

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
FINAL CORRECTIVE ACTION DECISION
FORMER NATIONAL ZINC COMPANY SITE
CHERRYVALE, KANSAS

JUL 17 2013

DECLARATION OF CORRECTIVE ACTION DECISION

SITE NAME AND LOCATION:

Former National Zinc Company Site
Cherryvale, KS

ORIGINAL

STATEMENT OF BASIS AND PURPOSE:

The Final Corrective Action Decision (CAD) document presents the corrective action selected for the Former National Zinc Company (NZC) Site located in Cherryvale, Kansas. The Kansas Department of Health and Environment (KDHE) and the Environmental Protection Agency (EPA) performed various assessments at the Former NZC Site and concluded that surface soil, groundwater, sediment and surface water is impacted by heavy metals contamination and that remedial action is necessary. The Remedial Action Design (RAD) report evaluated various remedial alternatives to address contamination at the Former NZC Site. The corrective action selected for the Former NZC Site was developed on the basis of documents and information contained in the Administrative Record, which is available for review at the KDHE office building in Topeka, Kansas.

DESCRIPTION OF THE SELECTED REMEDY:

KDHE has determined that the selected remedial alternative, as described and evaluated in the Final Corrective Action Decision, meets the criteria established by both the State and Federal programs and will be protective of human health and the environment. The selected remedial alternative for the Former NZC Site is a combination of alternatives to address the various areas targeted for cleanup. The remedial action alternatives selected for the Former NZC Site are as follows:

- **Alternative 4:** Remove contaminated soils above non-residential Risk-Based Standards for Kansas (NRRSK) levels at the NZC Site located outside of the EPA Repository and outside of the active railroad track corridor and dispose on-site. Soils contaminated above the NRRSK would be excavated and moved within the Former NZC Site to a prepared on-site area (former lagoon area). This alternative includes consolidation of waste and capping the disposal area.
- **Alternative 8:** Remove contaminated soils above NRRSK levels placed within the EPA Repository at the Former NZC Site and dispose on-site. Soils

contaminated above the NRRSK would be excavated and moved within the NZC Site to a prepared on-site area (former lagoon area). This alternative includes consolidation of waste and capping the disposal area.

- **Alternative 11: Removal of visible sediment in segments of the unnamed creek between Martin Street Crossing and Drum Creek and in segments of Drum Creek from the confluence to 300 feet downstream. This alternative includes the design, construction, and operation of a sediment catchment basin located in Drum Creek approximately 4.75 miles downstream of the confluence with the unnamed creek. The sediment catchment basin would trap and hold contaminated sediment originating upstream and prevent them from impacting downstream areas of Drum Creek.**

The combination of Alternatives 4, 8 and 11 in this Removal Action Decision are protective of human health and the environment and will greatly minimize and/or eliminate future risks.

DECLARATION:

The selected remedial action alternative is protective of human health and the environment; attains state, federal and local requirements that are applicable or relevant and appropriate to this remedial action; and provides cost-effective performance. The remedial action will reduce the mobility of contamination at the Site. In selecting and declaring this remedial action, KDHE believes implementation of the remedial action will have a beneficial effect on health and the environment in preventing human exposure to contaminants identified at the Site and limiting further transport of contamination off-site and downstream in surface water drainage.



Roderick L. Bremby
Secretary

2/19/07

Date

Attachment: Final Corrective Action Decision

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
CORRECTIVE ACTION DECISION
FOR
FORMER NATIONAL ZINC COMPANY SITE

Prepared by:
**KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT/
BUREAU OF ENVIRONMENTAL REMEDIATION**

Prepared for:
**FORMER NATIONAL ZINC COMPANY SITE
CHERRYVALE, MONTGOMERY COUNTY, KANSAS**

February 8, 2007

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1.0 PURPOSE OF FINAL CORRECTIVE ACTION DECISION

The primary purpose of the Final Corrective Action Decision (CAD) is to: 1) summarize key information from the Remedial Action Design (RAD) report and other site characterization reports; 2) briefly describe the alternatives for site remediation detailed in the RAD report; 3) identify and define the remedy selected for the site; and 4) document comments and KDHE's responses to the public comments received regarding the RAD report. To allow public comment, a notice was published in the *Montgomery County Chronicle* on December 14, 2006, and a news release was prepared by KDHE requesting comments to KDHE's selected remedy. The public notice allowed for a 30-day public comment period, effective from December 15, 2006 through January 15, 2007. Additionally, a public meeting was held at Cherryvale City Hall on December 20, 2006 at 7:00p.m.

