Barton Spring	Methylphenanthrene, 1-	<	0.1	0.05	0.001	0.00
9/27/00	218761	USFWS	35	Barton Spring	Naphthalene	<	0.1	0.05	0	0.00
9/27/00	218761	USFWS	35	Barton Spring	Perylene		423.7288	423.7288	0	0.00
9/27/00	218761	USFWS	35	Barton Spring	Phenanthrene		310.7345	310.7345	0.001	0.31
9/27/00	218761	USFWS	35	Barton Spring	Pyrene		903.9548	903.9548	0.001	0.90
9/27/00	218761	USFWS	35	Barton Spring	Trimethylnapthalene, 2,3,5-	<	0.1	0.05	0	0.00
									0	0.00
									0	0.00
9/27/00	218761	USFWS	35	Barton Spring	Total PAHs (BaP TEQs)		12,035	12,034		**2,443.90**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
11/8/00	221736	USGS	35	Barton Spring	Acenaphthene		20.5	20.5	0.001	0.02
11/8/00	221736	USGS	35	Barton Spring	Acenaphthylene		36.3	36.3	0.001	0.04
11/8/00	221736	USGS	35	Barton Spring	Anthracene		115	115	0.01	1.15
11/8/00	221736	USGS	35	Barton Spring	Benzo(a)Anthracene		1020	1020	0.1	102.00
11/8/00	221736	USGS	35	Barton Spring	Benzo(a)Pyrene		1720	1720	1	1,720.00
11/8/00	221736	USGS	35	Barton Spring	Benzo(b)Fluoranthene		1890	1890	0.1	189.00
11/8/00	221736	USGS	35	Barton Spring	Benzo(e)Pyrene		1390	1390	0.001	1.39
11/8/00	221736	USGS	35	Barton Spring	Benzo(k)Fluoranthene		1710	1710	0.01	17.10
11/8/00	221736	USGS	35	Barton Spring	Chrysene		2030	2030	0.001	2.03
11/8/00	221736	USGS	35	Barton Spring	Coronene	E	200	200	0	0.00
11/8/00	221736	USGS	35	Barton Spring	Dibenzo(a,h)Anthracene		338	338	1	338.00
11/8/00	221736	USGS	35	Barton Spring	Fluoranthene		2930	2930	0.001	2.93
11/8/00	221736	USGS	35	Barton Spring	Naphthalene		11.1	11.1	0	0.00
11/8/00	221736	USGS	35	Barton Spring	Phenanthrene		762	762	0.001	0.76
11/8/00	221736	USGS	35	Barton Spring	Pyrene		2310	2310	0.001	2.31
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
11/8/00	221736	USGS	35	Barton Spring	Total PAHs (BaP TEQs)		16,483	16,483		**2,376.73**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
11/8/00	221737	USGS	35	Barton Spring	Acenaphthene		19.7	19.7	0.001	0.02
11/8/00	221737	USGS	35	Barton Spring	Acenaphthylene		37.1	37.1	0.001	0.04
11/8/00	221737	USGS	35	Barton Spring	Anthracene		111	111	0.01	1.11
11/8/00	221737	USGS	35	Barton Spring	Benzo(a)Anthracene		1020	1020	0.1	102.00
11/8/00	221737	USGS	35	Barton Spring	Benzo(a)Pyrene		1740	1740	1	1,740.00
11/8/00	221737	USGS	35	Barton Spring	Benzo(b)Fluoranthene		1780	1780	0.1	178.00
11/8/00	221737	USGS	35	Barton Spring	Benzo(e)Pyrene		1370	1370	0.001	1.37
11/8/00	221737	USGS	35	Barton Spring	Benzo(k)Fluoranthene		1850	1850	0.01	18.50
11/8/00	221737	USGS	35	Barton Spring	Chrysene		1960	1960	0.001	1.96
11/8/00	221737	USGS	35	Barton Spring	Coronene	E	165	165	0	0.00
11/8/00	221737	USGS	35	Barton Spring	Dibenzo(a,h)Anthracene		343	343	1	343.00
11/8/00	221737	USGS	35	Barton Spring	Fluoranthene		2930	2930	0.001	2.93
11/8/00	221737	USGS	35	Barton Spring	Naphthalene	E	10.3	10.3	0	0.00
11/8/00	221737	USGS	35	Barton Spring	Phenanthrene		761	761	0.001	0.76
11/8/00	221737	USGS	35	Barton Spring	Pyrene		2320	2320	0.001	2.32
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
11/8/00	221737	USGS	35	Barton Spring	Total PAHs (BaP TEQs)		16,417	16,417		**2,392.01**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
11/14/00	187059	ERM	35	Barton Spring	Acenaphthene	<	1190	595	0.001	0.60
11/14/00	187059	ERM	35	Barton Spring	Acenaphthylene	<	1190	595	0.001	0.60
11/14/00	187059	ERM	35	Barton Spring	Anthracene	<	1190	595	0.01	5.95
11/14/00	187059	ERM	35	Barton Spring	Benzo(a)Anthracene		2660	2660	0.1	266.00
11/14/00	187059	ERM	35	Barton Spring	Benzo(a)Pyrene		3270	3270	1	3,270.00
11/14/00	187059	ERM	35	Barton Spring	Benzo(b)Fluoranthene		4320	4320	0.1	432.00
11/14/00	187059	ERM	35	Barton Spring	Benzo(g,h,i)Perylene		2990	2990	0.01	29.90
11/14/00	187059	ERM	35	Barton Spring	Benzo(k)Fluoranthene		2320	2320	0.01	23.20
11/14/00	187059	ERM	35	Barton Spring	Chrysene		3680	3680	0.001	3.68
11/14/00	187059	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1190	595	1	595.00
11/14/00	187059	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1190	595	0	0.00
11/14/00	187059	ERM	35	Barton Spring	Fluoranthene		2490	2490	0.001	2.49
11/14/00	187059	ERM	35	Barton Spring	Fluorene	<	1190	595	0.001	0.60
11/14/00	187059	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene		3150	3150	0.1	315.00
11/14/00	187059	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1190	595	0	0.00
11/14/00	187059	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1190	595	0	0.00
11/14/00	187059	ERM	35	Barton Spring	Naphthalene	<	1190	595	0	0.00
11/14/00	187059	ERM	35	Barton Spring	Phenanthrene		2180	2180	0.001	2.18
11/14/00	187059	ERM	35	Barton Spring	Pyrene		4150	4150	0.001	4.15
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
11/14/00	187059	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		41,920	36,565		**4,951.34**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/8/01	187055	ERM	35	Barton Spring	Acenaphthene	<	8990	4495	0.001	4.50
2/8/01	187055	ERM	35	Barton Spring	Acenaphthylene	<	899	449.5	0.001	0.45
2/8/01	187055	ERM	35	Barton Spring	Anthracene	<	899	449.5	0.01	4.50
2/8/01	187055	ERM	35	Barton Spring	Benzo(a)Anthracene	<	899	449.5	0.1	44.95
2/8/01	187055	ERM	35	Barton Spring	Benzo(a)Pyrene	<	899	449.5	1	449.50
2/8/01	187055	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	899	449.5	0.1	44.95
2/8/01	187055	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	899	449.5	0.01	4.50
2/8/01	187055	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	899	449.5	0.01	4.50
2/8/01	187055	ERM	35	Barton Spring	Chrysene	<	899	449.5	0.001	0.45
2/8/01	187055	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	899	449.5	1	449.50
2/8/01	187055	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	899	449.5	0	0.00
2/8/01	187055	ERM	35	Barton Spring	Fluoranthene	<	899	449.5	0.001	0.45
2/8/01	187055	ERM	35	Barton Spring	Fluorene	<	899	449.5	0.001	0.45
2/8/01	187055	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	899	449.5	0.1	44.95
2/8/01	187055	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	899	449.5	0	0.00
2/8/01	187055	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	899	449.5	0	0.00
2/8/01	187055	ERM	35	Barton Spring	Naphthalene	<	899	449.5	0	0.00
2/8/01	187055	ERM	35	Barton Spring	Phenanthrene	<	899	449.5	0.001	0.45
2/8/01	187055	ERM	35	Barton Spring	Pyrene	<	899	449.5	0.001	0.45
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/8/01	187055	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		25,172	12,586		**1,054.53**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/9/01	187219	ERM	35	Barton Spring	Acenaphthene	<	503	251.5	0.001	0.25
5/9/01	187219	ERM	35	Barton Spring	Acenaphthylene	<	503	251.5	0.001	0.25
5/9/01	187219	ERM	35	Barton Spring	Anthracene	<	503	251.5	0.01	2.52
5/9/01	187219	ERM	35	Barton Spring	Benzo(a)Anthracene	<	503	251.5	0.1	25.15
5/9/01	187219	ERM	35	Barton Spring	Benzo(a)Pyrene	<	503	251.5	1	251.50
5/9/01	187219	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	503	251.5	0.1	25.15
5/9/01	187219	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	503	251.5	0.01	2.52
5/9/01	187219	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	503	251.5	0.01	2.52
5/9/01	187219	ERM	35	Barton Spring	Chrysene	<	503	251.5	0.001	0.25
5/9/01	187219	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	503	251.5	1	251.50
5/9/01	187219	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	503	251.5	0	0.00
5/9/01	187219	ERM	35	Barton Spring	Fluoranthene	<	503	251.5	0.001	0.25
5/9/01	187219	ERM	35	Barton Spring	Fluorene	<	503	251.5	0.001	0.25
5/9/01	187219	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	503	251.5	0.1	25.15
5/9/01	187219	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	503	251.5	0	0.00
5/9/01	187219	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	503	251.5	0	0.00
5/9/01	187219	ERM	35	Barton Spring	Naphthalene	<	503	251.5	0	0.00
5/9/01	187219	ERM	35	Barton Spring	Phenanthrene	<	503	251.5	0.001	0.25
5/9/01	187219	ERM	35	Barton Spring	Pyrene	<	503	251.5	0.001	0.25
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
5/9/01	187219	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		9,557	4,779		**587.76**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/9/01	187220	ERM	35	Barton Spring	Acenaphthene	<	504	252	0.001	0.25
5/9/01	187220	ERM	35	Barton Spring	Acenaphthylene	<	504	252	0.001	0.25
5/9/01	187220	ERM	35	Barton Spring	Anthracene	<	504	252	0.01	2.52
5/9/01	187220	ERM	35	Barton Spring	Benzo(a)Anthracene	<	504	252	0.1	25.20
