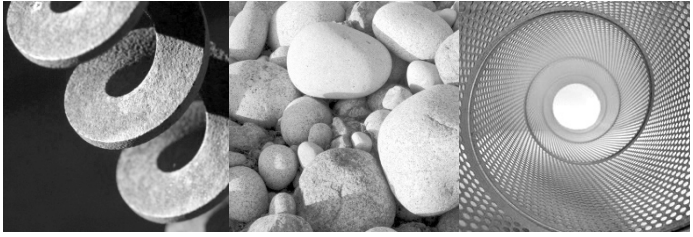

GEI Consultants

Consulting
Engineers and
Scientists

NYDEC Site No. 808013

Pathway Analysis Report

Shulmans Salvage Yard, Elmira, New York

Submitted On Behalf of:
New York State Electric & Gas Corporation
And Shulman Company, Inc.

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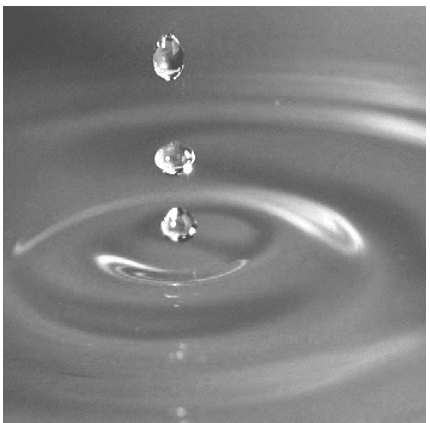

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Executive Summary

GEI Consultants, Inc., P.C. (GEI), on behalf of New York State Electric & Gas Corporation (NYSEG) and Shulman Company, Inc., prepared this Pathway Analysis Report (PAR) to support the Risk-Based Cleanup and Disposal (RBC&D) Plan (GEI, 2018) for the cleanup and disposal of polychlorinated biphenyl (PCB) contaminated soil at the Shulman's Salvage Yard site (the Site) in Elmira, New York. The United States Environmental Protection Agency (EPA) is requiring submittal of this PAR for their review and approval of the RBC&D Plan. This PAR evaluated potential human exposure pathways to PCBs at the Site based on future conditions following the implementation of the proposed RBC&D Plan.

The purpose of the RBC&D Plan is to request EPA approval under the risk-based disposal approval provisions of the Toxic Substances Control Act (TSCA), 40 CFR 761.61(c). The objective of the cleanup plan selected for the Site is to prevent direct contact with PCBs in soil and eliminate the potential for PCBs in surface water runoff. As part of the RBC&D Plan, NYSEG and Shulman are proposing to remediate PCBs in soil at the Site to a cleanup level of less than or equal to 25 milligrams per kilogram (mg/kg) in subsurface soils (depths greater than 1 foot), and less than or equal to 1 mg/kg in surface soils (0 to 1 foot). The proposed remedy will eliminate exposure pathways to PCBs remaining in Site soil by construction of a cover system consistent with an operating scrapyard and materials recycling facility and by implementing appropriate Site use restrictions and controls for continued industrial use of the Site.

The Site is currently used for the storage and handling of salvage materials and metal recycling operations and has been used for metal salvaging operations since the 1970s. The Site is considered a *high occupancy area* as defined under 40 CFR 761.3. The characterization of PCBs in soil is based on a total of 348 soil samples; 197 shallow soil samples representative of the 0 to 2 ft. depth interval, and 151 subsurface samples collected from various depths between 2 and 30 feet at the Site. PCBs were detected in soil samples at concentrations up to approximately 416 mg/kg to a depth of about 4 feet. PCBs are widely distributed in soil throughout the Site with the highest concentrations in the rail transit area and processing area, where the transformers thought to be the source of the PCBs were salvaged. PCBs may have been redistributed throughout the shallow soils as a result of day to day activities of heavy equipment and surface water runoff and drainage over the last 30 years. PCBs have not been detected in groundwater samples collected from Site monitoring wells. Maximum soil concentrations of all detected PCB Aroclors exceed applicable standards and risk-based screening levels. The following five PCB Aroclors are identified as constituents of potential concern (COPCs) at the Site: Aroclor 1016, Aroclor 1242, Aroclor 1248, Aroclor 1254, and Aroclor 1260.

The current site use is industrial. The area around the Site is mixed industrial, commercial, and residential uses. Under future land use, the Site will continue to be used as a scrap collection and processing facility or other industrial use. Based on the current and anticipated future use of the Site and surrounding area, the following receptors may be present: workers, visitors, trespassers, construction workers, and an off-Site adjacent resident.

Under future land use following implementation of the RBC&D Plan, exposure pathways for a future worker, visitor/trespasser, and off-Site resident are considered incomplete. These receptors will not be exposed to PCBs in soil at concentrations above the applicable cleanup level of 1 mg/kg for high occupancy areas in accordance with 40 CFR 761.61(a)(4) as the cover system implemented as part of the RBC&D Plan will prohibit direct contact with soils deeper than 1-foot. Exposure pathways for a future construction worker are considered potentially complete; however, PCB concentrations in subsurface soil following implementation of the RBC&D Plan will not exceed the applicable NYSDEC industrial land use Soil Cleanup Objective (SCO) or the soil cleanup level for low occupancy areas under 40 CFR 761.61(a)(4), both of which are 25 mg/kg. Future construction workers are not expected to be present at a high frequency over long periods of time because construction projects are typically short duration and there are no subsurface utilities in the areas to be remediated. In addition, institutional controls implemented as part of the RBC&D Plan will require a Site Management Plan that will include provisions for management of future excavations in areas of remaining contamination, including a Health and Safety Plan to mitigate construction worker exposures to residual PCBs in soil during excavations which will ensure exposure does not exceed OSHA Permissible Exposure Levels. Therefore, risk to a future construction worker is not evaluated further.

