

CONCEPTUAL SITE MODEL

**CITY OF SOUTH BEND
DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT
SOUTH BEND, INDIANA**

**FORMER OLIVER PLOW WORKS
VRP #6001202
South Bend, Indiana**

**Envirocorp Project No. 80D2468
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Prepared And Submitted By:

**ENVIROCORP, INC.
South Bend, Indiana**

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FIGURES

FIGURE 1: Area Identification After Demolition

**Conceptual Site Model
for Former Oliver Plow Property**

**Developed March 4, 2002
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I) INTRODUCTION

This conceptual site model will be used to assist in planning the sampling strategy for the site, as part of the Data Quality Objective process, and for filling the data gaps that exist at this site. The data used for this model are listed in the Remediation Work Plan (RWP). This conceptual model will be updated as circumstances dictate during the project.

II) BACKGROUND

The site, the former Oliver Plow Works; 533 Chapin Avenue; South Bend, Indiana was used for over 100 years to produce various types of farm equipment. The property is approximately 38 acres and is currently being re-developed by the City of South Bend for re-use as a commercial/industrial park. The remediation efforts at the site are intended to repair any property damage that may have occurred in the past, and relieve future owners of future liability from the past activities after the demolition and removal of the former buildings, foundations, and utilities.

III) SITE HYDROGEOLOGY OVERVIEW

The geology under the site to the water table is mainly sand and gravel, with some localized areas of silts and clays. The water table is approximately 19 to 24 feet below grade (bg), and the hydraulic gradient is approximately 0.001 ft/ft. The groundwater flow in the uppermost aquifer at the site is from the southwest to the northeast. See the RWP for further details.

IV) AREA IDENTIFICATION AND POTENTIAL CONTAMINATION ASSESSMENT FOR THE SOILS

The site has been divided into 12 different areas as the site should appear after the demolition is complete (Figure 1). The divisions are based upon data obtained during the investigations at the site during the past 15 years. The assessment of the potential for an area to contain impacted soils is based upon finding detectable levels of organic chemicals of concern (COCs) or metals above background levels. The assessment of the status of the area does not relate to the condition of the soils in relation to the closure standards in the RWP.

Area 1 - This area is located in the southwest corner of the site and includes MW-1. Two, 10,000-gallon quench oil underground storage tanks (USTs), a drum storage area north of the old oil pump house, and two former fuel oil USTs were formerly located in this area. The soil in the area of the oil pump house was noted in a previous investigation to contain elevated levels of volatile organic compounds (VOCs) (below Tier II non-residential standards) at 23-25 feet, although this appears to be located below the water table. During the most recent investigation, five borings were advanced in this area in the vicinity of the former tanks, and two borings in the vicinity of the former drum storage area north of the former oil pump house. The borings in the most recent investigation

indicated that soils above the cement floor at 14 feet were impacted by oil to a depth of approximately 10 feet. This area may be inside the former 500,000-gallon cistern. MW-1 was found to contain groundwater with tetrachloroethylene above non-residential levels. This area has a medium to high potential to be impacted by organic COCs.

Area 2 - This area is located east of Area One and includes MW-4. A review of old site plans indicate this area was primarily used as a storage area for coal and coke, and to off-load materials on the south side of the site. The samples obtained for the subsurface investigation in this area and the trenching investigation indicate that a significant layer of coal/coke/foundry waste is present beneath grade. This area has a low to medium potential to be impacted by inorganic COCs above background levels.

Area 3 - This area was the location for a number of the annealing ovens (along the southeast edge), railroad tracks, and a number of buildings (demolished). It contains MW-7. This area has a low to medium likelihood of being impacted by inorganic COCs.

Area 4 - This area is the present day location of the recently vacated St. Joseph Division of Family and Children office and a parking area. It was used in the past (from at least 1885) as the gray iron foundry. A review of the Sanborn maps indicate that the floor for the foundry was earthen. This area has not been investigated according to available records. It has a low to medium potential to be impacted by inorganic COCs.

