APPROVED

Cherryvale, Kansas Residential Soil Evaluation
Phase 2 Data Evaluation of Early Action Properties

Prepared for:
Kansas Department of Health and Environment

Prepared by:
Project Navigator, Ltd.
10497 Town & Country Way Suite 830
Houston, TX 77024

On behalf of United States Steel Corporation and Citigroup Global Market Holdings, Inc., Respondents in Consent Order Case No. 03-E-0222, as amended (the "Respondents")

August 2015

PROJECT NAVIGATOR, LTD.®

Table of Contents

1.0 Introduction
2.0 Background Information
3.0 Early Action Properties
4.0 Field Sampling Procedures
5.0 Sample Analysis Procedure
6.0 Soil Lead Screening
7.0 Summary
8.0 References

List of Tables

Table 1 – Property Summary
Table 2 – Analytical Results

List of Figures

Figure 1 - Area Location Map
Figures 2 to 10 – Composite Soil Sample Results

Appendix

Appendix 1 – Laboratory Confirmation and XRF Correlation

1.0 Introduction

This report summarizes work performed on behalf of United States Steel Corporation and Citigroup Global Market Holdings, Inc. (Respondents), for soil screening at select residential properties in Cherryvale, Kansas identified during work performed for the Phase 2 Removal Site Evaluation (RSE) Work Plan pursuant to the Second Amendment to the Consent Order dated May 3, 2013, for the National Zinc Site, Cherryvale Kansas. As part of the implementation of the Phase 2 work, at the request of the Kansas Department of Health and Environment (KDHE), schools, parks and day-care centers were evaluated early in the program. The subject properties are identified in Figure 1.

The subject properties have been identified with lead levels above the KDHE established residential criteria of 400 mg/kg in soil composites. Properties identified in this report represent locations where the Respondents and KDHE concluded that subject to conditions established in the Third Amendment to the Consent Order between the Respondents and KDHE dated 09/16/2015, early expedited removal actions are appropriate before the completion of the city-wide SRM survey. These data will be used to create a work plan that addresses potential actions for these properties.

The field work was performed by Project Navigator, Ltd., under the supervision of Mark Landress, Kansas Licensed Professional Geologist No. 793, coordinated by Exponent, Inc., on behalf of the Respondents.

2.0 Background Information

The subject properties are located within the City of Cherryvale Kansas outside the former National Zinc Smelter Site, and were evaluated as part of the Phase 2 RSE. The history and details of the smelter facility are documented in various site reports which are on file at the Kansas Department of Health and Environment. Briefly summarized, the smelter operated as a primary zinc recovery facility, first constructed by the Edgar Zinc Company in 1898. Through the years, a smelting complex of roasters, furnaces and several thousand retorts and condensers was constructed. Production appears to have declined through the 1930s, when most active operations ceased. The facility permanently ceased operations in 1976 leaving various smelter residues that were contained on the smelter site in settling ponds and at the surface. The smelter site was remediated in 2007 by the Respondents.

Prior to the remediation of the smelter site, various investigations and actions were conducted by KDHE which identified soil impacts to the surrounding community that were not part of the smelter property. KDHE performed extensive sampling leading to a Removal Site Evaluation conducted in 2001 for the residential yard area south of the smelter site. This led to an EPA time-critical removal action for the residential yards and nearby rodeo grounds which was performed in 2001 and 2002. In 2011, additional properties with elevated metal levels were identified by KDHE near the smelter site on Coyle Street which was apparently not remediated by the EPA as part of the time-critical removal action. The Respondents investigated the properties on Coyle Street in 2011 and subsequently remediated them in 2012. This work prompted a wider investigation by KDHE near the smelter site which identified what appeared to be smelter residues in roadside drainage ditches and other locations reported by residents. Various additional investigations performed in 2012 and 2013 by the Respondents which culminated in the implementation of the Phase 2 RSE starting in 2014, under which program the

subject properties were identified. The details of the evaluation program and additional historical information are included in the Phase 2 RSE work plan (Exponent 2014).