1. Introduction

GEI Consultants, Inc., P.C. (GEI), on behalf of New York State Electric & Gas Corporation (NYSEG) and Shulman Company, Inc., prepared this Pathway Analysis Report (PAR) to support the Risk-Based Cleanup and Disposal (RBC&D) Plan (GEI, 2018) prepared for the Shulmans Salvage Yard site (the Site) in Elmira, New York. The RBC&D Plan for the Site was submitted to US Environmental Protection Agency (EPA) in December 2018. EPA is requiring submittal of this PAR for their review and approval of the RBC&D Plan.

The RBC&D Plan was prepared for the cleanup and disposal of polychlorinated biphenyl (PCB) contaminated soil at the Site. The purpose of the RBC&D Plan is to request EPA approval under the risk-based disposal approval provisions of the Toxic Substances Control Act (TSCA), 40 CFR 761.61(c). The objective of the cleanup plan selected for the Site is to prevent direct contact with PCBs in soil and eliminate the potential for PCBs in surface water runoff. As part of the RBC&D Plan, NYSEG and Shulman are proposing to remediate PCBs in soil at the Site to a cleanup level of less than or equal to 25 milligrams per kilogram (mg/kg) in subsurface soils (depths greater than 1 foot), and less than or equal to 1 mg/kg in surface soils (0 to 1 foot). The proposed remedy will eliminate exposure pathways to PCBs remaining in Site soil by construction of a cover system consistent with an operating scrapyard and materials recycling facility and by implementing appropriate Site use restrictions and controls for continued industrial use of the Site. Because the Site is considered a *high occupancy area* as defined under 40 CFR 761.3, and the default cleanup levels specified for *high occupancy areas* under 40 CFR 761.61(a)(4) will not be met, NYSEG and Shulman are requesting EPA approval of a risk-based disposal under 40 CFR 761.61(c).

This PAR was prepared in accordance with guidance for Pathway Analysis Report New York TSCA PCB Sites as well as EPA Risk Assessment Guidelines for Superfund (RAGS), including more recent EPA applicable guidance (USEPA 1989, 2001, 2004, 2009, 2014, and 2019). This PAR includes the following three steps: Hazard Identification (Section 2), Exposure Assessment (Section 3), and Toxicity Assessment (Section 4.0). The Hazard Identification summarizes Site conditions, analytical data and constituents of potential concern (COPCs), while the Exposure Assessment evaluates human receptors and their potential exposure pathways under future conditions at the Site based on the implementation of the proposed RBC&D Plan.

2. Hazard Identification

The Hazard Identification section identifies the purpose of the PAR and describes the Site location, history, and contamination. In addition, the Hazard Identification presents the analytical data for PCBs in Site surface and subsurface soil evaluated in this PAR and identifies constituents of potential concern (COPCs).

2.1 Purpose of the PAR

The purpose of the PAR is to conduct a Hazard Identification, Exposure Assessment and Toxicity Assessment if applicable to characterize potential human exposure pathways to PCBs at the Site. This PAR evaluated potential human exposure pathways to PCBs at the Site based on future conditions following the implementation of the proposed RBC&D Plan (GEI, 2018), which includes a cover system and Site use restrictions and controls to eliminate exposure pathways to PCBs remaining in Site soil. In addition, this PAR provides a Selection of Exposure Pathways table in accordance with RAGS Part D Table 1 and a figure illustrating the human health conceptual site model (CSM) based on future conditions at the Site following the implementation of the proposed RBC&D Plan. This PAR was prepared to support the proposed RBC&D Plan and document that the proposed remedy will eliminate exposure pathways to PCBs remaining at the Site under future land use.

2.2 Site Background

The Site description, history and contamination are summarized below to support the evaluation of human receptors and exposure pathways at the Site. A detailed description of Site history and contamination are presented in the RBC&D Plan, as well as the Final Remedial Investigation (RI) Report (CDM Smith, 2014; Appendix B of the RBC&D Plan) and the Final Feasibility Study (FS) Report (CDM Smith, 2015; Appendix C of the RBC&D Plan).

2.2.1 Site Description

The Site is an approximately 7.34-acre parcel owned by Shulman Co., Inc. [1] and located at 197 Washington Avenue in Elmira, Chemung County, New York (Figs. 1 and 2 of the RBC&D Plan). The current Site use is industrial and is used for the storage and handling of metal and non-metal salvage materials and metal recycling operations. The Site is improved with a one-story maintenance building, a two-story office building, a weigh station, and a scale house trailer. Except for asphalt paved areas south of the office building, the Site is

[1] A portion of the property was transferred to OBK, LLC, which is wholly owned by Shulman Co., Inc.

largely unpaved. Based on previous investigations, the Site has been subdivided into the following five areas (Fig. 2 of the RBC&D Plan):

Recycling Area: The asphalt drive and parking areas south of the office building. Cardboard and metal recycling are located along the eastern edge.

