BCA™ Environmental Consultants

March 24, 2025

John Morris
Indiana Brownfields Program
INDIANA FINANCE AUTHORITY
100 North Senate Ave., STE 1275
Indianapolis, IN 46204

RE: RWP Revision 2 – Response to Comments
Former Exide Battery Facility
303 Water Street
Logansport, Indiana

Dear Mr. Morris:

Below are a list of responses to the IDEM review of RWP Revision 2 for the Former Exide Battery Factory located at 303 Water Street in Logansport, Indiana, submitted 12/27/24 (VFC# 83742147).

Risk Services Review (VFC # 83765511)

1 *Comment #4: Risk Services should review the planned SMP and ERC once available to address recommendations 4 and 5 of my above-cited memo, respectively.* – Draft ERC and SMP are not currently available. ERC will be prepared by IFA with support from BCA / City. SMP may or may not be required, depending on the effectiveness of site remediation. If an SMP is required, a draft version will be provided (along with maps of areas where contamination remains in place) to IDEM for review post remediation.

2 *Comment #7: Comprehensive CSM (specifically offsite)* – offsite sampling has been performed by EPA and a cleanup of the residential neighborhood to the north is currently in progress. BCA and the City had not planned on performing additional investigations above and beyond what the EPA has already done. There is no evidence of off-site downgradient migration of impacted groundwater. The property to the south across the tracks (Trelleborg) is also owned by the City and nearing completion of investigation and no evidence of impact from upgradient has been observed.

3 *Comment #8:New EPA RSL (200 mg/kg or 100 mg/kg if an additional source of lead is identified)* – as the Exide property is not intended for residential redevelopment, the new EPA RSL does not apply within the site boundaries. The EPA is conducting offsite investigation and cleanup of the residential areas to the north.

Chemistry (VFC # 83761140)

4 No applicable comments which require a response.

Geology (VFC # 83746351)

5 *IDNR Well ID #104360* – according to IDNR water well viewer, this well was installed April 15, 1960 and is located at 301 Water Street, the property east adjacent to the former Exide Battery factory. Other than the 5 monitoring wells installed in 2022, there are no known wells on the Exide site. If any wells are discovered during site remediation, they will be properly abandoned and IDEM / IDNR notified. If preferential pathways or any other unexpected feature is uncovered, steps will be taken to place it in a safe condition and IDEM will be informed. If the pathway is significant, additional measures may be taken with the concurrence of the IDEM PM.

6 *Lead delineation in soil to the north* – see comments in Risk section above regarding EPA investigation / cleanup.

7 *Metals exceeding GWPL at southern property boundary* – metals exceedances were present at the southern property boundary in SB-GW-15 (arsenic @ 11.3 ppm), SB-GW-17 (several analytes), and SB-GW-20 (several analytes) in samples collected in 2022. Filtered samples were not analyzed for SB-GW-15. Field filtered (in-line 10-um) samples were analyzed for both SB-GW-17 and SB-GW-20. For SB-GW-17, all analytes which exceeded SLs in the non-filtered sample were significantly reduced in the filtered sample, suggesting that detections present in the non-filtered sample were due to sediments. The filtered sample for SB-GW-20 did not fully reduce detections, so a monitoring well (MW-1) was installed. After well development, detections for arsenic and lead were significantly reduced compared to those seen in SB-GW-20, and there were no detections in the MW-1 field filtered sample. This evidence indicates that all detections present at the southwest corner of the site were most likely due to sediment carryover rather than mobile or dissolved in the groundwater. There is a possibilty that arsenic is present at the southeast corner (SB-GW-15) however all five (5) monitoring wells on this site were analyzed for arsenic, and no detections were present in any of the filtered samples. This suggests that all groundwater metals detections onsite are due to sediment carryover.

8 *Metals and TCE have not been vertically delineated* – Metals are not present in a mobile or dissolved phase above the PLs. TCE has not been vertically delineated. However with site redevelopment pending, vertical delineation of groundwater contaminants will occur with the installation of new monitoring wells post redevelopment, as any new monitoring wells would be destroyed during site remediation. A future ERC for this property will 1) prevent the use of groundwater and 2) require vapor assessments for any new buildings, so contaminants in the groundwater pose no risk to public health. If contamination is found to be present at deeper intervals, it will be further delineated post remediation to ensure contamination does not travel offsite and that there are no pathways which could affect health / environment.

9 *TCE in soil gas not delineated to the south* – Agreed, however with the excavation of two source locations (HS-1 and HS-5), TCE concentrations in the soil gas are likely to decrease post remediation. Additional soil gas delineation will be performed post remediation. As disucssed above, an ERC will require vapor assessments for new construction, so risk to human health from chlorinated vapors is unlikely.