3.0 Early Action Properties

The early action properties constitute those properties where lead in soil is above the KDHE residential soil screening value (SSV) of 400 mg/kg. Smelter residue material (SRM) is usually observed at the surface or in the shallow subsurface, and the properties may be frequently used by children for extended periods of play. These properties consist of five day care facilities (which are housed at residences), one owner-occupied single family residence, one park property, and an isolated area of SRM below exposed brickwork in Logan Park. The reason for the consideration of early action is to reduce the potential exposures for children at play. A property summary is provided in Table 1.

SRM at the early action properties consists of fine to medium grained, black and dark brown colored material with a granular ashy or glassy texture, typically with fragments up to a few cm in size. Retort fragments consist of broken cylindrical-shaped fired clay-brick retorts and condensers used in the smelting process. These fragments have a characteristic curved shape with a glassy black, gray or tan vesicular fusion crust. Fragments vary in size commonly ranging up to about 10 cm. Broken fragments sometimes have a distinctive purple or green color with hard white or gray silica or other mineral inclusions. SRM fill can be quite variable in texture and composition and can include ashy, granular and glassy SRM, retort fragments, all mixed with fill soil, brick and rock in varying amounts. The variability results from different times of placement, grading, and mixtures with other material placed over the years. Smelter residues, particularly the granular SRM are referred to locally as “cinders”.

4.0 Field Sampling Procedures

Field sampling procedures followed those outlined in the Phase 2 RSE work plan. Briefly summarized, once access was granted by the land owner, the properties were inspected and One-Call utility notices were made and composite sample locations identified for collection. Properties were divided in quadrants or other logical sampling areas depending on the property size and up to five aliquots selected for a 6-inch sample composite. Aliquots were collected with a hand auger to three depths: 0-6, 6-12 and 12-18 inches below ground surface. If soils were dry, sample composites were prepared in the field and sieved to remove large fragments. Moist samples were composited in the field and returned to the lab to dry before sieving and analysis.

Samples were placed in Zip-Lock bags, labeled with the sample number, location and depth. Sample depth was denoted as A, B, and C, for the 0-6, 6-12, and 12-18 inch depths, respectively. Excess soil not recovered for the sample was placed back in the auger hole and compacted. Sample equipment was then cleaned with soap and water and rinsed with distilled water before moving onto the next sample point. Samples were either air dried for 24 hours or oven dried before analysis.

5.0 Sample Analysis Procedure

All samples were screened for lead using a portable X-ray fluorescence (XRF) analyzer operating in soil mode using procedures outlined in the work plan. The instrument was initially

factory calibrated. Replicate analysis on individual samples, NIST[1] standards, laboratory cross-check and internal calibration comprised the instrument operational and QA/QC checks. The instrument operators received X-ray radiation safety training prior to the use of the instrument in Kansas, and Project Navigator Ltd., holds a 2015 KDHE BEH Radiation and Asbestos Control Section Certificate of Registration No. 7192 to operate XRF analyzers in the State of Kansas.

Composite samples were homogenized and a single 1-minute XRF reading was typically made on each sample. The data was recorded in the instrument data logger and visually checked on the instrument display to ensure proper instrument function. Data was transcribed from the data logger and extracted as tables for processing and for plotting on maps along with individual aliquot readings.

Confirmation samples were collected for laboratory analysis and the laboratory results compared with field XRF analyses. Using these data, an adjustment[2] was made to the raw XRF data to bring the results in line with the laboratory results as previously discussed with KDHE. Adjustments were applied for lead and arsenic as denoted in Tables 2 and 3. Lead results presented in Figures 2 through 10 are adjusted values. The lab reports and calculations used for these adjusted values are presented in Appendix 1.

6.0 Soil Lead Screening

Figures 2 through 9 depict XRF composite sample results for lead in soil at the early action properties. Results posted are in milligrams per kilogram (mg/kg) adjusted using the laboratory correlation data. Sample results over the SSV of 400 mg/kg for lead are highlighted. The data are presented in Table 2 which also includes results for arsenic, cadmium and zinc. The subareas in all of the residential yards and parks that had lead greater than 400 mg/kg always had observable SRM at the surface (i.e., SRM class A, B, C) or had observable fill (SRM class B-Fill). The ditch and ditch gradient samples in the public right-of-way on the north side of 529 W. 1st Street had elevated lead concentrations without observable SRM at the surface.

