



January 5, 2016

Ms. Pam Green
State Cooperative Program/Remedial Section
Kansas Department of Health and Environment
1000 SW Jackson Street, Suite 410
Topeka, Kansas 66612-1367

**RE: Catchment Dike System Compliance Sampling Report October 2016
National Zinc Smelter Site, Cherryvale, Kansas**

Dear Ms. Green,

On October 18, 2016 Project Navigator, Ltd. on behalf of United States Steel Corporation (USS) and Citigroup Global Market Holdings, Inc. (Respondents), completed an inspection of the Drum Creek Catchment Dike System (CDS) and collected three composite sediment samples for laboratory analysis as part of the agreed-upon bi-annual compliance monitoring. The work was performed by Philip Jen of Project Navigator, Ltd.

The results of the inspection, the sediment collection methodology and associated analytical results, including a comparison to the results of the samples taken during previous sampling events are provided in this letter report.

Inspection

The location of the CDS is provided in Figure 1. Water depth between the dikes was approximately 1 feet deep measured at the inside of the upstream catchment dike at the time of inspection and flow was low. The catchment was observed to be in good condition, however, a tree was observed within the catchment and another resting on the downstream dike. The upstream dike did not appear to have sustained any damage. However, the downstream dike appears to have a displaced gabion that was reported in the November 25, 2014 report. Despite the displaced gabion, the dike itself appears to be intact as the gabion that was positioned behind the displaced one is intact and small boulders appear to have been deposited in its place. There does not appear to have been any significant movement in the gabions since the September 2014 sampling event. As there is no immediate need for repairs, the replacement of the displaced gabion will coincide with a future mobilization of field crew and equipment to the catchment dike. The trees were left in place as it does not appear to pose any danger to the catchment and will likely pass on downstream during a future storm event. With the exception of the displaced gabion on the downstream dike no other washouts were observed along or around the edges of the dikes. Depictions of the sampling locations are provided in Figure 2 and photos of the catchment are provided in Figure 3.

A large volume of sediment was observed to have accumulated in the northeastern portion of the catchment. Removal of the sediment will be evaluated and coordinated with ENTACT at a time when it can be safely removed.

Analytical Sampling and Results

The sampling locations and representative sediment photographs are depicted in Figures 2 and 3. Samples consisted of poorly sorted medium grained gravel, with minor sand and silt. Minor organic materials consisting of wood and leaf debris were observed.

Samples were collected with a retriever scoop, placed into 5 gallon buckets and homogenized prior to placement in 4 ounce sample jars provided by the laboratory. Samples were composites of accumulated sediment from random points across the area of accumulation; to the extent the locations were accessible. Water present in the samples was slowly decanted from the sample container following collection. Samples contained minimal excess water. Sample containers were then sealed and deposited into a cooler with ice for shipment to the laboratory for analysis.

The Respondents' samples were submitted to PACE Analytical Laboratory for analysis of cadmium, arsenic, lead and zinc. The laboratory was instructed to grind the entire sample prior to analyses. Results are compared to the consensus-based sediment quality guidelines developed for the site (CBG). Historical values for all samples collected by the Respondents are presented in Table 1. The laboratory reports for the current sampling events are included in Attachment 1.

The current sampling results from the October 18, 2016 are presented below. Values above the CBG are in red font.

	Sample ID	Date	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)
Upstream	SD-53	10/18/2016	61.2	4.8	53	1100
Midstream	SD-52	10/18/2016	34.8	10.7	43.3	1200
Downstream	SD-51	10/18/2016	15.1	<0.47	8.3	196
Consensus Based Guideline			33	4.98	128	459

notes:

All units in mg/kg

Red bolded values are greater than the Consensus Based Guideline

Analytical Summary

Overall: The sample results from the October 2016 sediment sampling shows that the concentrations observed in all three sampling zones appear to be generally consistent with samples from recent years with the exception of three elevated concentrations. The concentrations of zinc in both the upstream and midstream sample were observed to be elevated. The zinc concentrations in the upstream and midstream samples may be outliers in view of the fact that they are essentially double previous upstream and midstream sample results, and are nearly ten times the current downstream sample result. In addition, the concentration of cadmium in the midstream sample appears to be elevated when compared to historical concentrations.

Upstream: The concentrations of arsenic and zinc were detected above the CBG in the upstream catchment segment while the cadmium and lead concentrations were detected below the CBG.

Between: The concentrations of arsenic, cadmium, and zinc were detected above the CBG in the upstream catchment segment while the lead concentration was detected below the CBG.

Downstream: All concentrations collected were observed to be below the CBG.

Analyses of all results (Total Project Average, or TPA), show the average of cadmium and lead are below the consensus-based sediment quality guidelines while the arsenic and zinc concentration were above the guidelines for the site.

The historical data shows fluctuations with no obvious pattern from which to conclude a definite cause for the variation. Variation in sediment concentrations could be the result of a combination of potential sources including: wastewater discharges, surface runoff from adjacent farmlands, metal containing debris, as well as naturally occurring concentrations from the indigenous geology.

The CDS appears to be functioning as designed to catch sediment traveling downstream in Drum Creek. We will continue to monitor the sediment accumulation as part of the periodic inspection and maintenance of the CDS.

Sincerely,



Mark Landress P.G. Kansas Licensed Geologist No. 793
Project Navigator, Ltd.

Attachment

Cc: William C. Anderson, Doerner, Saunders, Daniel & Anderson, L.L.P.
John J. Prusiecki, United States Steel Corporation
Mark Rupnow, United States Steel Corporation
Andrew G. Thiros, United States Steel Corporation
Mike Stoub, ENTACT
Philip Jen, PNL