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*Transmitted Via FedEx*

March 31, 2006

Mr. James Hosch  
Wisconsin Department of Natural Resources  
1401 Tower Avenue  
Superior, WI 54880

Re: Koppers Inc. Wood-Treating Facility, Superior, WI  
Memoranda Regarding Ecological and Human Health Risk  
Assessment for the "Off-Property" Portion of the Site  
BBL Project #: 388.62

Dear Mr. Hosch:

In February 2006, Beazer East, Inc. (Beazer) submitted a document to the Wisconsin Department of Natural Resources (WDNR) titled *Off-Property Investigation Data Summary Report* (Blasland, Bouck & Lee, Inc., 2006). The document summarized the scope and findings of 2005 field investigations performed in the "off-property" portion of the Koppers Inc. wood-treating site in Superior, Wisconsin<sup>1</sup>, as well as the results of investigations performed prior to 2005. Based on review of the investigatory data, the report concluded, among other things, that sufficient data and understanding of Site conditions exist to proceed with human health and ecological risk characterizations as a basis for establishing corrective action objectives for the off-property portion of the Site. As an initial step in advancing the risk assessment processes, enclosed please find two technical memoranda prepared by AMEC Earth & Environmental (AMEC) on behalf of Beazer.

The first memorandum (Attachment A) identifies the approach to ecological risk assessment and provides an ecological site conceptual model for the off-property portion of the Site, including identification of proposed ecological receptors and proposed assessment and measurement endpoints. The second memorandum (Attachment B) proposes an approach for developing a consensus regarding the evaluation of potential human health risks associated with the off-property portion of the Site. Specifically, it identifies an approach whereby a series of technical memoranda will be submitted for review and concurrence by the WDNR regarding each key step in the risk assessment process.

The overall purpose in submitting these memoranda is to provide a basis for discussions and consensus-building with the WDNR (and supporting agencies) regarding the risk assessment approaches such that, when submitted to the WDNR, the documents will be deemed complete with respect to scope and will only require review and evaluation of numeric calculations and written conclusions. We anticipate that this will facilitate the timely completion, review, and approval of the risk assessment documents.

<sup>1</sup> The "off-property" portion of the Site refers to the impacted portions of the Outfall 001 drainage ditch, Crawford Creek, and the Crawford Creek floodplain beyond and downgradient of the Koppers-owned property.

We look forward to your concurrence regarding the proposed approaches outlined in the attached memoranda. In the interim, please feel free to contact me (860-645-1084) or Jane Patarcity of Beazer (412-208-8813) with any questions or comments regarding the attached information.

Sincerely,

BLASLAND, BOUCK & LEE, INC.



Jeffrey S. Holden  
Associate

JSH/csc

Enclosures (2)

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cc: John Robinson, WDNR  
Mark Gordon, WDNR  
Henry Nehls-Lowe, WDHFS  
Vicki Drake, Douglas County  
Robert Egan, USEPA  
Jane Patarcity, Beazer  
Brian Magee, AMEC  
Paul Anderson, AMEC

# *Attachment A*

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## **Approach to Ecological Risk Assessment**



## **Approach to Ecological Risk Assessment Koppers Inc., Superior, Wisconsin Off-Property Area**

This memorandum presents the ecological Conceptual Site Model (CSM) for the off-property areas associated with the Koppers Inc. (KI) facility in Superior, Wisconsin. The "off-property" areas refer to the Outfall 001 drainage ditch, Crawford Creek and the Crawford Creek floodplain beyond and downstream of the Koppers property. The off-property area is referred to throughout the remainder of this memorandum as "the Site".

The focus of the CSM is Crawford Creek and its floodplain, including the portion of the Outfall 001 drainage ditch within the relatively flat Crawford Creek floodplain. The portion of the Outfall 001 drainage ditch upstream of the Crawford Creek floodplain is not included in this because it does not represent an aquatic habitat that would attract significant wildlife populations and is unlikely to contain enough prey items to compose an important fraction of the diet of aquatic or terrestrial upper trophic level receptors. As identified in the *Off-Property Investigation Data Summary Report* (BBL, 2006), "discharge to Outfall 001 is variable and dependent on precipitation events, with the flow received by the Outfall 001 drainage ditch primarily resulting from snowmelt and stormwater runoff at intermittent intervals." Moreover, remediation activities are anticipated for this portion of the ditch such that potential ecological risks that may exist under current conditions will be addressed by the planned remediation activities.