The United Methodist Church at 301/305 W 3rd hosts an inside-only pre-school. Children do not use the outside areas for play. The lead concentrations in two of the three subareas on this property were slightly above the 400 mg/kg screening level (Table 3 and Figure 10). No early action is recommended for this property for the following reasons: 1) no visible SRM at the surface (i.e., this was a SRM Class B-Fill), 2) no indication of use by children (i.e., no play structures or outdoor toys), 3) the yards are on a corner lot, unfenced, and face busy streets and thus are not currently suitable for play by small children; and 4) the lead screening level was exceeded by only about 10 percent.

1 National Institute of Standards and Technology

2 The adjustment method was presented to KDHE in a March 30, 2015 meeting with Respondents and their consultants.

7.0 Summary

This data evaluation report identifies certain properties with lead levels above soil screening values where KDHE and the Respondents agree that early action would be appropriate. These data will be used to prepare a work plan that describes appropriate removal actions for each property.

8.0 References

Exponent. Phase 2 Removal Site Evaluation Work Plan for the National Zinc Site, Cherryvale, Kansas. August 15, 2014.

Innov-X Systems. Radiation Safety and Start-Up Training, Innov-X Systems, Inc., July 2011

Innov-X Systems. Innov-X Alpha User Manual, Innov-X Systems P/N 100392 Rev. B

KDHE. Removal Site Evaluation (RSE) for the Cherryvale Residential Yards Site, Cherryvale, Montgomery County, Kansas, KDHE ID C306371097. March 2001

KDHE. Brownfield Targeted Assessment for the National Zinc Site, 1999.

Tetra Tech. Removal Action Summary Report, National Zinc Site, Cherryvale, KS. U.S. EPA Region 7 START 2, Contract No. 68-S7-01-41, Task Order No. 0063 (Residential Removal) by TetraTech, EM, 2002.

U. S. EPA. Standard Operating Procedure 4230.19 A; Soil Sampling at Lead-Contaminated Residential Sites, July 2007.

U. S. EPA. Superfund Lead-Contaminated Residential Sites Handbook, OSWER 9285.7.50, 2003

U. S. EPA. Method 6200, Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment. February 2007

U. S. EPA. Generic Quality Assurance Project Plan for Region 7's Superfund Lead Contaminated Sites, 2007

U. S. EPA. Expanded Site Inspection Report (ESI) for the Former National Zinc Site, Cherryvale, Montgomery County, Kansas, EPA ID KSD 98040698, KDHE ID C306371097 March 2001.

TABLES

Table 1. Property Summary. Cherryvale, Kansas Phase 2 RSE Data Evaluation of Early Action Properties

Figure	Property	Use	Description	Proposed Action	Estimated Area > SSV (sf)
2	219 W 1st	Resident Occupied	Ashy fine SRM exposed from removed brick at front and side property. Soil > soil screening value (SSV).	Remove and replace soil from affected areas > SSV.	4,276
3	317 W 4th	Resident Occupied / Day Care Center. Listed as active DCC but not observed to be active. Permit still valid.	Placed fill in back yard to 18". Soil > SSV in former play area.	Remove and replace soil from affected areas > SSV.	4,455
4	326 W 4th	Resident Occupied / Day Care Center. Observed active. Listed as active DCC.	Placed fill. Exposed granular SRM area from old driveway on east side of property. Soil > SSV in former play area.	Remove and replace soil from affected areas > SSV.	14,329
5	416 N Maple	Resident Occupied / Day Care Center. Observed active. Listed as active DCC.	Retort fragments and granular glassy SRM observed on property. Probable placed fill and spillover from road ditch on east side by road and yard with dog pen. Active play area sampled but < SSV.	Remove and replace soil from affected areas > SSV. East side removal limited to removing SRM near house entrance from south side towards driveway.	11,062
6	529 W 1st	Resident Occupied / Day Care Center. Observed as active. Listed as active DCC.	Isolated retort fragments. Granular SRM possibly from alley fill or old construction. SRM in north side ditch ROW. Soil composite from play area and west side > SSV.	Remove and replace soil from affected areas > SSV.	6,178
7	902 W Main	Resident Occupied / Day Care Center. Observed active. Listed as active DCC.	No SRM observed at surface. Placed fill observed in subsurface. Soil > SSV in one of four composite areas (east half of play area).	Remove and replace soil from affected areas > SSV.	5,930
8	00 E 1st	Light-use local park with swings.	Ashy granular SRM, brick and soil fill exposed on surface in adjacent ROW. Soil > SSV.	Remove and replace soil from affected areas > SSV.	5,000
9	Logan Park Gazebo	Shelter area in Logan Park.	Ashy granular SRM exposed from removed brick. Soil > SSV	Remove and replace soil from affected areas > SSV.	200
					51,430 Square Feet

Note: Square footage calculated to property line.
DCC list from KDHE. Personal contact for 326 W 4th confirmed through KDHE website.