10 *Preferential pathway assessment illustrating all buried utilities is needed* – See updated Figure 2 for known utilities in the area. Near the TCE impacted area, two utilities are possibly present, 1) a sanitary line running east-west at the northeast corner, and 2) a 6" water line running south-southeast terminating near HS-1. This water line is shown on city drawings, however utility tracing failed to locate the line north of the former railroad spur shown running through the middle of the site. Logansport Utilities has confirmed that this water line is present and is not currently active, although there is a possibility that this line will be used after redevelopment is complete. If any utilitities, trenches, etc. are encountered during site remediation which could act as a preferential pathway for contaminant migration, additional sampling will be performed and the IDEM PM will be notified. If these are encountered within the TCE excavation areas, additional soil removal may be necessary if it is determined that contamination has migrated through this preferential pathway.

11 *Details regarding the estimated amounts of soil deemed suitable for excavation and disposal in the TCE impacted area are needed. In addition, estimates of how much ZVI amendment will be required for the ISCR treatment are needed.* – HS-1 and HS-5 hotspots are shown on Figure 7 (83742147), and the calculated volumes of TCE impacted soil are below. Blue hatched areas will be excavated down to 8' BGS, while magenta hatched areas will be excavated to 4' BGS. Additional soil removal below 4' / 8' may be performed if field screening suggests the soil below these areas are significantly contaminated or if closure samples exceed 5 mg/kg.

- HS-1:
  - Blue hatch (see Figure 7) is ~240 sq. ft.
  - Magenta hatch is ~303 sq. ft. (543 – 240)
  - Soils in the 0-2' interval are contaminated with lead, and will be treated with Terrabond prior to loading.
  - Actual volume will be less, as a loading dock and gravel fill are in the way, however additional soil under the loading dock may be contaminated and may require excavation and removal.
- HS-5:
  - Blue hatch (see Figure 7) is ~280 sq. ft.
  - Magenta hatch is ~1313 sq. ft. (1593 – 280)

- HS-1 totals = 240*8' + 303*4 = 3,132 cu. ft. = 116 cu. yd.
- HS-5 totals = 280*8' + 1313*4 = 7,492 cu. ft. = 277 cu. yd.

- All excavated material from HS-1 and HS-5 will be loaded into lined roll-off containers based upon the expected requirements of an IDEM issued contained-in determination.

- All roll-off containers will be sampled and analyzed for TCE to determine disposal requirements.
  - Containers with detections exceeding 19 mg/kg TCE will not meet contained-in requirements and will require hazardous waste disposal at either a TSCA or RCRA subtitle C landfill.
  - For containers falling between 10 mg/kg and 19 mg/kg, TCLP for that sample will be analyzed to determine disposal requirements.
    - If TCLP results show TCE equal to or exceeding 0.5 mg/L, the roll-off will be transported to a hazardous waste landfill for disposal.
    - If TCLP results show TCE less than 0.5 mg/L, the roll-off will be transported to a non-hazardous landfill for disposal.
  - Containers with TCE detections less than 10 mg/kg are non-hazardous and will be sent to a RCRA subtitle D landfill for disposal.

- After HS-1 and HS-5 excavations are complete, a minimum of one 500 lb. drum of ZVI (split approximately equally between HS-1 and HS-5) will be utilized for the 8' portion of the excavations. ZVI will be dumped into the bottom of the excavated area and mixed in with the surface of the exposed soils.

12 *In the lead treatment area, a map of the proposed lead stabilization area is needed. In addition, specific details regarding the amount of lead contaminated soil to be stockpiled is needed. Estimates of the amount of soil treated vs. landfill disposal are also needed.* - Figure 6 (83742147) shows general areas on the site where lead exceeds EDC PLs. See plan view maps in Appendix O (attached) for more details on where soils will be excavated / treated / disposed at 6" or 1' intervals throughout the site. All soil which is excavated and treated will be transported for landfill disposal. No treated soils will remain on site after remediation is complete. The total volume of soils expected to be excavated / treated / disposed is calculated at approximately 6,500 cu. yds. (9,800 tons). Confirmation samples will be collected from sides and bottoms at each grid to evaluate the concentrations of contaminants left in place. If excessive levels of contamination are discovered, additional soils will be excavated / treated / disposed.

13 *A work plan will be needed for IDEM review prior to the installation of new monitoring wells. Monitoring well construction details were not provided.* - Details for future monitoring wells will be provided post remediation. At a minimum, monitoring wells will be installed near HS-1, HS-5 and a replacement for MW-5, which is likely to be destroyed during site remediation. At least one additional deep / bedrock well will be installed somewhere within the TCE impacted area. Exact number and placement of wells may vary due to site redevelopment. The IDEM PM will be informed and provided the opportunity to comment on planned locations / depths for future monitoring wells installed onsite. After monitoring well installation, groundwater samples will

be collected on a quarterly basis for 1 year and evaluated for potential additional groundwater remediation based on sample results.

