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Public Health Assessment for

SOUTH DAYTON DUMP & LANDFILL
MORAINE, MONTGOMERY COUNTY, OHIO
EPA FACILITY ID: OHD980611388

SEPTEMBER 30, 2008

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Agency for Toxic Substances and Disease Registry

THE ATSDR PUBLIC HEALTH ASSESSMENT: A NOTE OF EXPLANATION

This Public Health Assessment was prepared by ATSDR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) section 104 (i)(6) (42 U.S.C. 9604 (i)(6)), and in accordance with our implementing regulations (42 C.F.R. Part 90). In preparing this document, ATSDR has collected relevant health data, environmental data, and community health concerns from the Environmental Protection Agency (EPA), state and local health and environmental agencies, the community, and potentially responsible parties, where appropriate.

In addition, this document has previously been provided to EPA and the affected states in an initial release, as required by CERCLA section 104 (i)(6)(H) for their information and review. The revised document was released for a 30-day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The public health assessment has now been reissued. This concludes the public health assessment process for this site, unless additional information is obtained by ATSDR which, in the agency's opinion, indicates a need to revise or append the conclusions previously issued.

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PUBLIC HEALTH ASSESSMENT

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MORAINE, MONTGOMERY COUNTY, OHIO

EPA FACILITY ID: OHD980611388

Prepared by:

Ohio Department of Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

TABLE OF CONTENTS

TABLE OF CONTENTS **1**

SUMMARY **2**

PURPOSE AND HEALTH ISSUES **4**

BACKGROUND **4**

SITE LOCATION **4**
HISTORY **5**
REGIONAL HYDROGEOLOGY AND GROUNDWATER RESOURCES **6**
PREVIOUS SITE INVESTIGATIONS **8**
1985 PRELIMINARY ASSESSMENT 8
1991 SCREENING SITE INSPECTION 8
1994 FOCUSED SITE INSPECTION PRIORITIZATION 9
1996 SITE TEAM EVALUATION PRIORITIZATION 9
LANDOWNER'S INVESTIGATIONS 1998-2004 10
VALLEY ASPHALT PLANT – LIMITED DRUM REMOVAL ACTION (2000) 10
POTENTIAL EXPOSURE PATHWAYS **10**
PAST EXPOSURES **12**
RECREATION 13
FISHING 13
CURRENT EXPOSURES **13**

CHILD HEALTH CONSIDERATIONS **15**

CONCLUSIONS **15**

RECOMMENDATIONS **17**

PUBLIC HEALTH ACTION PLAN **17**

PREPARED BY **18**

REFERENCES **19**

TABLES AND FIGURES **21**

SUMMARY

The South Dayton Dump & Landfill (SDD) site is located in a mixed industrial and residential portion of Moraine, Montgomery County, Ohio. The site was proposed for the National Priorities List (NPL) of Superfund hazardous waste sites on September 23, 2004. The main public health concerns at the site are: 1) the possibility that on site workers may come into contact with contaminants in the soil; 2) that groundwater contamination could impact local drinking water supplies; and 3) the possibility that chemical contaminants in the groundwater will migrate off-site, vaporize to the soil and enter the indoor air of nearby residences and businesses.

Sand and gravel pits were excavated at the SDD site after 1935. These pits were filled with a variety of municipal and industrial wastes during landfill operations conducted between 1941 and 1996. SDD operated under a solid waste disposal permit issued by Montgomery County Health Department (MCHD), which allowed the disposal of waste in the former gravel pits: solid, inert, and insoluble material such as unregulated foundry sand, slag, glass, and demolition debris. The primary disposal practice at the SDD prior to 1970 was open burning of vegetation and wood waste and landfilling of the other wastes. Between 1950 and 1970, drummed waste was occasionally accepted at the landfill. There are numerous reports that indicate the SDD disposed of hazardous waste in addition to municipal waste and construction debris at the site. Reports indicate that drums of hazardous waste were accepted between July 1973 and July 1976. Ohio EPA (Ohio Environmental Protection Agency) and Montgomery County health officials inspected the site in May 1978 and noted several containers labeled "hazardous". A CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act – USEPA's Superfund law) Notification of Hazardous Waste Site Form was submitted in 1981 reporting that industrial waste had been transported to SDD for disposal. In 2000, drums containing hazardous waste were excavated from the southern portion of the Valley Asphalt Plant, in an area now known to have been the site of landfilling operations by SDD.

Elevated levels of lead (up to 12,100 ppm) and copper (up to 191,000 ppm) have been found in on-site soils but currently there are no data indicating that these contaminants are leaving the SDD site. The contaminants that were found in the sediments adjacent to the SDD site and in the Great Miami River have not been attributed to SDD site. The contaminants vinyl chloride (up to 180 ppb) and trichloroethylene (up to 260 ppb) have been found in the groundwater monitoring wells (MW-101A and MW-210) on the southern and southeastern boundaries downgradient of the SDD site (Hoffman, 2005). There are no known wells in the immediate vicinity of the site that are currently used as a source of drinking water.

This site is currently undergoing a Remedial Investigation and Feasibility Study (RI/FS) by the potentially responsible parties under supervision of the U.S. EPA's Superfund Alternative Sites (SAS) program. HAS will review any additional environmental data collected.

The SDD site posed an ***"Indeterminate Public Health Hazard"*** to area residents to contaminants through inhalation from vapor intrusion in the *past*. There are no soil gas or indoor air data to indicate whether vapor intrusion of contaminants occurred at nearby

residences. There are no data to indicate that nearby drinking water wells were contaminated. There are no data that indicate that the workers or visitors to the site have been exposed to contaminants in the past. In the past, elevated levels of polychlorinated biphenyls (PCBs) and mercury have been found in the sediments and elevated levels of PCBs and mercury have been found in fish tissues in the Great Miami River, but this contamination has not been linked conclusively to the SDD site.

Based on data received, the SDD site *currently* poses an ***"Indeterminate Public Health Hazard"*** for the exposure of nearby residents, local workers, and site visitors to contaminants. Nearby residents and workers may be exposed through inhalation of contaminants from vapor intrusion into their homes or businesses. Elevated levels of trichloroethylene (TCE) (up to 260 ppb) and vinyl chloride (VC) (up to 180 ppb) (Hoffman, 2005) are being transported off-site in the groundwater, but there are no soil gas or indoor air data that indicate that vapor intrusion of contaminants is occurring at nearby residences. There are no data that indicate that drinking water wells are being impacted by contaminants from the SDD site. Workers, residents and visitors who enter the site may come into contact with contaminants in the soil by inhaling dust, ingesting soil by inadvertently transferring contaminants to food or drink, and possible absorption of contaminants through the skin. There are no data that indicate that nearby residents, workers, or visitors to the site are currently being exposed to contaminants from the SDD site.

The SDD site may pose an ***"Indeterminate Public Health Hazard"*** in the *future* to area residents and workers via drinking contaminated groundwater, vapor intrusion, and contact with contaminants in soil. The contamination in the groundwater from South Dayton Dump appears to be moving toward residences southeast of the site. There are wellfields about four miles to the south that obtain water from the same aquifer that has become contaminated from the SDD. Some of these contaminants may migrate into the indoor air of residents and area workers. High concentrations of contaminants in the soil may pose a threat to area workers that come into direct contact with them.

PURPOSE AND HEALTH ISSUES

The South Dayton Dump site is a former sand and gravel mining operation along the Great Miami River in Moraine, Montgomery County, Ohio. In September 23, 2004, the SDD site was proposed for inclusion on the U.S. Environmental Protection Agency's (USEPA's) National Priorities List (NPL) of Superfund hazardous waste sites. The site was proposed for the NPL as a result of confirmed soil and groundwater contamination with chlorinated volatiles and other compounds. Vinyl chloride (VC) (up to 180 ppb) and trichloroethylene (TCE) (up to 260 ppb) were detected in monitoring wells drilled into the underlying drinking water aquifer (Hoffman, 2005). Municipal wellfields four miles away have a potential to become contaminated and people drinking the water may be exposed to the contaminants. Upon the site being listed on the NPL, the Agency for Toxic Substances and Disease Registry (ATSDR) is required by a congressional mandate to complete a Public Health Assessment evaluating the public health threat posed by all NPL sites. The Health Assessment Section (HAS) of the Ohio Department of Health has had a cooperative agreement with ATSDR since 1990. As part of that agreement, HAS agreed to take the lead in completing these Public Health Assessments. This health assessment will evaluate the environmental data collected at the site and will make conclusions and recommendations for additional actions that may be necessary to protect public health.

BACKGROUND

Site Location

The SDD site is a former landfill located at 1975 Dryden Road, in Moraine, Ohio (Figure 1). The site occupies at least 80 acres and is at an elevation of approximately 730 feet above sea level. It is located on the low, gently sloping flood plain along the east bank of the south-flowing Great Miami River. There are two small ponds on site that dry up occasionally and a larger, 5-acre, water-filled gravel pit to the southwest. The topography gently slopes downward to the west and south with surface water run-off flowing towards the banks of the Great Miami River or into the on-site gravel pit.

SDD is located in heavily industrialized and commercial area southwest of the city of Dayton. The nearest residential area is a mobile home park approximately 150 feet east-southeast of the site boundary and seven residences south of the site along East River Road (Figure 2). Light industries and commercial businesses are located along the east and southeast boundaries of the site on Dryden Road and East River Road. On the north side of SDD, there is an asphalt plant. It has been determined through excavations and aerial photos that at least some of this asphalt plant's property was impacted by past SDD landfill operations. Also there are some large industrial sites in the vicinity of the site including the Dayton Power and Light plant directly east of the site (Figure 2) and the former General Motors plants and the former Frigidaire plant about a mile south of the site.

The site is only fenced along the east side and has a locked gate at the entrance by Dryden Road. Incidents of trespassing and vandalism have occurred in the past at this site (Ohio EPA, 1996 a, p. 27). The gate is set back approximately 100 feet west of Dryden Road. An office trailer and some abandoned house trailers are located just inside

the access gate. The site is relatively flat, but the terrain is interrupted along the southeast border by a dry ravine and to the southwest by the gravel pit. Most of the site appears to be heavily vegetated (HAS site visit, July, 2005). On site, a dirt access road extends along the north central area and loops around the southwestern section of the property (Figure 3). Ohio EPA personnel have observed stacks of wooden pallets, piles of concrete, piles of wood and metal debris, mounds of fly ash and one discarded 55 gallon drum on either side of the north access road during site visits. There is an abandoned "air curtain destructor" (a controlled open burning device, see History) at the northwest corner of the site, along the north access road. There is also a 35 by 100 foot concrete pad, located just east of the air curtain destructor. South of the air curtain destructor, there is a depression about 7 feet deeper than the surrounding land surface. This depression occasionally has had some water ponded in it as reported from site visits and investigations by Ohio EPA and USEPA personnel (Ecology and Environment (E&E), 1991). Near the center of the site, a dirt road branches off the north access road, extending south across the site, then east along the dry ravine, and back to the entrance area. Between the deep depression south of the "air curtain destructor" and the dirt road that crosses the center of the site, there is a large shallow depression lacking vegetation (See Figure 3).

History

Sometime after 1935, sand and gravel was excavated from the 80 acre parcel of land now known as the SDD site. In 1941, the site was opened and operated as a dump until it's closure in 1996 (E&E, 1991). The sand and gravel pits were filled with waste during the landfill operations conducted between 1941 and 1996. From 1941 till 1986, the SDD operated as a sanitary landfill. The following operating licenses were held within that time period;

- 1969 to 1974 – License to accept commercial, industrial, and household wastes
- 1975 – License to accept sludges and demolition wastes
- 1976 to 1986 – License to accept dry commercial, industrial, household, and salvageable wastes and for wood burning (USEPA, 2004).

From 1986 till it closed in 1996, SDD operated as a construction and demolition debris landfill.

The primary disposal practice was open burning of material such as wood and brush, until open burning was prohibited in 1970. The unburnable and burnt residue was then land-filled. The operator stated that the landfill does not have a liner. After 1970, the primary method of disposal became land-filling. An attempt was made with the development of an "air curtain destructor" to continue to burn waste in a "controlled open burning device" and the landfill operator applied for a special open burning permit. The Ohio Department of Health never granted approval, and the operator abandoned the project. The air curtain destructor was never dismantled and is still present on site (E&E, 1991).

Between 1950 and 1970 drummed wastes were reported to have been occasionally accepted at SDD (E&E, 1991). The method of disposal for these drums was to empty the contents at the landfill and then the drums were either sold to a drum recycler or buried on site. Between June 1973 and July 1976, drums containing hazardous wastes were

accepted at SDD from two nearby facilities in Dayton, Ohio (E&E, 1991). During a routine inspection of the site in 1978 representatives of the Ohio EPA and Montgomery County Combined General Health District identified several problems at the SDD, including the presence of containers labeled as "hazardous" (E&E, 1991). An internal facility memo indicates that their asbestos waste was being sent to the SDD for disposal (Delco Moraine, 1976). On June 9, 1981, a Comprehensive Environmental Response, Compensation, and Liability Act (CERLA) Notification of Hazardous Waste Site Form was submitted by an industry waste hauler which stated that SDD had been used as a disposal landfill for the industrial as well as municipal wastes (E&E, 1991, PRC, 1995).

In 1985, the Ohio EPA prepared a preliminary assessment (PA) of the SDD site. The PA indicated that hazardous waste disposal at SDD posed a threat to the underlying drinking water aquifer and the adjacent surface waters of the Great Miami River (Ohio EPA, 1985).

Based on the PA and the more recent discovery of drummed waste at the site, the SDD was proposed for listing on the NPL, which is part of the Superfund cleanup process, on September 23, 2004,. The USEPA uses the NPL listings as a guide in determining and prioritizing which sites need further investigation to assess the nature and extent of the threat that the site's contamination poses to human health and the environment. The site's potentially responsible parties are currently conducting a Remedial Investigation and Feasiblity Study under the supervision of the U.S. EPA's Superfund Alternative Sites program.

Regional Hydrogeology and Groundwater Resources

The Great Miami River flows across a deep bedrock valley which is now filled with glacial sand and gravel deposits with an occasional layer of clay. These flood plain deposits range from 150 to 250 feet thick. The sand and gravel deposits are thickest near the present course of the Great Miami River and taper to 25 feet thick on the edges of the bedrock valley. Bedrock is encountered at depths ranging from 150 to 250 feet below ground surface (PRC, 1995).

Poorly sorted clays were deposited as intermittent lens-like layers along with the sand and gravel beds in the former river valley. These clay lenses do not, however, form a continuous, impermeable confining layer. The groundwater that may be perched above these layers is not isolated from the groundwater beneath it. The bulk of the soils under the site are porous and permeable sands and gravels (Ohio Department of Natural Resources well logs, 2005). The depth to the water table ranges from about 12 feet below ground surface (bgs) on the south portion of the landfill to about 18 feet bgs beneath the west portion of the landfill (USEPA, 2004). Surface water and groundwater may migrate through the glacial deposits all the way down to the bedrock. The bedrock limestone and shale layers do not transmit groundwater very well in comparison to the overlying sand and gravel deposits (OHIO EPA, 1996a). Drinking water and industrial production wells in the area of the site utilize the sand and gravel aquifer as a source of water (MCD, 2005).

Seventy-six percent of the water used in the area is withdrawn from the buried valley sand and gravel aquifer. Most of that water withdrawn from the aquifer (67 %), is used

for public drinking water supplies (Miami Conservancy District [MCD], 2005). The SDD overlies the USEPA-designated Miami Valley Sole Source Aquifer system (Figure 4).

The Great Miami aquifer is the major drinking water aquifer in Montgomery County. It is a high-yield aquifer with pump rates of up to several thousand gallons per minute. In the vicinity of the site, the pump rate for the aquifer is rated at 500 to 1,000 or more gallons per minute of groundwater (OHIO EPA, 1996a).