5/9/01	187220	ERM	35	Barton Spring	Benzo(a)Pyrene	<	504	252	1	252.00
5/9/01	187220	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	504	252	0.1	25.20
5/9/01	187220	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	504	252	0.01	2.52
5/9/01	187220	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	504	252	0.01	2.52
5/9/01	187220	ERM	35	Barton Spring	Chrysene	<	504	252	0.001	0.25
5/9/01	187220	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	504	252	1	252.00
5/9/01	187220	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	504	252	0	0.00
5/9/01	187220	ERM	35	Barton Spring	Fluoranthene	<	504	252	0.001	0.25
5/9/01	187220	ERM	35	Barton Spring	Fluorene	<	504	252	0.001	0.25
5/9/01	187220	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	504	252	0.1	25.20
5/9/01	187220	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	504	252	0	0.00
5/9/01	187220	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	504	252	0	0.00
5/9/01	187220	ERM	35	Barton Spring	Naphthalene	<	504	252	0	0.00
5/9/01	187220	ERM	35	Barton Spring	Phenanthrene	<	504	252	0.001	0.25
5/9/01	187220	ERM	35	Barton Spring	Pyrene	<	504	252	0.001	0.25
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
5/9/01	187220	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		9,576	4,788		**588.92**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
8/22/01	187048	ERM	35	Barton Spring	Acenaphthene	<	1390	695	0.001	0.70
8/22/01	187048	ERM	35	Barton Spring	Acenaphthylene	<	1390	695	0.001	0.70
8/22/01	187048	ERM	35	Barton Spring	Anthracene	<	1390	695	0.01	6.95
8/22/01	187048	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1390	695	0.1	69.50
8/22/01	187048	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1390	695	1	695.00
8/22/01	187048	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1390	695	0.1	69.50
8/22/01	187048	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1390	695	0.01	6.95
8/22/01	187048	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1390	695	0.01	6.95
8/22/01	187048	ERM	35	Barton Spring	Chrysene	<	1390	695	0.001	0.70
8/22/01	187048	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1390	695	1	695.00
8/22/01	187048	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1390	695	0	0.00
8/22/01	187048	ERM	35	Barton Spring	Fluoranthene	<	1390	695	0.001	0.70
8/22/01	187048	ERM	35	Barton Spring	Fluorene	<	1390	695	0.001	0.70
8/22/01	187048	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1390	695	0.1	69.50
8/22/01	187048	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1390	695	0	0.00
8/22/01	187048	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1390	695	0	0.00
8/22/01	187048	ERM	35	Barton Spring	Naphthalene	<	1390	695	0	0.00
8/22/01	187048	ERM	35	Barton Spring	Phenanthrene	<	1390	695	0.001	0.70
8/22/01	187048	ERM	35	Barton Spring	Pyrene	<	1390	695	0.001	0.70
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
8/22/01	187048	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		26,410	13,205		**1,624.22**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
10/30/01	191372	ERM	35	Barton Spring	Acenaphthene	<	1470	735	0.001	0.74
10/30/01	191372	ERM	35	Barton Spring	Acenaphthylene	<	1470	735	0.001	0.74
10/30/01	191372	ERM	35	Barton Spring	Anthracene	<	1470	735	0.01	7.35
10/30/01	191372	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1470	735	0.1	73.50
10/30/01	191372	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1470	735	1	735.00
10/30/01	191372	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1470	735	0.1	73.50
10/30/01	191372	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1470	735	0.01	7.35
10/30/01	191372	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1470	735	0.01	7.35
10/30/01	191372	ERM	35	Barton Spring	Chrysene	<	1470	735	0.001	0.74
10/30/01	191372	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1470	735	1	735.00
10/30/01	191372	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1470	735	0	0.00
10/30/01	191372	ERM	35	Barton Spring	Fluoranthene	<	1470	735	0.001	0.74
10/30/01	191372	ERM	35	Barton Spring	Fluorene	<	1470	735	0.001	0.74
10/30/01	191372	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1470	735	0.1	73.50
10/30/01	191372	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1470	735	0	0.00
10/30/01	191372	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1470	735	0	0.00
10/30/01	191372	ERM	35	Barton Spring	Naphthalene	<	1470	735	0	0.00
10/30/01	191372	ERM	35	Barton Spring	Phenanthrene	<	1470	735	0.001	0.74
10/30/01	191372	ERM	35	Barton Spring	Pyrene	<	1470	735	0.001	0.74
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
10/30/01	191372	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		27,930	13,965		**1,717.70**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/15/02	191364	ERM	35	Barton Spring	Acenaphthene	<	1110	555	0.001	0.56
2/15/02	191364	ERM	35	Barton Spring	Acenaphthylene	<	1110	555	0.001	0.56
2/15/02	191364	ERM	35	Barton Spring	Anthracene	<	1110	555	0.01	5.55
2/15/02	191364	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1110	555	0.1	55.50
2/15/02	191364	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1110	555	1	555.00
2/15/02	191364	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1110	555	0.1	55.50
2/15/02	191364	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1110	555	0.01	5.55
2/15/02	191364	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1110	555	0.01	5.55
2/15/02	191364	ERM	35	Barton Spring	Chrysene	<	1110	555	0.001	0.56
2/15/02	191364	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1110	555	1	555.00
2/15/02	191364	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1110	555	0	0.00
2/15/02	191364	ERM	35	Barton Spring	Fluoranthene	<	1110	555	0.001	0.56
2/15/02	191364	ERM	35	Barton Spring	Fluorene	<	1110	555	0.001	0.56
2/15/02	191364	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1110	555	0.1	55.50
2/15/02	191364	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1110	555	0	0.00
2/15/02	191364	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1110	555	0	0.00
2/15/02	191364	ERM	35	Barton Spring	Naphthalene	<	1110	555	0	0.00
2/15/02	191364	ERM	35	Barton Spring	Phenanthrene	<	1110	555	0.001	0.56
2/15/02	191364	ERM	35	Barton Spring	Pyrene	<	1110	555	0.001	0.56
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/15/02	191364	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		21,090	10,545		**1,297.04**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/28/02	206193	ERM	35	Barton Spring	Acenaphthene	<	1140	570	0.001	0.57
5/28/02	206193	ERM	35	Barton Spring	Acenaphthylene	<	1140	570	0.001	0.57
5/28/02	206193	ERM	35	Barton Spring	Anthracene	<	1140	570	0.01	5.70
5/28/02	206193	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1140	570	0.1	57.00
5/28/02	206193	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1140	570	1	570.00
5/28/02	206193	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1140	570	0.1	57.00
5/28/02	206193	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1140	570	0.01	5.70
5/28/02	206193	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1140	570	0.01	5.70
5/28/02	206193	ERM	35	Barton Spring	Chrysene	<	1140	570	0.001	0.57
5/28/02	206193	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1140	570	1	570.00
5/28/02	206193	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1140	570	0	0.00
5/28/02	206193	ERM	35	Barton Spring	Fluoranthene	<	1140	570	0.001	0.57
5/28/02	206193	ERM	35	Barton Spring	Fluorene	<	1140	570	0.001	0.57
5/28/02	206193	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1140	570	0.1	57.00
5/28/02	206193	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1140	570	0	0.00
5/28/02	206193	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1140	570	0	0.00
5/28/02	206193	ERM	35	Barton Spring	Naphthalene	<	1140	570	0	0.00
5/28/02	206193	ERM	35	Barton Spring	Phenanthrene	<	1140	570	0.001	0.57
5/28/02	206193	ERM	35	Barton Spring	Pyrene	<	1140	570	0.001	0.57
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
5/28/02	206193	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		21,660	10,830		**1,332.09**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/28/02	206194	ERM	35	Barton Spring	Acenaphthene	<	1080	540	0.001	0.54
5/28/02	206194	ERM	35	Barton Spring	Acenaphthylene	<	1080	540	0.001	0.54
5/28/02	206194	ERM	35	Barton Spring	Anthracene	<	1080	540	0.01	5.40
5/28/02	206194	ERM	35	Barton Spring	Benzo(a)Anthracene	<	1080	540	0.1	54.00
5/28/02	206194	ERM	35	Barton Spring	Benzo(a)Pyrene	<	1080	540	1	540.00