This memorandum is the first of two planned submittals describing the approach for evaluating potential ecological exposures associated with the Site. Once Wisconsin Department of Natural Resources (WDNR) has concurred with the potential exposure pathways and receptors to be evaluated, a second memorandum will be submitted to propose the exposure assumptions, parameters and scenarios that are to be used in evaluating potential risks for the established pathways and receptors. Parameters that will be discussed in the second memorandum include: identification of constituents of potential concern (COPCs); procedures for calculating exposure point concentrations (EPCs); screening benchmarks; receptor exposure parameters (e.g., dietary fractions and ingestion rates); and toxicity reference values (TRVs) that will be used to calculate toxicity quotients. As with the approach to human health risk assessment in the off-property area, Beazer East, Inc. (Beazer) has proposed these memoranda with a goal of reaching a mutual understanding with WDNR, on the technical approach to the ecological risk assessment, such that the initial report submitted to WDNR will be deemed complete with respect to scope and will only require review of calculations and written conclusions.

As stated in Blasland, Bouck & Lee's (BBL's) February 10, 2005 letter to the WDNR, the investigations conducted to date in the off-property areas are consistent with USEPA's 8-step process for conducting ecological risk assessments (ERAs) and WDNR's 3-tiered approach for assessing sediment quality (BBL, 2005). In 2000, BBL submitted the document *Supplemental Surface Water and Streambed Sediment Investigation Report* which summarized habitat, benthic macroinvertebrate and fish surveys performed in 1999. These surveys, along with the site characterization data collected to date and the evaluations of potential concentrations in fish tissue (AMEC, 2003), formed the basis of the preliminary problem formulation for the Site (Tier 1 of WDNR's sediment quality assessment outline and Steps 1 and 2 of USEPA's ERA 8-step process). From the results of these initial investigations, potentially complete exposure pathways and receptors were identified and additional data were collected to further characterize the Site. These additional field investigations, which included sampling collocated media (for bioaccumulation evaluations), in conjunction with the previous investigations, provide the information necessary to characterize potential risk as described under Tier 3 of the WDNR sediment assessment outline and in steps 5-7 of the USEPA 8-step ERA process.



The CSM that has been developed based on existing data is depicted on Figure 1. The CSM identifies primary and secondary sources to media to which ecological receptors may be exposed and describes potentially complete exposure pathways for representative ecological receptors that may be present at the Site. The ecological CSM for the off-property portion of the Site includes both direct and indirect exposure pathways. Direct exposure pathways include the incidental ingestion of Crawford Creek floodplain soils, sediments and/or surface water by potential receptors. Indirect exposure pathways include the consumption of Crawford Creek prey species (e.g., fish and insects) by upper trophic level receptors.

### **Potential Ecological Receptors**

The majority of the vegetation in the Crawford Creek floodplain is classified as "emergent wetland", dominated by plants that can sustain long periods of inundation: grasses, sedges and occasional willows and dogwoods (BBL, 2000). The floodplain is bordered by a forested habitat containing mainly hardwood tree species with variable amounts of understory vegetation (BBL, 2000). Potential ecological receptors were selected to be consistent with the habitat types observed in the off-property area.

In addition to fish and benthic macroinvertebrates that inhabit the creek itself, potential upper trophic level receptors will be chosen to represent the dominant feeding guilds that may potentially be exposed to COPCs present in Crawford Creek and its floodplain. All receptors are conservatively expected to incidentally ingest surface water from the creek. The species to be evaluated in the ecological risk assessment, and the feeding guilds they represent, are:

- Meadow vole (*Microtus pennsylvanicus*), which represents mammalian herbivores that are exposed to floodplain soils via incidental ingestion of soils and consumption of floodplain vegetation (grasses, shoots and bark). The meadow vole is known to inhabit grassy fields and marshes (U.S.EPA, 1993);
- Little brown bat (*Myotis lucifugus*), which represents mammalian insectivores that are expected to feed solely upon insects via nocturnal aerial capture method, without incidental soil ingestion (U.S.EPA, 1993);
- Tree swallow (*Tachycineta bicolor*), which represents aerial avian insectivores that also catch their prey while flying over land or water and, consequently, are not expected to incidentally ingest soil (Stokes, 1996);
- American robin (*Turdus migratorius*), which represents terrestrial avian omnivores that are exposed to floodplain soils via incidental ingestion and consumption of soil invertebrates and floodplain vegetation (e.g., dogwood and currant fruits) (U.S.EPA, 1993);
- Mink (*Mustela vison*), which represent mammalian piscivores (fish compose the primary fraction of their diet) and are opportunistic feeders (generally nocturnal) feeding on whatever may be the most abundant prey in an area and may incidentally ingest sediments and surface water (U.S.EPA, 1993); and
- Belted kingfisher (*Ceryle alcyon*), which represents avian piscivores that typically inhabit shores of streams, rivers and ponds, feeding primarily on fish and are not assumed to incidentally ingest sediments (U.S.EPA, 1993).