Montgomery County is now getting their water from the city of Dayton. The city of Moraine receives water from Montgomery County, who in turn get their water from the city of Dayton wells. Dayton has two wellfields with a total of over 100 production wells, all located over 5 miles north and upgradient of the SDD. Montgomery County has four wellfields in the area of the site (Figure 4). These wells are not in use but are maintained as standby wells. Montgomery County's former Lamme Road wellfield is located two and a half miles downgradient and south-southeast of the site, and is now abandoned. Montgomery County's Dryden Road North wellfield is located about three miles downgradient and southwest of the site and the Dryden Road South wellfield is located about three miles downgradient and south-southwest of the site. The two Dryden Road wellfields have shown contamination in the past and are currently off-line. The future use of these wells is uncertain. The fourth Montgomery County wellfield is the Miami Shores wellfield located about three miles downgradient and south-southwest of the site. This wellfield is maintained as a standby wellfield and was last used in 1989. If the Miami Shores wellfield was to be used, it would supply water to about 150,000 people. The city of West Carrollton has a wellfield just over four miles downgradient and southwest of the site and supplies drinking water to about 10,000 people. Approximately two miles east of the site, the City of Oakwood maintains two wellfields providing service to 9,500 people (Ohio EPA, 1996a).

Within four miles of the SDD site, the sand and gravel aquifer provides drinking water to the following receptors; 1) the employees of the Delphi Automotive Systems Plant, 2) the residents of the Cities of Oakwood and West Carrollton, and 3) residents of Montgomery County served by Montgomery County's standby wells (USEPA, 2004) (Figure 4)

The depth to the groundwater in the vicinity of the SDD varies from 20 to 45 feet below ground surface. Private drinking water wells in the general area of the site typically draw water from approximately 35 to 65 feet below ground surface (E&E, 1991). The depth to groundwater may change seasonally due to changes in precipitation and may also change due to the changes in the water level of the river. The Great Miami River aquifer may recharge and discharge in the area of the site, with river water leaving the river to go into the groundwater or groundwater leaving the aquifer to go into the river. There is some artificial recharge of the aquifer with the Great Miami River surface water, but it is upstream of the site and the city of Dayton. The aquifer recharges naturally during heavy precipitation events in the late fall and early spring.

The direction that the groundwater flows is generally influenced by topography, but direction can also be influenced by the recharge and discharge of water to and from the river and the pumping of nearby wells. Natural flow in the vicinity of SDD is likely

heavily influenced by major industrial water users in the area. Ohio Department of Natural Resources (ODNR) well logs indicate that there are two production wells pumping 4,000 gallons per minute at Dayton Power and Light facility on Dryden Road directly east of the SDD. The former Frigidaire Division complex in Moraine off Springboro Road, 1.5 – 2 miles south-southeast of SDD had wells capable of pumping up to 8,000 gallons per minute. The latter facility is now closed and part of it has been demolished. The rest has been incorporated into the adjacent GM complex. Status of the former on-site production wells is unknown. The direction of the groundwater flow beneath the SDD is poorly understood. Groundwater from beneath the site has been reported to flow to the southeast and to the southwest (Ohio EPA, 1996a). Groundwater is also suspected of discharging to the gravel pit immediately southwest of the site (PRC, 1995).

Most of the precipitation on site is thought to percolate through the soil to the groundwater. However, heavy precipitation may produce surface water run-off, which is expected follow the topography of the site and flow toward the river or gravel pit to the west and southwest. Most of the SDD site is designated by Federal Emergency Management Agency (FEMA) as a "Special Flood Hazard Area". By definition these land areas are at high risk of flooding with mudflow and flood related erosion hazards (FEMA, 2005). Flood waters in the Great Miami River would first have to overflow the slag/fill embankment before reaching the SDD. Only 24 % of the water used in the Great Miami River watershed is withdrawn from surface waters (MCD, 2005). This surface water is primarily used as cooling water by power plants and is not used as a drinking water resource. Although there is a potential for contaminants to be transported off-site during flooding or heavy precipitation, surface water is not used as a primary source of drinking water in the area. However, people may come into contact with the contaminants suspended in the water or deposited in the sediment while wading, swimming, or fishing, in the Great Miami River adjacent to the site.

Previous Site Investigations

1985 Preliminary Assessment

The Ohio EPA conducted a Preliminary Assessment (PA) of the South Dayton Dump and Landfill in 1985. It concluded that there was documented disposal of hazardous chemicals at the site which posed a threat to contamination of the underlying sand and gravel aquifer. It was also determined that the contaminated groundwater could potentially flow west to the Great Miami River. The Ohio EPA recommended the installation of monitoring wells and further investigation of the site (Ohio EPA, 1985).

1991 Screening Site Inspection

In 1991, USEPA's Field Investigation Team (FIT) conducted a Screening Site Inspection (SSI) which consisted of conducting interviews and taking soil samples. Analytical results of the soil samples indicated the presence of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals at concentrations significantly above background concentrations (E&E, 1991). Contaminant concentrations were significantly above background concentrations including; 1,2-dichloroethene (DCE) (200 parts per billion (ppb)), mercury (0.31 parts

per million (ppm)), cadmium (14 ppm), copper (2,220 ppm), nickel (402 ppm), lead (3,300 ppm), several PAHs (6,400 ppb chrysene and 5,700 ppb benzo(a)pyrene), and PCBs (up to 4,200 ppb) (E&E, 1991). FIT did not take any groundwater, surface water, or air samples. The SSI concluded that there was a potential exposure to contaminants by direct contact of contaminated soils on site and through migration of contaminants off-site in the surface water and in groundwater (E&E, 1991).

1994 Focused Site Inspection Prioritization

In 1994, PRC Environmental Management, Inc. (PRC) was contracted by the USEPA to prepare a Focused Site Inspection Prioritization (FSIP) of the SDD utilizing the Hazard Ranking System (HRS). The FSIP report evaluated whether, or to what extent, the site poses a threat to human health or the environment. PRC concluded that the site did not require an immediate removal action but they did recommend that an Expanded Site Inspection (ESI) be conducted and it should include the installation and sampling of groundwater wells and the sampling of surface water (PRC, 1995).

1996 Site Team Evaluation Prioritization

In 1996, the Ohio EPA, under a cooperative agreement with the USEPA, conducted a two-phase Site Team Evaluation Prioritization (STEP) investigation. Phase I consisted of drilling exploratory soil borings, collecting groundwater samples at the soil boring locations for VOC screening, and the installation of three monitoring wells. For Phase I, Ohio EPA retained PSARA Technologies, Inc. PSARA reported that the soil borings along the western border of the site, SD-003 through SD-007, encountered an "unidentifiable black sludge-like material" approximately 8 to 12 feet thick. No samples of the black sludge material were collected for analyses. This sludge layer overlies sand and gravel deposits that extend beneath the entire site. Monitoring wells, MW-101A, MW102, and MW-103, are located in the southwest corner of the site (see Figure 3). It was determined from these monitoring wells that the groundwater flow direction was to the southeast away from the river (PSARA, 1996).

During Phase II of the STEP investigation, soil samples, sediment samples, and groundwater samples were collected by Ohio EPA. The samples were compared to background samples and results with levels three times the concentration of the background were considered contaminated. Results indicate that soils at SDD were contaminated with the VOCs methylene chloride (16 ppb) and trichloroethylene (11 ppb); semi-volatile organic compounds (SVOCs) including PAHs (up to 2,000 ppb) and butylbenzylphthalate (18,000 ppb); the pesticides Lindane (1.8 ppb), DDD (4.4 ppb), DDT (8.8 ppb) and endrine ketone (7.5 ppb); the PCBs Aroclor-1254 (830 ppb) and Aroclor-1260 (1,200 ppb); and metals including copper (191,000 ppm), lead (12,100 ppm), arsenic (141 ppm), and cyanide (3.7 ppm) (Table 1). The sediment sample results indicated that there were concentrations of contaminants that are three times higher than background for some pesticides, aroclor-1254 (a PCB), and mercury (Table 2). One sediment sample from the gravel pit had PCBs at 660 ppb and the pesticides endrin at 34 ppb, endrin aldehyde at 7.9 ppb, and endosulfan sulfate at 3.7 ppb. One sediment sample from the river adjacent to the center of the site had pesticides methoxychlor up to 65 ppb and endrin (up to 4.8 ppb) and mercury (up to 0.65 ppm). Results of the sampling documented that groundwater was contaminated with VOCs, phenol, and heptachlor (a

pesticide) from the SDD site and was migrating off-site (OHIO EPA, 1996a). Monitoring well MW-101, located on the access road in the southwestern portion of the site, had detections of 1,2-dichloroethene (total) of 150 ppb, 1,1-dichloroethane at 13 ppb and acetone at 30 ppb (Table 3). This well also had high levels of phenol (130 ppb) and potassium up to 114,000 ppb. Another monitoring well, MW-102, located on the floodplain immediately southwest of the site had detections of chloroethane at 22 ppb and toluene at 15 ppb (OHIO EPA, 1996a).

Landowner's Investigations 1998-2004

The landowners have conducted several investigations of the groundwater and surface water at the landfill between 1998 and 2004. In 1998 and 1999, the landowners installed ten additional monitoring wells, MW-201 through MW-212 (monitoring wells MW-205 and MW-211 do not exist) (Figure 3). The 2002/2004 groundwater sampling results indicated the presence of vinyl chloride at concentrations up to 180 ppb (MW-101A) (Maximum Contaminant Level [MCL] = 2 ppb); TCE at concentrations of up to 260 ppb (MW-210) (MCL = 5 ppb); 1,1-dichloroethane at concentrations of up to 39 ppb; 1,2-dichloroethene (total) at concentrations of up to 480 ppb; 1,1,1-tricloroethane at concentrations of up to 5.2 ppb; and chlorobenzene at concentrations of up to 29 ppb (Table 4). The MCLs are drinking water standards established by USEPA for public water systems to protect public health by limiting levels of contaminants in drinking water. Measurements of groundwater elevations indicated that the direction of groundwater flow is to the southeast towards a number of major industrial groundwater users in Moraine.

Valley Asphalt Plant – Limited Drum Removal Action (2000)

In 2000, buried drums were discovered while installing a new sewer line at the Valley Asphalt Plant, on the north end of SDD (Figure 5). Based on this discovery and the subsequent investigation, it was determined that the SDD landfill operations had extended north to include at least the southern half of the of the Valley Asphalt Plant site. A sample of the drums determined that they were required to be disposed of as hazardous waste due to the enclosed waste exceeding the Toxicity Characteristic Leaching Procedure (TCLP) test for cadmium and lead. The drums were also found to contain the following chemicals; Aroclor-1254 (a PCB) at 75 ppm, benzene at 7,000 ppb, chlorobenzene at 1,700 ppb, ethylbenzene at 84,000 ppb, toluene at 530,000 ppb, TCE at 64,000 ppb, vinyl chloride at 840 ppb, and xylenes at 340,000 ppb (USEPA, 2006). Approximately 2,217 tons of contaminated soil was removed for disposal. Only the drums and the soil in the 600-square foot excavation were removed for disposal. Additional drums were observed in the side-walls of the excavation but were left in place (Conversation with Ohio EPA, Emergency Response personnel, SWDO 2005).

DISCUSSION

Potential Exposure Pathways

For the public *to be exposed* to elevated levels of contaminants in and around the SDD site they must first come into physical contact with the contaminated groundwater, surface water, soils, sediment, or air. To come into contact with the contaminated media

there must be a *completed exposure pathway*. A completed exposure pathway consists of *five main parts*, which must be present for a chemical exposure to occur. These include:

1) A source of the toxic chemicals of concern;
2) A method of Environmental Transport, which allows the chemical contaminant to move from its source (soil, air, groundwater, surface water, sediment);
3) A Point of Exposure where the residents come into direct physical contact with the chemical (on-site, off-site);
4) A Route of Exposure, which is how the residents come into physical contact with the chemical (drinking, eating, touching); and,
5) A Population at Risk which are the people who could possibly come into physical contact with site-related chemicals.

Exposure pathways can also be characterized as to when the exposure occurred or might occur in the *Past, Present, or Future*.

Physical contact with a chemical contaminant, in and by itself, does not necessarily result in adverse health effects. A chemical's ability to affect a resident's health is also controlled by a number of factors, including:

- How much of the chemical a person is exposed to (the *Dose*);
- How long a person is exposed to the chemical (duration of exposure);
- How often a person is exposed to the chemical (frequency); and,
- Toxicity of chemicals the person is exposed to.

Other factors affecting a chemical's likelihood of causing adverse health effects upon contact include the resident's:

- Personal habits
- Diet
- Age and sex
- Current health status
- Past exposures to the contaminants (occupational, hobbies, etc.).

Exposure Pathways

Site-related chlorinated compounds of concern associated with the groundwater plume under the SDD site include TCE, 1,2-DCE, 1,1-dichloroethane (DCA), 1,1,1-trichloroethane (TCA), chloroethane (CA), chlorobenzene and vinyl chloride(VC). These compounds are all VOCs and are typically found as liquids in groundwater but will rapidly vaporize to a gas upon exposure to the air. These chemicals are of concern for their potential to migrate off-site, vaporize and move as a gas into the basements of nearby homes (Figure 5) and businesses. This process is called vapor intrusion.

These volatile chemicals tend to be mobile in soils. They are partially soluble in water and are heavier than water (except vinyl chloride). Significant rainfall events can flush these chemicals deeper into the soils, and into the groundwater. When introduced into

the groundwater, they tend to sink to the bottom of the aquifer. With increasing distance from the original contamination area and decreasing oxygen levels as they travel deeper into the groundwater, they undergo biodegradation. With the help of anaerobic bacteria, TCE will break down to 1,1-DCE and 1,2-DCE. DCE will then break down into CA and VC. 1,1,1-TCA will break down into 1,1-DCE and 1,1-DCA which will further degrade to CA and VC (Vogel and McCarty, 1985). These chemicals tend to leave the groundwater and form vapors in the air spaces between soil particles. These vapors move to areas of lower air pressure, typically towards the ground surface and may be intercepted by buildings. Buildings with heating and air conditioning systems often have lower air pressure inside due to the heating and cooling systems. Vapors may migrate into the buildings and people in the buildings may breathe the contaminants.

The PCBs found in the on-site soils and in river sediments will typically adsorb to soil and sediment particles. PCBs may become mobile when soil or sediment particles are transported, such as in dust or in rain-water run off. If soil particles are transported to the surface water they can accumulate in the sediment and enter the aquatic food chain. PCBs are typically persistent in the environment, but can break down when exposed to sunlight. PCBs bioaccumulate in aquatic organisms with significant increases in concentration the higher up in the food chain.

Mercury, PCBs, and pesticides were found in the sediment samples taken in the Great Miami River adjacent to the SDD and at the gravel pit to the south of SDD. Mercury was found at 0.65 ppm, aroclor-1254 at 660 ppb, endrin up to 34 ppb, endrin aldehyde up to 7.9 ppb, methoxychlor up to 65 ppb, and endosulfan sulfate up to 3.7 ppb (OHIO EPA, 1996a).

Sample results indicated high levels of PAHs, pesticides, phthalates, PCBs, and metals are in on-site surface soils (See Table 1) (OHIO EPA, 1996a).

Past Exposures

No well data are available to determine whether the public has been exposed to contaminated drinking water prior to the detection of the groundwater contamination in the monitoring wells. There were public and private wells down-gradient of the site that were a source of people's drinking water in the past. However there are no data that indicate that contaminants from the SDD site were detected in these wells. There was a public well that was closed due to contamination down-gradient of SDD, but the contamination was attributed to a site much closer to the contaminated well than the SDD.

Rain water run off and groundwater from the SDD may have discharged into the river and transported contaminants to the surface water and sediment. The surface water in this area is not a source of drinking water, although the river is used as a recreational or fishing resource. Although fish tissue data indicated excess levels of PCBs and mercury in some fish in the Great Miami River (Ohio EPA, 2007), the source of these contaminants has not been attributed to SDD.

It is unknown if workers at the SDD or nearby facilities or people living nearby were exposed to contaminants in the air in the past through inhalation of contaminants. The

extent of past exposure to contaminants through contact with contaminated soil or breathing in contaminated dust from the soil for onsite workers at SDD, workers at the Valley Asphalt Plant, excavation workers at the trench for the sewer at the asphalt plant, or trespassers, is also unknown.

Recreation

Between the SDD and the Greater Miami River there is 350 foot wide strip of land owned by the Miami Conservancy District (MCD, 2005). Within the strip of land next to the SDD, the MCD built a bike trail named the Great Miami River Recreational Trail and a levee. In 1967, MCD gave the responsibility for maintenance and patrolling the Great Miami River Recreational Trail to the Montgomery County Parks District. The bikeway adjacent to SDD is heavily used and is part of a network of trails more than 200 miles long connecting the City of Dayton to trails in surrounding counties (MCD, 2007).