Table 2. Analytical Results. Cherryvale, Kansas Phase 2 RSE Data Evaluation of Early Action Properties

Sample	Date Sampled	Depth (in)	As (Adjusted) mg/kg	Cd mg/kg	Pb (Adjusted) mg/kg	Zn mg/kg	Sample Type	SRM Class	Gen Description
219 W 1st 1-A		0-6"	**63**	19	**6,280**	**25,412**		A	Granular SRM exposed from removed brick
219 W 1st 1-B		6-12"	< LOD	13	**703**	15,452			
219 W 1st 1-C		12-18"	30	< LOD	**532**	2,533			
219 W 1st 2-A		0-6"	< LOD	< LOD	**1,297**	1,411		A	Granular SRM exposed from removed brick
219 W 1st 2-B	10/14/2015	6-12"	29	< LOD	162	1,794	Residential		
219 W 1st 2-C		12-18"	23	< LOD	115	516			
219 W 1st 3-A		0-6"	33	< LOD	**942**	1,436		A	Sporadic SRM from removed brick
219 W 1st 3-B		6-12"	32	< LOD	**708**	5,080			
219 W 1st 3-C		12-18"	20	< LOD	167	786			
317 W 4th 1-A		0-6"	24	< LOD	395	1,711		C	Isolated RF
317 W 4th 1-B		6-12"	< LOD	< LOD	236	739			
317 W 4th 1-C		12-18"	14	< LOD	88	426			
317 W 4th 2-A		0-6"	21	< LOD	326	1,256		B-Fill	No visible SRM
317 W 4th 2-B	9-10-14 / 11-20-14	6-12"	21	< LOD	332	1,394	Daycare		
317 W 4th 2-C		12-18"	18	< LOD	191	830			
317 W 4th 3-A		0-6"	33	< LOD	**686**	3,428		B-Fill	GR SRM Fill observed in play area
317 W 4th 3-B		6-12"	**97**	< LOD	**5,188**	14,269			
317 W 4th 3-C		12-18"	47	< LOD	**1,082**	7,350			
326 W 4th 1-A		0-6"	< LOD	< LOD	**951**	2,506		A	Cinders along drip edge. Fill
326 W 4th 1-B		6-12"	35	< LOD	**584**	2,600			
326 W 4th 1-C		12-18"	36	< LOD	**514**	1,959			
326 W 4th 2-A		0-6"	27	< LOD	**536**	1,392		A	Widespread SRM
326 W 4th 2-B		6-12"	32	< LOD	388	835			
326 W 4th 2-C		12-18"	26	< LOD	203	820			
326 W 4th 3-A		0-6"	61	< LOD	**4,479**	4,831		A	Glassy granular red east side
326 W 4th 3-B		6-12"	< LOD	< LOD	**2,010**	2,667			
326 W 4th 3-C		12-18"	29	< LOD	**830**	1,278			
326 W 4th G-1-A		0-6"	**86**	< LOD	**673**	10,030		A	Glassy granular east side drive or foundation
326 W 4th G-1-B	10/23/2014	6-12"	46	< LOD	**412**	3,969	Daycare		
326 W 4th G-1-C		12-18"	46	< LOD	**488**	3,316			
326 W 4th G-2-A		0-6"	51	< LOD	**603**	2,844		A	Glassy granular east side drive or foundation
326 W 4th G-2-B		6-12"	29	< LOD	349	1,583			
326 W 4th G-2-C		12-18"	27	< LOD	308	1,731			
326 W 4th G-3-A		0-6"	47	< LOD	**767**	3,798		A	Glassy granular east side drive or foundation
326 W 4th G-3-B		6-12"	34	< LOD	**434**	1,892			
326 W 4th G-3-C		12-18"	< LOD	< LOD	373	1,645			