During the ecological survey performed in 1999 (BBL, 2000), a wood turtle (*Clemmys insculpta*) was observed in the Crawford Creek floodplain. Wisconsin lists the wood turtle as a threatened species that is "rare or uncommon". The wood turtle is not federally protected. Reptiles have not



been selected as receptors to be quantitatively evaluated in the ERA because only limited toxicity information is available to assess potential risks from food web exposures. Moreover, in AMEC's experience, potential risks estimated for reptiles are lower than potential risks estimated for avian species. This is based on the following:

- reptiles (in this case, the wood turtle) have much lower metabolic rates (and, consequently, lower intake rates) than birds; and
- the TRVs used for reptiles are often the same as used for birds because reptile-specific TRVs are usually not available and avian TRVs are used in their stead (due to the phylogenetic similarity of birds and reptiles).

As a result of their higher intake rate per unit body weight, birds, which will be evaluated in the ecological risk assessment, are a more sensitive receptor than reptiles.

### **Assessment and Measurement Endpoints**

As part of the Problem Formulation step in ecological risk assessment, assessment and measurement endpoints are established. USEPA (1997) defines assessment endpoints as specific ecological values to be protected. Measurement endpoints are defined as measurable biological or ecological effects that are related to the environmental value chosen as the assessment endpoint (USEPA, 1997). Measurement endpoints are used to assess and estimate potential risk associated with potential exposure to COPCs for each assessment endpoint. For the evaluation of potential ecological risk associated with off-property portions of the Site, measurement endpoints include a comparison of measured and/or modeled constituent concentrations in environmental media and wildlife to media-specific benchmarks and appropriate toxicity effects thresholds for each COPC. Measurement endpoints were selected on the basis of the potential presence of receptors in various feeding guilds in the off-property area, the existence of potentially complete exposure pathways, and the sensitivity of representative receptors ("indicator species") to COPCs. The assessment and measurement endpoints selected for the off-property assessment are summarized below.

- Assessment Endpoint 1 – Potential effects on benthic macroinvertebrate populations evaluated as a prey base for upper trophic level species resulting from potential exposure to COPCs in sediment.
  - Measurement Endpoint 1 – Comparison of sediment concentrations to available sediment ecological screening benchmarks, such as WDNR's Consensus-Based Sediment Quality Guidelines (CBSQGs).
  - Measurement Endpoint 2 – Evaluation of previously conducted site-specific benthic macroinvertebrate community analysis.
- Assessment Endpoint 2 – Potential effects on fish populations evaluated as a prey base for upper trophic level species resulting from exposure to COPCs in surface water and sediment.
  - Measurement Endpoint 1 – Comparison of surface water concentrations to ecological screening benchmarks, such as ambient water quality criteria (AWQC).
  - Measurement Endpoint 2 – Evaluation of previously conducted site-specific fish community analysis.



- Assessment Endpoint 3 – Potential effects on herbivorous mammalian populations resulting from consumption of floodplain vegetation potentially exposed to COPCs in Crawford Creek floodplain soils and surface water.
  - Measurement Endpoint 1 – Comparison of estimated potential average daily doses (ADDs) of COPCs for a representative mammalian herbivore (e.g., meadow vole) to mammalian TRVs. ADDs will be estimated using measured and/or modeled site-specific COPC concentrations, and site- and receptor-specific exposure factors to assess potential risk associated with incidental soil ingestion and consumption of floodplain vegetation. Surface water ingestion will also be evaluated.
- Assessment Endpoint 4 – Potential effects on aerial insectivorous mammalian populations resulting from consumption of prey potentially exposed to COPCs in Crawford Creek floodplain soils, sediment and surface water.
  - Measurement Endpoint 1 – Comparison of estimated potential ADDs of COPCs for a representative mammalian insectivore (e.g., little brown bat) to mammalian TRVs. ADDs will be estimated using measured and/or modeled site-specific COPC concentrations, and site- and receptor-specific exposure factors to assess potential risk associated with surface water ingestion and consumption of insects.
- Assessment Endpoint 5 – Potential effects on aerial insectivorous avian populations resulting from potential consumption of prey potentially exposed to COPCs in Crawford Creek floodplain soils, sediment and surface water.
  - Measurement Endpoint 1 – Comparison of estimated potential ADDs of COPCs for a representative avian insectivore, that feeds aerially (e.g., tree swallow), to avian TRVs. ADDs will be estimated using measured and/or modeled site-specific COPC concentrations and site- and receptor-specific exposure factors to assess potential risk associated with surface water ingestion and consumption of insects.
- Assessment Endpoint 6 – Potential effects on omnivorous avian populations resulting from potential consumption of vegetation and prey potentially exposed to COPCs in Crawford Creek floodplain soils, sediment and surface water.
  - Measurement Endpoint 1 – Comparison of estimated potential ADDs of COPCs for a representative avian omnivore, that feeds primarily terrestrially (e.g., American robin) to avian TRVs. ADDs will be estimated using measured and/or modeled site-specific COPC concentrations, and site- and receptor-specific exposure factors to assess potential risk associated with incidental ingestion of soil and surface water and consumption of floodplain vegetation and soil invertebrates.
- Assessment Endpoint 7 – Potential effects on piscivorous mammalian populations resulting from consumption of aquatic prey potentially exposed to COPCs in Crawford Creek sediment and surface water.