14 *Estimates of how much concrete slab/foundation will be removed are needed, as well as details regarding the sampling and evaluation of sub-slab soils.* - The entire Exide slab (~180,000 sq. ft.) will be demolished during site remediation to prepare the site for subsequent redvelopment. All concrete (~3,400 cu yds.) will be crushed as necessary for reuse as backfill in order to 1) minimize landfill disposal costs and 2) minimize the volume requirement for imported fill. As detailed site redevelopment plans are not yet available, the redevelopment contractor will be asked to reuse as much of this crushed concrete as possible. If adequate space is not available to reuse all of this material, any excess will be transported for landfill disposal. Concrete samples were collected from several locations on the slab, none showed significant levels of contamnation, so the soils underneath the slab are not expected to be impacted. Significant sub-slab soil sampling was conducted and impacts already delineated. If evidence of further contamination is encountered once the slab is removed, IDEM will be notified and additional sampling will be performed to determine disposal criteria.

Additional IDEM Comments:

15 *Please specify the grid cell sizes for treatment (width & depth). Will it be 25 x 25 x 2 feet bgs? The RWP states the lead contaminated soil will be excavated and stockpiled and then treated (6.4.1). How many stockpiles? What will be the size (tons) of the soil piles that will be treated?* Grid cells will be 20'x20' for closure sampling purposes. Excavated material will be removed in 6" or 1' increments as shown on plan view maps in Appendix O (attached). Stockpile / treatment pile sizes are expected to be approximately 440 tons, based on a 5% w/w ratio of the applied Terrabond amendment. Strict adherence to grid cells / boundaries will not be observed during the excavation phase, the excavation contractor will be allowed to pull soils from a general area to accumulate the required treatment volume. Based on the total calculated excavation volume of lead impacted soil (~9,800 tons), approximately 20-25 full size stockpiles are expected throughout the duration of the project. Additional smaller stockpiles may be necessary if closure samples are not satisfactory and additional excavation is required.

16 *Please clarify this sampling procedure and the number of samples you estimate will be collected.* For ***closure sampling***, the bottom will be screened with an XRF in several (typically 5) locations and the analytical sample will be obtained from the highest location. One bottom sample (composited from 3-4 aliquots from within about 2 feet of the sample location) will be collected from each 20'x20' grid cell where soil was removed. If a full grid cell is not excavated, a single bottom sample may be collected from two or more adjoining grid cells where the excavated surface area is approximately 400 sq.ft. Sidewall samples will follow the same procedure (composited from 3-4 aliquots) will be collected from 20-foot intervals within each grid square where sidewalls are present. All closure samples will be analyzed for Total Lead. Approximately 350 bottom samples and 175 sidewall samples are expected to be collected throughout the

remediation project. For ***disposal sampling***, landfill approval is pending. Verbal discussion with landfill reps suggests that three (3) grab samples (per 440-ton treated stockpile) analyzed for lead by TCLP will be adequate for disposal requirements in the early stages of the remediation project. Once the effectiveness of the treatment process has been confirmed (after 4-5 stockpiles), the number of required samples can be reduced to one (1) per stockpile, provided all previous treated samples have passed TCLP. Once treated, stockpiles may be separated into five (5) or more smaller stockpiles and sampled individually, as to minimize the volume requiring retreatment if a single TCLP failure occurs. As the highest concentration of contaminated soils (northeast / east zones) will be excavated / treated at the beginning of the remediation project, any exceedances in the post treatment samples are likely to occur in the soils from this area early in the remediation project. Samples will be collected out of each stockpile after soil mixing is complete, using a shovel or hand auger to obtain soils from below the surface of the stockpile. All disposal samples will be analyzed for lead by TCLP.

17 *According to Section 6.4: Some treated soil below 2-foot depth may be left in place with an ERC. Please clarify on a map where you anticipate this occurring.* – This sentence was in error, any soils which are excavated and treated will be removed from the site. No treated soils will remain in place post remediation. During closure sampling, any soils which are found to exceed 2,000 mg/kg (2x EDC PL) in bottom or sidewall samples will be excavated / treated / disposed. Bottom sample failures will be excavated an additional 6 inches bgs, while sidewall samples failures will be set back an additional 5 feet from the offending sample. The sampling routine will be continued until all bottom and sidewall samples are below 2x EDC PL. Soils containing total lead in excess of 800 mg/kg (IDC PL) and less than 2,000 mg/kg (EDC PL) from bottom or sidewall samples may be left in place (provided the averages for the surrounding area are below 800 mg/kg). Where soils above the IDC PL are left in place, locations and exceedances will be recorded for inclusion in a future SMP.

