



# PREFERRED PLAN

**FOR THE REMEDIATION OF THE  
COOPER TIRE & RUBBER CO. (COOPER STANDARD) SITE  
1175 NORTH MAIN STREET  
BOWLING GREEN, WOOD COUNTY, OHIO**



**Division of Environmental Response and Revitalization  
Northwest District Office**

**November 2017**

<b>Ohio EPA's Division of Environmental Response and Revitalization (DERR) - Remedial Response Program</b>			<b>Preferred Plan For the Remediation of the Cooper Tire &amp; Rubber Site Bowling Green, Wood County, Ohio</b>		
<b>THE REMEDIAL RESPONSE PROCESS</b>					
<b>(1)</b> Preliminary Assessment & Site Inspection	<b>(2)</b> Remedial Investigation & Feasibility Study	<b>(3)</b> Remedy Selection (Preferred Plan & Decision Document)	<b>(4)</b> Remedial Design	<b>(5)</b> Remedial Action	<b>(6)</b> Remedy Operation, Maintenance & Monitoring

This Preferred Plan is subject to public comment. Ohio EPA may modify the preferred remedial alternative or select another alternative presented in this Preferred Plan based on new information or public comments that are received. Therefore, the public is encouraged to review and comment on the remedial alternatives presented in this Preferred Plan. Once the final remedial alternative is selected, it will be presented in a Decision Document, defining the final remedy decision. All documents referenced herein can be found in the repository located at the Wood County District Public Library, 251 N. Main Street, Bowling Green, Ohio 43402.

Written public comments on this preferred plan will be accepted during the comment period that runs from November 13, 2017 – December 20, 2017. Ohio EPA will hold a public meeting to explain this preferred plan. Oral and written comments will be accepted at this meeting, which will be held on December 13, 2017 at 6:00 p.m. at the Ohio EPA Northwest District Office, located at 347 N. Dunbridge Road, Bowling Green, Ohio 43402. Additional information on the Cooper Tire & Rubber Company (currently Cooper Standard Automotive) Site, at 1175 N. Main Street, Bowling Green, Ohio (Site) is available from (1) Ohio EPA's Northwest District Office, located at 347 North Dunbridge Road, Bowling Green, Ohio 43402, by contacting Ghassan Tafla at (419) 373-3039, or via e-mail at [ghassan.tafla@epa.ohio.gov](mailto:ghassan.tafla@epa.ohio.gov); and (2) locally from the information repository located 251 N. Main Street, Bowling Green, Ohio 43402.

## **SUMMARY**

On March 27, 1992, Cooper Tire & Rubber Company signed Director's Final Findings and Orders (DFFO) with Ohio EPA to investigate the extent of contamination and, if appropriate, develop remedial alternatives to address the problem. The Remedial Investigation (RI) documented the existence of contamination (e.g., trichloroethylene (TCE), xylenes, and metals) on the Site. An evaluation of the risk to human health and environment was performed.

The contamination poses unacceptable current and future human health and environmental risks based on direct contact with contaminated surface and subsurface soil, inhalation of contaminated soil and/or ground water via vapor intrusion, and direct contact with contaminated ground water. Additional details concerning the primary contaminants of

concern (COCs) and remediation goals, now termed Remediation Levels (RLs), and the health risks associated with them are located in Table 1 below:

<b>TABLE 1: CONTAMINANTS OF CONCERN (COCs) / REMEDIATION LEVELS (RLs)</b>			
<b>Medium</b>	<b>COC</b>	<b>RL</b>	<b>RL Basis</b>
<b>Soil: Human Direct Contact</b>	Trichloroethylene	19,000 µg/kg	US EPA Industrial Soil
<b>Sub-Slab Vapor Intrusion to Indoor Air</b>	Vinyl chloride	930 µg/m <sup>3</sup>	US EPA VISL
	Trichloroethylene	290 µg/m <sup>3</sup>	US EPA VISL
<b>Ground Water: Construction Worker Direct Contact</b>	Cis-1,2-Dichloroethene	4,810 µg/L	Property-Specific
	Vinyl chloride	2,020 µg/L	Property-Specific
	Arsenic	2,400 µg/L	Property-Specific
	Iron	5,600,000 µg/L	Property-Specific
	Manganese	192,000 µg/L	Property-Specific
<b>Ground Water: Vapor Intrusion to Indoor air</b>	Vinyl Chloride	37 µg/L	US EPA VISL
<b>Indoor Air</b>	Trichloroethylene	8.8 µg/m <sup>3</sup>	US EPA Industrial Air
	Vinyl Chloride	28 µg/m <sup>3</sup>	US EPA Industrial Air