Fishing

There are a number of sport fish found in the Great Miami River adjacent to the SDD. This section of the river is known as an excellent smallmouth bass sports fishery, but also has catfish, rock bass, bluegill, carp, and suckers. In 1997, a statewide fish consumption advisory for mercury was issued for Ohio. The advisory stated that women of child-bearing age and children 15 years old and younger should eat no more than one meal per week of fish from any Ohio body of water and no more than the number of meals of fish that are specified in the more restrictive fish consumption advisories for specific waterways. The specific advisories for the Great Miami River adjacent to the SDD are for the following (OHIO EPA, 2007);

- do not eat any species of suckers due to PCB's,
- eat no more than one meal per two months of Common Carp due to PCBs,
- eat no more than one meal per month of Saugeye due to PCBs, and
- eat no more than one meal per month of white bass due to mercury.

Current Exposures

The most likely routes of exposure to contaminants from the SDD site are through coming into direct contact with contaminated soil, through inhalation by breathing indoor air that has been impacted by volatilization of site-related groundwater contaminants, or through ingestion by drinking contaminated groundwater from drinking water wells.

Direct Contact with On-Site Soils Pathway

Contamination was discovered in the shallow on-site soils (less than 6 inches depth). During the SSI in 1991, the following contaminants were detected in on-site soils at levels above the background sample concentrations; lead up to 3,300 ppm (400 ppm is EPAs screening level for lead in residential soil), copper up to 2,200 ppm and total PAHs up to 6,400 ppb. The following results came from soil sampling for the STEP report in 1996; total PAHs up to 11,150 ppb, phthalates up to 21,600 ppb, PCBs up to 2,030 ppb, and numerous metals significantly exceeding background concentrations (See Table 1). The ATSDR has established "Environmental Media Evaluation Guides" (EMEGs) for

PCBs and copper which are concentrations at which human may be exposed during a specified period of time (chronic, intermediate, or acute) without experiencing adverse health effects. The soil EMEGs for PCBs are 10 ppm for chronic and 20 ppm for intermediate exposures (chronic is more than one year and intermediate is more than two weeks and less than one year). The intermediate soil EMEG for copper is 7,000 ppm for adults. Soil sample results for copper, arsenic, and benzo(a)pyrene significantly exceed ATSDR's intermediate and chronic EMEG values (ATSDR, 2008) and the lead concentration is significantly above the EPAs screening level for residential soils (See Table 1). ATSDR has not established soil EMEGs for PAHs and phthalates. It is unknown if people are being exposed to contaminants in the on-site soils. It is unknown if there are trespassers or workers from nearby businesses that come into contact with the contaminated soils on site or breathe in dust generated from these soils. There are numerous nearby light industries and an asphalt plant that occupies part of the landfill. Workers from some of these industries reportedly use part of the site for storage of materials. Also, it is also unknown if the surface water runoff is transporting contaminated soils to the bikeway or other off-site locations where people may come into contact with them. There are no data indicating that nearby workers or people using the bikeway are exposed to contaminants in the soil from the SDD.

Off-Site Aquatic Food-Chain Pathway

PCBs and mercury have been discovered at elevated levels in the sediments and in the fish tissues of fish in the Great Miami River adjacent to the site. There are very few residents in the immediate vicinity of the site; therefore, it is unlikely that residents and visitors are being exposed to contaminated sediments on a regular basis. Ohio has a fish consumption advisory in place to protect citizens. There is a statewide advisory for mercury and the Great Miami River has advisories for both mercury and PCBs in fish. It is unknown if people are consuming more fish than the recommended rate of the advisory or if there are subsistence fishermen. There are no data that directly connect the contaminants in the fish or sediment in the Great Miami River to the contamination found at the SDD site.

Drinking-Water Pathway

There are no data indicting that the chemicals that have been detected in on-site soils and in the groundwater at the property boundary are being transported to drinking water supplies used by the area residents. Although the drinking water is from the same sand and gravel aquifer that has been found to be contaminated at the boundary of the site, the closest public or private water wells are located about 3 to 4 miles from the site. It is unlikely that the levels of contaminants in the groundwater from this site would have any impact on these wells. The Montgomery County Miami Shores wellfield is about three miles south-southwest of the site. It is on standby, but if put into use, it could supply water for up to 150,000 people.

The contaminants vinyl chloride, trichloroethylene, and 1,2-dichloroethylene were detected in the groundwater at monitoring wells along the south boundary of the SDD property (wells MW-101A and MW-210) (Figure 3). Detections of vinyl chloride range from 4 ppb to 180 ppb (MW-101A). Trichloroethylene was found in concentrations ranging from 30 to 250 ppb in well MW-210, from 8 ppb to 22 ppb in well MW-201, and

from 11 ppb to 41 ppb in well MW-202. Detections of 1,2-dichloroethene ranged from 41 ppb to 480 ppb in well MW-101A (Hoffman, 2005). At the time these samples were collected, the direction of groundwater flow was to the southeast.

Vapor Intrusion Pathway

Volatile organic compounds can escape the groundwater and migrate through the air spaces in the soil to the indoor air in nearby residential basements (Figure 5) and commercial or industrial work locations. The inhalation of the vapor phase of these site-related contaminants is another potential exposure route. Conditions found at this site that are favorable for contaminant migration via vapor intrusion pathway include: the shallow depth to groundwater (12 to 18 feet below ground surface), the type of soil (sand and gravel), which allows for easy transport of contaminants through the soil air spaces, and the close proximity of homes with basements and work locations. The potential for offsite vapor intrusion at this site has not been investigated. No indoor air or soil gas data has been collected to determine whether vapor intrusion is occurring or that there is an inhalation exposure for residences with basements within a quarter mile south of the site or for workers at locations on the northern and eastern portions of the site (Figure 5).

CHILD HEALTH CONSIDERATIONS

ATSDR and HAS recognize the unique vulnerabilities of children exposed to environmental contamination and hazards. As part of this health assessment, HAS considered the greater sensitivity of the children who live in the area of the SDD site when drawing conclusions and making recommendations regarding health effects from exposure to chemicals related to the SDD site.

COMMUNITY HEALTH CONCERNS

The Draft SDD Public Health Assessment document was made available for public comment from November 1, 2007 through December 14, 2007 at the USEPA site repository (Montgomery County Library, Kettering-Moraine Branch, in Kettering, Ohio) and on the ODH web location. A total of 72 comments were received; 28 comments from the USEPA Remedial Project Manager for the SDD site and 44 comments from representatives of the Potentially Responsible Parties (PRPs). All USEPA and PRP comments and response to comments can be found in the Appendix of this document. This public health consultation focuses on environmental data from sampling conducted prior to the proposed listing of this site to the NPL in September 23, 2004. USEPA and PRP investigations have new information that will be considered in future health assessments.

CONCLUSIONS

The SDD site posed an ***"Indeterminate Public Health Hazard"*** for exposure of area residents and workers to contaminants *in the past*. 1) There are no data that indicate that the workers or visitors to the site were coming into contact with contaminants in the surface soils or sediments. 2) Elevated levels of PCBs and mercury have been found in the soils and sediments on-site and in the tissues of fish from the Great Miami River, but

the contamination in the fish has not been directly linked to the SDD. 3) There are no soil gas data or indoor air data to determine if nearby residents and workers were inhaling vapor phase contaminants. 4) There are no data to indicate whether nearby drinking water wells were contaminated.

The SDD site *currently* poses an ***"Indeterminate Public Health Hazard"*** for the exposure of nearby residents and workers to contaminants through drinking contaminated groundwater. TCE, DCE, and VC are being transported off-site in the groundwater, however, the extent of contamination off-site has not been fully characterized. Nearby residents are currently connected to the city of Dayton public water supply whose wellfields are not impacted by the contaminants from the SDD site. Currently there is no evidence of a drinking water threat. The Valley Asphalt facility is using an on-site well to supply water to a kitchen and a bathroom for offices on site. No data has been collected to indicate whether workers are being exposed to contaminants from the drinking water. The Delphi Automotive plant, Oakwood City, the City of West Carrollton, and Montgomery County all have drinking water wells within 4 miles of the site. There are no drinking water data that indicate that these wells are being impacted by the groundwater contamination from the SDD site.

The SDD site *currently* poses an ***"Indeterminate Public Health Hazard"*** for the exposure of nearby residents and workers to contaminants through inhalation of contaminants in vapors in their homes and work locations, and through contact with contaminated surface soils or sediments. There are no soil gas data or indoor air data to determine if vapor intrusion of contaminants is occurring at nearby residential or commercial properties.

The SDD site *currently* poses an ***"Indeterminate Public Health Hazard"*** for the exposure of nearby residents and workers to contaminants through contact with contaminated surface soils or sediments. Workers, residents, trespassers, and visitors who enter the site may come into contact with contaminants in the surface soils or sediments. Elevated levels of mercury, cadmium, copper, nickel, lead, methylene chloride, TCE, tetrachloroethylene (PCE), DCE, phthalates, pesticides, PAHs, and PCBs, have been detected in on-site surface soils. However, there are no data that indicate the workers, residents, trespassers, or visitors to the site are being exposed to site-related contaminants at levels that would cause adverse health effects.

The SDD site *currently* poses an ***"Indeterminate Public Health Hazard"*** for the exposure of area residents to contaminants through consumption of fish adjacent to the site in the Great Miami River. Although, elevated levels of PCBs and mercury have been found in the soils and sediments on-site and in fish caught in the Great Miami River adjacent to the site, these contaminants have not been conclusively linked to the SDD site.

The SDD site poses an ***"Indeterminate Public Health Hazard"*** in the *future* for exposure of nearby residents and workers to contaminants through drinking contaminated groundwater, through inhalation from vapor intrusion into their homes and work locations, and through contact with contaminated surface soils or sediments. TCE, DCE, and VC are being transported off-site in the groundwater, however, the extent of contamination off-site has not been fully characterized. The Valley Asphalt facility is

using an on-site well to supply water to a kitchen and a bathroom for on site offices. Within four miles of the site there are mostly production wells for industrial process water, such as the Delphi Automotive plant and a few city wellfield for drinking water, such as the Oakwood City, the City of West Carrollton, and Montgomery County. If the groundwater contamination migrates to these wells, the potential future exposure would be from using these wells as a source of drinking water. Also, soil gas may migrate from the contaminated groundwater to the indoor air environment of nearby residences or work locations. Workers, residents, trespassers, and visitors who enter the site, may come into contact with contaminants in the surface soils or sediments.

The SDD site poses an ***"Indeterminate Public Health Hazard"*** in the *future* for the exposure of area residents to contaminants through consumption of fish from the Great Miami River adjacent to the SDD site. People may eat fish caught in the Great Miami River and be exposed to elevated levels of PCBs and mercury in fish tissues that originated from the SDD site soils and sediments.

RECOMMENDATIONS

Environmental sampling as part of a Remedial Investigation / Feasibility Study (RI/FS) should be completed at the site to better characterize the extent of contamination including:

1. More fully determine the nature and extent of groundwater contamination. The nature and extent of groundwater contamination needs to be investigated not only to ensure that people are not drinking contaminated water, but also to determine if there is a potential threat to local residents and workers from contaminants via the vapor intrusion pathway.
2. If groundwater contamination is a potential threat via the vapor intrusion pathway, the site investigation would also need to determine if nearby residents and workers are being exposed or will potentially be exposed in the future to contaminants from the SDD.
3. The direction and rate of groundwater flow - Need to determine the direction and rate of groundwater flow to ensure that drinking water wells are not at risk of contamination. The pumping of nearby industrial production wells and groundwater recharge and discharge to and from the Great Miami River may be affecting the direction and rate of groundwater flow as well as the migration of contaminants from the site.
4. Soil contamination - The site should be secured so that workers do not come into contact with contaminated soils. If portions of the former SDD are currently being utilized by nearby facilities, such as the Valley Asphalt Plant, measures need to be taken to ensure that workers will not be exposed to contaminants.
5. Determine if the contamination from the SDD site is impacting sediment and fish in the Great Miami River and posing a health threat to people eating the fish.
6. USEPA has recently discovered records that indicate asbestos was improperly disposed of in the SDD site. Samples need to be collected to determine if site workers or the public is being exposed to asbestos.

PUBLIC HEALTH ACTION PLAN

Actions at this site are currently being pursued under the USEPA Superfund Alternative Sites (SAS) program. A Remedial Investigation / Feasibility Study is currently being conducted by the potentially responsible parties under the supervision of the U.S. EPA. Due to the incomplete information characterizing the nature and extent of contamination on-site and lack data characterizing the extent of contamination of the offsite groundwater plume, no public health education activities or public meetings are planned at this time. HAS will review any additional environmental data collected.

PREPARED BY

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Robert C. Frey Ph. D. – Principal Investigator

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TABLES AND FIGURES

Table 1. Surface Soil Contaminant Concentrations (0 to 6 inches depth) - STEP Investigation 1996, Ohio EPA				
	Up to	**Background**	**Comparison Values**	**Source[a]**
VOLATILE ORGANIC COMPOUNDS (VOCs) - parts per billion (ppb)				
Methylene chloride	16	ND	90,000	CREG B2
Trichloroethylene	11	ND	400,000	Pica Acute EMEG
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) - parts per billion (ppb)				
Phenanthrene	1,700	63		
Fluoranthene	2,000	110	30,000,000	Adult RMEG
Pyrene	1,900	130	20,000,000	Adult RMEG
Benzo(a)anthracene	1,100	58		B2
Chrysene	1,200	83		B2
Benzo(b)fluoranthene	1,300	ND		B2
Benzo(k)fluoranthene	950	ND		B2
Benzo(a)pyrene	**1,000**	62	**100**	CREG B2
Indeno(1,2,3-cd) pyrene	910	48		B2
Dibenzo(a,h)anthracene	450	ND		B2
PESTICIDES - parts per billion (ppb)				
Gamma-BHC (Lindane)	1.8	ND		
Endosulfan II	5.4	1.4	1,000,000	Adult EMEG
4,4-DDD	4.4	0.65	3,000	CREG B2
4,4-DDT	8.8	1.6	2,000	CREG B2
Endrin ketone	7.5	ND		
POLYCHLORINATED BIPHENYLS (PCBS)- parts per billion (ppb)				
Aroclor-1254	830	ND	10,000	Chronic EMEG
Aroclor-1260	1,200	ND		
PHTHALATES - parts per billion (ppb)				
Butylbenzylphthalate	18,000	ND	100,000,000	Adult RMEG
Bis(2-ethylhexyl)phthalate	2,100	230		
METALS - parts per million (ppm)				
Antimony	278	ND	300	Adult RMEG
Arsenic	**141**	6.0	**0.5**	CREG A
Barium	13,000	112	400,000	Adult RMEG
Beryllium	5.8	0.62	1,000	Adult EMEG B1
Cadmium	16.3	0.57	100	Adult EMEG B1
Chromium	62.0	17.3		
Copper	**191,000**	22.5	**7,000**	Adult EMEG
Lead	**12,100**	31.5	**400[b]**	B2
Nickel	139	12.9	10,000	Adult RMEG
Selenium	8.8	ND	4,000	Adult EMEG
Silver	7.6	0.45	4,000	Adult RMEG
Vanadium	92.6	17.4	2,000	Adult Inter. EMEG
Zinc	11,500	76.9	200,000	Adult EMEG
Cyanide	3.7	0.30	10,000	Adult RMEG

ND – Analyte was analyzed for but not detected

[a]ATSDR Soil Comparison Values Feb. 20, 2007

[b]Residential Soil Lead Action Level-Removal Actions established by U.S. EPA and HAS

Table 2. Sediment Contaminant Concentrations - STEP Investigation 1996, Ohio EPA					
	Gravel Pit	**River Sediment**	**Background**	**Comparison Values**	**Source[a]**
PESTICIDES - parts per billion (ppb)					
Endrin	34	4.8	ND	200,000	Adult EMEG
Endosulfan sulfate	3.7	ND	ND	1,000,000	Adult EMEG
Methoxychlor	18	65	ND	4,000,000	Adult Inter. EMEG
Endrin aldehyde	7.9	ND	ND		
POLYCHLORINATED BIPHENYLS (PCBs)- parts per billion (ppb)					
Aroclor-1254	660	ND	ND	10,000	Adult EMEG
METALS - parts per million (ppm)					
Mercury	ND	0.65	0.13		

ND – Analyte was analyzed for but not detected
[a]ATSDR Soil Comparison Values Feb. 20, 2007