- Measurement Endpoint 1 – Comparison of estimated ADDs of COPCs for a representative mammalian piscivore (e.g. mink) to mammalian TRVs. ADDs will be estimated using measured and/or modeled site-specific COPC concentrations and site- and receptor-specific exposure factors to assess potential risk associated with ingestion of surface water and sediments and consumption of fish and benthic macroinvertebrates.
- Assessment Endpoint 8 – Potential effects on piscivorous avian populations resulting from consumption of aquatic prey potentially exposed to COPCs in Crawford Creek sediment and surface water.
  - Measurement Endpoint 1 – Comparison of estimated potential ADDs of COPCs for a representative avian piscivore (e.g., belted kingfisher) to avian TRVs. ADDs will be estimated using measured or modeled site-specific COPC concentrations and site- and receptor-specific exposure factors to assess potential risk associated with ingestion of surface water and consumption of fish and benthic macroinvertebrates.

### **Summary**

Following WDNR concurrence with the CSM presented in this memorandum, we will begin work on the second memorandum which will describe the exposure assumptions, parameters and scenarios that will be used to evaluate potential risks for the potential receptors and exposure pathways described above. Parameters that will be discussed in the second memorandum include: identification of COPCs; procedures for calculating EPCs; screening benchmarks; receptor exposure parameters (e.g., dietary fractions and ingestion rates); and TRVs that will be used to calculate toxicity quotients.

Each memorandum can be discussed during a meeting or conference call with WDNR at the same time that the approach to the human health assessment is discussed. For most topics, if not all, we believe that a conference call should be sufficient to discuss and finalize the proposed approach. However, if WDNR believes that a meeting would be beneficial, Beazer will meet with WDNR to present and discuss the relevant material.





## References

AMEC Earth & Environmental. 2003. Memorandum from Brian Magee (AMEC) to James Hosch (WDNR). *Koppers, Inc. Superior, Wisconsin Facility WID 006 179 493*. (October 14)

Blasland, Bouck & Lee, Inc. 2006. *Off-Property Investigation Data Summary Report (February)*.

Blasland, Bouck & Lee, Inc. 2005. *Response to WDNR Comments Dated January 21, 2005 (February 10)*.

Blasland, Bouck & Lee, Inc. 2000. *Supplemental Surface Water and Streambed Sediment Investigation Report (July)*.

Stokes D, L. Stokes. 1996. *Stokes Field Guide to Birds. Eastern Region. Little, Brown and Company. Boston. 469 pp.*

USEPA. 1993. *Wildlife Exposure Factors Handbook*. U.S. Environmental Protection Agency, Office of Research and Development. Washington, D.C. EPA/600/R-31/187a, 187b. December.

USEPA. 1997. *Ecological Risk Assessment for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim Final*. EPA Environmental Response Team. EPA 540-R-97-006. PB97-963211.