Based on this information, remedial alternatives were developed to address human health and environmental risks posed by the Site. The Feasibility Study (FS) documents the remedial alternatives developed for the Site, and the Remedial Action Objectives (RAOs) to ensure protectiveness of human health and the environment.

This Preferred Plan summarizes the range of remedial alternatives evaluated, identifies Ohio EPA's preferred remedial alternative, and explains the reasons for selection of the preferred remedial alternative. The preferred remedial alternative is designed to reduce human health risks to within acceptable limits, and to protect human health and the environment from exposure to soil, ground water, and indoor air contamination.

The expectations for the preferred remedial alternative include:

1. Reduction of human health risks to within acceptable limits, and protection of human health and the environment from exposure to COCs in soil, ground water, and indoor air, which are above acceptable limits.
2. Short and long-term protection of human health and the environment.
3. Compliance with applicable or relevant and appropriate requirements (ARARs).
4. Cost-effectiveness and limitation of expenses to what is necessary to achieve the preferred alternative expectations.
5. Continued operation and maintenance of the existing remedial action and monitoring systems.

The major elements of the preferred remedial alternative include:

1. Establishing institutional controls, including for limiting the property to commercial/industrial use, prohibiting potable use of ground water, and requiring operation and maintenance of engineering controls.
2. Utilizing the current parking lot as an asphalt cap (engineering control) over Area I soil (See Figure 1).
3. Utilizing the asphalt cap (engineering control) to prevent direct contact.
4. Conducting a maintenance and repair program for the engineering controls.
5. Installing a passive ventilation system (engineering control).
6. Performing sub-slab soil gas and indoor air sampling, to periodically evaluate for continued system effectiveness, as part of the operation and maintenance program.
7. Establishing a ground water management and monitoring program.

## **SITE HISTORY**

The Site is currently operated by Cooper Standard Automotive (CSA), which purchased the property and business operations from Cooper Tire & Rubber Company (Cooper Tire) during 2002 to 2004. Specifically, the Site is owned by Cooper-Standard Automotive Inc. OH LLC and comprises Wood County Auditor parcel nos. B08-510-130203003000 (eastern parcel with Plant Building) and B08-510-130203002000 (western parcel with parking areas). Cooper Tire purchased the Site in May 1977 from Gulf & Weston Manufacturing. Historical Site activities included flame cutting, welding, shearing, punching, forming, machining, honing, solvent degreasing, assembly, priming and painting (both dip and spray). Cooper Tire renovations allowed for the manufacturing of reinforced rubber hose and body seals for the automotive industry, as well as other extruded rubber products. Site activities included extruding, knitting, braiding, spiraling, curing (vulcanization), spray coating, floccing, finishing, packing, warehousing, and shipping. TCE, xylenes, and other solvents were used in the past on Site.

The building was expanded in 1989 for warehousing. In the latter half of 1993, the hose production operations were relocated to another property. A second expansion was completed in 1997. Cooper Tire used materials typical of rubber manufacturing, including: rubber, adhesives, solvents, reinforcing material, coatings, silicones, and glycol compound. CSA has continued manufacturing automotive seals since its purchase of the Site. Neither Cooper Tire nor CSA used TCE at the site.

The Site is located on a flat parcel of land (surface relief of 2 feet) with drainage to the east. The Site encompasses approximately 25 acres, including a building of 285,000 square feet, approximately 4.5 acres of paved parking lots and approximately 2.8 acres of gravel driveways and parking areas, with most of the remaining 12 acres grass covered. The Site is bounded to the north by Van Camp Road and an auto dealership beyond, to the east by North Main Street (Highway 25) and commercial facilities beyond, to the south by light industrial and commercial properties, and to the west by an abandoned industrial facility.