The public was encouraged to review and comment on the selected remedial alternative, which was developed based on the technical information presented in the RAD report. The Administrative Record file includes all pertinent documents and site information that form the basis for the selected remedial alternative, including the RAD report.

2.0 SITE BACKGROUND

The former National Zinc Company Site ("NZC Site") is located in Section 8 in Township 32 South, Range 17 East, northwest of Cherryvale, Kansas in Montgomery County. According to the 2000 census information the population of Cherryvale, Kansas is 2,386. The NZC Site is approximately 360 acres in size and the boundaries are illustrated in Figure 1. Land uses surrounding the NZC Site include commercial, industrial, residential and recreational.

According to historical review, the Edgar Zinc Company constructed the site in 1898 with three furnace buildings and 1,800 retorts. By 1908, there were 24 furnaces and 4,800 retorts. In 1928, there were four ore roasters and 24 furnaces operating. This facility was known as the largest zinc smelter in the world until World War I. Sometime after 1928 the smelter was reorganized as the former National Zinc Company. Major production at the site declined through the 1930s and operations ceased on December 24, 1976.

Previous incidents of surface water contamination were reported to KDHE in the 1950s by adjacent landowners due to water breaching a 23-acre, on-site waste lagoon. Heavy metals, sludge and waste from the smelter operations were contained within the lagoon. KDHE inspected the site in April 1976 due to complaints by farmers of visual contamination of Drum Creek and the possibility of fish kill or cattle illness.

In September 1977, KDHE inspected the site for possible surface water or groundwater contamination, and the former National Zinc Company initiated limited response actions in October, as requested by KDHE. In 1979, approximately 95 million gallons of fluid from the lagoon were treated and discharged into Drum Creek and ore and sludge were

removed from the site. An estimated 300 tons of remaining sludge was encapsulated on-site at the location of the lagoon. The lagoon was filled in, topped with soil, treated with lime and planted with grass. Five monitoring wells were installed at the west and south edges of the former lagoon and groundwater samples were collected from 1982 through 1984. Analytical results indicated high levels of cadmium and lead was present in on-site groundwater. A restrictive covenant was issued in 1983 to limit the use and development of a majority of the NZC Site, which is still in effect. In 1981, a Preliminary Assessment (PA) and Site Inspection were performed by KDHE.

The Cherryvale City Council contacted KDHE in 1987 regarding an opportunity to purchase the former NZC Site. The City was concerned with the responsibility and long-term operation and maintenance of the property. KDHE inspected the NZC Site and identified stressed vegetation and evidence of surficial contamination on the southern edge of the property. KDHE advised the Mayor of Cherryville of potential future environmental liability and responsibility if purchased. The City purchased the property on June 8, 1989 and is the current owner. Currently, the site consists of abandoned buildings, foundations, the former lagoon and smelter operation residues.

During the early 2000's, KDHE conducted extensive research to identify potentially responsible parties that may have past connections to historical operations at the NZC Site. Research identified potential links to United States Steel Corporation and Salomon Smith Barney Holdings, Inc. (the Respondents). The Respondents agreed to conduct further investigative work at the site and signed a Consent Order with KDHE.

3.0 SUMMARY OF SITE INVESTIGATIONS

3.1 State and Federal Site Investigations

KDHE and the Environmental Protection Agency (EPA) performed various assessments at the NZC Site and concluded that surface soil, groundwater, sediment and surface water is impacted by heavy metal contamination and that future remedial action is necessary. A summary of the state and federal work at the NZC Site is as follows:

- KDHE inspected the NZC Site in 1995, as the result of an inquiry by the city of Cherryvale. The inspection documented the prior encapsulation and capping of smelter waste had failed. Sediment, sludge and soil were found to be contaminated with lead, cadmium, zinc and arsenic.
- In 1999, the City of Cherryvale requested KDHE conduct an assessment of property historically used for housing smelter employees, located just south of the NZC Site. This property was commonly known as the "Rodeo Grounds." At the time of the request, the city was considering redeveloping this property into public housing. In 2000, KDHE performed the assessment and identified elevated lead levels in soils on the property and adjacent residential yards. Based on these findings, KDHE recommended that EPA perform a time-critical removal action. In 2002, EPA excavated and replaced contaminated soil in the municipal "Rodeo

Grounds” and in 35 adjacent residential yards. Contaminated soil was transported to the NZC Site, disposed in an eight-acre area and capped.