5/28/02	206194	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	1080	540	0.1	54.00
5/28/02	206194	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	1080	540	0.01	5.40
5/28/02	206194	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	1080	540	0.01	5.40
5/28/02	206194	ERM	35	Barton Spring	Chrysene	<	1080	540	0.001	0.54
5/28/02	206194	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	1080	540	1	540.00
5/28/02	206194	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	1080	540	0	0.00
5/28/02	206194	ERM	35	Barton Spring	Fluoranthene	<	1080	540	0.001	0.54
5/28/02	206194	ERM	35	Barton Spring	Fluorene	<	1080	540	0.001	0.54
5/28/02	206194	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	1080	540	0.1	54.00
5/28/02	206194	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	1080	540	0	0.00
5/28/02	206194	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	1080	540	0	0.00
5/28/02	206194	ERM	35	Barton Spring	Naphthalene	<	1080	540	0	0.00
5/28/02	206194	ERM	35	Barton Spring	Phenanthrene	<	1080	540	0.001	0.54
5/28/02	206194	ERM	35	Barton Spring	Pyrene	<	1080	540	0.001	0.54
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
5/28/02	206194	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		20,520	10,260		**1,261.98**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
8/6/02	214577	ERM	35	Barton Spring	Acenaphthene	<	674	337	0.001	0.34
8/6/02	214577	ERM	35	Barton Spring	Acenaphthylene	<	674	337	0.001	0.34
8/6/02	214577	ERM	35	Barton Spring	Anthracene	<	674	337	0.01	3.37
8/6/02	214577	ERM	35	Barton Spring	Benzo(a)Anthracene	<	674	337	0.1	33.70
8/6/02	214577	ERM	35	Barton Spring	Benzo(a)Pyrene	<	674	337	1	337.00
8/6/02	214577	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	674	337	0.1	33.70
8/6/02	214577	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	674	337	0.01	3.37
8/6/02	214577	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	674	337	0.01	3.37
8/6/02	214577	ERM	35	Barton Spring	Chrysene	<	674	337	0.001	0.34
8/6/02	214577	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	674	337	1	337.00
8/6/02	214577	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	674	337	0	0.00
8/6/02	214577	ERM	35	Barton Spring	Fluoranthene	<	674	337	0.001	0.34
8/6/02	214577	ERM	35	Barton Spring	Fluorene	<	674	337	0.001	0.34
8/6/02	214577	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	674	337	0.1	33.70
8/6/02	214577	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	674	337	0	0.00
8/6/02	214577	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	674	337	0	0.00
8/6/02	214577	ERM	35	Barton Spring	Naphthalene	<	674	337	0	0.00
8/6/02	214577	ERM	35	Barton Spring	Phenanthrene	<	674	337	0.001	0.34
8/6/02	214577	ERM	35	Barton Spring	Pyrene	<	674	337	0.001	0.34
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
8/6/02	214577	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		12,806	6,403		**787.57**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
11/14/02	214575	ERM	35	Barton Spring	Acenaphthene	<	744	372	0.001	0.37
11/14/02	214575	ERM	35	Barton Spring	Acenaphthylene	<	744	372	0.001	0.37
11/14/02	214575	ERM	35	Barton Spring	Anthracene	<	744	372	0.01	3.72
11/14/02	214575	ERM	35	Barton Spring	Benzo(a)Anthracene	<	744	372	0.1	37.20
11/14/02	214575	ERM	35	Barton Spring	Benzo(a)Pyrene	<	744	372	1	372.00
11/14/02	214575	ERM	35	Barton Spring	Benzo(b)Fluoranthene	<	744	372	0.1	37.20
11/14/02	214575	ERM	35	Barton Spring	Benzo(g,h,i)Perylene	<	744	372	0.01	3.72
11/14/02	214575	ERM	35	Barton Spring	Benzo(k)Fluoranthene	<	744	372	0.01	3.72
11/14/02	214575	ERM	35	Barton Spring	Chrysene	<	744	372	0.001	0.37
11/14/02	214575	ERM	35	Barton Spring	Dibenzo(a,h)Anthracene	<	744	372	1	372.00
11/14/02	214575	ERM	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	744	372	0	0.00
11/14/02	214575	ERM	35	Barton Spring	Fluoranthene	<	744	372	0.001	0.37
11/14/02	214575	ERM	35	Barton Spring	Fluorene	<	744	372	0.001	0.37
11/14/02	214575	ERM	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	<	744	372	0.1	37.20
11/14/02	214575	ERM	35	Barton Spring	Methylcholanthrene, 3-	<	744	372	0	0.00
11/14/02	214575	ERM	35	Barton Spring	Methylnaphthalene, 2-	<	744	372	0	0.00
11/14/02	214575	ERM	35	Barton Spring	Naphthalene	<	744	372	0	0.00
11/14/02	214575	ERM	35	Barton Spring	Phenanthrene	<	744	372	0.001	0.37
11/14/02	214575	ERM	35	Barton Spring	Pyrene	<	744	372	0.001	0.37
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
11/14/02	214575	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		14,136	7,068		**869.36**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/15/03	221747	TNRCC	35	Barton Spring	Acenaphthene	<	79.4	39.7	0.001	0.04
2/15/03	221747	TNRCC	35	Barton Spring	Acenaphthylene	<	79.4	39.7	0.001	0.04
2/15/03	221747	TNRCC	35	Barton Spring	Anthracene	<	79.4	39.7	0.01	0.40
2/15/03	221747	TNRCC	35	Barton Spring	Benzo(a)Anthracene	J	17.5	17.5	0.1	1.75
2/15/03	221747	TNRCC	35	Barton Spring	Benzo(a)Pyrene	J	31.7	31.7	1	31.70
2/15/03	221747	TNRCC	35	Barton Spring	Benzo(b)Fluoranthene		85.7	85.7	0.1	8.57
2/15/03	221747	TNRCC	35	Barton Spring	Benzo(g,h,i)Perylene	J	34.1	34.1	0.01	0.34
2/15/03	221747	TNRCC	35	Barton Spring	Benzo(k)Fluoranthene	J	18.3	18.3	0.01	0.18
2/15/03	221747	TNRCC	35	Barton Spring	Chrysene	J	30.2	30.2	0.001	0.03
2/15/03	221747	TNRCC	35	Barton Spring	Dibenzo(a,h)Anthracene	<	79.4	39.7	1	39.70
2/15/03	221747	TNRCC	35	Barton Spring	Dimethylbenzo(a)Anthracene, 7,12-	<	397	198.5	0	0.00
2/15/03	221747	TNRCC	35	Barton Spring	Fluoranthene	J	46	46	0.001	0.05
2/15/03	221747	TNRCC	35	Barton Spring	Fluorene	<	79.4	39.7	0.001	0.04
2/15/03	221747	TNRCC	35	Barton Spring	Indeno(1,2,3-cd)Pyrene	J	50.8	50.8	0.1	5.08
2/15/03	221747	TNRCC	35	Barton Spring	Methylcholanthrene, 3-	<	397	198.5	0	0.00
2/15/03	221747	TNRCC	35	Barton Spring	Methylnaphthalene, 2-	<	397	198.5	0	0.00
2/15/03	221747	TNRCC	35	Barton Spring	Naphthalene	<	79.4	39.7	0	0.00
2/15/03	221747	TNRCC	35	Barton Spring	Phenanthrene	<	79.4	39.7	0.001	0.04
2/15/03	221747	TNRCC	35	Barton Spring	Pyrene	J	37.3	37.3	0.001	0.04
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/15/03	221747	TNRCC	35	Barton Spring	Total PAHs (BaP TEQs)		2,098	1,225		**87.99**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Acenaphthene	<	785	392.5	0.001	0.39
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Acenaphthylene	<	785	392.5	0.001	0.39
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Anthracene	<	785	392.5	0.01	3.93
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Benzo(a)Anthracene	<	785	392.5	0.1	39.25
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Benzo(a)Pyrene	<	785	392.5	1	392.50
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Benzo(b)Fluoranthene	<	785	392.5	0.1	39.25
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Benzo(g,h,i)Perylene	<	785	392.5	0.01	3.93
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Benzo(k)Fluoranthene	<	785	392.5	0.01	3.93
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Chrysene	<	785	392.5	0.001	0.39
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Dibenzo(a,h)Anthracene	<	785	392.5	1	392.50
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Fluoranthene	<	785	392.5	0.001	0.39
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Fluorene	<	785	392.5	0.001	0.39
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Indeno(1,2,3-cd)Pyrene	<	785	392.5	0.1	39.25
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Methylnaphthalene, 2-	<	785	392.5	0	0.00
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Naphthalene	<	785	392.5	0	0.00
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Phenanthrene	<	785	392.5	0.001	0.39
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Pyrene	<	785	392.5	0.001	0.39
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Total PAHs (BaP TEQs)		13,345	6,673		**917.27**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Acenaphthene	<	64.3	32.15	0.001	0.03
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Acenaphthylene	<	64.3	32.15	0.001	0.03
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Anthracene	<	64.3	32.15	0.01	0.32
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Benzo(a)Anthracene	<	64.3	32.15	0.1	3.22
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Benzo(a)Pyrene	<	64.3	32.15	1	32.15
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Benzo(b)Fluoranthene		79.5	79.5	0.1	7.95
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Benzo(g,h,i)Perylene	<	64.3	32.15	0.01	0.32