Table 3. Groundwater Contaminant Concentrations - STEP Investigation 1996, Ohio EPA				
	Up to	**Background**	**ComparisonValues[a]**	**U. S. EPA[b]**
VOLATILE ORGANIC COMPOUNDS (VOCs)- parts per billion (ppb)				
Chloroethane	22	ND		
Acetone	30	ND	30,000 Adult RMEG	
1,1-dichloroethane	13	ND		
1,2-dichloroethane (total)	**150**	ND	**0.4 CREG** B2	**5 MCL**
Toluene	15	ND	700 Int. EMEG	1,000 MCL
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)- parts per billion (ppb)				
Phenol	130	ND	10,000 RMEG	
PESTICIDES - parts per billion (ppb)				
Heptachlor	**0.51**	ND	**0.008 CREG** B2	**0.4 MCL**
METALS- parts per billion (ppb)				
Potassium	114,000	9,570		

ND – Analyte was analyzed for but not detected
[a]ATSDR drinking water comparison values, Feb. 20, 2007
[b]U.S.EPA Maximum Contaminant Levels

Table 4. Groundwater Sample Results 1996 through 2004 Parts per billion (ppb)									
	MCL	**MW-101a**	**MW-102**	**MW-103**	**MW-201**	**MW-202**	**MW-203**	**MW-208**	**MW-210**
Vinyl chloride	**2**	**4-180**	ND	ND	ND	ND	ND-**2**	ND-1	ND
Trichloroethylene	**5**	ND	ND-0.7	ND-**8**	**5.9-22**	**11-41**	ND	ND-2	**30-260**
1,1-Dichloroethane	**NL**	8.7-20,000	ND	ND	ND	ND	ND-13	ND	ND
1,2-Dichloroethene (total)	**70**	**92-480**	ND	ND	ND	ND-3	ND-25	ND-2	ND-45
1,1,1-Trichloroethane	**200**	ND	ND	ND	ND-8.9	ND	ND	ND	ND
Chlorobenzene	**100**	ND	ND	ND	ND	ND	12-29	ND	ND

Monitoring Wells MW-204, MW-206, MW-207, MW-209, & MW-212 – all results were below detection limits.
Bolded results are above the MCLs.
Source - Hoffman, 2005
ND – Analyte was analyzed for but not detected
NL – No Level established

FIGURES

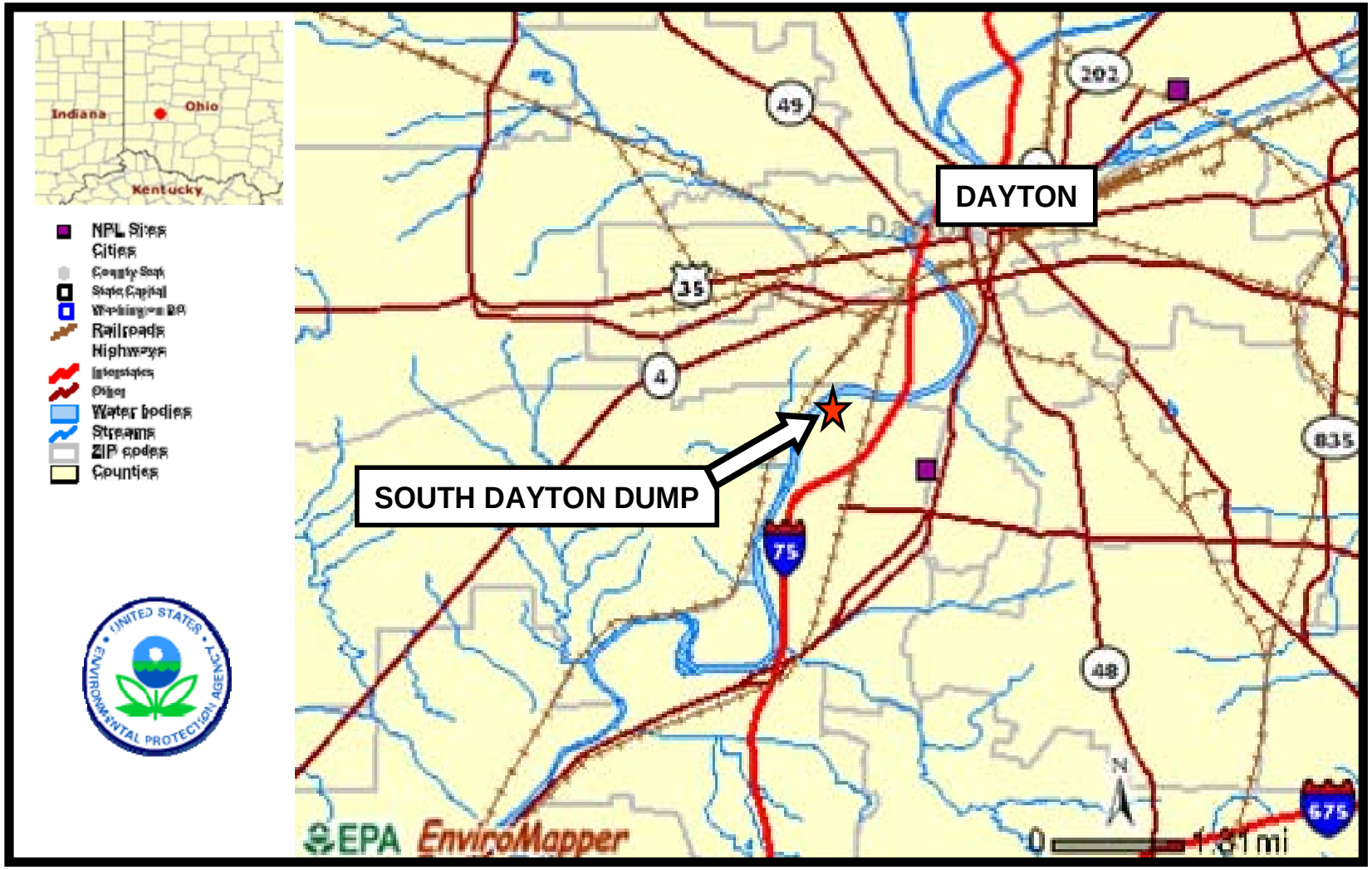

FIGURE 1. SOUTH DAYTON DUMP LOCATION

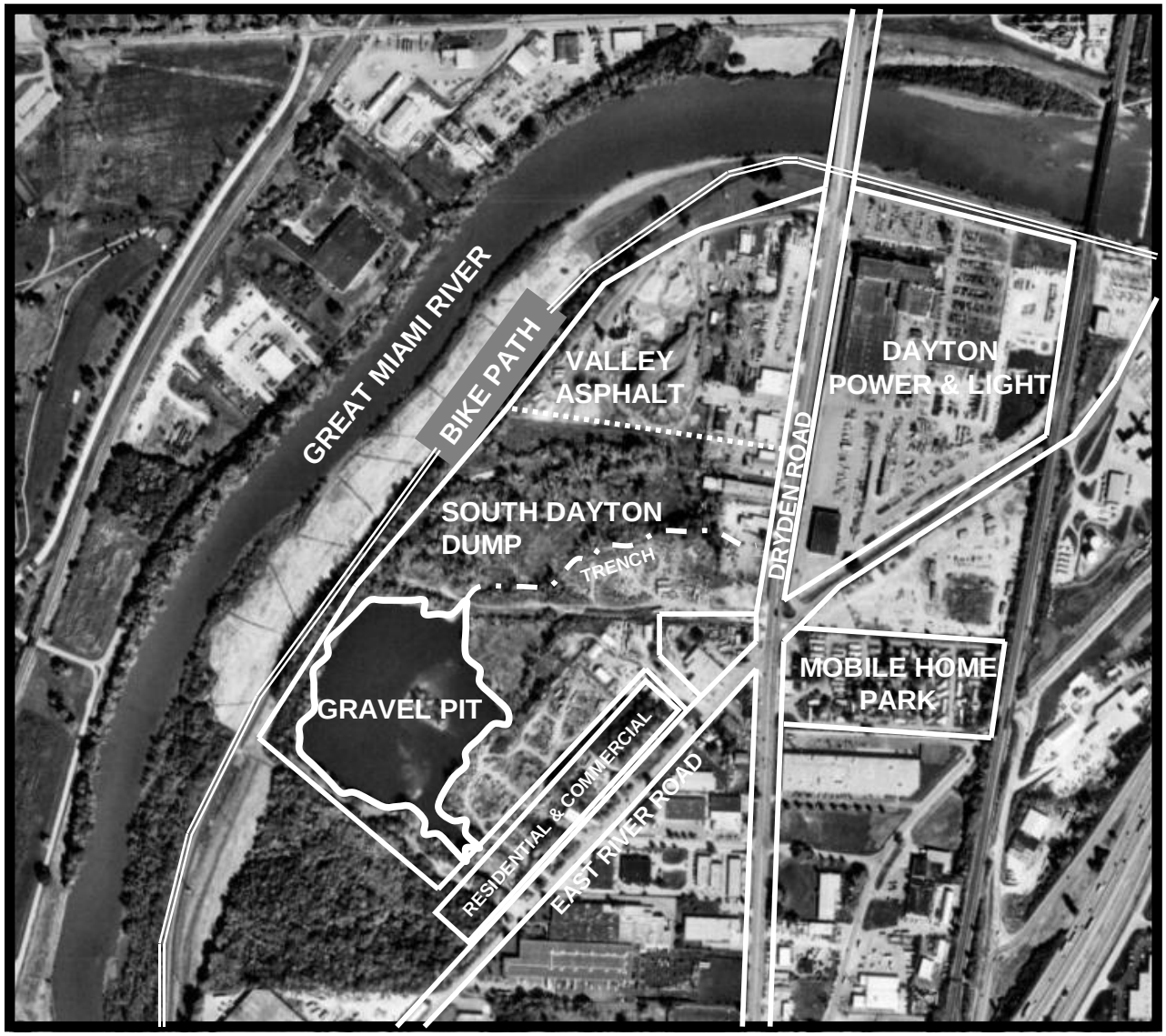

FIGURE 2. South Dayton Dump and Surrounding Area

Exemption 9

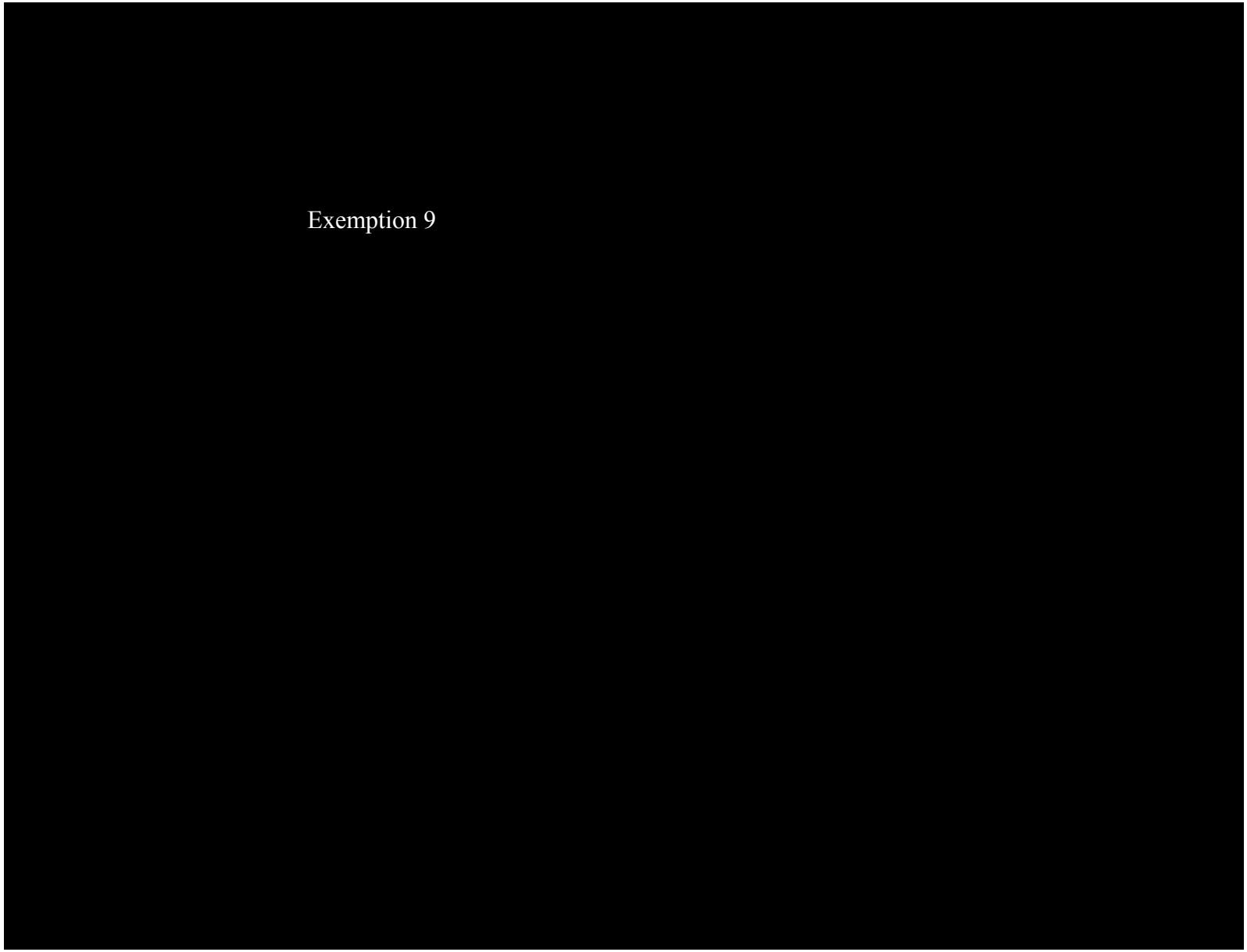

Figure 4. Location of Drinking Water Wells and Sole Source Aquifer System Near the South Dayton Dump

[redacted]

Exemption 6, 9

Figure 5. Location of Residential Homes in the Vicinity of South Dayton Dump

CERTIFICATION

This South Dayton Dump and Landfill Health Assessment was prepared by the Ohio Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures.
Editorial review was completed by the cooperative agreement partner.

Technical Project Officer, Cooperative Agreement Program Evaluation Branch (CAPEB), Division of Health Assessment and Consultation (DHAC), ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health assessment and concurs with the findings.

Team Leader, CAPEB, DHAC, ATSDR

APPENDIX

The public was asked to review this Public Health Assessment for the South Dayton Dump and Landfill and provide comments and questions. It was made available for public comment from November 1, 2007 until December 14, 2007 and copies of the assessment were located at the Montgomery County Library, Kettering-Moraine Branch, 3496 Far Hills Avenue, Kettering, Ohio, 45429-2518, and at the Ohio Department of Health web location. The purpose of the comment period was to provide the community with an opportunity to express what health concerns they have, including suspected exposures and the health effects of exposures.

No comments or questions were received from the community regarding suspected exposures or health effects from exposures from the SDD site. There were a total of 72 comments received from three parties; 28 comments were received from the U.S. Environmental Protection Agency Remedial Project Manager for the SDD site, 9 of the comments received were submitted on behalf of the SDD owners, and 35 of the comments received were submitted on behalf of the SDD Potentially Responsible Parties.

It is important to note that this health assessment focuses on environmental data from sampling and investigations conducted prior to the proposed listing of the site to the NPL on September 23, 2004. The USEPA and the PRPs are currently in the process of a Remedial Investigation (RI). The RI is expected to provide data that can be used for a more determinate public health assessment.

United States Environmental Protection Agency Comments
Public Health Assessment South Dayton Dump and Landfill Site
September 28, 2007 Draft
Submitted November 19, 2007

1. Page 2, Summary, Paragraph 2: Internal memoranda from Delco Moraine in 1975 and 1976 indicate asbestos waste was disposed at the Site without adequate cover. Handwritten notes believed to be in the landfill operator's handwriting (Alcine Grillot) on an undated tax map from Montgomery Health Department files from the 1960s also indicate "brake lining dust" was disposed at the Site although it is not clear whether or not this is asbestos waste. A copy of the map and memos are in Attachment 1.