- KDHE performed an Expanded Site Inspection Report (ESI) and recommended future remedial response action to address contaminated soil, waste, sediment, and surface water (March 2001). KDHE identified two potentially responsible parties for the contamination and entered into a Consent Order with these Respondents to further address the NZC Site.

3.2 Site Investigations Conducted By Respondents

- The Respondents conducted several extensive investigations to further define the extent and magnitude of contamination from the NZC Site including the collection of surface water and sediment samples from Drum Creek and Unnamed Creek. These reports include:

Hydrogeological Investigation Report dated December 2003.

Analytical Report: Surface water, Sediment and EPA Repository Soil Sampling dated October 2003.

Water Quality and Sediment Sampling Report dated April 2004.

Remedial Action Design Report dated July 2004.

Supplement to the Remedial Action Design dated July 2006.

3.4 Description of Hydrogeology

According to the Remedial Action Design Report dated July 2004, the former NZC Site lies within the Osage Questas physiographic region and is underlain by Pennsylvanian age bedrock, specifically the Cherryvale Shale and Dennis Limestone Formations of the Kansas City Group. Bedrock ranges between 3.5 and 14 feet below ground surface.

The NZC Site is drained to the west by an Unnamed Creek, which then drains into Drum Creek. Another creek that bounds the southern edge of the site merges with the Unnamed Creek just west of the site. Drainage southwest of the South Kansas and Oklahoma Railroad, which transects the site northwest to southeast, flows in a southwest direction toward Unnamed Creek and drainage from the northeast of the railroad tracks flows to the South/Southeast.

Groundwater in the Cherryvale Shale and the Dennis Limestone is of poor quality. Groundwater only occurs in very localized areas and yields little to no water.

3.5 Description of Site Contaminants

The primary contaminants of concern (COCs) for the NZC Site include lead, cadmium, zinc and arsenic. Other heavy metals are present either in isolated areas or lower concentrations. The primary COCs are above background concentrations for the area and exceed their respective RSK values.

Contaminated media include surficial and subsurface soil both off and on-site, groundwater on-site, and surface water and sediment both off and on-site. Off-site contaminants are found primarily in sediments of Drum Creek and Unnamed Creek.

Table 1 summarizes the residential and non-residential RSK values for the COCs. Tables 2 through 4 summarize the maximum concentrations of the COCs identified at the NZC Site for each type of impacted media (i.e., soil, groundwater, surface water, and sediment).

4.0 SUMMARY OF SITE RISKS

Information collected from the various investigations at the NZC Site have documented the potential risks to human health and environment if no cleanup actions were performed at the site. Risks are subsequently used as one of several criteria to evaluate proposed remedial alternatives and establish remedial action goals. The general purpose of a recommended remedial action at the NZC Site is to protect human health and the environment from exposure to the COCs. Potential routes of exposure for human health are ingestion or inhalation of dust from surface soil contaminated by COCs. Arsenic can also be absorbed through skin contact. The ecological risks include impact to fresh water biota and ecosystems from sediment contaminated by COCs.

Specific goals for the site include:

- 1) Minimizing and/or eliminating human exposure via direct contact with surface soils that contain elevated concentrations of COCs;
- 2) Minimizing and/or eliminating human exposure to contaminated sediments and surface water;
- 3) Minimizing and/or eliminating impacts to ecological targets in streams downstream from the NZC Site;
- 4) Long term land use restrictions, protection and maintenance of the capped areas that encapsulate elevated levels of COCs;
- 5) Minimizing infiltration in capped areas to prevent leaching of contaminants to surface and/or groundwater; and
- 6) Long term monitoring of removal action.

The greatest pathways of concern for the NZC Site are surface soil and sediment pathways. On-site groundwater is contaminated; however, groundwater is not used in the area and does not appear to be impacting off-site areas.