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Benzo(k)Fluoranthene	<	64.3	32.15	0.01	0.32
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Chrysene	J	41	41	0.001	0.04
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Dibenzo(a,h)Anthracene	<	64.3	32.15	1	32.15
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Fluoranthene	J	39	39	0.001	0.04
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Fluorene	<	64.3	32.15	0.001	0.03
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Indeno(1,2,3-cd)Pyrene	<	64.3	32.15	0.1	3.22
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Naphthalene	<	64.3	32.15	0	0.00
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Phenanthrene	<	64.3	32.15	0.001	0.03
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Pyrene	J	49	49	0.001	0.05
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Total PAHs (BaP TEQs)		980	594		**79.90**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Acenaphthene	<	1940	970	0.001	0.97
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Acenaphthylene	<	1940	970	0.001	0.97
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Anthracene	J	49	49	0.01	0.49
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Benzo(a)Anthracene		487	487	0.1	48.70
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Benzo(a)Pyrene		652	652	1	652.00
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Benzo(b)Fluoranthene		682	682	0.1	68.20
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Benzo(g,h,i)Perylene		604	604	0.01	6.04
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Benzo(k)Fluoranthene		672	672	0.01	6.72
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Chrysene		789	789	0.001	0.79
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Dibenzo(a,h)Anthracene	J	180	180	1	180.00
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Fluoranthene		1320	1320	0.001	1.32
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Fluorene	<	1940	970	0.001	0.97
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Indeno(1,2,3-cd)Pyrene		633	633	0.1	63.30
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Methylnaphthalene, 2-	<	1940	970	0	0.00
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Naphthalene	<	1940	970	0	0.00
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Phenanthrene		370	370	0.001	0.37
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Pyrene		1130	1130	0.001	1.13
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Total PAHs (BaP TEQs)		17,268	12,418		**1,031.97**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Acenaphthene	<	86.1	43.05	0.001	0.04
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Acenaphthylene	<	86.1	43.05	0.001	0.04
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Anthracene	<	86.1	43.05	0.01	0.43
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Benzo(a)Anthracene	J	42	42	0.1	4.20
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Benzo(a)Pyrene	<	86.1	43.05	1	43.05
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Benzo(b)Fluoranthene	J	82	82	0.1	8.20
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Benzo(g,h,i)Perylene	<	86.1	43.05	0.01	0.43
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Benzo(k)Fluoranthene		92.9	92.9	0.01	0.93
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Chrysene		92	92	0.001	0.09
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Dibenzo(a,h)Anthracene	<	86.1	43.05	1	43.05
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Fluoranthene		110	110	0.001	0.11
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Fluorene	<	86.1	43.05	0.001	0.04
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Indeno(1,2,3-cd)Pyrene	J	52	52	0.1	5.20
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Naphthalene	<	86.1	43.05	0	0.00
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Phenanthrene	J	40	40	0.001	0.04
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Pyrene		128	128	0.001	0.13
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Total PAHs (BaP TEQs)		1,328	983		**105.99**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Acenaphthene	<	66.6	33.3	0.001	0.03
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Acenaphthylene	<	66.6	33.3	0.001	0.03
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Anthracene	J	24.6	24.6	0.01	0.25
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Benzo(a)Anthracene		366	366	0.1	36.60
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Benzo(a)Pyrene		455	455	1	455.00
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Benzo(b)Fluoranthene		866	866	0.1	86.60
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Benzo(g,h,i)Perylene		324	324	0.01	3.24
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Benzo(k)Fluoranthene		389	389	0.01	3.89
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Chrysene		550	550	0.001	0.55
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Dibenzo(a,h)Anthracene	<	66.6	33.3	1	33.30
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Dimethylbenzo(a)Anthracene, 7,12-	<	333	166.5	0	0.00
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Fluoranthene		809	809	0.001	0.81
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Fluorene	<	66.6	33.3	0.001	0.03
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Indeno(1,2,3-cd)Pyrene		301	301	0.1	30.10
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Methylcholanthrene, 3-	<	333	166.5	0	0.00
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Methylnaphthalene, 2-	<	333	166.5	0	0.00
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Naphthalene	<	66.6	33.3	0	0.00
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Phenanthrene		199	199	0.001	0.20
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Pyrene		835	835	0.001	0.84
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Total PAHs (BaP TEQs)		6,451	5,785		**651.47**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	1100	550	0.001	0.55
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	1100	550	0.001	0.55
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Anthracene	<	1100	550	0.01	5.50
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene	<	1100	550	0.1	55.00
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene	<	1100	550	1	550.00
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene	<	1100	550	0.1	55.00
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene	<	1100	550	0.01	5.50
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene	<	1100	550	0.01	5.50
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Chrysene	<	1100	550	0.001	0.55
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene	<	1100	550	1	550.00
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Fluoranthene	<	1100	550	0.001	0.55
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Fluorene	<	1100	550	0.001	0.55
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene	<	1100	550	0.1	55.00
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Naphthalene	<	1100	550	0	0.00
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Phenanthrene	<	1100	550	0.001	0.55
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Pyrene	<	1100	550	0.001	0.55
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		17,600	8,800		**1,285.35**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	1910	955	0.001	0.96
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	1910	955	0.001	0.96
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Anthracene	<	1910	955	0.01	9.55
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene		5090	5090	0.1	509.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene		6500	6500	1	6,500.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene		7520	7520	0.1	752.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene		4550	4550	0.01	45.50
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene		6630	6630	0.01	66.30
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Chrysene		6850	6850	0.001	6.85
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene	<	1910	955	1	955.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Fluoranthene		13300	13300	0.001	13.30
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Fluorene	<	1910	955	0.001	0.96
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene		4510	4510	0.1	451.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Methylnaphthalene, 2-	<	1910	955	0	0.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Naphthalene	<	1910	955	0	0.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Phenanthrene		3400	3400	0.001	3.40