   Response: Inhalation of asbestos fibers is a health concern. Site investigations need to include asbestos as a contaminant of concern and determine if the public is being exposed to asbestos. Monitoring for asbestos fibers in air should be required during any site activities that would disturb the soil/fill material to ensure the safety of on-site workers and to determine if there are any releases off-site. We recommend the collection of this data during the Remedial Investigation to determine whether asbestos may pose a health threat to the public.

2. Page 2, Summary, Paragraph 3: Soil sample S08 (OEPA) collected from 0.2-0.3 feet below ground surface in 1996 contains elevated levels of lead (652 mg/Kg) and copper (1,830 mg/Kg) as well as antimony (278 mg/Kg), arsenic (141 mg/Kg) and polynuclear aromatic hydrocarbons (PAHs) including 820 ug/Kg benzo(a)pyrene [see Ohio Environmental Protection Agency (OEPA) 1996 Site Team Evaluation Prioritization Report]. Sample S08 (OEPA) was collected from the embankment leading down to the Great Miami River (GMR) on Miami Conservancy District (MCD) property (Lot 3278) and indicates landfill contaminants are leaving the South Dayton Dump and Landfill (SDDL) and/or the landfill extends into off-Site areas. Conestoga Rovers Associates (CRA), the consultant for the SDDL potentially responsible parties (PRPs) reports the embankment is constructed of fill material including slag, ash and foundry sand and metal and glass shards. Sample S10 (EPA) collected from the embankment on MCD property north of S08 (OEPA) (Lot 3058) also contained 1,200 ug/Kg benzo(a)pyrene (see Draft RI/FS Work Plan Pages 5, 18, 76, and 78; Figure 2.1 (site features/inspection); Figure 2.20 (soil sample locations); and Table 2.2 (soil sample results) in Attachment 2. NOTE: "Direct Contact Presumptive Remedy Area" in Figure 2.1 and Figure 2.20 is not approved; please disregard.

   Response: The USEPA and CRA have recently discovered that early landfill operations took place in areas thought to be off-site. As a result site boundaries have been extended for the Remedial Investigation. It has yet to be determined whether some of the "off-site" or background samples collected during previous investigations indicate that landfill

contaminants are leaving the site or that the landfill extends into off-site areas.

3. Page 2, Summary, Paragraph 3: Sediment samples S17 (OEPA) and S19 (OEPA) collected in the GMR adjacent to the Site contain PAHs above consensus-based probable effects concentrations for ecological effects (Table 1) (see *Prediction of Sediment Toxicity Using Consensus-Based Freshwater Sediment Quality Guidelines*, EPA 905/R-00/007, June 2000). NOTE: When the samples were collected OEPA did not realize S19 was adjacent to the Site - not upstream (see Draft RI/FS Work Plan Figure 2.20 and Table 2.3 in Attachment 2). NOTE: "Direct Contact Presumptive Remedy Area" in Figure 2.20 is not approved; please disregard.

   CRA's site inspection indicates the embankment appears to be constructed of fill material including foundry sand, slag, ash and other debris (Attachment 2 - Draft RI/FS Work Plan Pages 5, 18, 76 and 78).

   These chemicals were also detected at much higher concentrations on Site. About 10 percent of the landfill is in the 100 year floodway and about 60 percent of the landfill is in the 100 year floodplain (Draft RI/FS Work Plan Figure 2.6 in Attachment 2). About 50 percent of the landfill is below the 10 year flood elevation which ranges from 729 feet north of Dryden Road to 726 feet south of the Quarry Pond (see Draft RI/FS Work Plan Page 32 in Attachment 2 and Payne Firm Survey in Attachment 3).

   Draft RI/FS Work Plan Figure D-5 shows the extent of Site flooding during a 1959 flood (Attachment 2, Appendix D). The 1959 flood was between a 20 to 50 year flood event and is estimated as a 40-year flood with a maximum daily average discharge of 57,100 cubic feet per second (cfs) at the nearest upstream gauging station (USGS Dayton 03270500) (Attachment 4).

   An air photo from April 14, 1973 (Attachment 2, Draft RI/FS Work Plan Appendix D, Figure D-9) shows flooding along the MCD recreational trail to the embankment of the landfill in some Site areas. United States Geological Survey (USGS) records indicate the maximum daily average discharge on April 14, 1973 was 7,190 cfs with a maximum daily average discharge for the event of 8,220 cfs on April 13, 1973 (Attachment 4).

   USGS records indicate that during the past 10 years (1997-2007), the Dayton gauging station had a daily average discharge of 8,220 cfs or higher on 270 days (Table 2 and Attachment 4). On 47 days, the daily average discharge was between 2 to 3 times greater than the 1973 event (16,440 cfs to < 24,660 cfs) and on 20 days the daily average discharge was between 3 to 4 times greater than the 1973 event (24,660 cfs to < 32,880 cfs). Four days during the past 10 years had a daily average discharge greater than 4 times the 1973 event (32,880 cfs to < 41,100 cfs). Two 2 days during the past 10 years had a daily average discharge greater than 5 times the 1973 event (greater than 41,100 cfs). The maximum daily

average discharge reported during the 10 year period was 42,000 cfs in January 2005.

Response: Although, elevated levels of PAHs have been found in the sediment adjacent to the site and elevated levels of PAHs have been found in the on-site surface soils and the site has been flooded on several occasions in the past (a substantial portion of the site is in the 100 year floodplain), no one has attributed the contaminants found in the sediments of the Great Miami River adjacent to the site to the SDD.

4. Page 2, Summary, Paragraph 3: Valley Asphalt's consultants for the 2000 drum removal (2000 TCA Environmental Remediation Report Page 1, Section 3, Item 5) and CRA report the Valley Asphalt well as a drinking water well/potable well supply (see also Draft RI/FS Work Plan Pages 73 and 77 in Attachment 2).

Response: The Draft RI/FS Work Plan states that during an Ohio EPA inspection on Jan. 20, 2006 it was reported that Valley Asphalt's owner **"thought"** that the facilities wells provided drinking water to the main office (Conestoga-Rovers & Associates, Draft, Remedial Investigation/Feasibility Study Work Plan, South Dayton Dump and Landfill Site, Moraine, Ohio. January, 2007, page 73). However on Feb. 1, 2006 Ohio EPA DDAGW confirmed that the well is **not** a public water supply well; Hutch Rogge of John Jurgensen Co. (which owns Valley Asphalt) said the well supplies their office building with water for a hand-sink and toilets. The well water is not for drinking, bottled water is used instead (Email communication OEPA, February 1, 2006).

5. Page 2, Summary, Paragraph 4: There are at least 7 wells 500-1,500 feet in the general downgradient direction of the Site (Draft RI/FS Work Plan Figure 2.14 and 2.15 and Apendix C, Figure C-1 and well logs). NOTE: The "Direct Contact Presumptive Remedy Area" in Figure 2.14 and Figure 2.15 is not approved; please disregard. The Well ID Numbers are:

- 966158, Miller Valentine
- 493091, Steve Tomsky
- 536349, Mosier Tree
- 158881, Moraine Corporation
- 557902 and 557903, Mid-States Development
- 499062, Rock Processing

Well 966158 was installed in 2005. How did ATSDR confirm none of these wells are used for drinking water? Could any of these wells be used for industrial purposes with supply lines run to offices for drinking water/potable use?

Response: ATSDR, HAS contacted the local health department to determine if residential properties have connections to the City of Dayton's water supply. The local health department, Public Health of

Dayton Montgomery County, confirmed through records search that properties were connected to public water service. It is assumed that public water service would be used as a source of drinking water at these properties.

6. Summary, Page 2, Paragraph 5 and Page 3: These paragraphs state "there are no…data that indicate that…occurred." Since there is no data wouldn't it be more accurate to state "…there are no…data to indicate whether…occurred/is occurring, etc.."?

   Response: Changed to "data to indicate whether".

7. Page 4, Site Location, Paragraph 2: The mobile home park is approximately 150 feet from the Site boundary and the nearest mobile home appears to be approximately 250 feet from the Site boundary, not ¼ mile from the Site. See Draft RI/FS Work Plan Figure 2.1 in Attachment 2. NOTE: The "Direct Contact Presumptive Remedy Area" in Figure 2.1 is not approved; please disregard.

   Response: Will change to "less than a quarter mile southeast" (STEP 1996 report stated "about 0.25 mile southeast of the site.")

8. Pages 5 and 6, Site History: See Comment No. 1 re: asbestos.

   Response: See Response to Comment No. 1 regarding asbestos.

9. Regional Hydrogeology and Groundwater Resources, Page 7, Paragraph 3: See Comment No. 5 re: wells near Site.

   Response: See Response to Comment No. 5 regarding wells near Site.

10. Regional Hydrogeology and Groundwater Resources, Page 8, Paragraph 2: See Comment No. 3 re: flooding. Also, there is not a levee between the Site and the river. There is an embankment constructed of fill material including slag, ash and foundry sand, along with metal and glass shards. Sample S08 (OEPA), S10 (EPA) and S07 (OEPA) collected from the embankment on MCD property in the 100 year floodway of the GMR contains contaminants above ATSDR Comparison Values. See 1996 OEPA Site Team Evaluation Prioritization Report and 1999 United States Environmental Protection Agency (U.S. EPA) Screening Site Inspection Report. The data is also summarized in Draft RI/FS Work Plan Table 2.2 in Attachment 2:

    - S08 (OEPA): 141 mg/Kg arsenic; 652 mg/Kg lead and 820 ug/Kg benzo(a)pyrene
    - S05 (OEPA): 12.2 mg/Kg arsenic
    - S10 (EPA): 8.1 mg/Kg arsenic; 1,200 ug/Kg benzo(a)pyrene

Response: See Response to Comment No. 3 regarding flooding and attributing the off-site contamination to the SDD. Although, fill material including slag, ash and foundry sand, along with metal and glass shards were encountered during drilling operations, no reports have concluded that contaminated soils in the embankment or levee were associated with the landfill operations at SDD. In all the previous reports the embankment is referred to as the levee.

11. Page 9, 1996 Site Team Evaluation Prioritization, Paragraph 2: See Comment No. 3 above re: SVOCs in GMR sediment and S19 not being a "background sample".

Response: See Response to Comment No. 3.

12. Page 10, Landowners Investigations: The maximum concentration of TCE was 260 ug/L in 1999. See 2002 Payne Firm Report and subsequent figures. The data is also summarized in Draft RI/FS Work Plan Table 2.5 in Attachment 2.

Response: This will be changed to maximum TCE concentration - 260 ppb, however, note that the Administrative Settlement Agreement and Order on Consent for RI/FS stated that the maximum TCE concentration was 250 ppb.

13. Page 10, Landowners Investigations: Arsenic was also detected above the MCL in the following samples (see 2002 Payne Firm Report and subsequent figures). The data are also summarized in Draft RI/FS Work Table 2.5 in Attachment 2. Monitoring well locations are in Draft RI/FS Work Plan Figure 2.21 in Attachment 2.
    - MW-203: 19 ug/L 1998; 27 ug/L 1999. No other samples collected.
    - MW-207: 12 ug/L 1999. No other samples collected.
    - MW-209: 32ug/L 1999. No other samples collected.
    - MW-204: 33 ug/L 1998; 28 ug/L 1999. No other samples collected.

    NOTE: The "Direct Contact Presumptive Area" in Figure 2.21 is not approved; please disregard:

Response: These arsenic concentrations are above the current MCL of 10 ug/L; however, at the time that they were sampled (in 1998 and 1999) they were below the MCL of 50 ug/L (the MCL was reduced to 10 ug/L on January 1, 2006). The concentrations found in the groundwater may be a health concern for people drinking water from that aquifer downgradient of the site. However, public water supplies are monitored to assure that levels are below the MCLs. There are no site specific background arsenic groundwater data (there are no monitoring wells upgradient up the site). Monitoring well MW-207 was installed in a location that was thought to be upgradient of the site, but has subsequently been determined to be located adjacent to early landfill operations. Also, sand and gravel aquifers

in Ohio have been found to have concentrations of arsenic ranging up to 102 ug/L. Without site specific arsenic background data, it is uncertain whether the arsenic detected in the groundwater can be attributed to the SDD site.

"Drinking water in the United States generally contains an average of 2 ug/L arsenic (EPA 1982c), although 12% of the drinking water from surface water sources in the north Central region of the United States and 12% of the supplies from groundwater sources in the western region have levels exceeding 20 ug/L (Karangas et. al.1998). In January 2001, EPA adopted a new standard that arsenic levels in drinking water were not to exceed 10 ug/L, replacing the previous standard of 50 ug/L. The date for compliance with the new MCL was January 23, 2006 (EPA 2001)." ATSDR Toxicological Profile for Arsenic, August 2007, p 315.

14. Page 10, Landowners Investigations: Lead was also detected above the MCL action level in MW-209 at a concentration of 100 ug/L in 1999. No other samples were collected from MW-209 for lead analysis. See 2002 Payne Firm Report. The data is also summarized in Draft RI/FS Work Plan Table 2.5 in Attachment 2.

Response: Lead was reported detected at 0.1 mg/L for the Landowners Investigation. As it was reported, it appeared that the detected result was at the detection limit or the required reporting limit of the analysis. Given the uncertainty associated with this detection may be at the limits of the analysis and the assumed level of accuracy of plus or minus 0.1 mg/L, it was not discussed in the Public Health Assessment.

Also, lead is regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For lead, the action level is 0.015 mg/L.

15. Page 11, Exposure Pathways, General: See Comment No. 1 re: asbestos. See Comment Nos. 13 and 14 re: arsenic and lead in groundwater. See Comment No. 3 re: PAHs in sediment samples.

Response: See Response to Comment No. 1 regarding asbestos. See response to Comment No. 13 and 14 regarding arsenic and lead in groundwater. See Comment No. 3 regarding PAHs in sediment samples.

16. Page 11, Exposure Pathways, Paragraph 1: Isn't there also a potential for the VOCs in the groundwater to move as a gas into Valley Asphalt buildings and the other on-Site buildings along Dryden Road? U.S. EPA does not know whether any of these buildings have basements. See Comment No. 23 below re: extent of landfill.

Response: Yes there is a potential for the VOCs in the groundwater to move as a gas into Valley Asphalt buildings as well as other on-Site

buildings along Dryden Road. Vapors can move into the buildings regardless of whether they have basement or are built on slabs. However, at this time we do not have groundwater or soil gas data that indicates that there are levels of VOCs above the OSWER screening values in the vicinity of the Valley Asphalt buildings. Data indicates that the groundwater flow may vary seasonally from the southwest to the southeast, therefore samples from existing monitoring wells, located downgradient of Valley Asphalt buildings, will not provide us with the data to make a determination of vapor intrusion threat.

17. Exposure Pathways, Page 12, Paragraph 4 and Table 1: Some sample results were significantly higher in the 1991 U.S. EPA samples. See 1991 U.S. EPA Screening Site Inspection Report. The data are also summarized in Draft RI/FS Work Plan Table 2.2 in Attachment 2. In 1991 maximum concentrations were:
    - Phenanthrene: 18,000 ug/Kg, S3 (EPA)
    - Fluoranthene: 21,000 ug/Kg, S6 (EPA)
    - Pyrene: 13,000 ug/Kg, S6 (EPA)
    - Benzo(a)anthracene: 8,500 ug/Kg, S3 (EPA)
    - Chrysene: 6,400 ug/Kg, S6 (EPA)
    - Benzo(b)fluoranthene: 9,500 ug/Kg, S3 (EPA)
    - Benzo(k)fluoranthene: 6,400 ug/Kg, S3 (EPA)
    - Benzo(a)pyrene: 5,700 ug/Kg, S3 (EPA)
    - Indeno(1,2,3-cd)pyrene: 5,000 ug/Kg, S3 (EPA)
    - Dibenz(a,h)anthracene: 1,600 ug/Kg, S6 (EPA)
    - Aroclor-1248: 4,200 ug/Kg S2 (EPA)
    - Aroclor-1260: 2,800 ug/Kg S2 (EPA)

    Response: HAS could only obtain page 2 of Table 1 of the 1991 USEPA Screening Site Inspection Report. This new information, although it indicates higher concentrations of contaminants, does not change our conclusions in this report. However, this information will be included in future assessments.

18. Page 13, Fishing: See Comment No. 3 re: S19 not being a background location and Site flooding. Significant levels of PAHs were found in S17 (OEPA) and S19 (OEPA). Metals and low levels of pesticides were also detected in these samples and in sediment sample S18 (OEPA). U.S. EPA has not evaluated whether any of the chemicals detected in the GMR sediments adjacent to the Site would pose a risk through fish ingestion. Perhaps the current fishing advisory for mercury and PCBs in the GMR is already expected to be protective?