**FIGURE 1**  
**Conceptual Site Model for Off-Property Ecological Exposures**  
**KI Facility, Superior, Wisconsin**

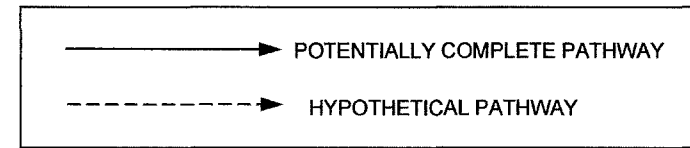
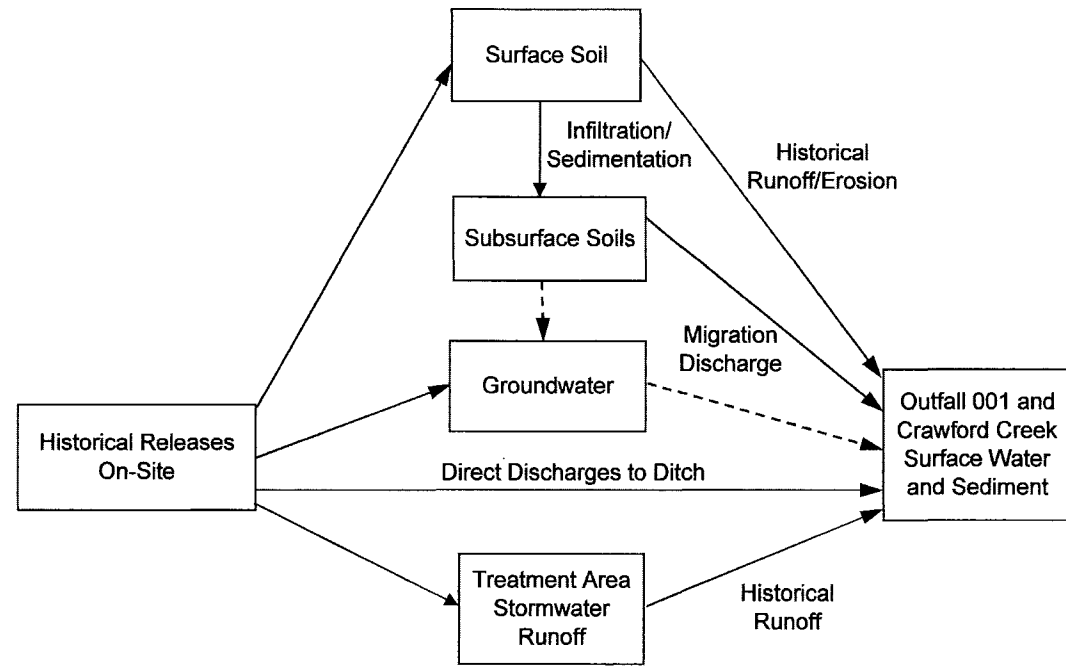
**PRIMARY SOURCE**