Processing Area: The unpaved area immediately north of the office building currently being used for scrapping materials.

Rail Transit Area: The northern portion of the Site west of the central fence line, which contains a railroad spur for transporting processed scrap metal off-Site. This unpaved and sparsely vegetated area contains a gravel road and abandoned railroad sidings that run approximately north-south through the area.

Outlying Parcel: The northern portion of the Site east of the central fence line containing scattered piles of miscellaneous debris. This area is largely vegetated with grass and brush and is also lightly wooded in spots.

Right-of-Way: A vegetated right-of-way along almost the entire eastern boundary of the Site. The right-of-way is located east of a chain link fence that bounds the recycling area, processing area, and outlying parcel to the east, and west of Clemens Center Parkway.

The area around the Site is mixed industrial, commercial, and residential uses. The Site is bounded by a Chemung County Transit System office to the north, Clemens Center Parkway to the east, East Washington Avenue to the south, and a Norfolk Southern property and Triple Cities Metal Finishing (former Industrial Services Corporation) property to the west. A residential area borders the southwest corner of the Site. Except for the northwest Site boundary with the Norfolk Southern property, the Site is enclosed with a fence and is accessible via a main entrance gate to the south on East Washington Avenue. The gated main entrance is locked after business hours, which prohibits public access to scrap storage areas within the processing area.

Current Site operations involve sorting processed scrap metal and paper goods on-Site and transporting scrap and recycling materials off-Site via tractor trailer, or by the single rail line located in the northwest portion of the Site. The Site is considered a high occupancy area as defined under 40 CFR 761.3 because, although the Site use is industrial, Site workers may be present more than an average of 6.7 hours per week.

2.2.2 Site History

The Site has been used for metal salvaging operations since the 1970s. Prior to the 1970s, the southern portion of the Site was a coal yard operated by C.A. Petrie Co., Inc., and rail lines located on the central and northern portions of the Site were likely used to transport the

coal. The Site was initially identified during investigations conducted in the 1980s. In 1986, the Site was identified as a Class 2 inactive hazardous waste disposal site in New York State Department of Environmental Conservation (NYSDEC's) Inactive Hazardous Waste Disposal Site (IHWDS) program (State Superfund program).

The RI report characterized the nature and extent of contamination in soil, catch basin soil and water, and groundwater, resulting from Site operations. The RI report identified PCB Aroclors and metals as COPCs in surface and subsurface soil at the Site. PCB Aroclors were not detected in groundwater at the Site. A qualitative human health exposure assessment was conducted as part of the RI, which evaluated potential risks to human health associated with COPCs at the Site under no remedial action and institutional control conditions. The qualitative human health exposure assessment concluded that based on potential exposures to COPCs, including PCB Aroclors, in surface and subsurface soil, there is a potential risk to workers, visitors/trespassers, and construction workers at the Site.

2.2.3 Site Contamination

According to the RI, PCB Aroclors and metals in soil have been identified as the primary COPCs at the Site. The RBC&D Plan and this PAR focus on PCB Aroclors in soil. Metals contamination has been evaluated and addressed as part of the remedy selected for implementation in accordance with NYSDEC requirements. Based on the results of the RI, PCB Aroclors were detected in soil, and in catch basin soil and water. The depth to groundwater at the Site is approximately 12 feet. PCBs have not been detected in groundwater samples collected from Site monitoring wells; therefore, groundwater is not addressed further. The presence of PCBs in soil is likely associated with salvaging transformers at the Site. After initial deposition, PCBs may have been redistributed throughout the shallow soils on-Site due to the day-to-day activities of heavy equipment operations at the property and surface water runoff and drainage over the last 30-plus years.

The primary PCB Aroclors detected in soil include 1242, 1254, and 1260; however, Aroclors 1016 and 1248 were also quantified in at least one sample. Total PCBs were detected in soil samples at concentrations up to approximately 416 mg/kg to a depth of about 4 feet. PCBs are widely distributed in soil throughout the Site with the highest concentrations in the rail transit area and processing area, where the transformers thought to be the source of the PCBs were salvaged. The extent of PCB contamination in soil in each area of the Site is as follows:

Recycling Area: PCB concentrations in soil range from non-detect to 3.39 mg/kg to a depth of 2 feet along the unpaved eastern edge of the recycling area. The majority of the recycling area is paved.

Processing and Rail Transit Areas: Concentrations of PCBs are greater than 1 mg/kg in almost all soil samples in the processing and rail transit areas with the majority of soil

samples also having concentrations greater than 10 mg/kg. PCB concentrations are greater than 25 mg/kg at several locations in this area. PCB concentrations greater than 25 mg/kg are primarily limited to a depth of 4 feet.

Outlying Parcel: PCBs are present throughout the outlying parcel; however, concentrations greater than 1 mg/kg are generally in the southern half of the parcel. PCBs at a concentration greater than 25 mg/kg were detected at only one location nearer the eastern fence line, and in the upper 1 foot of soil. PCB contamination appears to be generally limited to the top 2 feet of soil in this area.