    Response: See Response to Comment No. 3 regarding attributing contamination to the SDD site.

19. Page 13, Fishing: The health assessment does not address fishing in the on-Site Quarry Pond, part of which is owned by the MCD (Lot 3274). See Comment No. 3 re: sediment concentrations above ecological criteria and

sample results for S15 (OEPA) and S17 (OEPA) for complete analytical results. Metals and pesticides were also detected in the sediment. However, U.S. EPA has not evaluated whether any of the chemicals detected in the Quarry Pond are at concentrations high enough to pose a risk through fish ingestion.

Response: See Response to Comment No. 3 regarding attributing contamination to the SDD site. Previous reports did not mention fish or fishing in the Quarry Pond. Eating fish from this pond and potential exposure to contaminants could be attributed to the SDD site.

20. Page 13, Current Exposures: The total PAHs detected in 1991 are more than 6,400 ug/Kg. See Comment No. 17.

Response: See response to Comment No. 17.

21. Direct Contact with On-Site Soils, Page 14, Paragraph 1: The copper concentration of 191,000 mg/Kg is above the ATSDR Adult EMEG. The significance of benzo(a)pyrene at a maximum concentration of 5,700 ug/Kg in soil sample S3 (EPA) which is 57 times greater than the ATSDR Comparison Value of 100 ug/Kg (CREG B2) is not discussed. The significance of arsenic at a maximum concentration of 141 mg/Kg in off-Site soil sample S08 (OEPA) which is 282 times greater than the ATSDR Comparison Value of 0.5 mg/Kg (CREG A) is not discussed. See 1991 U.S. EPA Screening Site Inspection Report and 1996 OEPA Site Team Evaluation Prioritization Report). The data and sampling locations are also summarized in Draft RI/FS Work Plan Table 2.2 and Figure 2.20 in Attachment 2. NOTE: The "Direct Contact Presumptive Remedy Area" in Figure 2.20 is not approved; please disregard.

Response: The benzo(a)pyrene data from the 1991 Screening Site Inspection Report was not available to the HAS at the time the report was written. The data for copper, arsenic, and lead are presented in Table 1, and as stated in the Health Assessment, numerous metals were significantly above background. Text will be added to include a discussion of the ATSDR comparison values.

22. Direct Contact with On-Site Soils, Page 14, Paragraph 1: See Comment No. 10 re: embankment and contamination on MCD property.

Response: Although, fill material including slag, ash and foundry sand, along with metal and glass shards were encountered during drilling operations, no reports have concluded that contaminated soils in the embankment or levee were part of or associated with the landfill operations at SDD.

23. Direct Contact with On-Site Soils, Page 14, Paragraph 1: The businesses just west of Dryden Road are over the reported landfilled area (see marked-up tax map in Attachment 1). Landfilled material was detected at

soil borings near these businesses at locations MW-208 (10 feet of fill), MW-202 (5 feet of fill) and MW-210 (8 feet of fill) (see Draft RI/FS Work Plan Figure 2.21 and Appendix B, Soil Boring Logs in Attachment 2). However, soil samples were not collected from these locations for laboratory analysis. NOTE: The "Direct Contact Presumptive Remedy Area" in Figure 2.21 is not approved; please disregard.

Underground Storage Tank Removal Reports for Dayton Recycling and Custom Deliveries also indicate the landfill extends into these areas (Draft RI/FS Work Plan Figure 2.22 in Attachment 2). NOTE: The "Direct Contact Presumptive Remedy Area" in Figure 2.22 is not approved; please disregard.

Page 5 of the logbook for the Dayton Recycling closure states (Attachment 5):
"*These tanks had been installed into a landfill type excavation. Visual signs of foundry sand, brick, bottles, etc., were exposed during removal process*."

Page 3 of the closure assessment report for Custom Deliveries states (Attachment 6):
"*During excavation and removal of the UST black-gray fine sand and trash were found to exist along the walls of the excavation. Commingled in the fill material were paint cans, multi-colored soil, newspaper, steel pipe and incinerator ash. The fill material was encountered on all sides of the tank pit and extended to a depth of approximately twelve (12) feet below the ground surface. Underlying the fill material was a natural, brown silty sand and gravel. Groundwater was not encountered during the excavation of the UST*."

Response: Although, fill material including slag, ash and foundry sand, along with metal and glass shards were encountered during drilling operations, no reports have concluded that contaminated soils in the area of the businesses west of Dryden Road were part of or associated with the landfill operations at SDD.

24. Direct Contact with On-Site Soils, Page 14, Paragraph 1: See Comment No. 10 re: arsenic, lead and benzo(a)pyrene in off-Site soil on MCD property.

Response: See Response to Comment No. 22 regarding off-site soils on MCD property.

25. Page 14, Off-Site Aquatic Food-Chain Pathway: See Comment No. 18 re: GMR sediment contamination adjacent to the Site. See Comment No. 19 re: fishing in on-Site Quarry Pond, part of which is owned by MCD.

Response: See Response to Comment No. 18 and 19 regarding attributing sediment contamination to the SDD site.

26. Page 14, Drinking Water Pathway: See Comment Nos. 4 and 5 re: Valley Asphalt well and other wells 500-1,500 feet generally downgradient of Site. See Comment Nos. 13 and 14 re: arsenic and lead in groundwater.

Response: See Response to Comment No. 4, 5, 13, and 14.

27. Page 15, Vapor Intrusion Pathway: See Comment No. 16 re: potential vapor intrusion to on-Site businesses.

Response: See Response to Comment No. 16.

28. Conclusions: See previous comments.

Response: See previous Responses to Comments.

Coolidge Wall Comments
Prepared by the Payne Firm On Behalf of SDDL Owners
Public Health Assessment South Dayton Dump and Landfill Site
September 28, 2007 Draft

1. General Comment No. A
   The PHA should clearly explain the conservative nature of the approach used to conduct the assessment. The explanation should include text in appropriate portions of the document clarifying: 1) background on the process the SDDL is currently in and where the PHA fits into the process; 2) the objectives of the PHA and how those objectives might differ from the RI/FS process objectives; 3) discussion of achievement of the PHA objectives at this time; 4) how the PHA considered contaminants of concern (COCs); 5) how the PHA used the existing data; 6) how the PHA considered data sufficiency; 7) how the PHA considered pathway completeness; 8) how the PHA considered uncertainty; and 9) how the RI/FS process is different than the PHA approach and will determine site conditions and the remedy to address any complete exposure pathways.

   Response - PHA is defined as:
   The evaluation of data and information on the release of hazardous substances into the environment in order to assess any [past], current, or future impact on public health, develop health advisories or other recommendations, and identify studies or actions needed to evaluate and mitigate or prevent human health effects (42 Code of Federal Regulations, Part 90, published in 55 Federal Register 5136, February 13, 1990).

   Goals of PHA
   - Evaluate site conditions and determine the nature and extent of environmental contamination
   - Define potential human exposure pathways related to site-specific environmental contaminants
   - Identify who may be or may have been exposed to environmental contamination associated with a site (past, current, and future)
   - Examine the public health implications of site-related exposures, through the examination of environmental and health effects data (toxicological, epidemiologic, medical, and health outcome data)
   - Address those implications by recommending relevant public health actions to prevent harmful exposures
   - Identify and respond to community health concerns clearly communicate the findings of the assessment

   ATSDR considers the same environmental data as USEPA, but focuses more closely on site-specific exposure conditions, specific community health concerns, and any available health outcome data to provide a more qualitative, less theoretical evaluation of possible public health hazards. It considers past exposures in addition to current and potential future

exposures (The integration of site-specific exposure conditions with health effects data and specific community health concerns).

2. General Comment No. B
The PHA should explain pertinent details and uncertainties of the identified potential exposure pathways and why data for pathways are not currently available (For instance, potiential vapor intrusion is a pathway that has relatively recently focused on specific sampling approaches for evaluation. Ohio EPA established a working group to provide guidance on this issue in 2007), may be insufficient, or may not be attributable to the SDDL. The PHA does not appear to convey area and site-specific complexities in evaluating the SDDL. Pertinent background and uncertainty discussions are appropriate for: 1) the SDDL site boundary and internal features such as the landfill limits and operating entities: 2) the relation of sediment and surface water to the SDDL; 3) contaminant significance, nature, fate and transport; 4) ground water flow, flow variation, and river effect; 5) developments in considering vapor intrusion; 6) evidence of aquitard separation within the area considered in the PHA; and 7) distant well fields and identified upgradient entities.

Response - The Public Health Assessment is initiated during the early stages of the RI/FS process so that site specific exposure conditions and community health concerns can be addressed during the subsequent investigations. Typically, not all the data are available at the time that the PHA is written. As a stakeholder for public health concerns, the Health Assessment Section focuses on data needs that provide a more qualitative, less theoretical evaluation of possible public health hazards. Environmental details and uncertainties are explained in detail in the reports cited in the PHA, however ample detail and discussion are provided to make the public health determinations in the PHA.

3. General Comment No. C
The PHA should provide appropriate perspective on the evaluated geographic areas encompassing the SDDL, and how local, regional, surface, and subsurface features complicate assessment in the area. This perspective should include discussions of relevant past work and findings at other nearby sites and should not be limited to those currently mentioned in the report.

Response - The PHA has determined that ample environmental information, to make the public health determination, is not available at this time. Local, regional, surface, and subsurface features are discussed in the "Background" section of the PHA. Past work and findings at other nearby sites will not fill the SDD site-specific data gaps identified in the conclusions of the PHA.

1. Specific Comment No. 1 – Page 4, Purpose And Health Issues
On page 4 it states, "*Upon being listed on the NPL, the Agency for Toxic Substances and Disease Registry (ATSDR) is required by a congressional*

mandate to complete a Public Health Assessment evaluating the public health threat posed by all NPL sites." Since the Site is currently not on the NPL, it is not clear what prompted this report. As noted above and on page 6 of the PHA, the Site is currently under administrative orders (U.S. EPA served special notice letters [September 29, 2005] to PRPs to initiate the process for conducting an RI/FS at the site. Negotiating PRPs submitted a good faith offer to U. S. EPA on December 8, 2005. The negotiating parties signed an Administrative Settlement Agreement and Order on Consent (ASAOC) on August 10, 2006. The effective date of the order is August 15, 2006) to perform further assessment (i.e., RI/FS). Therefore, considering the report's inability to make any Public Health Hazard determinations due to insufficient data and with the understanding that a RI/FS has been required for the Site, this report seems redundant of information previously available, consequently prompting the noted orders.

Response - Three situations trigger a public health assessment:

1. A site is proposed to be placed on the EPA National Priorities List (NPL). ATSDR is required by law to conduct a public health assessment at all sites proposed for or listed on EPA's NPL. (CERCLA section 104(i), as amended, requires the ATSDR to conduct health assessments for all sites listed **or proposed** to be listed on the NPL.)
2. ATSDR receives a "petition" to evaluate a site or release.
3. ATSDR receives a request from another agency.

Text will be changed to reflect that ATSDR conducts a public health assessment for sites that are **proposed to be listed**.
See Response to General Comment No. B, with regard to insufficient data and the focus of PHA.

2. Specific Comment No. 2 – Pages 6-8, Regional Hydrogeology and Groundwater Resources
The PHA presents a broad overview of the Great Miami Buried Valley Aquifer System that is unbalanced with respect to area and site-specific conditions at and in the vicinity of the SDDL. This is done without conveying the role of certain important relationships that affect the potential exposure pathways under consideration. For instance, ground water flow is primarily horizontal, significant clay intervals affecting potential migration are present at the SDDL site and elsewhere in the area under consideration, and the Great Miami River is present both north and west of the SDDL causing seasonal complexity in flow. Given the indeterminate conclusions presented in the PHA, it is surprising that this section presents the absolute characterizations it does about Great Miami Buried Valley Aquifer System without being more site-specific. Limited details about other sites in the area are mentioned, such as specific production wells or wellfields, yet pertinent details about active production rates and other contaminant source are left out. Text should be revised to add available detail regarding how the information in this

section relates to fate, transport, potential exposure pathways, the SDDL, and other contaminant sources in the area.

Response - The PHA focuses on potential routes of exposure as well as conditions that may not lead to exposures. HAS is concerned that sufficient data has not been collected to support site-specific exposure concerns. Site-specific aquifer conditions are poorly understood at SDD. PHA statements regarding the Great Miami Buried Valley Aquifer are well documented and from creditable sources. Site-specific groundwater flow direction, clay intervals, seasonal groundwater flow directions, the influence of production wells on groundwater flow direction, other potential sources of contaminants, etc. need more investigation. This is information that we recommend be gathered during the RI/FS.

3. Specific Comment No. 3 – Pages 8-10, Previous Site Investigations
There should be an introductory paragraph to this section discussing the general purposes and limitations of the sampling, and why many of the pathways considered in the PHA were not a focus of prior work. In the discussion of this prior work, results were often characterized as high, elevated, or compared to background without an appropriate current frame of reference. It is not clear that detected contaminants may or may not be a chemical of concern at the SDDL or acknowledged that future RI/FS work will determine contaminants of concern and representative concentrations. In addition, the 2004 proposed listing of the SDDL to the NPL should be summarized, along with PRP comments, the current status, and why only the ground water pathway was scored.

Response - Discussions of general purposes and limitations of sampling and the focus of previous investigations, as you are suggesting, would only detract from the focus of the PHA and can be found in the original reports. The chemicals mentioned in the PHA have the potential to threaten public health, either alone or in combination with the other chemicals through discussed routes of exposure. The PHA's discussion of the 2004 proposed listing of the SDD to the NPL is focused on relevance to the site's potential threat to public health.

4. Specific Comment No. 4 - Figures 2, 3, 4, and 5 are inconsistent in depicting boundary of the SDDL site and should be made consistent or explained otherwise
Restricted access and the relationship of the SDDL to nearby features and industrial entities are important considerations in discriminating the significance of potential issues. The PHA is unclear in presenting current conditions including access at the site. The lack of accurate current conditions raises the following questions. Is the SDDL site defined? Are areas of the SDDL site included or excluded from consideration, and if so, why? Does the SDDL site extend to Dryden Road and include local industrial businesses? Does the SDDL site include the large water-filled former gravel pit to the south, and if so, why? Does the SDDL site include

Valley Asphalt? These considerations are important for evaluating issues relative to the actual landfill and other current historic features.

Response - The site boundaries have been evolving with the discovery of new information during the initial stages of the RI/FS process. Many of your questions regarding the site boundaries, such as, inclusion of local businesses, the water-filled former gravel pit to the south, and the Valley Asphalt plant need to be discussed with the appropriate agencies, such as, USEPA and Ohio EPA.

5. Specific Comment No. 5 – Tables 1 through 3
   These tables include columns for "background" and "comparison values." These column headings should be clearly explained, particularly "background", if not deleted. When utilized, background determinations are generally required by regulatory agencies to be site-specific. We are unaware that background has been determined at the SDDL. Since background concentrations are undocumented and are not being used to determine COCs they offer no relevancy to the PHA and provide a possibly inappropriate point of reference. It should be noted that in a heavily industrialized area, determination of background concentrations presents a significant challenge. Therefore, for the purpose of this PHA, the references to background should be removed from the data tables.

   Response - The data labeled as "Background" in Tables 1 through 3 are the same "Background" data as presented in the 1996 STEP Investigation report. Also, the footnote at the bottom of each table provides the sources of the comparison values (from the ATSDR Comparison Values, Feb., 20, 2007).

6. Specific Comments No. 6 – Page 3, Last Sentence
   The word "area" should be changed to the word "site."

   Response - A suggested change to "site" workers may be misinterpreted to be only the workers employed at SDD by the PRPs. The word "area" was carefully chosen because "area" workers would include the workers from the Valley Asphalt plant and the businesses along Dryden and East River Roads that may potentially be exposed to contaminants in the soil.