**SECONDARY SOURCE**

**EXPOSURE POINTS**

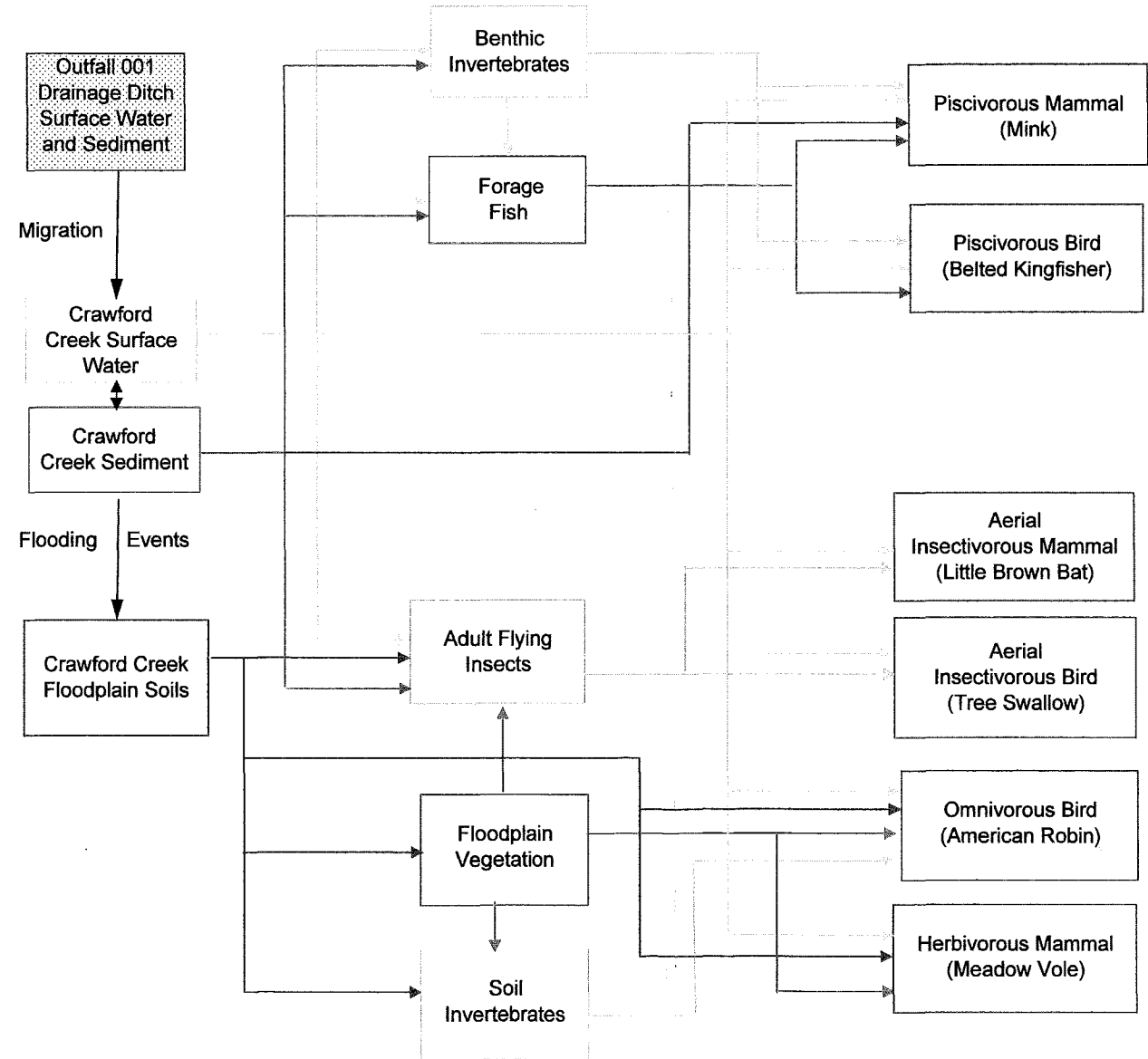
**PRIMARY RECEPTORS**

**SECONDARY RECEPTORS**

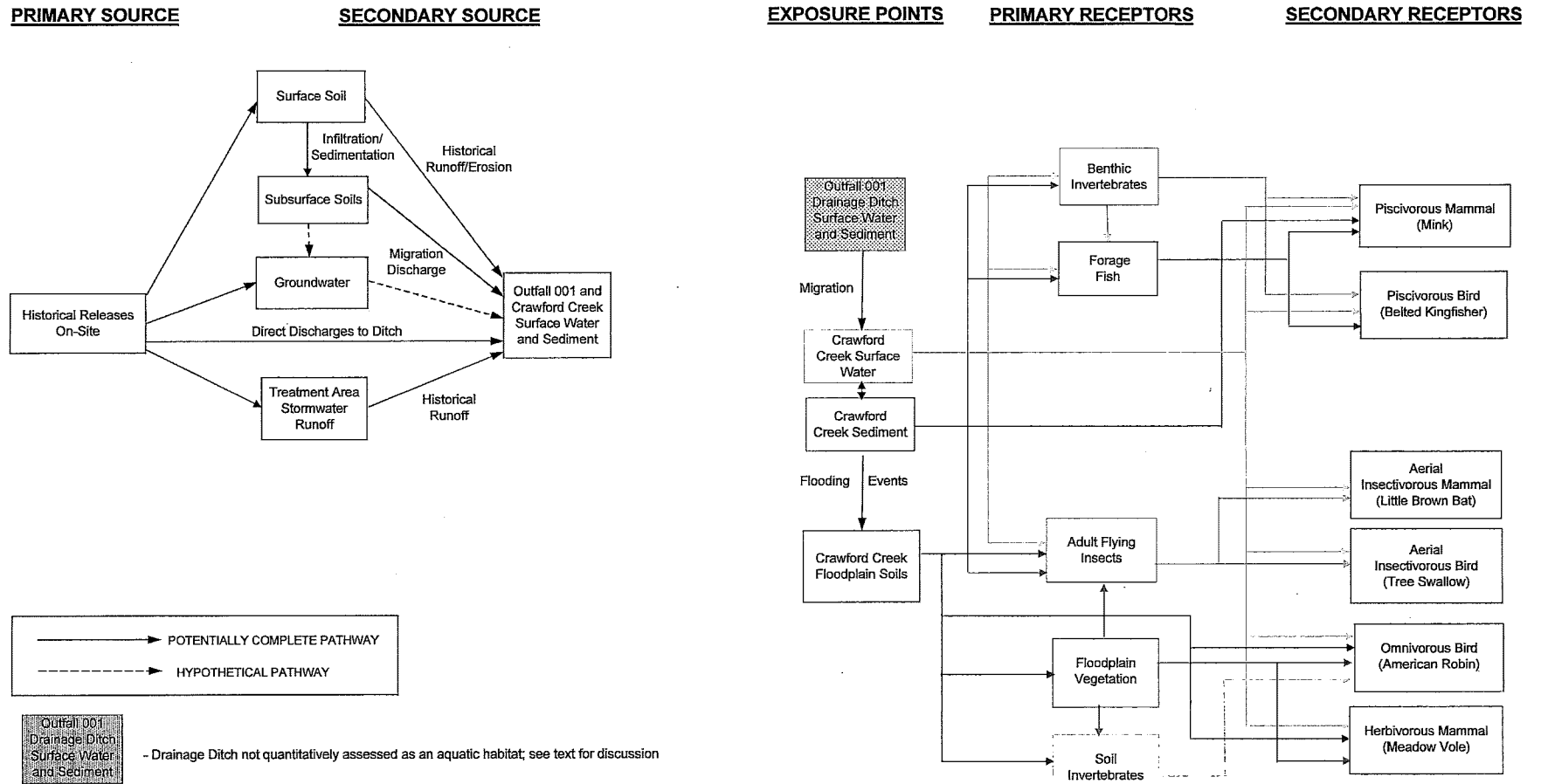


Outfall 001  
 Drainage Ditch  
 Surface Water  
 and Sediment

- Drainage Ditch not quantitatively assessed as an aquatic habitat; see text for discussion



**FIGURE 1**  
**Conceptual Site Model for Off-Property Ecological Exposures**  
**KI Facility, Superior, Wisconsin**



# ***Attachment B***

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## **Approach to Human Health Risk Assessment**



## Approach to Human Health Risk Assessment Koppers Inc., Superior, Wisconsin Off-Property Area

The goal of this memorandum is to propose a process for reaching consensus on the approach to be used to assess potential human health risks associated with potential exposures to constituents in media in the "off-property" portion of the Koppers Inc. (KI) wood-treating facility located in Superior, Wisconsin (hereinafter referred to as "the Site"). The off-property portion of the Site has been investigated during several phases of sampling conducted over several years. Most recently, investigation data were summarized in a report entitled *Off-Property Investigation Data Summary Report*, which was submitted to the Wisconsin Department of Natural Resources (WDNR) in February 2006.

To facilitate an efficient evaluation of potential human health risks and review of that evaluation, Beazer East, Inc. (Beazer) has proposed to engage in a series of discussions with WDNR on the technical approach to be used in the risk assessment. Beazer believes that, by discussing and reaching consensus on the technical approach for the risk assessment prior to performing and submitting a risk assessment to WDNR, the lengthy and resource-intensive comment/response cycle on the risk assessment report can be avoided. Beazer's goal, therefore, is to reach a mutual understanding with WDNR on the technical approach to be used for each key step of the risk assessment process, such that the initial report submitted to WDNR will be deemed complete with respect to scope and will only require review and evaluation of numeric calculations and written conclusions.