5.0 SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED

The cleanup alternatives that were evaluated during the Remedial Action Design (RAD) Report dated July 2004 and the Supplement to the Remedial Action Design dated July 2006 are presented below. Areas targeted for cleanup include: 1) Contaminated soils above the non-residential Risk-Based Standards for Kansas (NRRSK) at the NZC Site that are located outside of the EPA repository and outside of the active railroad track corridor; 2) Contaminated soils above NRRSK levels placed within the EPA repository at the NZC Site; and 3) Contaminated sediment in Unnamed Creek and Drum Creek. The cleanup alternatives, which were formulated by combining the technologies and process options, are numbered to correspond with the RAD Report or the Supplement to RAD Report.

Remedial Alternatives for Contaminated Soils Above NRRSK Levels at the NZC Site Located Outside of the EPA Repository and Outside of the Active Railroad Track Corridor:

- **Alternative 1: No Action.** The no action alternative is included to provide a baseline against which other alternatives are compared. The no action alternative would entail no additional monitoring of the conditions of soils located outside of the EPA Repository and soils located outside of the active railroad track corridor, as well as no additional remedial steps to contain or reduce the volume of contamination. Human health and/or ecological risks would not be minimized or eliminated. There are no costs associated with this alternative.
- **Alternative 2: Cap and leave in place.** Alternative 2 involves capping surface soil areas that are above the NRRSK. There would be no excavation of contaminated soil. An 18" clay cap and a six-inch cap of topsoil would be constructed over these areas. Land use controls would remain on the site. This alternative would minimize and/or eliminate risks associated with the potential for human contact with contaminated soil. The alternative however would not be conducive to future land development because of the large capped areas. Costs associated with this alternative are 5 million dollars.
- **Alternative 3: Remove soils above NRRSK and dispose off-site.** Soil contaminated above NRRSK would be removed from the site and transported to a designated landfill. New soil would be transported to the site to raise the surface area of the site. This alternative would minimize and/or eliminate the potential risks associated with human contact with contaminated soil and would encourage future land development since all contamination would be transported off-site. The alternative would create new risks associated with transportation of material off-site such as heavy truck traffic and dust. Costs associated with this alternative are prohibitive at 16.2 million dollars.

- **Alternative 4: Remove soils above NRRSK and dispose on-site.** Soils contaminated above the NRRSK would be excavated and moved within the NZC Site to a prepared on-site area (former lagoon area). This alternative includes consolidation of waste and capping the disposal area, which is a much smaller area than that described in Alternative 2. This alternative would minimize and/or eliminate the potential for human contact with contaminated soil and is more conducive to future land development because a smaller area would be capped. Costs associated with this alternative are cost effective at 3.6 million dollars.

Remedial Alternatives for Contaminated Soils Above NRRSK Levels Placed Within the EPA Repository at the NZC Site:

- **Alternative 5: No Action.** The no action alternative is included to provide a baseline against which other alternatives are compared. The no action alternative would entail no additional monitoring of the conditions of soils placed within the EPA Repository, as well as no additional remedial steps to contain or reduce the volume of contamination. Human health and/or ecological risks would not be minimized or eliminated. There are no costs associated with this alternative.
- **Alternative 6: Cap and leave in place.** This alternative would involve leaving contaminated soils in place and capping these soils with 18" of clay and a six-inches of topsoil. Land use controls would continue at the NZC site. This alternative would minimize and/or eliminate the risks associated with the potential for human contact with contaminated soil. Costs associated with this alternative are 143,000 dollars.
- **Alternative 7: Remove soils above the NRRSK level and dispose off-site.** This alternative would require removing soil contaminated above NRRSK to a designated off-site landfill and importing new soil to the site to raise the surface area. The alternative would create new risks associated with transportation of material off-site such as heavy truck traffic and dust. Costs associated with this alternative are 158,600 dollars.
- **Alternative 8: Remove soils above the NRRSK level and dispose on-site.** Soils contaminated above the NRRSK would be removed and disposed of on a prepared on-site area. This alternative includes consolidation of waste with soil outlined in Alternative 4 and capping the portion of the EPA Repository where contaminated soils are removed. This alternative would minimize and/or eliminate risks associated with the potential for human contact with contaminated soil and is more conducive to future land development because a smaller area would be capped. Costs associated with this alternative are cost effective at 89,600 dollars.