Conestoga-Rovers & Associates Comments
Public Health Assessment South Dayton Dump and Landfill Site
September 28, 2007 Draft

1. General Comment No. 1 - Timing of the Report
   Given that all conclusions in the report were "indeterminate" the reader is left wondering why an assessment of the exposure pathways was conducted. In addition, the potential impact of the Site sediments, soils and groundwater on the Great Miami River (GMR) can only be assessed using data generated from on-Site sampling, based on the fact (and as acknowledged in the report) it has been clearly established that this watershed has been impacted from years of industrial activity and urban development unrelated to this specific Site. Furthermore, the potential impacts of the GMR sediments upon the Site are not acknowledged or considered in this assessment. The ATSDR has sufficient information and data to develop a conclusion on the health considerations posed from flooding of the GMR onto the site.

   Response - CERCLA section 104(i), as amended, requires the ATSDR to conduct health assessments for all sites listed or proposed to be listed on the NPL. The Public Health Assessment is usually initiated during the early stages of the RI/FS process so that site specific exposure conditions and community health concerns can be addressed during the subsequent Remedial Investigations. Typically, not all data are available at the time that the PHA is written. As a stakeholder for public health concerns, the Health Assessment Section focuses on data needs that provide a more qualitative, less theoretical evaluation of possible public health hazards.

   ATSDR does not have any data that indicates that this site has been impacted by other sites in the Great Miami River watershed. The RI/FS investigation should investigate impacts, if any, from other contaminant sources in the watershed.

2. General Comment No. 2 – Site Description
   The description of the Site is simplistic, confusing and out of date and fails to describe either present or historical Site conditions with any precision. The report fails to provide the reader with even a basic clear understanding of current conditions at the Site. The discussion of Site conditions references and presumably relies upon historical inspection documentation dating back to 1985. More current information should have been used in the development of the document or alternatively a Site inspection should have been conducted. The reader may be misled by the discussion of Site features such as ponds and a stream which are only intermittently present at the Site. The report suggests that the entire Site was used for industrial and municipal landfill operations when only a small portion of the Site actually contains fill material. The nature and type of fill has not been fully characterized in the areas where it is located at the Site. The report should be more specific when referring to impacted areas, as there is no evidence of landfilling on significant portions of the Site.

Response - Details of the site conditions were taken from previous investigation reports and accurately describe conditions at the time of the investigations. Site conditions may have recently undergone some minor changes, however these changes do not affect the outcome of the health assessment determinations. We expect that the RI will provide an update to the current site conditions in sufficient detail that another health assessment determination can be made at a later date if needed. Accurate and precise details of the landfill operations have not been reported in previous documents.

The focus of the PHA is on the site-specific exposure conditions, specific community health concerns, and any available health outcome data to provide a more qualitative, less theoretical evaluation of possible public health hazards. The PHA considers past exposures in addition to current and potential future exposures. The PHA relies on existing data and reports that have been collected.

USEPA and Conestoga-Rovers & Associates (CRA) have recently begun the RI/FS process and have uncovered information that indicates that the landfill covers a more extensive area than originally thought.

3. General Comment No. 3 – Site History and Previous Investigations
The discussion of the Site history is oversimplified and inaccurate, previous investigation work is not put into perspective and the reader is left to believe entire Site was used for landfilling of municipal and industrial solid waste. The historical Site operations discussion relies heavily on the Screening and Site Inspection Report for the Site, dated September 1991, prepared by Ecology and Environment Inc (E&E) for the United States Environmental Protection Agency (USEPA). There are additional sources of information regarding historical operations available. This information should be included, such as statements and depositions of persons historically associated with the Site. The Montgomery County Health District and Ohio Environmental Protection Agency have information available that provides additional detail on early Site operations, regulation and compliance.
Additional historical investigation information needs to be added, to put the previous work into context. Information regarding whether previous investigations were intrusive or non-intrusive, media sampled, numbers of samples per media and specific Site areas investigated need to be provided. The reader is left with a general impression that the entire Site and all environmental media are considered in each investigation, when in fact this is not the case. The reader is also not provided with all specific sampling locations when analytical data is discussed. References to specific reports are either not provided or inconsistent. References for the landowner's investigations and the Valley Asphalt Plant Limited Drum Removal Action are not provided. The report assumes the drums recovered from Valley Asphalt were part of the Site, when there is no evidence to substantiate such a claim.

Response - History of the site is important. Historical details found in this assessment were taken from reports of previous investigations and have been reviewed by appropriate Ohio EPA, USEPA, and Public Health of Dayton Montgomery County staff. Previous investigations were limited in scope typically due to limited resources and were not meant to provide the detail likely found in a Remedial Investigation (RI). The RI should provide detailed historical review and in depth review of sample information, such as, whether samples were intrusive or non-intrusive, the media sampled, the numbers of samples per media and the specific site areas investigated. The focus of this report is on site-specific exposure conditions, specific community health concerns, and any available health outcome data to provide a more qualitative, less theoretical evaluation of possible public health hazards. Recent information obtained by USEPA indicates that landfill operations may have occurred in areas outside of the original site boundaries. This new information indicates that SDD landfill operations took place on the property now occupied by the Valley Asphalt plant.

4. General Comment No. 4 – Site Geology/Hydrogeology
Because the discussion of Site geology/hydrogeology is contradictory and in not in agreement with published regional information and known Site-specific information, the reader is left confused. Differing groundwater elevations and groundwater flow directions are presented and discussed within the PHA. At one point in the document it is stated that groundwater flow beneath the Site is poorly understood; later in other portions of the document groundwater flow directions are stated and conclusions are drawn based on the information regarding flows. Also the potential effects or interconnection of the GMR and Site groundwater are not specifically presented or discussed. Extensive environmental investigations have been conducted in this area of Ohio. A large amount regional information and data are publicly available. The regional geologic and hydrogeologic data and references are not provided. This understanding of the Site, regional geology and hydrogeology should be presented followed by Site-specific information. This approach will educate the reader and allow for a better understanding of potential contaminant transport mechanisms.

Response - The information regarding site geology and hydrogeology was obtained from previous site specific investigation reports by USEPA and Ohio EPA, ODNR well logs, and Miami Conservancy District.

- The differing groundwater depths (not elevations) are likely due to variations in the topography and/or seasonal fluctuations in the groundwater elevation.
- Health assessment conclusions were drawn from measured groundwater flow directions and assuming scenarios that will be most protective of public health.

- Site specific effects or interconnection of the GMR and site groundwater have not been specifically studied and it is expected that the RI will provide site specific information.
- Regional geologic and hydrogeologic data were discussed first so that site specific data can be discussed and put into context of the regional data.

The focus of this health assessment is on site-specific exposure conditions, specific community health concerns, and any available health outcome data to provide a more qualitative, less theoretical evaluation of possible public health hazards.

5. General Comment No. 5 – Reported Sampling Results
The discussion of available Site soil, surface water and groundwater analytical data is oversimplified, the available data is not put into perspective, and the reader is only provided with the maximum concentrations of certain constituents. The minimum reported concentrations, number of samples taken, and number of non-detect results are not available for review. Without this information the reader is lead to believe that these results are indicative of general conditions across the entire Site when the available data clearly establishes that this is not the case. Identification of the analytical laboratories used in previous investigations is not provided. In addition, the data quality assurance and quality control are not discussed.

Response - Objective of the PHA is to identify possible harmful exposures and to recommend actions needed to protect public health. ATSDR focuses on environmental data for evaluations of site-specific exposures, specific community health concerns, and any health outcome data for past, current, and potential future exposures. The source of the data is referenced so that the reader can obtain additional information. Discussions of the minimum reported concentrations, number of samples taken, number of non-detect results can be found in the referenced reports and discussions in this document would only serve to detract from the focus of health assessment.

Health assessment conclusions assume scenarios that will be most protective of public health and therefore the maximum concentrations of constituents are considered. References were provided so that additional information can be obtained as well as the identification of the analytical laboratories used the quality assurance and quality control data.

6. General Comment No. 6 – Off-Site Impacts
The past, current and future exposure discussions are confusing. For example, there is a discussion of “other contamination” from off Site; however the information is incomplete and the extent of the potential impacts are unclear. Furthermore, the document suggests that the Site has impacted a municipal well field that is not currently in use when there is not evidence that the impacts at that well field have any relationship to the

Site. Moreover, there are a number of other contaminated sites between the subject Site and the impacted well field; however this fact is not raised. Finally the document, acknowledges identified impacts to the GMR from historical activities along the entire watershed, including significant activity upstream of the Site, but then does not take this acknowledged potential for impact into account when considering the impact to the river.

In conclusion, the report is ill timed, confusing and provides no useful information. It fails to provide any assessment of potential Site impacts to human health or the environment. The PHA fails to consider available information to form conclusions regarding potential impacts of the Site on any environmental media. It is our position that there is more information and data available for use in the preparation of a PHA and that had these data been used a more definitive conclusion with regards to human health risks could be made. In addition the RI/FS work will generate all necessary current to complete this PHA. In closing, issuing the PHA at this time is premature and provides no useful information to the public.

Response - The Health Assessment Section obtains information from previous investigations.

- The PHA describes the area surrounding the site as "located in heavily industrialized and commercial area" and the assessment specifically refers to large industrial sites in the vicinity of SDD; Dayton Power and Light, the former General Motors plants, and the former Frigidaire plant. Although the PHA acknowledges the **potential** for these large industries to impact the site, it also acknowledges that there are no data that indicate that the SDD site has been impacted by contaminants from nearby industries.
- The health assessment does not suggest that the site has impacted municipal wellfields that are currently not in use. The health assessment specifically states that the municipal well fields have "Shown contamination in the past and are currently off-line" and does not attribute the contamination to the SDD site.
- The PHA acknowledges the **potential** that historical activities in the upstream watershed of the GMR could have impacted the SDD site, however if there was an impact it is likely not significant. Considering the history of the site, the waste materials buried there, and the concentrations of contaminants found on-site, there is a far greater potential that the SDD site would have impacted the GMR.

The Preliminary Assessment, the Site Inspection, the Screening Site Inspection, the Site Team Evaluation Prioritization Report, the Focused Site Inspection Prioritization Site Inspection Report, Hazard Ranking System (HRS) Documentation Record, and the Administrative Settlement Agreement and Order of Consent for Remedial Investigation/ Feasibility Study were, in part, the sources of information used in this health assessment.

CERCLA section 104(i), as amended, requires the ATSDR to conduct health assessments for all sites listed or proposed to be listed on the NPL. The Public Health Assessment is usually initiated during the early stages of the RI/FS process so that site specific exposure conditions and community health concerns can be addressed during the subsequent investigations. Typically, not all the data are available at the time that the PHA is written. As a stakeholder for public health concerns, the Health Assessment Section focuses on data or data needs that provide a more qualitative, less theoretical evaluation of possible public health hazards.

ATSDR considers the same environmental data as USEPA, but focuses more closely on site-specific exposure conditions, specific community health concerns, and any available health outcome data to provide a more qualitative, less theoretical evaluation of possible public health hazards. It considers past exposures in addition to current and potential future exposures (The integration of site-specific exposure conditions with health effects data and specific community health concerns).

The Superfund program has long ago recognized the importance of including all stakeholders in the Data Quality Objectives (DQOs) process. It is important to include the affected community with their specific community health concerns and health agencies prior to completing the Remedial Investigation Work Plan. It would be a very inefficient process and more expensive to go back after the RI was completed and have to collect data to answer community and environmental health concerns. Therefore, it is important that the data specified in the PHA be obtained during in the RI. The conclusion section of the health assessment indicates the data needed in specific areas in order to determine if there is a public health hazard posed by contaminants at SDD.

1. Specific Comment No. 1 – Purpose And Health Issues – Page 4
The Public Health Assessment (PHA) includes a statement that municipal well fields located four miles away have the potential to become contaminated and people drinking the water may be exposed to contaminants. This statement suggests that there is a direct connection between the South Dayton Dump and Landfill Site (Site) groundwater and this unnamed well field. This connection has never been established, nor does the PHA cite to any data or support for this statement. Given what is known about ground water flow and Site hydrogeology, the likelihood of this actually occurring is negligible. Available Site data do not suggest groundwater impacts to support this statement. There are a number of contaminated sites documented in federal and state environmental databases located in the near vicinity of the Site that may be more plausible threats to the unnamed well field.

Response - It is unlikely that the groundwater sampled beneath SDD in not connected to the municipal well field aquifer. Data to support the statement that it is not connected should be obtained in during the RI. Data indicating that contaminants are not migrating off-site of the SDD and do

not pose a threat to the municipal well fields should also be obtained during the RI.

Given what is known about the Greater Miami River Buried Valley Aquifer, the contaminants from this site have the potential to migrate to the downgradient wellfields. The connections have not been established and the conclusions drawn, as stated in the PHA, are indeterminate due to extent of contamination not being fully characterized and that further investigation is warranted.

2. Specific Comment No. 2 – Background – Page 4
The PHA states that there are two 5-acre ponds on the Site. This is incorrect. There is only one large pond located at the Site, namely the Quarry Pond. The other two are intermittent ponds that are frequently dry and do not constitute five acres in area. The small ponds have only been observed occasionally, suggesting that this is a seasonal phenomenon rather than a permanent, significant Site feature. More current information should have been used in the development of the document or alternatively a Site inspection should have been conducted.

Response - Will be changed to "There are two small ponds on site that dry up occasionally and a larger, 5-acre, water filled, gravel pit to the southwest."

3. Specific Comment No. 3 – Background – Page 4
The PHA includes a discussion on the extent of industrial and municipal waste landfilling activities that is limited to the Valley Asphalt portion of the Site. The extent of industrial and municipal waste landfilling at the Site as currently understood should be fully presented to better inform the reader. A discussion indicating that such landfilling activities were reportedly limited to the central portion of the Site is appropriate in the PHA. The nature and extent of industrial and municipal waste landfilling as understood by the Potentially Responsible Party (PRP) Group has been provided most recently in the draft Remedial Investigation/Feasibility Study (RI/FS) Work Plan (CRA, January 2007). Landfill activities focused on the central portion of the Site. This information should be incorporated into the PHA.

Response - The RI/FS Work Plan is a draft and has not yet been made available to HAS. Recent investigations by the USEPA have determined that the landfill operations were more extensive than described in previous reports. The extent of industrial and municipal waste landfill operations will be noted in future assessments, however, this new information will not change the health assessment conclusions that data is currently needed to determine whether or not the public is being exposed to site-related contaminants.

4. Specific Comment No. 4 - Background – Page 4
The discussion on Site fencing is incorrect. The perimeter of the Site is entirely fenced with the exception of the Valley Asphalt property. More current information should have been used in the development of the document or alternatively a Site inspection should have been conducted.

Response - Previous investigation reports that were available at the time the site was proposed for listing to the NPL were used in the development of this PHA. The PHA describes the site as stated in the *Focused Site Inspection Prioritization Site Evaluation Report, South Dayton Dump, February 10, 1995* which states on page 13, "although the site gate is kept locked, the site is not entirely fenced." In the *Screening Site Inspection for South Dayton Dump, September 23, 1991*, it states on page 3-2, "The site is bordered on the north by the auto salvage yard and to the east by a fence with a locked gate… This is the only border of the site that is fenced."

5. Specific Comment No. 5 – Background – Page 5
The dates of the Ohio Environmental Protection Agency (OhioEPA) and United States Environmental Protection Agency (USEPA) inspections of the Site should be properly referenced in this section and an inspection date provided.

Response - USEPA FIT team and Ohio EPA representatives made the reconnaissance inspection observations on Oct. 23, 1990 and reported in the *Ecology and Environment,1991, Inc. Screening Site Inspection for South Dayton Dump, September 23, 1991,* page 3-4.

6. Specific Comments No. 6 – History – Page 5
The primary source of Site history is referenced as the Ecology and Environment (E&E) 1991 Screening Site Inspection Report for the Site. The scope of the E&E investigation and the sources of information E&E reviewed should be provided in the PHA. Additional information regarding the E&E 1991 investigation needs to be added, to put the work into context. Information on media sampled, number of samples per media and specific Site areas investigated need to be provided.

Response - Discussions of the scope, context, media sampled, number of samples, areas investigated can be found in the original report and discussions of these items would only serve to detract from the focus of this health assessment.

7. Specific Comments No. 7 – History – Page 5
The PHA states that the former "air curtain destructor" was not permitted by the Ohio Department of Health. While technically true, permitting by the Ohio Department of Health was not required at the time and thus this statement mischaracterizes the facts. The air curtain destructor did receive a permit from the Montgomery County Health District (MVHD) as the appropriate permitting agency at the time. The MCHD licensed the Site in

1969. In 1974 Ohio EPA took over licensing authority for landfills, however the MCHD still issued licenses on behalf of the Ohio EPA.