To that end, Beazer has proposed to submit a series of technical memoranda to WDNR, each of which will discuss particular aspects of the risk assessment approach. Each memorandum will present Beazer's proposed approach and rationale for selecting that approach clearly and with sufficient detail and supporting documentation to support WDNR's full review of the topic. This initial memorandum outlines the risk assessment process in general terms, identifies the topics that are proposed to be addressed in subsequent memoranda, proposes a schedule for submittal of the memoranda, and suggests a format for discussion and consensus-building.

### Risk Assessment Process

The risk assessment will be conducted in accordance with recent EPA and WDNR guidance.<sup>1,2,3,4</sup> Consistent with EPA guidance, the risk assessment will consist of the following steps:

- **Hazard Identification** involves identification of the constituents of potential concern (COPC) for evaluation in the quantitative risk assessment;

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<sup>1</sup> Wisconsin Department of Natural Resources. 2001. Chapter NR 720. Soil Cleanup Standards. <http://www.legis.state.wi.us/rsb/code/nr/nr720.pdf>

<sup>2</sup> U.S. EPA. 1989. Risk Assessment Guidance for Superfund, Volume I Human Health Evaluation Manual, Part A. Interim Final. EPA/540/1-89/002. December 1989.

<sup>3</sup> U.S. EPA. 1997. Exposure Factors Handbook. PB98-124217. August 1997.

<sup>4</sup> U.S. EPA. 2004. Risk Assessment Guidance for Superfund. (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. EPA/540/R/99/005. July 2004.



- **Toxicity Assessment** describes the relationship between the magnitude of exposure for each COPC (dose) and the occurrence of specific health effects for a potential receptor (response). This step also includes identification of toxicity values for use in the risk assessment;
- **Exposure Assessment** involves identification of potential human receptors, based on characteristics of the area, identification of exposure points and potential exposure pathways and associated exposure assumptions, estimation of exposure point concentrations, followed by estimation of the magnitude and frequency of receptors' potential exposure to COPCs; and
- **Risk Characterization** combines the information from the Exposure Assessment with the information from the Toxicity Assessment to derive quantitative estimates of the likelihood for adverse noncarcinogenic health effects or carcinogenic effects. These effects are estimated for each receptor for each potential exposure pathway and area identified in the Exposure Assessment. The risks from each exposure pathway are summed to obtain an estimate of total risk for each receptor at each exposure point.