Table 2. Analytical Results. Cherryvale, Kansas Phase 2 RSE Data Evaluation of Early Action Properties

Sample	Date Sampled	Depth (in)	As (Adjusted) mg/kg	Cd mg/kg	Pb (Adjusted) mg/kg	Zn mg/kg	Sample Type	SRM Class	Gen Description
326 W 4th SP-1-A		0-6"	**270**	< LOD	**888**	14,544		A	Glassy granular east side drive or foundation
326 W 4th SP-1-B		6-12"	**109**	< LOD	**592**	8,067			
326 W 4th SP-1-C		12-18"	**222**	< LOD	**641**	13,951			
416 N Maple 1-A		0-6"	22	< LOD	**429**	2,326		C	Sporadic SRM fragments
416 N Maple 1-B		6-12"	18	< LOD	204	1,376			
416 N Maple 1-C		12-18"	26	< LOD	151	1,308			
416 N Maple 2-A		0-6"	22	< LOD	236	1,930		D	No visible SRM
416 N Maple 2-B		6-12"	< LOD	< LOD	166	1,333			
416 N Maple 2-C		12-18"	< LOD	< LOD	104	878			
416 N Maple 3-A		0-6"	< LOD	< LOD	173	1,469	Daycare	D	No visible SRM
416 N Maple 3-B	9/23/2014	6-12"	< LOD	< LOD	162	1,225			
416 N Maple 3-C		12-18"	< LOD	< LOD	93	851			
416 N Maple 4-A		0-6"	51	< LOD	**642**	5,061		C	RF east side by road, exposed in sewer line tren
416 N Maple 4-B		6-12"	29	< LOD	149	1,582			
416 N Maple 4-C		12-18"	26	< LOD	145	1,324			
416 N Maple DW-A		0-6"	36	< LOD	204	1,922		B	Glassy granular SRM at drive edge single point
416 N Maple DW-B		6-12"	45	< LOD	244	2,392	Driveway		
416 N Maple DW-C		12-18"	23	< LOD	104	1,411			
529 W 1st 1-A		0-6"	< LOD	< LOD	331	1,464		C	Isolated SRM
529 W 1st 1-B		6-12"	23	< LOD	240	1,686			
529 W 1st 1-C		12-18"	< LOD	< LOD	85	1,005			
529 W 1st 2-A		0-6"	26	< LOD	**535**	1,959		C	Isolated RF
529 W 1st 2-B		6-12"	< LOD	< LOD	274	1,087	Daycare		
529 W 1st 2-C		12-18"	17	< LOD	81	579			
529 W 1st 3-A		0-6"	43	11.39	**1,496**	6,747		C	Isolated SRM
529 W 1st 3-B		6-12"	32	< LOD	**584**	4,971			
529 W 1st 3-C		12-18"	21	< LOD	187	2,010			
529 W 1st G-1-A		0-6"	44	< LOD	**1,228**	8,443		D	No visible SRM in ditch
529 W 1st G-1-B	9/10/2014, 12-11-14	6-12"	39	< LOD	**772**	6,174			
529 W 1st G-1-C		12-18"	19	< LOD	207	2,276			
529 W 1st G-2-A		0-6"	48	< LOD	**1,021**	6,116		D	No visible SRM in ditch
529 W 1st G-2-B		6-12"	34	< LOD	**591**	5,464	Gradient Ditch		
529 W 1st G-2-C		12-18"	< LOD	< LOD	149	1,779			
529 W 1st G-3-A		0-6"	36	< LOD	**1,110**	6,101		D	No visible SRM in ditch
529 W 1st G-3-B		6-12"	20	< LOD	242	2,769			
529 W 1st G-3-C		12-18"	22	< LOD	254	2,117			
529 W 1st Ditch A		0-6"	**88**	< LOD	**1,104**	11,186		D	No visible SRM in ditch
529 W 1st Ditch B		6-12"	**102**	< LOD	**1,541**	10,490	Ditch		
529 W 1st Ditch C		12-18"	**56**	< LOD	**527**	6,696			

Table 2. Analytical Results. Cherryvale, Kansas Phase 2 RSE Data Evaluation of Early Action Properties