Response - The information in the PHA was based on the SSI (E & E, 1991) discussion which states "According to local health officials at the time, the device was not an incinerator but rather a "controlled open burning device," and was to be operated under a special open burning permit (MCCGHD 1970). The Montgomery County Health Department (MCHD) assisted Alcine Grillot in the permit process and acknowledged the air curtain destructor as a reasonable alternative to continued land disposal of wastes (Vogel 1970). After the permit applications were submitted, several trial burns were initiated. However, because final approval from the Ohio Department of Health was never granted, the project was abandoned."

8. Specific Comment No. 8 – History – Page 6
The PHA makes use of the conclusions of the Ohio EPA preliminary assessment (PA). The scope of the PA needs to be documented if it is going to be put in the proper context in the PHA. The reader should be aware that the PA was prepared based solely on an aerial inspection of the Site. The PHA conclusions were drawn in 1985 and are out of date. This should be stated in the PHA.

Response - Data collected subsequent to the PA's conclusion in 1985 (that the site poses a threat to underlying drinking water aquifer and the adjacent surface waters) have not alleviated the health concerns posed by the site's contamination.

9. Specific Comment No. 9 – Regional Hydrogeology and Groundwater Resources – Page 6
The description of the groundwater aquifer in the PHA is incorrect. The references to perched groundwater does not accurately describe the groundwater aquifer immediately underlying the Site. The groundwater aquifer underlying the Site is best described as an upper aquifer zone followed by a till rich zone followed by a lower aquifer zone. It is important to note that the upper and lower aquifer zones are interconnected. The current understanding of the groundwater flow regime is documented in the RI/FS Work Plan (CRA, January 2007).

Response - See Response to Specific Comment No. 3. The PHA states the same thing, "Poorly sorted clays were deposited as incomplete layers along with the sand and gravel beds in the former river valley. These clay lenses do not, however, form a continuous, impermeable confining layer. The groundwater that may be perched above these layers is not isolated from the groundwater beneath it."

10. Specific Comment No. 10 – Regional Hydrogeology and Groundwater Resources – Page 7
The potential interaction of the Great Miami River (GMR) and the groundwater aquifer beneath the Site needs to be discussed. This potential interconnection (both a recharge and a discharge source) is described fully in the draft RI/FS Work Plan.

Response - Site specific interaction of the Great Miami River and the aquifer beneath the site should be further investigated and discussed in the RI, however at this time, we do not have any site specific data regarding these interactions.

11. Specific Comment No. 11 – Regional Hydrogeology and Groundwater Resources – Page 7
A brief discussion on the location of the well fields relative to the Site is warranted in this section. Also, the report should identify whether a subject well field is upgradient or downgradient with respect to groundwater flow. This determination is required to understand local and regional hydrogeology.

Response - As stated in the PHA, the wells are located with in four miles of the SDD site and a Figure 4 graphically shows the location of the wells. The locations of the other well fields relative to the site are discussed in this section.

12. Specific Comment No. 12 – Regional Hydrogeology and Groundwater Resources Pages 6 and 7
The depths to groundwater at the Site presented in the report are confusing. At one point the depth to water is stated to be 12 to 18 feet below ground surface (ft bgs), later on in the discussion the depth to groundwater is stated to be from 20 to 40 ft bgs. This should be clarified in the PHA. Please refer to the draft RI/FS Work Plan for the most recent analysis of this issue.

Response - See Response to Specific Comment No. 3. The depths to groundwater stated in the assessment are restatements from other investigations. The groundwater depth in the area of the site would be expected to vary considerably due to changes in surface elevation and seasonal changes in the groundwater elevation.

13. Specific Comment No. 13 - Regional Hydrogeology and Groundwater Resources – Page 7
The actual distance to the Site from the Dayton Power and Light facility production well should be provided.

Response - Specifics of the location of the Dayton Power and Light facility production well are not known. A general address was provided for the location of the production well. Numerous well logs for the Dayton

Power and Light facility are available, however which well(s) are production wells and which wells are monitoring wells was not provided.

14. Specific Comment No. 14 - Regional Hydrogeology and Groundwater Resources – Page 8
The discussion regarding sediment transport from the Site to the GMR infers that the former landfill is the only contributing factor and is significant in its contribution to sediment and surface water impacts to the GMR. This statement as worded is incorrect. The GMR runs through highly industrialized areas of Ohio. There are sewage treatment plant outfalls, urban runoff, and numerous industrial impacts on the GMR both up and down stream as well as in the immediate vicinity of the Site. Moreover, the report fails to consider the potential for impacts to the Site from GMR sediment and surface water. This potential impact needs to be considered and evaluated.

Response - The focus of this health assessment is on the potential exposure from contaminants from the SDD site. Contaminants from other sites can be investigated and discussed in the RI. However, as stated in the PHA, there are high concentrations of contaminants in the on-site surface soils that have the potential to migrate off-site and expose people through contact during wading, swimming, or fishing

15. Specific Comment No. 15 – Previous Investigations – Page 8
In the discussion of the 1991 Screening Site Investigation there should be a description of the scope of work, media sampled, how many samples were collected, the number of detections and non-detects and a range of concentrations.

Response - Discussions of the scope, context, media sampled, number of samples, number of detections and non-detects, and range of concentrations can be found in the original report and discussions of these items would only serve to detract from the focus of this health assessment.

16. Specific Comment No. 16 – Previous Investigations – Page 9
In the discussion of the 1994 Focused Site Inspection Prioritization there should be a description of the scope of work, sources of information reviewed or obtained and how PRC Environmental Management, Inc. made its conclusions.

Response - Discussions of the scope of work, context, media sampled, number of samples, number of detections and non-detects, and range of concentrations can be found in the original report and discussions of these items would only serve to detract from the focus of this health assessment. See the original report for a review of how PRC made their conclusions.

17. Specific Comment No. 17 – Previous Investigations – Page 9
In the discussion of the 1996 Site Team Evaluation Prioritization there should be a clear description of the scope of work, media sampled, the

number of samples were collected, the number of detections and non-detects and a range of concentrations detected, and the conclusions of the report. The presentation given in the PHA involves a listing of detections of a variety of compounds in a variety of media without providing the frequency of detections or an analysis of the significance of the detections.

Response - Discussions of the scope of work, context, media sampled, number of samples, number of detections and non-detects, and range of concentrations can be found in the original report and discussions of these items would only serve to detract from the focus of this health assessment. See the original report for a review of how conclusions were made.

18. Specific Comment No. 18 – Previous Investigations – Page 10
In the discussion of the Landowner's Investigations 1998-2004 there should be a description of the scope of work, media sampled, the number of samples collected, the number of detections and non-detects, the range of concentrations, and the conclusions of the report. In the discussion of the groundwater flow and direction in the PHA implies that there is a direct connection between the Site and major industrial groundwater users to the southeast where no such connection has been demonstrated. This should be clarified.

Response - Discussions of the scope of work, context, media sampled, number of samples, number of detections and non-detects, and range of concentrations can be found in the original report and discussions of these items would only serve to detract from the focus of this health assessment. See the original report for a review of how conclusions were made.
See Response to Comment No. 9, regarding the connection between site and major industrial groundwater users to southeast.

19. Specific Comment No. 19 – Previous Investigations – Page 10
In the discussion of the Valley Asphalt Plant – Limited Drum Removal Action (2000) there should be a description of the scope of investigation completed, the number of drums found, the number of samples collected, the media sampled (i.e., groundwater, sediment, surficial or subsurface soil), the number of detections and non-detects, and a range of concentrations. In addition, the RI/FS Work Plan contains supplemental information based on files reviewed and interviews of this activity that should be reflected in the PHA.

Response - Discussions of the scope of work, the number of drums found, context, media sampled, number of samples, number of detections and non-detects, and range of concentrations can be found in the original report and discussions of these items would only serve to detract from the focus of this health assessment. See the original report for a review of how conclusions were made.

See Response to Specific Comment No. 3. The Draft RI/FS Work Plan is a draft document and has not been made available to HAS.

20. Specific Comment No. 20 – Exposure Pathways – Page 11
As per the ATSDR guidance (reference to be provided) a table should be included in the PHA to document the exposure pathways. According to the ATSDR guidance, the table should list the contaminated media involved, points of exposure, routes of exposure, and potentially exposed populations.

Response - ATSDR guidance document does not require the exposure pathways table.

21. Specific Comment No. 21 – Exposure Pathways – Page 12
The exposures of rainwater run-off and groundwater from the Site to the GMR and from the GMR to the Site are relevant exposure pathways. Fish tissue samples collected from the GMR contained PCBs and mercury. The source of these contaminants has not and cannot be attributed to Site. The presence of PCBs and mercury in fish (which are migratory within the GMR) provide substantive support for Comment 14 above. There is no information to establish any link between the Site and fish tissue concentrations of any substances.

The GMR has been affected by many industries. The Ohio EPA issued the 2007 Ohio Sport Fish Consumption Advisory which lists the species and maximum recommended meal frequency for specific water body areas. The PHA does not mention that there are areas of the GMR both upstream and downstream of the river that has advisories for fish with regards to both PCBs and mercury. To state specifically that the advisory is for the GMR adjacent to the Site is false and misleading. The advisory is for the Lowhead Dam at Monument (Dayton) to State Route 73 near Middletown (Butler, Montgomery, and Warren Counties). The mercury and PCBs in the fish found in the GMR have not been connected to the Site.

Response - The focus of this health assessment is on the potential exposure from contaminants from the SDD site. The PHA states that there are high concentrations of contaminants in the on-site surface soils that have the potential to migrate off-site and expose people through contact during wading, swimming, or fishing. Contaminants from other sites should be investigated and discussed in the RI. However, there is no information at this time indicating that mercury and PCBs found in the fish in the Great Miami River did not originate from the SDD site. PHA states, "Although fish tissue data indicated excess levels of PCBs and mercury in some fish in the Great Miami River, the source of these contaminants has not been attributed to SDD."

22. Specific Comment No. 22 – Exposure Pathways – Page 13
The PHA does not mention that during the SSI 1991 investigation only 4 out of the 11 shallow soil samples contained lead at concentrations greater than the USEPA screening level of 400 ppm for residential soil. This Site is and has been historically used for commercial/industrial rather then

residential uses. The soil samples should be compared to the commercial/industrial criteria, established at 800 ppm. Four out of the eleven shallow soil samples contained lead at concentrations greater than the commercial/industrial criterion. Lead was detected in surface soil samples ranging from 10.4 to 3,300 ppm. At a minimum the PHA should include both the residential and commercial/industrial criteria for lead.

Response - The objective of setting a screening level is so that sites that have levels that do not exceed these levels will not require further investigation and sites that exceed these levels warrant further investigation. These screening levels are based on scenarios where just one contaminant of concern can trigger further investigation. However, when more than one contaminant exceeds the screening levels, as is the case at SDD, the interaction of these chemicals should warrant additional consideration, although, interactions between many chemicals during human exposures have not been adequately investigated.

- Screening levels were not developed for cleanup levels (residential, commercial, or industrial settings).
- The nature and extent of the lead contamination was not delineated during the 1991 SSI. The number of samples that exceed the residential, commercial, or industrial comparison values will be important issues to discuss in the RI. The focus of the PHA is that lead screening levels for soil were exceeded and the potential exists that the lead contaminants may pose health threat to the public and that due to these lead levels this site warrants further investigation (which should take place during the RI/FS process).

23. Specific Comment No. 23 – Exposure Pathways – Page 14
The Environmental Media Evaluation Guides for the chronic exposure to copper is referenced but not provided in the text. Also the USEPA screening levels for residential soils are referenced but again not provided. The comparison of Site soil data to EPA screening levels for residential soils is not applicable in this evaluation. There are no plans to redevelop the Site for residential purposes. In fact, there are plans to place a commercial/residential land use restriction on the Site to prevent any residential development.

Response - On page 13 of the PHA it states that ATSDR established the EMEGs. The following reference was added for the ATSDR Environmental Media Evaluation Guides (EMEGs); *Agency for Toxicology Substances and Disease Registry (ATSDR), 2006, Soil Comparison Values, February 12, 2008.*

The following reference was added for the USEPA screening levels; *United States Environmental Protection Agency (USEPA), 2002, OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), November 2002, EPA530-D-02-004.*

24. Specific Comment No. 24 – Exposure Pathways – Page 14
The comment regarding the use of the Montgomery County Miami Shores well field implies that it is somehow connected to the Site. This is speculative, not supported by the data and should be removed from the PHA since it is no way indicative of Site conditions or potential health risks.

Response - The PHA must consider potential threats to be protective of public health. The PHA also makes recommendations according to the conclusions. In part, the SDD conclusions state that the extent of groundwater contamination has not been fully characterized and the recommendations state that the nature and extent of the groundwater contamination needs to be investigated.

25. Specific Comment No. 25 – Exposure Pathways – Page 15
The PHA states that Valley Asphalt uses an on-site well to supply water to a kitchen and bathroom, implying that it is completed in a contaminated aquifer. This is an incorrect characterization. Please refer to the RI/FS Work Plan for more information (This statement is repeated on Page 16 of the PHA).

Response - There is conflicting information regarding the use of the Valley Asphalt water supply well. "Ohio EPA meeting notes with TCA dated May 31, 2006 state that this well was used minimally for sanitary purposes, however during reconnaissance on January 20, 2006, Mr. Hutch Rogge, project manager of John R. Jurgensen Co. (owner of Valley Asphalt), stated that he thought the well provided drinking water to the main office." Draft RI/FS Work Plan, January 2007.

26. Specific Comment No. 26 – Exposure Pathways – Page 16
The discussions on the current and future exposure of residents to contaminants through the consumption of fish are contradictory. In the current exposure scenarios these contaminants have not been conclusively linked to the Site. There is no data to link the fish contamination to Site conditions. Moreover, the "fish advisory" is unrelated to, and specific to areas other than the Site. This should be handled in a consistent manner in both exposure pathways.

Response - The PHA must assess potential threats to be protective of public health. The presence of elevated levels of contaminants in on-site soils and sediments may pose a threat to public health currently and in the future.

PHA also makes recommendations according to the conclusions. In part, the SDD conclusions state that the extent of fish tissue contamination has not been fully characterized and the recommendations state that the nature and extent of the fish tissue contamination needs to be investigated.

27. Specific Comment No. 27 – Exposure Pathways – Page 16
The PHA should list the criteria that were used to evaluate detections of contaminants in the groundwater. Also, the conclusion listed on Page 16 that chlorinated organics are being transported off-Site in groundwater is not supported by available data. This should be clarified in the text. This comment also conflicts with an earlier statement found at page 8 of the PHA it is reported that "the direction of the groundwater flow beneath the SDD is poorly understood". These statements in the PHA are in conflict and need to be resolved.

Response - The detections reported in the PHA were the detections reported from previous investigations. The monitoring wells where these contaminants were detected are located on the boundaries of the site and considering the direction of groundwater flow at the time of sampling it can logically be concluded that these contaminants are being transported off-site. See response to comment number 4 regarding direction of groundwater flow.

28. Specific Comment No. 28 – Exposure Pathways – Page 15 and 16
The ATSDR Guidance Manual states that "ATSDR requires that an estimate of the number of potentially exposed people be documented in public health assessment documents for every exposure pathway". This information is not included in the PHA.

Response - Exposure Demographics and Structure File (EDS) form has the total estimated receptor populations in on-site and off-site completed and potential pathways. This EDS was reviewed by ATSDR when this PHA was reviewed. For the indoor air pathway, 100 people were estimated to be potentially exposed; for outdoor air pathway, 50 people; for groundwater pathway, 4500 people; for surface water, 50 people; for soil pathway, 200 people; and for soil gas, 100 people.

29. Specific Comment No. 29 – Exposure Pathways – Page 16
The following text should be re-worded to state that these contaminants have not been conclusively link to the Site.

> *The SDD site poses an "Indeterminate Public Health Hazard" in the future for the exposure of area residents to contaminants through consumption of fish from the Great Miami River adjacent to the SDD site. People may eat fish caught in the Great Miami River and be exposed to elevated levels of PCBs and mercury in fish tissues that originated from the SDD site soils and sediment.*

Response - This statement does not conclusively state that the people will be exposed to contaminants from the site. Furthermore, on page 14 it states that "There are no data that directly connect the contaminants in the fish or sediment in the Great Miami River to the contamination found at the SDD site."