PCB concentrations in soil on the Norfolk Southern property, which abuts the Site to the northwest and is separated from the Site by an active rail line, are typically less than 1 mg/kg to a depth of 4 feet. However, PCBs were detected at 1.04 mg/kg in a soil sample collected from 0 to 1 foot at location SB-216, which is located at the western Site boundary with the Norfolk Southern property.

PCBs were detected in both soil and water samples collected from Site catch basins. PCB concentrations in catch basin soils were less than 1 mg/kg, an order of magnitude lower than the adjacent soil. PCB concentrations in catch basin water samples ranged from 0.88 to 5.1 micrograms per liter (µg/l).

2.3 PCB Soil Analytical Data

Although the RBC&D Plan includes a summary of historic Site investigations conducted in the 1980s, only the data collected during the comprehensive RI in 2013 was relied on in preparation of the RBC&D Plan and this PAR. The RI data set was more comprehensive than the data set collected in the 1980s, and more representative of current conditions. A summary of PCB testing results collected during the RI and used to evaluate the nature and extent of PCB contamination for development of the RBC&D Plan and this PAR is presented in Table 1 and sample locations are shown in Fig. 3 of the RBC&D Plan. The characterization of PCBs in soil is based on a total of 348 soil samples; 197 shallow soil samples representative of the 0 to 2 ft. depth interval, and 151 subsurface samples collected from various depths between 2 and 30 feet at the Site.

The investigations conducted by CDM Smith in 2013 provide significant information about the extent of PCBs in soil. However, additional PCB data is needed in some areas to fully delineate extent and to support design of the remedy. The proposed RBC&D Plan describes the additional proposed soil samples for PCB analysis needed to fully delineate the horizontal and vertical extent of PCBs in soil that will require excavation and off-site disposal.

The remedial investigation was conducted between March and November 2013. The investigation was performed in three phases. Phase I consisted of collecting 178 soil samples (including 11 duplicates) from 62 locations (SB-01 through SB-62) on a rough grid pattern

across the Site. Samples were collected from the 0 to 1 ft. depth interval at all 62 locations, and from the 1 to 2 ft. depth interval at 56 of the locations. The remaining samples were collected from deeper increments at selected locations, with a maximum sample depth of 14 to 16 ft. Soil samples were collected using a hand auger; All soil samples were submitted to TestAmerica Laboratories for extraction by EPA Method 3550B (ultrasonic extraction) and laboratory analysis of PCBs by EPA Method 8082. Total PCBs were detected in the surface soil samples at concentrations ranging from non-detect to 416.6 mg/kg at location SB-20 in the processing area.

Supplemental (Phase II) remedial investigations were conducted to further evaluate the nature and extent of contamination that was identified during the Phase I investigations. Phase II investigations consisted of collecting surface soil samples representative of the 0 to 2 ft. depth interval, and/or subsurface samples from depths below 2 ft., from locations SB-70 through SB-87, GWS-01 through GWS-04, GWS-08, GWS-09, and GWS-50. With the exception of the samples collected from SB-87, which were collected using a hand auger, soil samples were collected using a Geoprobe® direct push drill rig. Soil samples were submitted to TestAmerica for extraction by EPA Method 3550B (ultrasonic extraction) and PCB analysis by EPA Method 8082. Total PCB concentrations in soils ranged from non-detect to 95.9 mg/kg in the 2- to 4-foot deep sample from soil boring SB-37 in the rail transit area.

During Phase III, a limited subsurface investigation was performed on the Norfolk Southern property immediately west of the Rail Transit Area to evaluate the extent of potential contamination from the Site. The investigation consisted of advancing 28 soil borings (SB-201 through SB-228) and collecting soil samples to a depth of 4 feet. Soil samples were submitted to TestAmerica for extraction by EPA Method 3550C (ultrasonic extraction) and PCB analysis by EPA Method 8082. Total PCB concentrations in the Norfolk Southern property surface soils (0 to 2 feet) ranged from non-detect 1.04 mg/kg at SB-216, while PCB concentrations in subsurface soil (2 to 4 feet) ranged from non-detect to 0.840 mg/kg in SB-213.

The distribution of PCBs at various concentration ranges in soil are shown at depth intervals of 0 to 1 foot, 1 to 2 feet, 2 to 4 feet, 4 to 6 feet, and greater than 6 feet, in Figs. 4 through 8 of the RBC&D Plan.

2.4 Constituents of Potential Concern (COPCs)

Site-wide summary statistics for PCB Aroclor data in surface and subsurface soil to a depth of 30 feet are presented in Table 1 of this PAR. Table 1 also presents a comparison of maximum detected concentrations of PCB Aroclors to the applicable Industrial Restricted Use Soil Cleanup Objective (SCO) of 25 mg/kg for Total PCBs as well as the Commercial / Residential SCO of 1 mg/kg for Total PCBs (NYSDEC, 2006) and the EPA Industrial Soil Regional Screening Levels (RSLs) for each PCB Aroclor (EPA, 2019). Maximum soil

concentrations of all detected PCB Aroclors exceed applicable standards and risk-based screening levels. Therefore, the following five PCB Aroclors are identified as COPCs at the Site: Aroclor 1016, Aroclor 1242, Aroclor 1248, Aroclor 1254, and Aroclor 1260.