Sample	Date Sampled	Depth (in)	As (Adjusted) mg/kg	Cd mg/kg	Pb (Adjusted) mg/kg	Zn mg/kg	Sample Type	SRM Class	Gen Description
902 W Main 1-A	9-10-14, 11-20-14	0-6"	< LOD	< LOD	310	1,272	Daycare	B-Fill	No visible SRM
902 W Main 1-B		6-12"	< LOD	< LOD	222	1,022			
902 W Main 1-C		12-18"	19	< LOD	46	432			
902 W Main 2-A		0-6"	< LOD	< LOD	**1,175**	2,621		B-Fill	Initially no visible SRM GR SRM in 2nd inspecti
902 W Main 2-B		6-12"	< LOD	< LOD	**744**	2,919			
902 W Main 2-C		12-18"	< LOD	< LOD	160	934			
902 W Main 3-A		0-6"	< LOD	< LOD	364	1,304		B-Fill	No visible SRM
902 W Main 3-B		6-12"	15	< LOD	128	524			
902 W Main 3-C		12-18"	22	< LOD	60	334			
902 W Main 4-A		0-6"	< LOD	< LOD	345	1,484		B-Fill	No visible SRM. Raised area in front
902 W Main 4-B		6-12"	19	< LOD	234	1,023			
902 W Main 4-C		12-18"	< LOD	< LOD	156	970			
000 E 1st Park 1-A	9/24/2014	0-6"	37	< LOD	**1,017**	18,263	Park	B	Scattered ashy SRM in soil
000 E 1st Park 1-B		6-12"	47	< LOD	**780**	16,195			
000 E 1st Park 1-C		12-18"	19	< LOD	153	3,020			
000 E 1st Park 2-A		0-6"	48	35	**2,466**	**36,055**		B	Ashy SRM by swing
000 E 1st Park 2-B		6-12"	**65**	**61**	**3,885**	**64,101**			
000 E 1st Park 2-C		12-18"	< LOD	**70**	**3,400**	**58,311**			
Logan Park Gazebo *	1/28/2015	Grab	**929**	< LOD	**32,984**	**92,701**	Park	A	Ashy SRM exposed from removed brick
Logan Park Gazebo *		Grab dupe	**1043**	< LOD	**33,692**	**94,989**			
Residential Screening Criteria			53.6	39	400	23,500			
Non-Residential Screening Criteria			179.2	965	1,000	613,000			