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Pyrene		9830	9830	0.001	9.83
									0	0.00
									0	0.00
							81550		0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		163,100	74,865		**9,324.60**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	1398.5	699.25	0.001	0.70
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	1398.5	699.25	0.001	0.70
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Anthracene	<	1398.5	699.25	0.01	6.99
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene		4894.7	4894.7	0.1	489.47
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene		6463.8	6463.8	1	6,463.80
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene		8698.5	8698.5	0.1	869.85
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene		3040.3	3040.3	0.01	30.40
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene		3650	3650	0.01	36.50
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Chrysene		6922.5	6922.5	0.001	6.92
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene	<	1398.5	699.25	1	699.25
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Fluoranthene		11596.2	11596.2	0.001	11.60
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Fluorene	<	1398.5	699.25	0.001	0.70
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene		3513	3513	0.1	351.30
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Naphthalene	<	1398.5	699.25	0	0.00
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Phenanthrene		3613.7	3613.7	0.001	3.61
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Pyrene		12656.2	12656.2	0.001	12.66
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		73,440	69,244		**8,984.45**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	1643.4	821.7	0.001	0.82
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	1643.4	821.7	0.001	0.82
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Anthracene	<	1643.4	821.7	0.01	8.22
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene	<	1643.4	821.7	0.1	82.17
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene	<	1643.4	821.7	1	821.70
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene	<	1643.4	821.7	0.1	82.17
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene	<	1643.4	821.7	0.01	8.22
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene	<	1643.4	821.7	0.01	8.22
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Chrysene	<	1643.4	821.7	0.001	0.82
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene	<	1643.4	821.7	1	821.70
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Fluoranthene		1669.7	1669.7	0.001	1.67
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Fluorene	<	1643.4	821.7	0.001	0.82
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene	<	1643.4	821.7	0.1	82.17
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Naphthalene	<	1643.4	821.7	0	0.00
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Phenanthrene	<	1643.4	821.7	0.001	0.82
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Pyrene	<	1643.4	821.7	0.001	0.82
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		26,321	13,995		**1,921.16**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	881	440.5	0.001	0.44
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	881	440.5	0.001	0.44
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Anthracene	<	881	440.5	0.01	4.41
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene	<	881	440.5	0.1	44.05
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene	<	881	440.5	1	440.50
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene	<	881	440.5	0.1	44.05
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene	<	881	440.5	0.01	4.41
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene	<	881	440.5	0.01	4.41
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Chrysene	<	881	440.5	0.001	0.44
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene	<	881	440.5	1	440.50
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Dimethylbenzo(a)Anthracene, 7,12-	<	881	440.5	0	0.00
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Fluoranthene	<	881	440.5	0.001	0.44
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Fluorene	<	881	440.5	0.001	0.44
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene		1307.4	1307.4	0.1	130.74
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Methylcholanthrene, 3-	<	881	440.5	0	0.00
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Methylnaphthalene, 2-	<	881	440.5	0	0.00
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Naphthalene	<	881	440.5	0	0.00
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Phenanthrene	<	881	440.5	0.001	0.44
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Pyrene	<	881	440.5	0.001	0.44
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		17,165	9,236		**1,116.14**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	1390	695	0.001	0.70
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	1390	695	0.001	0.70
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Anthracene	<	1390	695	0.01	6.95
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene	<	1390	695	0.1	69.50
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene	<	1390	695	1	695.00
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene	<	1390	695	0.1	69.50
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene	<	1390	695	0.01	6.95
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene	<	1390	695	0.01	6.95
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Chrysene	<	1390	695	0.001	0.70
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene	<	1390	695	1	695.00
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Dimethylbenzo(a)Anthracene, 7,12-	<	1390	695	0	0.00
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Fluoranthene	<	1390	695	0.001	0.70
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Fluorene	<	1390	695	0.001	0.70
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene	<	1390	695	0.1	69.50
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Methylcholanthrene, 3-	<	1390	695	0	0.00
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Methylnaphthalene, 2-	<	1390	695	0	0.00
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Naphthalene	<	1390	695	0	0.00
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Phenanthrene	<	1390	695	0.001	0.70
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Pyrene	<	1390	695	0.001	0.70
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		26,410	13,205		**1,624.22**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	81.1	40.55	0.001	0.04
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	81.1	40.55	0.001	0.04
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Anthracene	<	81.1	40.55	0.01	0.41
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene		395	395	0.1	39.50
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene		495	495	1	495.00
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene		536	536	0.1	53.60
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene		372	372	0.01	3.72
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene		512	512	0.01	5.12
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Chrysene		686	686	0.001	0.69
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene		208	208	1	208.00
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Fluoranthene		786	786	0.001	0.79
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Fluorene	<	81.1	40.55	0.001	0.04
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene		319	319	0.1	31.90
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Naphthalene	<	81.1	40.55	0	0.00
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Phenanthrene		211	211	0.001	0.21
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Pyrene		906	906	0.001	0.91
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		5,832	5,629		**839.96**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Acenaphthene	<	81.3	40.65	0.001	0.04
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Acenaphthylene	<	81.3	40.65	0.001	0.04
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Anthracene	J	27.6	27.6	0.01	0.28
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Benzo(a)Anthracene		439	439	0.1	43.90
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Benzo(a)Pyrene		564	564	1	564.00
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Benzo(b)Fluoranthene		1150	1150	0.1	115.00
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Benzo(g,h,i)Perylene		384	384	0.01	3.84