3. Exposure Assessment

The objective of the exposure assessment conducted as part of this PAR is to identify and characterize potential human exposure pathways to PCBs in soil at the Site under future conditions following the implementation of the RBC&D Plan. The objective of the RBC&D Plan is to prevent complete exposure pathways to PCBs in soil at the Site. An exposure pathway describes the unique mechanisms by which an individual or population is exposed to chemicals at or originating from a site. The following four elements must be present for a complete exposure pathway:

- A source and mechanism of chemical release
- A retention or transport medium
- A point of contact between the human receptor and the medium
- A route of exposure for the potential human receptor at the contact point

Under future conditions at the Site, an exposure pathway is incomplete, and may be eliminated from further evaluation, when one of the four elements will not exist in the future. The following exposure assessment identifies potential receptor populations and exposure points under future conditions at the Site following the implementation of the RBC&D Plan.

3.1 Human Receptors under Future Site Activities and Uses

The Site is operated as the Shulman's Salvage Yard for various metal salvaging and recycling operations. The area around the Site is mixed industrial, commercial, and residential uses. A residential area borders the southwest corner of the Site. Future land use at the Site and surrounding area is anticipated to remain the same as current use. Therefore, under future land use, the Site will continue to be used as a scrap metals collection and processing facility or other industrial use. The Site is currently locally zoned for commercial use; however, the owner has submitted a request to the City of Elmira to re-zone the Site to industrial use.

The majority of the Site is enclosed with a fence, accessible via a main entrance gate on East Washington Street. The gated main entrance is locked after business hours, limiting public access to most of the Site. Therefore, recreational visitors will not be present at the Site under future land use and were not evaluated as potential human receptors.

Based on the current and anticipated future use of the Site and surrounding area, the following receptors may be present: workers, visitors, trespassers, construction workers, and an off-Site adjacent resident.

3.2 Human Exposure Pathway Evaluation

This PAR evaluates potential human exposure pathways based on the implementation of the RBC&D Plan. To eliminate exposure pathways to PCBs remaining in Site soil, the RBC&D Plan includes a PCB cleanup level of less than or equal to 1 mg/kg in surface soil (0 to 1 ft. depth); a PCB cleanup level of less than or equal to 25 mg/kg in soil beneath a minimum 1-foot thick cover system; and implementation of institutional controls that will restrict Site use to industrial activity and require compliance with a Site Management Plan. Specifically, the RBC&D Plan includes the following elements:

- Excavation and off-site disposal of soil with PCB concentrations greater than 25 mg/kg.
- Excavation in some areas of the Site, from the upper 1 foot, of soil with PCB concentrations greater than 1 mg/kg to achieve PCB concentrations less than or equal to 1 mg/kg in the upper foot.
- Construction of a minimum one-foot thick cover system over areas where PCBs remain in soil at concentrations greater than or equal to 1 mg/kg and less than or equal to 25 mg/kg. The cover system will consist of clean soil, crusher run, and/or asphalt pavement suitable for heavy equipment traffic which will be approved by NYSDEC during the Remedial Design.
- Prior to placement of the cover system, a permeable demarcation layer (e.g., geotextile fabric) will be placed to mark the depth below which soil with residual PCB concentrations up to 25 mg/kg are present.

In addition, the RBC&D Plan as well as NYSDEC's Record of Decision requires implementation of institutional controls in the form of an Environmental Easement and Site Management Plan that will:

- Allow the use and development of the controlled property for industrial uses, subject to local zoning laws.
- Restrict the use of groundwater as a source of potable or process water, without necessary water quality requirement.
- Require an Institutional and Engineering Control Plan that identifies use restrictions and engineering controls, and requirements to ensure that the institutional and/or engineering controls remain in place and effective.
- Require an Excavation Plan that includes provisions for management of future excavations in areas of remaining contamination, including a Health and Safety Plan to mitigate exposures to residual PCBs in soil during excavations.
- Require periodic reviews and certification of the institutional controls.

- Require a Monitoring Plan to assess the performance and effectiveness of the remedy, which may include monitoring of the soil cover and periodic reporting to the NYSDEC.

A discussion of each receptor's potential exposure to PCBs in soil at the Site under future land use, following the implementation of the RBC&D Plan, is presented below. The Human Health Conceptual Site Model (CSM), presented as Figure 1 in this PAR, presents contamination sources, fate and transport, potential exposure mediums, potential exposure routes, potential receptors and complete exposure pathways for the Site based on the implementation of the RBC&D Plan. Table 2 of this PAR presents a Selection of Exposure Pathways table in accordance with RAGS Part D Table 1, including the rationale for selection or exclusion of exposure pathways under future conditions at the Site following the implementation of the RBC&D Plan. PCBs have not been detected in groundwater samples collected from Site monitoring wells; therefore, groundwater is not addressed further.

3.2.1 Future Workers

Future workers at the Site include indoor workers such as office workers and commercial workers and outdoor workers such as salvage operations/maintenance workers and groundskeepers. Outdoor workers spend most of the workday conducting salvage operations/maintenance activities outdoors and have a greater potential for exposure to surface soils. Typical outdoor worker activities may include moving scrap material around the property, and landscaping that generally involve exposures to surface soils. The Site is considered a high occupancy area as defined under 40 CFR 761.3 because, although the Site use is industrial, Site workers may be present more than an average of 6.7 hours per week. Workers may be exposed to surface soils through incidental ingestion, dermal contact and inhalation of fugitive dust. However, future workers are not expected to contact soils at depths greater than 1 foot.