Within each of these steps, decision points are encountered that will guide subsequent steps in the risk assessment process. The following paragraphs identify key decision points in the risk assessment process; it is anticipated that each topic will be further addressed in a series of three memoranda to be submitted to and discussed with the WDNR prior to submitting a risk assessment report for the off-property portion of the Site.

Selection of Dataset, COPCs, and Toxicity Values. Samples have been collected from soil, sediment, and water at off-site locations during several phases of investigation over several years. The various investigations have provided chemical and visual/olfactory information about conditions over a broad area. During some investigations, samples were collected at random locations, whereas biased sampling was conducted during other investigations. Some of the data that have been compiled into the project database are up to ten years old, and other data were collected several months ago. Sampling depths varied among the investigations, as did detection limits. This memorandum will discuss selection of the dataset for human health risk assessment from the universe of data available from off-site locations, such that the dataset used for risk assessment is most representative of off-property conditions with respect to horizontal and vertical spatial coverage, appropriate depths for human contact, age of data, and acceptability of detection limits, among other factors.

Following this step, the process to be used for selection of COPCs will be identified. Starting with the list of constituents that were detected at least once in a medium, a series of screening steps will be undertaken to identify those constituents that are most appropriate for quantitative evaluation in the human health risk assessment. The screening steps may involve comparison to risk-based screening concentrations, comparison to background concentrations, frequency of detection, and/or consideration of whether the constituent is related to historical site use. The memorandum will describe the screening steps and evaluation criteria for selecting COPCs.

For each constituent identified as a COPC, toxicity values will be identified from current EPA sources. For those constituents for which EPA has not developed toxicity values, surrogate toxicity values may be identified from other appropriate sources or based on structural similarity.



The memorandum will identify the EPA sources of toxicity values that will be used in the human health risk assessment and will identify the process for selection of surrogate toxicity values, when necessary.

Selection of Exposure Scenarios, Exposure Pathways, and Exposure Parameter Values. This memorandum will present the rationale for the selection of exposure scenarios and exposure areas to be quantitatively evaluated in the risk assessment, based on current and reasonably foreseeable land use. Land use restrictions – as well as practical considerations such as topography, terrain characteristics, and information about the frequency and severity of annual flooding events – will be used in assessing the likelihood of potential future site uses that may differ from the current site use. The process for identifying potential receptors consistent with each selected site use will also be discussed. The memorandum will also discuss the approach for identifying exposure areas to be evaluated in the risk assessment, based on the selected current and potential future site use scenarios and whether it is appropriate to group certain samples together in an exposure area based on the area characteristics and spatial distribution of constituent concentrations.

This memorandum will additionally describe the process for selecting exposure pathways for each receptor / exposure area combination. EPA and WDNR sources for potential exposure parameter values for each relevant pathway and receptor will be identified.

Estimation of Exposure Point Concentrations. For constituents selected as COPCs, exposure point concentrations must be estimated for each relevant exposure area. The methodology used to estimate exposure point concentrations will depend upon the characteristics of each dataset, such as the number of sample points, the frequency of detection, the presence of elevated detection limits, the exposure scenario for which the EPC will be used, the statistical distribution of the dataset, and the spatial distribution of the dataset. Selection of an appropriate method for estimating EPCs will consider EPA guidance on this topic, as well as relevant information from the literature. The goal of this memorandum will be to identify the approach for selecting a method(s) for estimating EPCs for the human health risk assessment, including the rationale for the selection of the method(s).

### **Schedule for Submittals**

Following concurrence with WDNR on the topics to be addressed in the technical memoranda, Beazer will prepare the first memorandum for submittal to WDNR. It is likely that the time necessary to prepare the three memoranda may vary due to the complexity of the material to be discussed in each memorandum. We believe it will require eight weeks following concurrence by WDNR on this overall approach memorandum to complete the first technical memorandum (Selection of Dataset, Constituents of Potential Concern, and Toxicity Values). Following WDNR's concurrence on the technical approach in the first technical memorandum, we will begin work on the second technical memorandum (Selection of Exposure Scenarios, Exposure Pathways, and Exposure Parameter Values). We estimate that the second technical memorandum will require six weeks to prepare. Again following concurrence by WDNR on the technical approach in the second technical memorandum, we will begin work on the third



technical memorandum (Estimation of Exposure Point Concentrations), which we estimate will require eight weeks to prepare.

### **Approach to Reaching Consensus**

We propose to discuss each memorandum during a meeting or conference call with WDNR. For most, if not all, topics we believe that a conference call will be sufficient to discuss the proposed approach and WDNR's review. However, if WDNR believes that a meeting would be beneficial, Beazer will meet with WDNR to present the relevant material.