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Benzo(k)Fluoranthene		441	441	0.01	4.41
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Chrysene		672	672	0.001	0.67
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Dibenzo(a,h)Anthracene	<	81.3	40.65	1	40.65
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Dimethylbenzo(a)Anthracene, 7,12-	<	407	203.5	0	0.00
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Fluoranthene		953	953	0.001	0.95
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Fluorene	<	81.3	40.65	0.001	0.04
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Indeno(1,2,3-cd)Pyrene		362	362	0.1	36.20
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Methylcholanthrene, 3-	<	407	203.5	0	0.00
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Methylnaphthalene, 2-	<	407	203.5	0	0.00
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Naphthalene	<	81.3	40.65	0	0.00
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Phenanthrene		228	228	0.001	0.23
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Pyrene		934	934	0.001	0.93
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)		7,782	6,968		**811.18**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Acenaphthene	<	684	342	0.001	0.34
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Acenaphthylene	<	684	342	0.001	0.34
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Anthracene	<	684	342	0.01	3.42
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(a)Anthracene	J	470	470	0.1	47.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(a)Pyrene		752	752	1	752.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(b)Fluoranthene		1150	1150	0.1	115.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(g,h,i)Perylene	J	370	370	0.01	3.70
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(k)Fluoranthene	J	330	330	0.01	3.30
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Chrysene		744	744	0.001	0.74
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Dibenzo(a,h)Anthracene	J	660	660	1	660.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Dimethylbenzo(a)Anthracene, 7,12-	<	684	342	0	0.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Fluoranthene		1180	1180	0.001	1.18
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Fluorene	<	684	342	0.001	0.34
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Indeno(1,2,3-cd)Pyrene	J	640	640	0.1	64.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Methylcholanthrene, 3-	<	684	342	0	0.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Methylnaphthalene, 2-	<	684	342	0	0.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Naphthalene	<	684	342	0	0.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Phenanthrene	J	390	390	0.001	0.39
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Pyrene		1120	1120	0.001	1.12
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Total PAHs (BaP TEQs)		13,278	10,542		**1,652.88**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Acenaphthene	<	72.5	36.25	0.001	0.04
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Acenaphthylene	<	72.5	36.25	0.001	0.04
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Anthracene		76.1	76.1	0.01	0.76
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(a)Anthracene		337	337	0.1	33.70
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(a)Pyrene		304	304	1	304.00
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(b)Fluoranthene		562	562	0.1	56.20
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(g,h,i)Perylene		192	192	0.01	1.92
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Benzo(k)Fluoranthene		243	243	0.01	2.43
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Chrysene		415	415	0.001	0.42
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Dibenzo(a,h)Anthracene	<	72.5	36.25	1	36.25
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Dimethylbenzo(a)Anthracene, 7,12-	<	362	181	0	0.00
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Fluoranthene		808	808	0.001	0.81
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Fluorene	<	72.5	36.25	0.001	0.04
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Indeno(1,2,3-cd)Pyrene		178	178	0.1	17.80
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Methylcholanthrene, 3-	<	362	181	0	0.00
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Methylnaphthalene, 2-	<	362	181	0	0.00
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Naphthalene	<	72.5	36.25	0	0.00
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Phenanthrene		317	317	0.001	0.32
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Pyrene		645	645	0.001	0.65
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Total PAHs (BaP TEQs)		5,526	4,801		**455.35**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Acenaphthene	<	52.8	26.4	0.001	0.03
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Acenaphthylene	<	52.8	26.4	0.001	0.03
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Anthracene	<	52.8	26.4	0.01	0.26
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Benzo(a)Anthracene		71.3	71.3	0.1	7.13
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Benzo(a)Pyrene		74.5	74.5	1	74.50
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Benzo(b)Fluoranthene		159	159	0.1	15.90
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Benzo(g,h,i)Perylene		64.5	64.5	0.01	0.65
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Benzo(k)Fluoranthene		60.8	60.8	0.01	0.61
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Chrysene		92.5	92.5	0.001	0.09
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Dibenzo(a,h)Anthracene	<	52.8	26.4	1	26.40
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Dimethylbenzo(a)Anthracene, 7,12-	<	264	132	0	0.00
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Fluoranthene		179	179	0.001	0.18
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Fluorene	<	52.8	26.4	0.001	0.03
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Indeno(1,2,3-cd)Pyrene		68.7	68.7	0.1	6.87
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Methylcholanthrene, 3-	<	264	132	0	0.00
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Methylnaphthalene, 2-	<	264	132	0	0.00
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Naphthalene	<	52.8	26.4	0	0.00
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Phenanthrene		55	55	0.001	0.06
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Pyrene		144	144	0.001	0.14
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Total PAHs (BaP TEQs)		2,078	1,524		**132.87**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Acenaphthene	<	79.4	39.7	0.001	0.04
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Acenaphthylene	<	79.4	39.7	0.001	0.04
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Anthracene	<	79.4	39.7	0.01	0.40
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Benzo(a)Anthracene		124	124	0.1	12.40
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Benzo(a)Pyrene		157	157	1	157.00
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Benzo(b)Fluoranthene		290	290	0.1	29.00
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Benzo(g,h,i)Perylene		133	133	0.01	1.33
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Benzo(k)Fluoranthene		140	140	0.01	1.40
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Chrysene		187	187	0.001	0.19
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Dibenzo(a,h)Anthracene	<	79.4	39.7	1	39.70
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Dimethylbenzo(a)Anthracene, 7,12-	<	397	198.5	0	0.00
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Fluoranthene		305	305	0.001	0.31
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Fluorene	<	79.4	39.7	0.001	0.04
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Indeno(1,2,3-cd)Pyrene		129	129	0.1	12.90
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Methylcholanthrene, 3-	<	397	198.5	0	0.00
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Methylnaphthalene, 2-	<	397	198.5	0	0.00
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Naphthalene	<	79.4	39.7	0	0.00
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Phenanthrene		97.6	97.6	0.001	0.10
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Pyrene		287	287	0.001	0.29
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Total PAHs (BaP TEQs)		3,517	2,683		**255.12**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Acenaphthene	<	85.5	42.75	0.001	0.04