To eliminate potential exposure to PCBs in surface soil for a future worker, the RBC&D Plan includes excavation of surface soil with PCB concentrations greater than 1 mg/kg and construction of a minimum 1-foot thick cover system over areas where PCBs remain in soil at concentrations greater than 1 mg/kg to achieve PCB concentrations less than or equal to 1 mg/kg in the upper foot of soil throughout the Site. A permeable demarcation layer (e.g., geotextile fabric) will mark the depth below which soil with residual PCB concentrations up to 25 mg/kg are present so that future Site workers conducting work on the top foot of soil will not contact residual PCB concentrations in soil beneath the cover system. The cover system will also eliminate the migration of PCBs in surface water run-off. Therefore, future workers at the Site will not be exposed to PCBs in surface soil above the applicable cleanup level of 1 mg/kg for high occupancy areas in accordance with 40 CFR 761.61(a)(4). In addition, as described above, institutional controls implemented as part of the RBC&D Plan will require the cover system to remain in place to prohibit direct contact with soils deeper

than 1-foot at the Site. Therefore, under future land use following implementation of the RBC&D Plan, exposure pathways for a future worker are considered incomplete.

3.2.2 Future Visitors / Trespassers

Under future land use as a metal salvaging and recycling operation, an adult and child may visit the Site. In addition, although unauthorized access to the Site is restricted by a gate and a fence surrounding much of the property, trespassers may gain access to the Site. An adult and child visitor / trespasser may be exposed to surface soils while walking outside on unpaved areas of the Site. Future visitors / trespassers may be exposed to surface soils through incidental ingestion, dermal contact and inhalation of fugitive dust. Future visitors / trespassers are not expected to contact soils at depths greater than 1 foot.

To eliminate potential exposure to PCBs in surface soil for a future visitor / trespasser, the RBC&D Plan includes excavation of surface soil with PCB concentrations greater than 1 mg/kg and construction of a minimum 1-foot thick cover system over areas where PCBs remain in soil at concentrations greater than 1 mg/kg to achieve PCB concentrations less than or equal to 1 mg/kg in the upper foot of soil throughout the Site. Therefore, future visitors / trespassers will not be exposed to PCBs in surface soil above the applicable cleanup level of 1 mg/kg for high occupancy areas in accordance with 40 CFR 761.61(a)(4). In addition, as described above, institutional controls implemented as part of the RBC&D Plan will require the cover system to remain in place to prohibit direct contact with soils deeper than 1-foot at the Site. The cover system will also eliminate the migration of PCBs in surface water run-off. Therefore, under future land use following implementation of the RBC&D Plan, exposure pathways for a future visitor / trespasser are considered incomplete.

3.2.3 Future Construction Workers

Future construction workers may be present at the Site to conduct future construction and excavation projects. Future construction workers may be exposed to soils at depths greater than 1 foot. However, future construction workers are not expected to be present at a high frequency over long periods of time because construction projects are typically short duration. Future construction workers may be exposed to PCBs in subsurface soil, beneath the cover system, at concentrations ranging from greater than 1 mg/kg to less than or equal to 25 mg/kg. Future construction workers may be exposed to subsurface soils through incidental ingestion, dermal contact and inhalation of fugitive dust. However, future construction workers will not be exposed to PCBs in subsurface soil at concentrations above the NYSDEC industrial land use SCO or the soil cleanup level for low occupancy areas under 40 CFR 761.61(a)(4), both of which are 25 mg/kg.

Risk-based screening levels established for soil at industrial use sites are generally protective of potential construction worker exposures because industrial soil risk-based screening levels are typically based on outdoor worker exposure to soil for approximately 225 days per year

over 25 years of employment. Although a construction worker may have more intense exposure to soil, typical construction worker exposure durations are much less than one year. In addition, there are no existing subsurface utilities at the Site, so excavations related to subsurface utilities are not likely. Therefore, the cleanup of PCBs in subsurface soil to the NYSDEC industrial land use SCO of 25 mg/kg (also the soil cleanup level for low occupancy areas in accordance with 40 CFR 761.61[a][4]) is considered applicable for short-term construction worker exposures to subsurface soil.

In addition, as previously described, institutional controls implemented as part of the RBC&D Plan will require a Site Management Plan that will include provisions for management of future excavations in areas of remaining contamination, including a Health and Safety Plan to mitigate construction worker exposures to residual PCBs in soil during excavations and soil handling. Therefore, exposure pathways for a future construction worker are considered potentially complete; however, PCB concentrations in subsurface soil will not exceed the applicable NYDEC industrial land use SCO or the soil cleanup level for low occupancy areas under 40 CFR 761.61(a)(4), both of which are 25 mg/kg. In addition, institutional controls implemented as part of the RBC&D Plan will mitigate construction worker exposures to residual PCBs in soil during excavations which will ensure exposure does not exceed OSHA Permissible Exposure Levels. Therefore, risk to a future construction worker is not evaluated further.