Ground water at the Site is contained within two primary water-bearing zones, the overburden and the bedrock aquifer. Overburden ground water at the Site consists almost entirely of perched water that extend down to approximately 12 feet bgs. The bedrock aquifer consists of a shallow portion of the bedrock aquifer and an intermediate/deep bedrock portion of the bedrock aquifer.

There are no identified domestic water wells in the downgradient direction (south-southeast) located within one half mile of the Site. The immediate area around the Cooper Plant is mainly a Commercial/Industrial area serviced by Bowling Green municipal water supply. Due to the high levels of naturally occurring hydrogen sulfide content in the bedrock ground water, the ground water quality is not considered acceptable for human consumption. Therefore, the industrial/commercial area around the Cooper Plant and residential area located further from the Plant will remain on City water for the foreseeable future.

## **SITE CONDITIONS**

In 1986, TCE contamination was discovered during the removal of the xylene USTs located immediately west of the building and immediately south of a former TCE aboveground storage tank (AST). It is suspected that the TCE release was from historical (prior to 1972) chemical handling practices by the prior owners. The primary area of TCE contamination is immediately west of the manufacturing building near the former TCE AST and the adjacent former xylene and fuel oil UST basins.

The RI identified four (4) areas for potential exposure concerns that were subsequently evaluated to determine risk to human health and the environment. Area 1 comprises the Site Building and the approximately 20,000 square foot (sf) paved parking lot area immediately west of the Site Building. This area is associated with the former TCE AST, former xylene USTs, and former fuel oil UST. Area 2 refers to the approximately 10,800 sf area located adjacent to the southeast corner of the Site Building. This area is associated with historical material handling and the historical wastewater pretreatment operations. Area 3 refers to the approximately 9,600 sf undeveloped area of the Site along the southern property boundary and approximately 350 feet south of the Site Building. And Area 4 refers to the area of the paved parking lot approximately 100 feet west of the Site Building and south of the material storage shed. This area was historically used for the storage of rubber stock (See Figure 1).

Interim remedial measures and in-situ chemical oxidation using potassium permanganate ( $\text{KMnO}_4$ ) were implemented to address soil and ground water contamination for Area 1. Areas of known saturated fill were de-watered, and the pumped ground water was mixed with  $\text{KMnO}_4$  and re-injected back into the fill material to treat the perched ground water. In 2008, injection wells installed in the Area 1 to supplement treatment of the perched ground water treatment area. The interim measures successfully reduced the contaminant mass in the soils and perched water within Area 1 by 90 percent.

## **SITE RISKS**

An evaluation of current and potential future risks to human and ecological receptors as the result of exposure to contaminants present at the Site demonstrate that contaminants in environmental media pose, or potentially pose, unacceptable risks sufficient to trigger the need for remedial actions. The risk assessment for human health is an estimate of the likelihood of potential health problems occurring if no remedial actions were taken at the Site. To estimate risk, a four-step process is undertaken that involves data collection and evaluation, assessment of potential exposure, assessment of the contamination toxicity, and characterization of the risk.

A human health risk assessment was prepared to evaluate potential impacts to human health posed by contamination in soils, soil vapor, indoor air, and overburden ground water in Areas 1 through 4. Areas 2, 3, and 4 did not have significant potential risks and were eliminated for further evaluation. The risks and hazard levels for Area 1 indicate that there is significant potential risk to children and adults from direct exposure to contaminated soil, ground water, and soil vapor. Development of an Ecological Risk Assessment was not necessary because important ecological receptors that could be affected by Site contamination were not identified.

**SUMMARY OF REMEDIAL ALTERNATIVES**

Remedial Action Objectives (RAOs) were developed for the Site to identify goals that a remedy should achieve in order to ensure protection of human health and the environment. The RAOs for the Site are listed in Table 2, below:

<b>TABLE 2: REMEDIAL ACTION OBJECTIVES</b>	
<b>Ground water</b>	
<b>Human Health Risk</b>	<p>Prevent direct contact of vinyl chloride in Area I overburden ground water (UST-1 and EXT-1) by future construction/utility worker during ground intrusive activities at concentrations in excess of a total excess lifetime cancer risk greater than <math>1 \times 10^{-5}</math>.</p> <p>Prevent inhalation within the Site Building of the carcinogen vinyl chloride in vapors emanating from ground water in excess of a <math>1 \times 10^{-5}</math> excess lifetime cancer risk.</p> <p>Prevent inhalation within the Site Building of non-carcinogens vinyl chloride in vapors emanating from ground water in excess of a HQ or HI of 1.</p>
<b>Soil (including Sub-Slab Vapor and Indoor Air)</b>	
<b>Human Health Risk</b>	<p>Prevent ingestion/direct contact with soil located in in Area I by future industrial/commercial workers at concentrations greater than 19,000 <math>\mu\text{g}/\text{kg}</math> for Trichloroethylene.</p> <p>Prevent ingestion/direct contact with soil located in in Area I by future construction/utility workers at concentrations greater than 19,000 <math>\mu\text{g}/\text{kg}</math> for Trichloroethylene.</p> <p>Prevent indoor air inhalation exposure within the Site Building by future industrial/commercial workers at concentrations greater than a cumulative carcinogenic risk of <math>1 \times 10^{-5}</math> or a hazard index of 1. Prevent inhalation in existing building of carcinogens trichloroethylene in vapors emanating from soil in excess of a <math>1 \times 10^{-5}</math> excess lifetime cancer risk.</p> <p>Prevent inhalation in existing building of non-carcinogens trichloroethylene in vapors emanating from soil in excess of a HQ or HI of 1.</p>

A total of 4 remedial alternatives, which include 3 soil and 4 ground water options, were considered in the FS. The “no action alternatives” for soil, ground water and sediment have been included in a single section for efficiency and serves as a baseline for the comparison of

other remedial alternatives. Under this alternative, no remedial activities or monitoring are conducted at the Site to prevent exposure to contaminated media.

The second soil alternative, Institutional Controls, would control access and exposure to contaminated media by establishing activity and use limitations through an environmental covenant (EC), including to restrict Site use to commercial and/or industrial purposes and limit excavation in Area 1 without proper protective measures for construction and excavation activities. Management plans would be developed to maintain the parking lot over Area 1 soil, and to maintain and repair the floor within the Site Building.

The third soil alternative, Institutional Controls and Passive Ventilation, is essentially identical to the second soil alternative but adds an engineering control. The engineering control would be designed as a vapor mitigation system to prevent exposure from any vapor intrusion of soil and ground water contaminants to indoor air (such as via installation of a passive ventilation system). The vapor mitigation system would be required for the current building. Any future building at the Site would require evaluation to determine whether a vapor mitigation system is needed for the building.

As previously mentioned, the first ground water alternative is no action and serves as a basis of comparison to other ground water alternatives. The second ground water alternative, Institutional Controls, would prohibit the use of ground water for potable purposes, and would provide for both ground water monitoring as well a risk mitigation plan to address direct contact scenarios. The components would prevent any direct contact with ground water from construction or excavation activities.

The third ground water alternative is essentially identical to the second ground water alternative but adds management plans to maintain and repair the parking lot (i.e., to prevent any direct contact with ground water from construction or excavation activities), and the Site building floor (i.e., to prevent vapor intrusion to indoor air). The third alternative also adds a specific ground water monitoring program to document the attenuation of contaminants (i.e., monitored natural attenuation or MNA).

The fourth ground water alternative is essentially identical to the third ground water alternative but adds enhanced bioremediation to speed the process of natural attenuation. With the implementation of enhanced bioremediation, the MNA program would not be necessary, and therefore eliminated as an element of this remedial alternative.

## **COMPARISON CRITERIA**

Eight (8) criteria have been established to evaluate the various remedial alternatives individually and compare them with each other to select a preferred remedy. The eight evaluation criteria, include: the threshold criteria (1. overall protection of public health and the environment, and 2. compliance with ARARs), balancing criteria (3. Long-term effectiveness and performance, 4. Reduction of toxicity, mobility, or volume of contaminants through treatment, 5. Short-term effectiveness, 6. Implementability, and 7. Cost), and modifying criteria (8. Community acceptance).

The Threshold Criteria is comprised of two criterions. The first criterion is the overall protection of public health and the environment which evaluates whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, treatment, etc. The second criterion is compliance with Applicable or Relevant and Appropriate Requirements (ARARs) which evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the Site, or whether a waiver is justified. Any acceptable remedy must comply with both criteria.