18 *Specify how the amendment will be mixed within the soil and duration of mixing (how many times will it be mixed and with what equipment).* - Contaminated soils will be excavated and moved into a mixing area and a volume of amendment reagent applied. Equipment for the mixing process will be left at the discretion of the excavation subcontractor as to achieve the best results / efficiency possible. Discussions with subcontractors indicate that a standard excavator / excavator bucket is sufficient and specialized mixing equipment is not necessary. Mixing of a 440-ton stockpile is estimated to take approximately 2-3 hours to achieve homogeneity.

19 *Clarify how the workers will determine that mixing has been completed and how confirmation soil samples will be collected.* – According to the Terrabond supplier, TerraBond is an off-white/light gray powder, and at a 5% w/w treatment ratio, treated soil will lighten in color visibly compared to the soil prior to mixing. Photos of Terrabond 1) applied and unmixed and 2) partially mixed, are included in Appendix P. Soil mixing will continue until the stockpile appears to be visually homogeneous. Closure samples and Landfill Disposal samples will be collected as

described above in #16.

20 *Will pH sampling be performed in the field to assist with verifying the treatment has been successful?* Per the Terrabond supplier, pH checks are not effective for determining mixing progress for the Terrabond reagent and will not be performed.

21 *If a sample fails TCLP it will be retreated. Will it be retreated with a full "dose" or how will the retreatment occur? Specify "additional volume" in Section 6.4.2.* – If failure occurs after the first treatment, the stockpile will be retreated at least once. The additional volume of Terrabond applied to a failed stockpile will be determined by the Terrabond supplier in consultation with the excavation contractor. If a failure occurs after the 2nd round of treatment, the results will checked for improvement, and a 3rd round of retreatment is possible if the disposal sample results show significant progress and is very near the target threshold of 5 mg/L Pb by TLCP. If the stockpile is not showing progress or still far above the non-haz disposal limits, the stockpile will be loaded for hazardous disposal. Based on statements from the Terrabond supplier, Terrabond has a very low re-treatment rate averaging about 2%, and failures past a 2nd dose are not expected to occur.

22 *How many times can you treat a lead contaminated cell before it is more cost effective to just dispose of the soil as hazardous?* - To achieve efficiency in the soil mixing process, stockpiles will need to be several hundreds of tons. Terrabond can be delivered in 22-ton shipments, so at a 5% w/w ratio, one truckload of Terrabond will treat 440 tons of soil. The estimated cost of transportation and disposal (T&D) for hazardous waste at the nearest RCRA subtitle C facility (prior to Terrabond treatment) is expected to be $105,000 for a 440-ton stockpile. After Terrabond treatment, the cost for T&D would be approximately $69,000 (RCRA subtitle C), versus the cost of non-hazardous of approximately $19,500 (RCRA subtitle D). The cost of 1 truckload of Terrabond, a worst-case scenario of one full 8-hour day for soil mixing, plus additional sample collection and laboratory analysis is estimated at $25,000. This estimate suggests that two (2) follow-up treatment cycles with a full 5% w/w Terrabond mix would be roughly equivalent to the cost of hazardous disposal.

23 *Provide maps of the proposed lead stabilization areas, with cells, as well as the proposed TCE excavation areas.* - Lead and TCE excavation areas are presented in Figures 6 and 7 (83742147). Lead excavation areas are further expanded by 6" or 1' intervals in plan view maps in Appendix O.

24 *A work plan will be needed for IDEM review prior to the installation of new 2-inch monitoring wells. Monitoring well construction details were not provided.* – See #13 above

25 *Estimates of how much concrete slab/foundation will be removed are needed, as well as details regarding the sampling and evaluation of sub-slab soils.* – See #14 above

26 *If the roundhouse concrete is encountered will that be removed as well?* - Appendix Q shows a 1936 aerial photo overlay on the remediation areas. During 2024 site investigation, three (3) probes hit refusal at 2 feet, most likely remains of the old roundhouse. If concrete from the roundhouse is encountered, the location will be noted, and the concrete will be left in place.

27 *The disposition of the on-site well (IDNR ID #104360) needs to be determined and properly abandoned (if applicable).* See #5 above

28 *A preferential pathway assessment, including maps illustrating buried utilities, is needed for the CSM.* – See #10 above

Section 6.4.1 Amendment – In this section of RWP Revision 2, it is stated that approximately 30 tons of material in the vicinity of HS-1 will be loaded into roll offs and transported for hazardous waste disposal. Hazardous disposal will occur if detections of TCE are present in the sample collected from the roll off container. If the sample from the roll off container has no detections of TCE, then that roll off will not fall under the requirements of a contained in determination and will be disposed of based on lead concentrations alone as discussed above.

Please let me know if you have any questions or need clarification on any topic.

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Attachments:
Figure 2
Appendix O
Appendix P
Appendix Q