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Acenaphthylene	<	85.5	42.75	0.001	0.04
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Anthracene	J	26.5	26.5	0.01	0.27
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Benzo(a)Anthracene		358	358	0.1	35.80
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Benzo(a)Pyrene		450	450	1	450.00
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Benzo(b)Fluoranthene		862	862	0.1	86.20
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Benzo(g,h,i)Perylene		344	344	0.01	3.44
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Benzo(k)Fluoranthene		368	368	0.01	3.68
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Chrysene		544	544	0.001	0.54
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Dibenzo(a,h)Anthracene	<	85.5	42.75	1	42.75
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Dimethylbenzo(a)Anthracene, 7,12-	<	427	213.5	0	0.00
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Fluoranthene		801	801	0.001	0.80
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Fluorene	<	85.5	42.75	0.001	0.04
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Indeno(1,2,3-cd)Pyrene		319	319	0.1	31.90
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Methylcholanthrene, 3-	<	427	213.5	0	0.00
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Methylnaphthalene, 2-	<	427	213.5	0	0.00
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Naphthalene	<	85.5	42.75	0	0.00
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Phenanthrene		223	223	0.001	0.22
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Pyrene		853	853	0.001	0.85
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Total PAHs (BaP TEQs)		6,857	6,003		**656.58**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Acenaphthene	<	97.9	48.95	0.001	0.05
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Acenaphthylene	<	97.9	48.95	0.001	0.05
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Anthracene	<	97.9	48.95	0.01	0.49
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Benzo(a)Anthracene	J	35.2	35.2	0.1	3.52
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Benzo(a)Pyrene	J	56.8	56.8	1	56.80
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Benzo(b)Fluoranthene		152	152	0.1	15.20
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Benzo(g,h,i)Perylene	J	57.7	57.7	0.01	0.58
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Benzo(k)Fluoranthene	J	41.1	41.1	0.01	0.41
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Chrysene	J	58.7	58.7	0.001	0.06
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Dibenzo(a,h)Anthracene	<	97.9	48.95	1	48.95
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Dimethylbenzo(a)Anthracene, 7,12-	<	489	244.5	0	0.00
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Fluoranthene	J	86.1	86.1	0.001	0.09
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Fluorene	<	97.9	48.95	0.001	0.05
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Indeno(1,2,3-cd)Pyrene	J	76.3	76.3	0.1	7.63
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Methylcholanthrene, 3-	<	489	244.5	0	0.00
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Methylnaphthalene, 2-	<	489	244.5	0	0.00
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Naphthalene	<	97.9	48.95	0	0.00
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Phenanthrene	J	23.5	23.5	0.001	0.02
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Pyrene	J	77.3	77.3	0.001	0.08
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Total PAHs (BaP TEQs)		2,719	1,692		**133.97**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Acenaphthene	<	87.5	43.75	0.001	0.04
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Acenaphthylene	<	87.5	43.75	0.001	0.04
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Anthracene	<	87.5	43.75	0.01	0.44
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Benzo(a)Anthracene	J	30.6	30.6	0.1	3.06
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Benzo(a)Pyrene	J	42	42	1	42.00
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Benzo(b)Fluoranthene		109	109	0.1	10.90
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Benzo(g,h,i)Perylene	<	87.5	43.75	0.01	0.44
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Benzo(k)Fluoranthene	J	33.3	33.3	0.01	0.33
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Chrysene	J	35.9	35.9	0.001	0.04
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Dibenzo(a,h)Anthracene	<	87.5	43.75	1	43.75
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Dimethylbenzo(a)Anthracene, 7,12-	<	438	219	0	0.00
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Fluoranthene	J	57.8	57.8	0.001	0.06
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Fluorene	<	87.5	43.75	0.001	0.04
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Indeno(1,2,3-cd)Pyrene	<	87.5	43.75	0.1	4.38
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Methylcholanthrene, 3-	<	438	219	0	0.00
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Methylnaphthalene, 2-	<	438	219	0	0.00
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Naphthalene	<	87.5	43.75	0	0.00
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Phenanthrene	<	87.5	43.75	0.001	0.04
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Pyrene	J	65.6	65.6	0.001	0.07
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Total PAHs (BaP TEQs)		2,476	1,425		**105.63**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Acenaphthene	<	73.9	36.95	0.001	0.04
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Acenaphthylene	<	73.9	36.95	0.001	0.04
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Anthracene	<	73.9	36.95	0.01	0.37
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Benzo(a)Anthracene	<	73.9	36.95	0.1	3.70
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Benzo(a)Pyrene	<	73.9	36.95	1	36.95
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Benzo(b)Fluoranthene	<	73.9	36.95	0.1	3.70
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Benzo(g,h,i)Perylene	<	73.9	36.95	0.01	0.37
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Benzo(k)Fluoranthene	<	73.9	36.95	0.01	0.37
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Chrysene	<	73.9	36.95	0.001	0.04
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Dibenzo(a,h)Anthracene	<	73.9	36.95	1	36.95
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Dimethylbenzo(a)Anthracene, 7,12-	<	370	185	0	0.00
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Fluoranthene	J	25.1	25.1	0.001	0.03
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Fluorene	<	73.9	36.95	0.001	0.04
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Indeno(1,2,3-cd)Pyrene	<	73.9	36.95	0.1	3.70
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Methylcholanthrene, 3-	<	370	185	0	0.00
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Methylnaphthalene, 2-	<	370	185	0	0.00
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Naphthalene	<	73.9	36.95	0	0.00
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Phenanthrene	<	73.9	36.95	0.001	0.04
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Pyrene	J	30.3	30.3	0.001	0.03
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
									0	0.00
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Total PAHs (BaP TEQs)		2,200	1,128		**86.33**

Sample_Date	Sample_ID	Agency	Site_ID	Site_Location	PAH_Root_Name	Qualifier	PPB_Lev	PPB_Lev2	TEF	BaP TEQs
5/8/97	219805	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		6,891	6,835		985.93
5/8/97	219806	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		6,810	6,754		970.04
3/22/99	73602	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		19,764	9,882		1,215.47
5/5/99	73590	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		22,368	15,699		2,000.12
8/26/99	78835	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		14,478	7,239		890.40
11/19/99	87931	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		21,090	10,545		1,297.04
2/23/00	87930	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		26,220	13,110		1,612.53
5/3/00	87947	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		10,449	6,449		585.95
5/3/00	87948	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		9,462	4,731		581.91
9/27/00	218761	USFWS	35	Barton Spring	Total PAHs (BaP TEQs)		12,035	12,034		2,443.90
11/8/00	221736	USGS	35	Barton Spring	Total PAHs (BaP TEQs)		16,483	16,483		2,376.73