The Balancing Criteria is comprised of five (5) criterion. The first criterion is Long-Term Effectiveness and Permanence, which evaluates the ability of an alternative to maintain protection of human health and the environment over time. The second criterion is the Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment, which evaluates the amount of contamination present, the ability of the contamination to migrate, and the use of treatment to reduce harmful effects. The third criterion is Short-Term Effectiveness, which evaluates the length of time needed to implement an alternative and the risks the alternative poses during implementation. The fourth criterion is Implementability which evaluates the technical and administrative feasibility of implementing the alternative. The fifth criterion is Cost, which is an estimate of the capital and annual operation and maintenance costs. Evaluation of the Balancing Criteria are used to select the most appropriate remedial alternative.

The Modifying Criterion is Community Acceptance, which considers whether the local community agrees with the analyses and preferred alternative as proposed. The Modifying Criterion is evaluated through public comment on the alternatives received during the comment period.

## EVALUATION OF ALTERNATIVES

A summary of the evaluation of the Site remedial alternatives and the costs associated with each alternative is included below in **Table 6: Evaluation of Site Remedial Alternatives:**

TABLE 6: EVALUATION OF SITE REMEDIAL ALTERNATIVES								
Remedial Alternatives	Threshold Criteria		Balancing Criteria				7. Costs	Modifying Criteria
	1. Protects Human Health & Environment	2. Compliance with ARARs	3. Long Term Effectiveness	4. Reduces T, M and/or V by Treatment	5. Short Term Effectiveness	6. Implementable		
Soil								
Alternative 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	\$0	TBD
Alternative 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$81,137	TBD
Alternative 3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$110,762	TBD



<b>Ground water</b>								
<b>Alternative 1</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	\$0	TBD
<b>Alternative 2</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$97,588	TBD
<b>Alternative 3</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$117,588	TBD
<b>Alternative 4</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$474,163	TBD
<input checked="" type="checkbox"/> = Fully Meets Criteria <input checked="" type="checkbox"/> = Partially Meets Criteria <input type="checkbox"/> = Does Not Meet Criteria								

## PREFERRED REMEDIAL ALTERNATIVE

Ohio EPA's preferred remedial alternative for the Cooper Tire and Rubber Company Site is a combination of Soil Alternative 3 and Ground Water Alternative 3. The alternative relies on various institutional controls to restrict the use of the Site, and engineering controls to prevent direct contact with contamination remaining on Site as well as to mitigate vapor intrusion to indoor air. The engineering and institutional controls on which the preferred alternative relies are commonly used strategies and have been widely applied at other sites with soil and ground water impacts. This preferred remedial alternative, as detailed below, may change in response to Ohio EPA's consideration of public comment or new information.

The preferred alternative consists of an environmental covenant which would (a) limit the use of the Site to commercial and/or industrial purposes, (b) prohibit the use of ground water for any purpose other than sampling and analysis to monitor contamination, (c) require operation and maintenance of engineering controls, (d) require use of a risk mitigation plan for any construction or excavation activities in the subsurface, and (e) require evaluation vapor intrusion risk prior to occupancy of any future buildings on the Site and if needed, installation of a vapor mitigation system as an engineering control.

The preferred alternative will also rely on the existing asphalt parking lot in Area 1 to be maintained as an engineering control to prevent direct contact with the underlying impacted soils. The building floor will be maintained as an engineering control to prevent sub slab vapors from impacting the indoor air of the Site building. Sub-slab soil vapors will be managed through passive ventilation, and will involve trenching within the Site building in limited areas in order to install the passive ventilation system. Lastly, a monitoring program will be implemented to conduct periodic ground water sampling throughout the Site to confirm and document MNA is effective.

Ohio EPA encourages the public to review and comment on this document, and other documents contained in the administrative record file for the Site, to gain a better understanding of the Site, and the activities that have been conducted there.