3.2.4 Future Off-Site Resident

Residential land use currently bounds the Site to the southwest, approximately 250 feet from PCB-impacted areas of the Site. Under future land use, an off-Site resident may be living adjacent to the Site. A future off-Site resident may be exposed to surface soils through inhalation of fugitive dust that migrates from the Site to off-Site properties in ambient air. A future resident is not expected to contact soils at depths greater than 1 foot. To eliminate potential exposure to PCBs in surface soil for a future off-Site resident, the RBC&D Plan includes excavation of surface soil with PCB concentrations greater than 1 mg/kg and construction of a minimum 1-foot thick cover system over areas where PCBs remain in soil at concentrations greater than 1 mg/kg to achieve PCB concentrations less than or equal to 1 mg/kg in the upper foot of soil throughout the Site. Therefore, a future off-Site resident will not be exposed to PCBs in surface soil above the applicable cleanup level of 1 mg/kg for high occupancy areas in accordance with 40 CFR 761.61(a)(4). In addition, as described above, institutional controls implemented as part of the RBC&D Plan will require the cover system to remain in place to prohibit the potential for PCBs in fugitive dust to migrate off-Site in ambient air. The cover system will also eliminate the migration of PCBs in surface water run-off. Therefore, under future land use following implementation of the RBC&D Plan, exposure pathways for a future off-Site resident are considered incomplete.

3.3 Human Exposure Calculations

For complete human exposure pathways, exposure calculations involve estimating exposure point concentrations (EPCs) for COPCs, identifying exposure factors to characterize receptors' exposures to COPCs, and presenting equations to calculate exposure doses. However, as discussed above in Section 3.2, based on the implementation of the RBC&D Plan, there are no complete exposure pathways identified at the Site under future conditions. Exposure pathways for a future construction worker are considered potentially complete; however, PCB concentrations in subsurface soil will not exceed the applicable NYSDEC industrial land use SCO or the soil cleanup level for low occupancy areas under 40 CFR 761.61(a)(4), both of which are 25 mg/kg. In addition, institutional controls implemented as part of the RBC&D Plan will mitigate construction worker exposures to residual PCBs in soil during excavations. Therefore, risk to a future construction worker is not evaluated further and human exposure calculations were not conducted as part of this PAR.

4. Toxicity Assessment

The Toxicity Assessment is a process that results in a quantitative estimate or index of toxicity for each COPC. For carcinogens, this index is the cancer slope factor (CSF) or unit risk factor (URF). For non-carcinogens, it is the reference dose (RfD) or reference concentration (RfC). Toxicity values are associated with both threshold (non-carcinogenic) health effects and carcinogenicity. For complete human exposure pathways, toxicity values are identified for COPCs to allow for quantitative risk characterization. However, as discussed above in Section 3.2, based on the implementation of the RBC&D Plan, there are no complete exposure pathways identified at the Site under future conditions. Exposure pathways for a future construction worker are considered potentially complete; however, PCB concentrations in subsurface soil will not exceed the applicable NYSDEC industrial land use SCO or the soil cleanup level for low occupancy areas under 40 CFR 761.61(a)(4), both of which are 25 mg/kg. In addition, institutional controls implemented as part of the RBC&D Plan will mitigate construction worker exposures to residual PCBs in soil during excavations. Therefore, risk to a future construction worker is not evaluated further and a toxicity assessment was not conducted as part of this PAR.

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Tables

Table 1
PCB Soil Data Summary Statistics
Pathway Analysis Report
Shulmans Salvage Yard, Elmira, NY

	Number of Detections	Number of Samples	Detection Frequency (%)	Maximum Detected Value (mg/kg)	Maximum Detected Concentration Location	NYDEC Residential / Commercial Use Soil Cleanup Objective (SCO) (mg/kg)	NYSDEC Industrial Use Soil Cleanup Objective (SCO) (mg/kg)	USEPA Regional Screening Level (RSL) Industrial Soil (mg/kg)	Chemical of Poential Concern (COPC)
Polychlorinated Biphenyls (PCBs)									
Aroclor 1016	3	348	1%	410	SB-20 (0-1')	1.0	25	27	X
Aroclor 1242	130	348	37%	180	SB-25 (1-1.5')	1.0	25	1.0	X
Aroclor 1248	5	348	1%	6.7	SB-84 (3-4')	1.0	25	1.0	X
Aroclor 1254	156	348	45%	59	SB-55 (0-1')	1.0	25	1.0	X
Aroclor 1260	145	348	42%	14	GWS-08 (2-4') / SB-74 (1-2')	1.0	25	1.0	X
Total PCBs	179	348	51%	416	SB-20 (0-1')	1.0	25	1.0	X

General Notes:

1. Only those PCBs Aroclors with at least one detection in surface or subsurface soil are presented here.

Table 2
Selection of Exposure Pathways
Pathway Analysis Report
Shulmans Salvage Yard, Elmira, NY