Area 5 - This area contains the old transformers. The transformers and the soils beneath them were noted to be impacted by polychlorinated biphenyls (PCBs). The area was remediated by removal of the transformer fluid and impacted soil and found to be below applicable standards. It has a low to medium potential to be impacted by PCBs.

Area 6 - This area was formerly occupied by two buildings and most recently found to have been used as a hazardous waste storage area (on the northern portion of the former building 20). A machine shop was located in Building #20. The area also contains an old cistern by building #21. A UST was also noted on the southeast side of this area. Elevated levels of lead were noted in the northwest corner of this area. It has a low to medium potential to be impacted by inorganic and organic COCs.

Area 7 - This area is the courtyard located on the northeast side of the building complex and the interior courtyard in the north side of the complex. The northeast courtyard contained the former Japanning building and a gasoline tank that was closed in-place on the western portion of this area. The interior courtyard contained the oil storage area in the southwest corner of the courtyard since the 1880s. The most current investigation found semi-volatile organic compounds (SVOCs) above detection limits, but below Tier II levels. This area has a low to medium potential to be impacted by organic COCs.

Area 8 - This area contains the land under the buildings that are scheduled to be demolished. The buildings were constructed at different times over the life of the site. Some of the area under the buildings was used as storage for the materials used at the site prior to the construction. No investigation, except for the investigation in the former tank area inside of area 14, has been conducted on the soils under these buildings. The potential for impacted soils for inorganic and organic COCs is unknown.

Area 9 - This area is located west of the buildings. The area was used for rail and surface transportation routes and loading/unloading. This area has a low to medium potential to be impacted by inorganic COCs.

Area 10 - This area is located on the northern portion of the site. This area is the paved parking area north of the building complex. It was used as warehouse space since the 1880s. It was used to stage barrels of waste in the past. Soil samples from this area did not indicate any contamination was present. It is unlikely to be impacted by organic and inorganic COCs.

Area 11 - This area currently contains the 500,000-gallon water retention pond used for fire protection purposes and Building 31. A soil sample in this area was found to contain lead over the VRP Tier II non-residential level north of the retention pond, but a re-analysis of a different aliquot of this sample was noted to be below the Tier II level. The most current investigation found SVOCs above detection limits north of Building 31. Building 31 was used as a painting area in the last years of the operation. This area has a medium to high potential to be impacted by inorganic COCs and a low to medium potential to be impacted by organic COCs.

Area 12 - This area is the former location of the administration buildings for Oliver Plow. The subsurface contains building debris and other demolition material. The samples from this area did find low levels of SVOCs below the Tier II non-residential levels. This area has a low to medium potential to be impacted by inorganic COCs and organic COCs.

V) POTENTIAL MIGRATION ROUTES, EXPOSURE PATHWAYS, AND RECEPTORS

Migration Routes

The site does not appear to have any surface water flowing directly off the site. It does have a number of combined sewer/stormwater lines currently crossing the site.

The main migration route for COCs is via groundwater moving off the site due to the dissolution into rainwater that has infiltrated the soil. There is a potential for airborne COCs (in the form of dust) to migrate off-site during construction activities at the site.

Exposure Pathways

The exposure pathways discussed in this document are based upon a commercial setting. These pathways include skin contact, ingestion of soils and groundwater, and inhalation of vapors or particulate matter.

Receptors

The receptors at the site will initially be composed of the construction workers at the site. The long term exposure receptors will include the commercial/industrial personnel and the potential impact to the groundwater by on-site sources.

VI) DATA GAPS

This section will identify known data gaps at this site.

The condition of the soils under the buildings (Area 8)

The condition of the soils and the potential COCs that may be present have not been addressed in this area.

The source of the dissolved PCE contamination in the southwest corner of the site

The source of this contamination has not been conclusively determined but is believed to be off-site.