**Figure 1**  
**Site Map**  
**Areas of Concern**

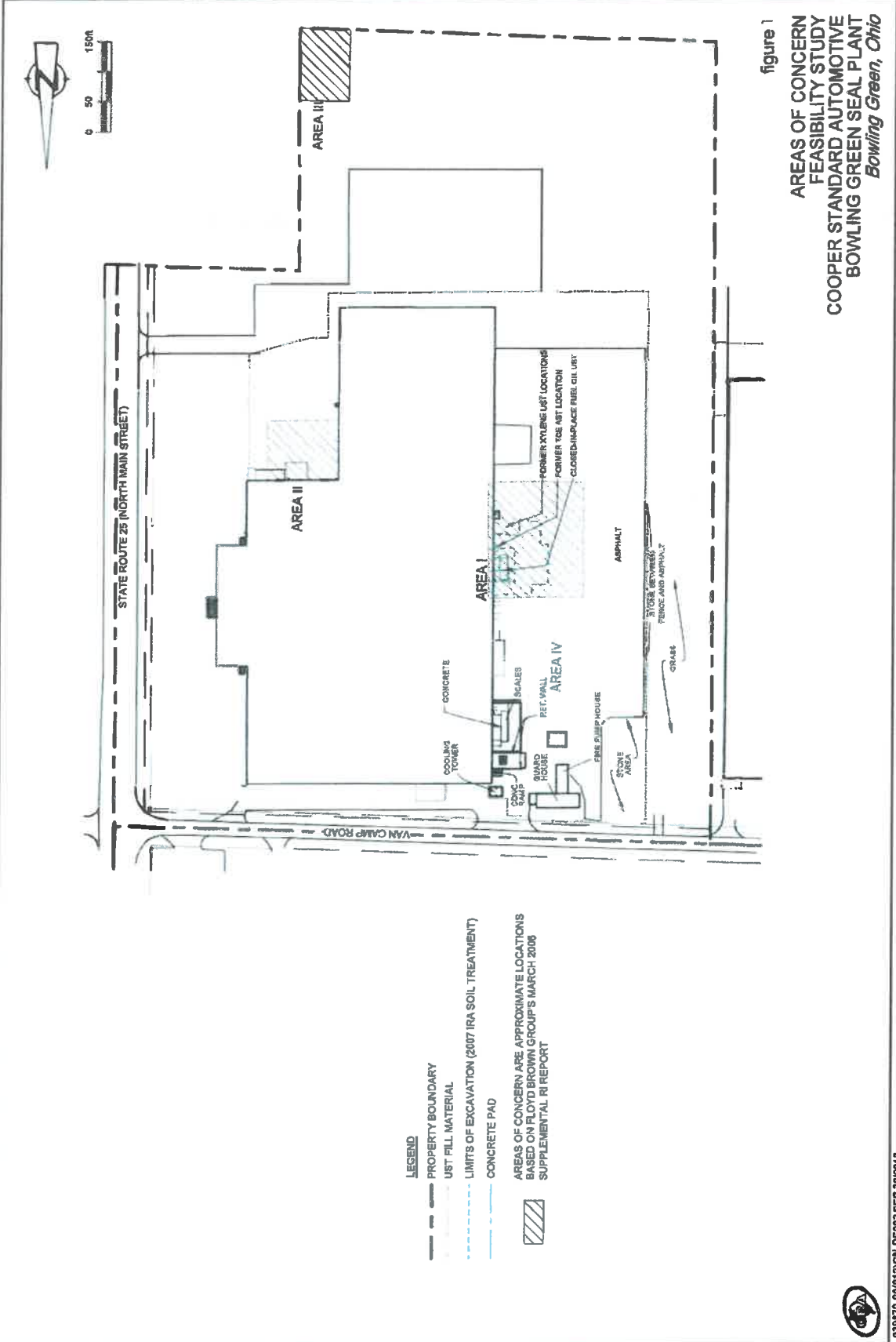


figure 1  
**AREAS OF CONCERN  
 FEASIBILITY STUDY  
 COOPER STANDARD AUTOMOTIVE  
 BOWLING GREEN SEAL PLANT**  
*Bowling Green, Ohio*

**LEGEND**

- PROPERTY BOUNDARY
- UST FILL MATERIAL
- LIMITS OF EXCAVATION (2007 IRA SOIL TREATMENT)
- CONCRETE PAD

▨ AREAS OF CONCERN ARE APPROXIMATE LOCATIONS BASED ON FLOYD BROWN GROUP'S MARCH 2008 SUPPLEMENTAL RI REPORT