11/8/00	221737	USGS	35	Barton Spring	Total PAHs (BaP TEQs)		16,417	16,417		2,392.01
11/14/00	187059	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		41,920	36,565		4,951.34
2/8/01	187055	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		25,172	12,586		1,054.53
5/9/01	187219	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		9,557	4,779		587.76
5/9/01	187220	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		9,576	4,788		588.92
8/22/01	187048	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		26,410	13,205		1,624.22
10/30/01	191372	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		27,930	13,965		1,717.70
2/15/02	191364	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		21,090	10,545		1,297.04
5/28/02	206193	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		21,660	10,830		1,332.09
5/28/02	206194	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		20,520	10,260		1,261.98
8/6/02	214577	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		12,806	6,403		787.57
11/14/02	214575	ERM	35	Barton Spring	Total PAHs (BaP TEQs)		14,136	7,068		869.36
2/15/03	221747	TNRCC	35	Barton Spring	Total PAHs (BaP TEQs)		2,098	1,225		87.99
12/2/02	214716	AAS	2514	Barton Springs Pool @ Shallow End	Total PAHs (BaP TEQs)		13,345	6,673		917.27
1/12/03	214658	ERM	2514	Barton Springs Pool @ Shallow End	Total PAHs (BaP TEQs)		980	594		79.90

12/2/02	214723	AAS	2515	Barton Springs Pool @ Beach Area	Total PAHs (BaP TEQs)	17,268	12,418	1,031.97
1/12/03	214659	ERM	2515	Barton Springs Pool @ Beach Area	Total PAHs (BaP TEQs)	1,328	983	105.99
2/15/03	221739	TNRCC	2515	Barton Springs Pool @ Beach Area	Total PAHs (BaP TEQs)	6,451	5,785	651.47
9/27/91	4761	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	17,600	8,800	1,285.35
4/20/95	5552	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	163,100	74,865	9,324.60
4/20/95	7080	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	73,440	69,244	8,984.45
7/25/95	8195	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	26,321	13,995	1,921.16
3/22/99	73603	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	17,165	9,236	1,116.14
8/17/00	187047	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	26,410	13,205	1,624.22
1/12/03	214669	ERM	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	5,832	5,629	839.96
2/18/03	221740	TNRCC	2516	Barton Springs Pool @ Deep End	Total PAHs (BaP TEQs)	7,782	6,968	811.18
1/16/03	218201	TNRCC	2694	TCEQ Monitoring Site:B5	Total PAHs (BaP TEQs)	13,278	10,542	1,652.88
2/15/03	221748	TNRCC	2694	TCEQ Monitoring Site:B5	Total PAHs (BaP TEQs)	5,526	4,801	455.35
2/15/03	221746	TNRCC	2814	Barton Springs Pool Site BSP-2	Total PAHs (BaP TEQs)	2,078	1,524	132.87
2/18/03	221741	TNRCC	2815	Barton Springs Pool site BSP-6	Total PAHs (BaP TEQs)	3,517	2,683	255.12
2/18/03	221742	TNRCC	2816	Barton Springs Pool site BSP-7	Total PAHs (BaP TEQs)	6,857	6,003	656.58
2/19/03	221743	TNRCC	2817	Barton Springs Pool site BSP-11	Total PAHs (BaP TEQs)	2,719	1,692	133.97
2/19/03	221744	TNRCC	2818	Barton Springs Pool site BSP-10	Total PAHs (BaP TEQs)	2,476	1,425	105.63
2/19/03	221745	TNRCC	2819	Barton Springs Pool site BSP-9	Total PAHs (BaP TEQs)	2,200	1,128	86.33
						18,467	**11,480**	**1,459.66**

Appendix D

Estimated excess lifetime cancer risk estimates associated with common everyday exposures to PAHs are presented

Lifetime Cancer Risk from Food Ingestion Exposure (Food Containing Average BaP Levels Seen in Average American Diet)					
Parameter Description		Lower Param Value	Median Param Value	Upper Param Value	Param Units
Total quantity of food ingested per day		1.00	1.00	1.00	kg food/day
Average concentration of BaP TEQ in food		0.192	0.600	1.920	ug BaP/kg food
Quantity BaP TEQ ingested per day (ug)		0.19	0.60	1.92	ug BaP/day
Percent of inhaled BaP TEQ absorbed by body		100%	100%	100%	Percent
Quantity BaP TEQ absorbed per day (ug)		0.192	0.600	1.920	ug BaP/day
Conversion factor: ug BaP -> mg BaP		0.001	0.001	0.001	mg BaP/ug BaP
Quantity BaP TEQ ingested per day (mg)		1.920E-04	6.000E-04	1.920E-03	mg BaP/day
Slope factor for BaP		7.3	7.3	7.3	per mg BaP/kg BW/day
Body Weight		70.0	70.0	70.0	kg BW
Ca risk from daily exposure for 70 years		2.002E-05	6.257E-05	2.002E-04	Ca risk
Number of days per week exposed		7	7	7	days exp/week
Number of weeks per year exposed		52	52	52	weeks exp/year
Number of years exposed		70	70	70	years exp
Ca risk from limited exposure specified above:		2.002E-05	6.257E-05	2.002E-04	Ca Risk
Odds of getting Ca from above exposure:	1 in	49,943	15,982	4,994	Ca Odds

Lifetime Cancer Risk from Drinking Water Exposure (Water Containing Average BaP Levels Seen in Public Water Supplies)					
Parameter Description		Lower Param Value	Median Param Value	Upper Param Value	Param Units
Total quantity of water ingested per day		2.00	2.00	2.00	L water/day
Average concentration of BaP TEQ in water		0.405	1.620	6.480	ng BaP/L water
Quantity BaP TEQ ingested per day (ng)		0.810	3.240	12.960	ng BaP/day
Conversion factor: ng BaP -> ug BaP		0.001	0.001	0.001	ug BaP/ng BaP
Quantity BaP TEQ ingested per day (ug)		0.00081	0.00324	0.01296	ug BaP/day
Percent of ingested BaP TEQ abosorbed by body		100%	100%	100%	Percent
Quantity BaP TEQabsorbed per day (ug)		0.00081	0.00324	0.01296	ug BaP/day
Conversion factor: ug BaP -> mg BaP		0.001	0.001	0.001	mg BaP/ug BaP
Quantity BaP TEQ absorbed per day (mg)		8.100E-07	3.240E-06	1.296E-05	mg BaP/day
Slope factor for BaP		7.3	7.3	7.3	per mg BaP/kg BW/day
Body Weight		70.0	70.0	70.0	kg BW
Ca risk from daily exposure for 70 years		8.447E-08	3.379E-07	1.352E-06	Ca risk
Number of days per week exposed		7	7	7	days exp/week
Number of weeks per year exposed		52	52	52	weeks exp/year
Number of years exposed		70	70	70	years exp
Ca risk from limited exposure specified above:		8.447E-08	3.379E-07	1.352E-06	Ca Risk
Odds of getting Ca from above exposure:	1 in	11,838,322	2,959,581	739,895	Ca Odds

Childhood Ca Risk from Skin Contact with Sediments from Barton Creek Pool					
Parameter Description		Lower Param Value	Median Param Value	Upper Param Value	Param Units
Total surface area of body exposed per day (cm2)		4,769.0	4,769.0	4,769.0	cm2
Child Soil-to-Skin Adherence FActor (0-6 years)		0.30	1.30	3.30	mg Sed/cm2
Concentration of BaP TEQ in Sediment (ug BaP/kg Sed)		1,460	1,460	1,460	ug BaP/kg Sed
Conversion factor: ug BaP -> mg BaP		0.001	0.001	0.001	mg BaP/ug BaP
Conversion factor: mg Sed -> kg Sed		1.00E-06	1.00E-06	1.00E-06	kg Sed/mg Sed
Percent of adhering BaP absorbed by body in 24 hrs		13%	13%	13%	Percent
Hours out of day in which sediment in contact with skin		1.0	1.0	1.0	hours/day
Quantity of BaP TEQ absorbed per day (mg)		1.1312E-05	4.9018E-05	1.2443E-04	mg BaP/day
Slope factor for BaP		7.3	7.3	7.3	per mg BaP/kg BW/day
Body Weight		15.0	15.0	15.0	kg BW
Ca risk from daily exposure for 70 years		5.505E-06	2.386E-05	6.056E-05	Ca risk
Number of days per week exposed		7	7	7	days exp/week
Number of weeks per year exposed		14	14	14	weeks exp/year
Number of years exposed		10	10	10	years exp/lifetime
Ca risk from limited exposure specified above		2,114E-07	9.175E-07	2.329E-06	Ca Risk
Odds of getting Ca from exposure:	1 in	4,722,907	1,089,902	429,355	Ca Odds

Lifetime Ca Risk for Inhalation Exposure (Indoor Air Containing Average Levels of BaP TEQ)					
Parameter Description		**Lower Param Value**	**Median Param Value**	**Upper Param Value**	**Param Units**
Inhalation rate for an adult		20.0	20.0	20.0	m3/day
Concentration of BaP TEQ in air (ng/m3)		0.313	1.250	5.000	ng BaP/m3
Quantity BaP TEQ inhaled per day (ng)		6.250	25.000	100.000	ng BaP/day
Conversion factor: ng BaP -> ug BaP		0.001	0.001	0.001	ug BaP/ngBaP
Quantity BaP inhaled per day (ug)		0.0063	0.0250	0.1000	ug BaP/day
Percent of inhaled BaP absorbed by body		100 %	100%	100%	Percent
Quantity BaP abosorbed per day (ug)		0.006	0.025	0.100	ug BaP/day
Conversion factor: ug BaP -> mg BaP		0.001	0.001	0.001	mg BaP/ug BaP
Quantity BaP absorbed per day (mg)		6.250E-06	2.500E-05	1.000E-04	mg BaP/day
Slope factor for BaP		7.3	7.3	7.3	per mg BaP/kg BW/day
Body Weight		70.0	70.0	70.0	kg/BW
Ca risk from daily exposure for 70 years		6.518E-07	2.607E-06	1.043E-05	Ca risk
Number of days per week exposed		7	7	7	days exp/week
Number of weeks per year exposed		52	52	52	weeks exp/year
Number of years exposed		70	70	70	years exp
Ca risk from limited exposure specified above:		6.518E-07	2.607E-06	1.043E-05	Ca Risk
Odds of getting Ca from above exposure:	1 in	1,534,247	383,562	95,890	Ca Odds