Remedial Alternatives for Drum Creek and Unnamed Creek:

- **Alternative 9: No Action.** The no action alternative is included to provide a baseline against which other alternatives are compared. The no action alternative would entail no additional monitoring of the conditions of sediments located within Drum Creek and Unnamed Creek, as well as no additional remedial steps to contain or reduce the volume of contamination. This alternative is not protective of human health or the ecological system. There are no costs associated this alternative.
- **Alternative 10: Visible Sediment Removal only at the Confluence.** This alternative would include removing visible sediments in segments of the Unnamed Creek between Martin Street Crossing and Drum Creek and in segments of Drum Creek from the Confluence to 300 feet downstream. The contaminated sediments would then be removed and transported to the NZC Site and placed in the on-site repository as described in Alternative 4. This alternative would minimize future impact to the freshwater ecosystem and risk to human health from the NZC Site. Costs associated with this alternative are \$313,100 dollars.
- **Alternative 11: Visible Sediment Removal only at the Confluence and Sediment Containment.** This alternative would include removing visible sediment from the same places as described in Alternative 10, but would include design, construction and operation of a sediment catchment basin located in Drum Creek approximately 4.75 miles downstream of the confluence with the Unnamed Creek. The sediment catchment basin would trap and hold contaminated sediment originating upstream from impacting downstream areas of Drum Creek. This alternative would minimize future impact to the freshwater ecosystem and risk to human health from the NZC Site. Costs associated with this alternative are \$370,100 dollars.
- **Alternative 12: Dredge Drum Creek and Unnamed Creek at the Confluence and all of Drum Creek from the Confluence to the 5100 Road Bridge.** This alternative would involve dredging Drum Creek from the confluence with Unnamed Creek to 5100 Road Bridge and along Unnamed Creek back to the NZC Site. This alternative could negatively impact stretches of Drum Creek through removal of established vegetation and trees to gain access for dredging operations. Extensive dredging operations may damage areas of the creek and negatively impact the freshwater ecosystem. This alternative is very cost prohibitive at \$9,203,500 dollars.

A detailed breakdown of each alternative is summarized in the Remedial Action Decision Report, dated July 2004 and in the supplement to the Remedial Action Decision Report, dated July 2006.

6.0 SUMMARY OF THE SELECTED REMEDIAL ALTERNATIVE

KDHE has determined the selected remedial alternative for the NZC Site, outlined below, satisfies or meets the criteria established by both the State and Federal programs and will be protective of human health and the environment.

The selected remedial alternative for the NZC Site is a combination of alternatives to address the various areas targeted for cleanup. A common theme for the remediation of contaminated soil at the NZC Site is to excavate contaminated areas, consolidate contamination by hauling impacted soil to an on-site disposal area, and designing and constructing a cap to encapsulate the contaminated material in a smaller area on-site. The recommended alternatives would eliminate the need for transportation of contamination to an off-site disposal area, reduce the risks associated with heavy truck traffic, allow for the future redevelopment of excavated areas, and is cost effective. Therefore, a combination of Alternatives 4 and 8 are KDHE's selected alternative for contaminated soil at the NZC Site.

Alternative 4 consists of excavating contaminated soil with concentrations above the NRRSK levels after initial excavation. Areas with contaminated soil remaining above the NRRSK will be removed in additional six-inch lifts until standards are met or will be covered with 18 inches of non-contaminated clay and six inches of topsoil. Limited areas will not be excavated at all, based on considerations including depth of contaminated soils and inaccessibility, and instead will be covered with 18 inches of non-contaminated clay and 6 inches of top soil, and subjected to land use controls. Alternative 8 consists of excavating contaminated soil above the NRRSK levels that was placed in the EPA Repository. Contaminated soil will not be excavated from beneath the capped areas of the EPA Repository, nor from within the boundaries of the active railroad track corridor. It is estimated that a minimum of 100,000 cubic yards of contaminated soil would be excavated and transported on-site for consolidation at the disposal area. Areas where soil is removed will be covered with six inches of clean topsoil and graded for proper surface drainage. The disposal area will be located on top of the former NZC lagoon. Once all material has been consolidated in the disposal area, the area will be capped with 12 inches of clay, six inches of topsoil, graded for proper drainage, and seeded. Land use controls restricting the future use of this property and a long-term operation and maintenance plan will be developed and implemented.