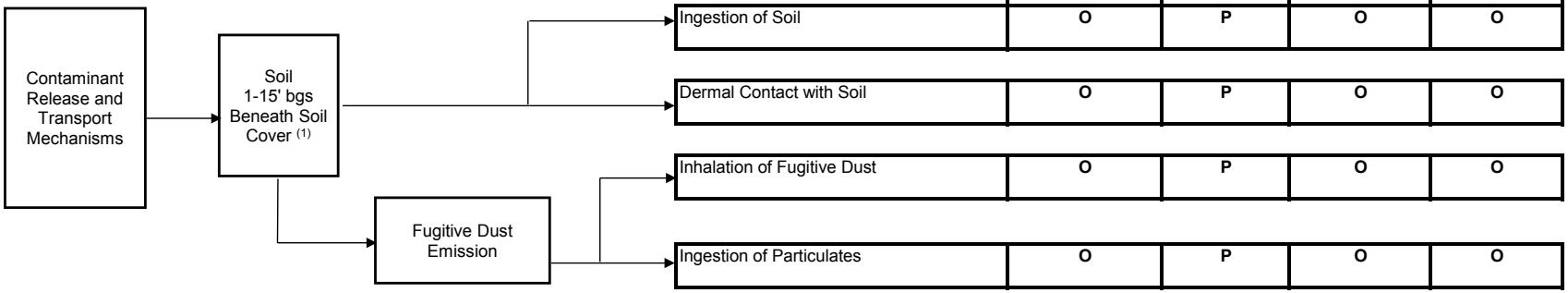
Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Soil	Surface Soil	Surface Soil	Worker	Adult (>18 years)	Incidental Ingestion	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
						Dermal Contact	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
						Inhalation of Particulates	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
				Visitor / Trespasser	Adult (>18 years)	Incidental Ingestion	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
						Dermal Contact	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
						Inhalation of Particulates	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
					Child (<18 years)	Incidental Ingestion	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
						Dermal Contact	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
						Inhalation of Particulates	None	Based on the RBC&D Plan, the cover system will prevent exposure to residual PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
				Off-Site Resident	Adult (>18 years)	Inhalation of Particulates	None	Based on the RBC&D Plan, the cover system will prevent off-Site exposure to residual PCBs in fugitive dust above 1 mg/kg located beneath the 1-foot soil cover.
								Based on the RBC&D Plan, the cover system will prevent off-Site exposure to residual PCBs in fugitive dust above 1 mg/kg located beneath the 1-foot soil cover.
					Child (<18 years)	Inhalation of Particulates	None	Based on the RBC&D Plan, the cover system will prevent off-Site exposure to residual PCBs in fugitive dust above 1 mg/kg located beneath the 1-foot soil cover.
								Based on the RBC&D Plan, the cover system will prevent off-Site exposure to residual PCBs in fugitive dust above 1 mg/kg located beneath the 1-foot soil cover.

Table 2
Selection of Exposure Pathways
Pathway Analysis Report
Shulmans Salvage Yard, Elmira, NY

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Soil	Subsurface Soil	Subsurface Soil	Construction Worker	Adult	Incidental Ingestion	None	PCBs in subsurface soil will meet the NYDEC SCO of 25 mg/kg for industrial soil. Based on the RBC&D Plan's institutional controls, excavations will be conducted under a Soil Management Plan and Health & Safety Plan to mitigate exposure to PCBs in soil above 1 mg/kg and less than or equal to 25 mg/kg located beneath the 1-foot soil cover.
					(>18 years)	Dermal Contact	None	PCBs in subsurface soil will meet the NYDEC SCO of 25 mg/kg for industrial soil. Based on the RBC&D Plan's institutional controls, excavations will be conducted under a Soil Management Plan and Health & Safety Plan to mitigate exposure to PCBs in soil above 1 mg/kg and less than or equal to 25 mg/kg located beneath the 1-foot soil cover.
						Inhalation of Particulates	None	PCBs in subsurface soil will meet the NYDEC SCO of 25 mg/kg for industrial soil. Based on the RBC&D Plan's institutional controls, excavations will be conducted under a Soil Management Plan and Health & Safety Plan to mitigate exposure to PCBs in soil above 1 mg/kg and less than or equal to 25 mg/kg located beneath the 1-foot soil cover.

Figures

Figure 1
Human Health Conceptual Site Model for PCB Soil Contamination Based on Risk-Based Cleanup and Disposal Plan
Pathway Analysis Report
Shulmans Salvage Yard, Elmira, NY



Exposure Pathway	Potential Future Receptors			
	Site-Worker [2]	Construction Worker [3]	Visitor / Trespasser [4]	Off-Site Resident [5]
Ingestion of Soil	O	P	O	O
Dermal Contact with Soil	O	P	O	O
Inhalation of Fugitive Dust	O	P	O	O
Ingestion of Particulates	O	P	O	O

Key:

X - Complete Exposure Pathway
P - Potentially Complete Exposure Pathway
O - Incomplete Exposure Pathway
→ Exposure Route

Notes:

[1] Groundwater is not evaluated as an exposure medium because PCBs were not detected in groundwater at the Site.
[2] Based on the RBC&D Plan, workers will not have complete exposure pathways to PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
[3] Based on the RBC&D Plan, construction workers have potentially complete exposures to PCBs in subsurface soil; however, PCB concentrations in subsurface soil will not exceed the applicable NYDEC industrial land use SCO. In addition, these exposures will be mitigated through a Soil Management Plan and Health and Safety Plan.
[4] Based on the RBC&D Plan, visitors / trespassers will not have complete exposure pathways to PCBs in soil above 1 mg/kg located beneath the 1-foot soil cover.
[5] Based on the RBC&D Plan, an off-Site resident will not have complete exposure pathways to PCBs in fugitive dust above 1 mg/kg located beneath the 1-foot soil cover.