The selected remedial alternative for remediation of Drum Creek and Unnamed Creek is Alternative 11. All visible contaminated sediments will be removed from Unnamed Creek and 300 feet downstream in Drum Creek, transported and placed into the disposal area described in Alternatives 4 and 8. It is estimated that a minimum of 3,000 cubic yards of contaminated sediment will be dredged and removed. Dredged areas of the creeks will be graded with clean soil as necessary to maintain slope. A sediment catchment structure will be constructed about 4.75 miles downstream of the confluence of Unnamed Creek and Drum Creek. This structure will include two dikes made with riprap and a crushed stone filter material. The first upstream dike will be 3 foot high, 8 foot wide, and have 2 to 1 side slopes. The second downstream dike will be 2 feet high

and 4 feet wide, and have 2 to 1 side slopes. The storage capacity between the two dikes of the catchment basin will be approximately 350 cubic yards. The catchment will protect downstream Drum Creek from contamination released during dredging operations. The remaining portion of the Drum Creek between the dredging operation and catchment basin will be remediated by natural attenuation.

The combination of Alternatives 4, 8 and 11 in this Removal Action Decision are protective of human health and the environment and will greatly minimize and/or eliminate future risks. This remedial strategy is also technically feasible, implementable and cost effective.

7.0 COMMUNITY INVOLVEMENT

The information used to develop this document was available in the Administrative Record (AR). The AR is available for review by appointment Monday through Friday, from 8:00 A.M. to 5:00 P.M., at KDHE's office building in Topeka, Kansas. In the process of selecting the final remedy, input from the public was encouraged. A public notice was published in the *Montgomery County Chronicle* announcing the availability of the AR and inviting the public to review the AR and comment on the RAD report. A 30-day public comment period was in effect from December 15, 2006 through January 15, 2007. Additionally, a public meeting was held at Cherryvale City Hall on December 20, 2006 at 7:00p.m.

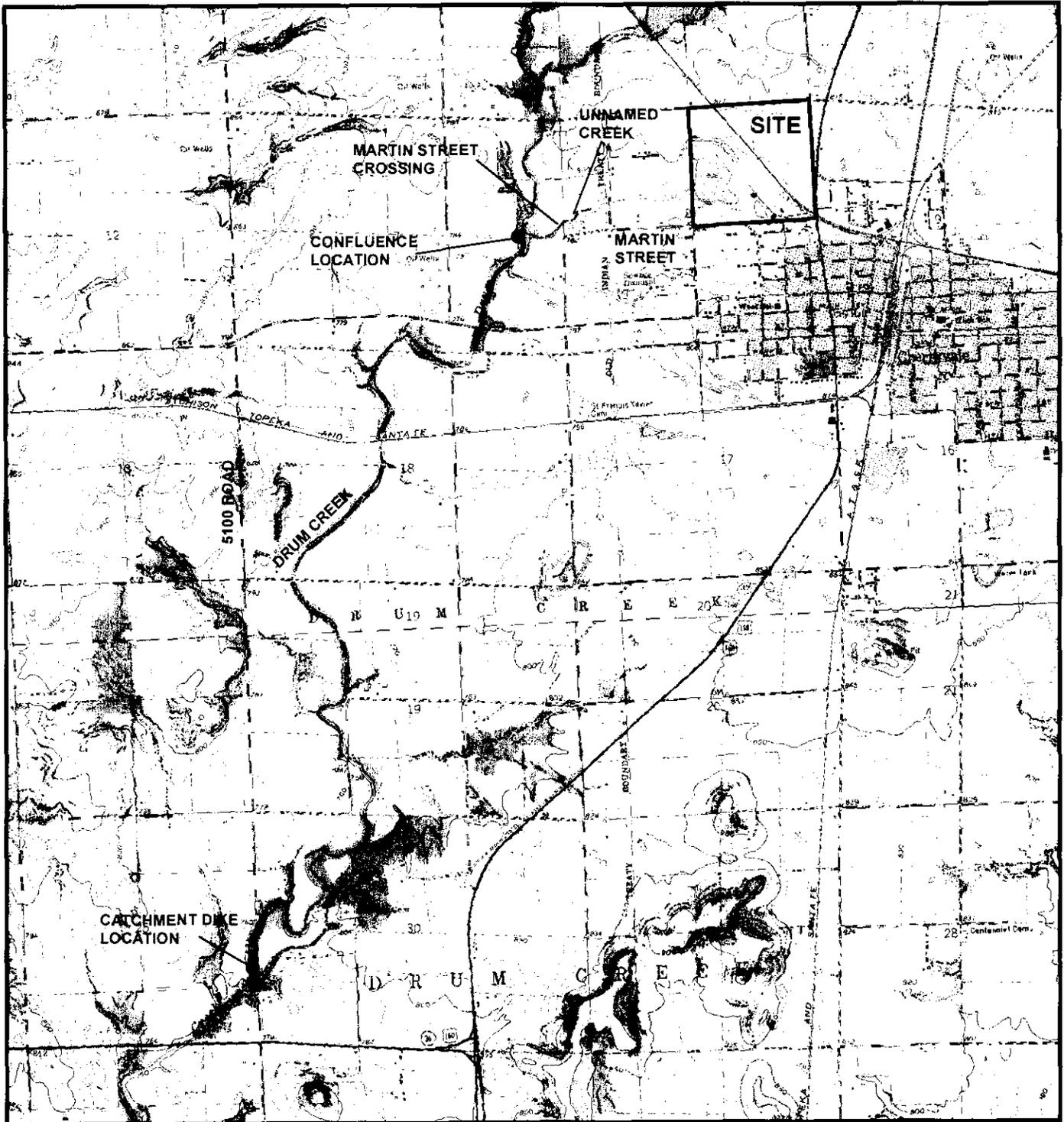
During the 30-day public comment period, KDHE encouraged the public to provide written comments regarding the RAD report. KDHE did not receive any comments during the public comment period.

8.0 DOCUMENTATION OF SIGNIFICANT CHANGES

KDHE did not receive any comments during the public comment period; therefore, there were no significant changes made to the Final RAD.

9.0 RESPONSE TO COMMENTS SUMMARY

The purpose of the Response to Comments Summary is to summarize the comments made by the interested parties during the public comment period for the RAD report for the NZC Site and KDHE's responses. Since KDHE did not receive any comments during the public comment period, no responses were necessary.



Scale: 0 0.25 0.5 1 Miles

LEGEND

□ Site Boundary

FIGURE 1

Site Map
National Zinc Corporation Site
Cherryvale, Kansas



Map prepared by KDHE

Project Manager: NC Drawn by: PBJ

TABLE 1
KDHE Tier 2 Risk-Based Standards for Kansas
Contaminants of Concern for the NZC Site

Contaminant	Soil Pathway (mg/kg)	
	Residential RSK	Non-Residential RSK
Lead	400	1000
Arsenic	11	38
Cadmium	39	1000
Chromium	390	4000
Silver	390	10000
Mercury	2	20
Zinc	23000	610000
	Groundwater Pathway (mg/L)	
Lead	0.015	0.015
Arsenic	0.01	0.01
Cadmium	0.005	0.005
Chromium	0.1	0.1
Silver	0.1	0.1
Mercury	0.002	0.002
Zinc	5	5
	Residential RSK	Non-Residential RSK

TABLE 2
Maximum Concentration Levels at NZC Site
Based on Analytical Data from BTA

Contaminant	Concentration (mg/kg)	Media
Lead	120,800	surface soil
Cadmium	460.73	surface soil
Arsenic	30615	surface soil
Lead	0.136	groundwater
Cadmium	3.062	groundwater
Chromium	0.014	groundwater
Silver	0.113	groundwater
Cadmium	0.088	surface water
Arsenic	289.82	sediment

*Note: all samples were on-site except the sediment which was sampled just west of the site in the Unnamed Creek.
Analytical Data from Kansas Department of Health and Environment Laboratory.

TABLE 3
Maximum Concentration Levels Off-Site
Based on Analytical Data from the Expanded Site Investigation

Contaminant	Concentration (mg/kg)	Media
Lead	3,680	surface soil
Cadmium	180	surface soil
Arsenic	33.7	surface soil
Cadmium	0.082	surface water
Zinc	1.957	surface water
Mercury	0.0876	sediment
Cadmium	165.81	sediment
Lead	1,294.61	sediment
Zinc	9,877.32	sediment

*Note: all samples were taken just off-site in residential yards or creeks.
Analytical Data from Kansas Department of Health and Environment Laboratory.

TABLE 4
Maximum Concentration Levels for Soils On NZC Site
Vertical Profiling

Contaminant	Concentration (mg/kg) in Soil At Depth in Inches				
	0" to 6"	6" to 18"	18" to 30"	30" to 72"	72" to 90"
Lead	456	36,000	36,100	8,115	7,420
Cadmium	14.4	1,080	655	1,060	388
Arsenic	16.5	83.7	206	598	62

Analytical Data from Kansas Department of Health and Environment Laboratory.