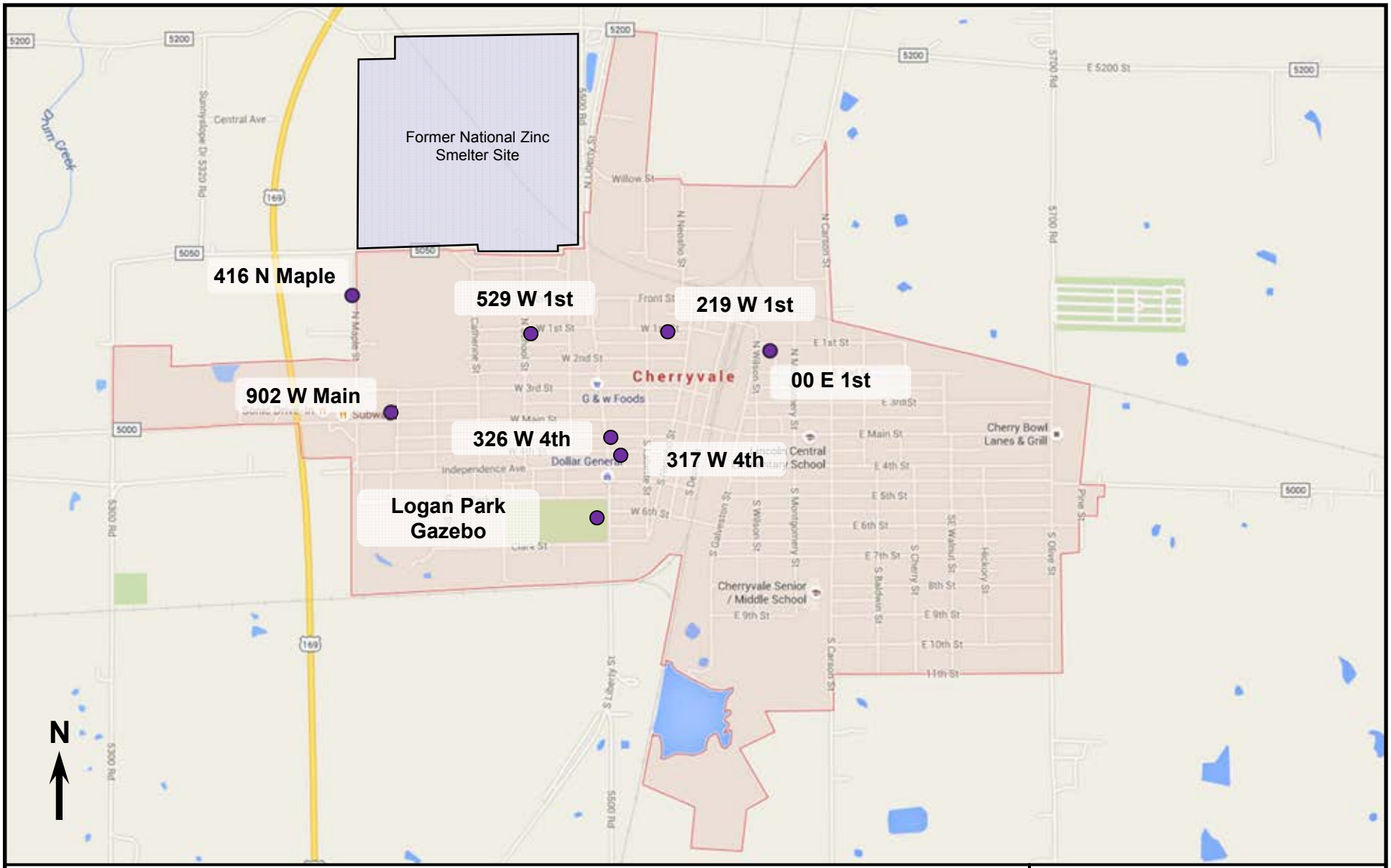
Notes: Results in mg/kg rounded to nearest whole number. <LOD = Not detected.
Lead and arsenic adjusted using laboratory sample correlation.
Depths in Inches.
Soil screening criteria from KDHE (2010) except arsenic which are based on an adjustment for site specific bioavailability.
[ ] Exceeds screening criteria
* Unadjusted value
Does not include United Methodist Church (UMC) Property Values

Table 3. Analytical Results. Cherryvale, Kansas Phase 2 RSE Data Evaluation, United Methodist Church (UMC) Property.

Sample	Date Sampled	Depth (in)	As (Adjusted) mg/kg	Cd mg/kg	Pb (Adjusted) mg/kg	Zn mg/kg	Sample Type	SRM Class	Gen Description
301/305 W 3rd 1-A		0-6"	< LOD	< LOD	**445**	1,527		B-Fill	No visible SRM at surface Graded fill
301/305 W 3rd 1-B		6-12"	< LOD	< LOD	306	2,247			
301/305 W 3rd 1-C		12-18"	< LOD	< LOD	190	1,231			
301/305 W 3rd 2-A		0-6"	33	< LOD	**450**	1,479	Church / Preschool	B-Fill	No visible SRM at surface Graded fill
301/305 W 3rd 2-B	10/30/2014	6-12"	27	< LOD	377	6,140			
301/305 W 3rd 2-C		12-18"	23	< LOD	207	776			
301/305 W 3rd 3-A		0-6"	20	< LOD	289	2,510		B-Fill	No visible SRM at surface Graded fill
301/305 W 3rd 3-B		6-12"	26	< LOD	396	3,679			
301/305 W 3rd 3-C		12-18"	**54**	< LOD	**690**	2,362			
Residential Screening Criteria			53.6	39	400	23,500			
Non-Residential Screening Criteria			179.2	965	1,000	613,000			

Notes: Lead and arsenic adjusted using laboratory sample correlation.
Depths in Inches.
Soil screening criteria from KDHE (2010) except arsenic which are based on an adjustment for site specific bioavailability.
Exceeds screening criteria
UMC property not scheduled for soil removal.

FIGURES



PROJECT NAVIGATOR, LTD.

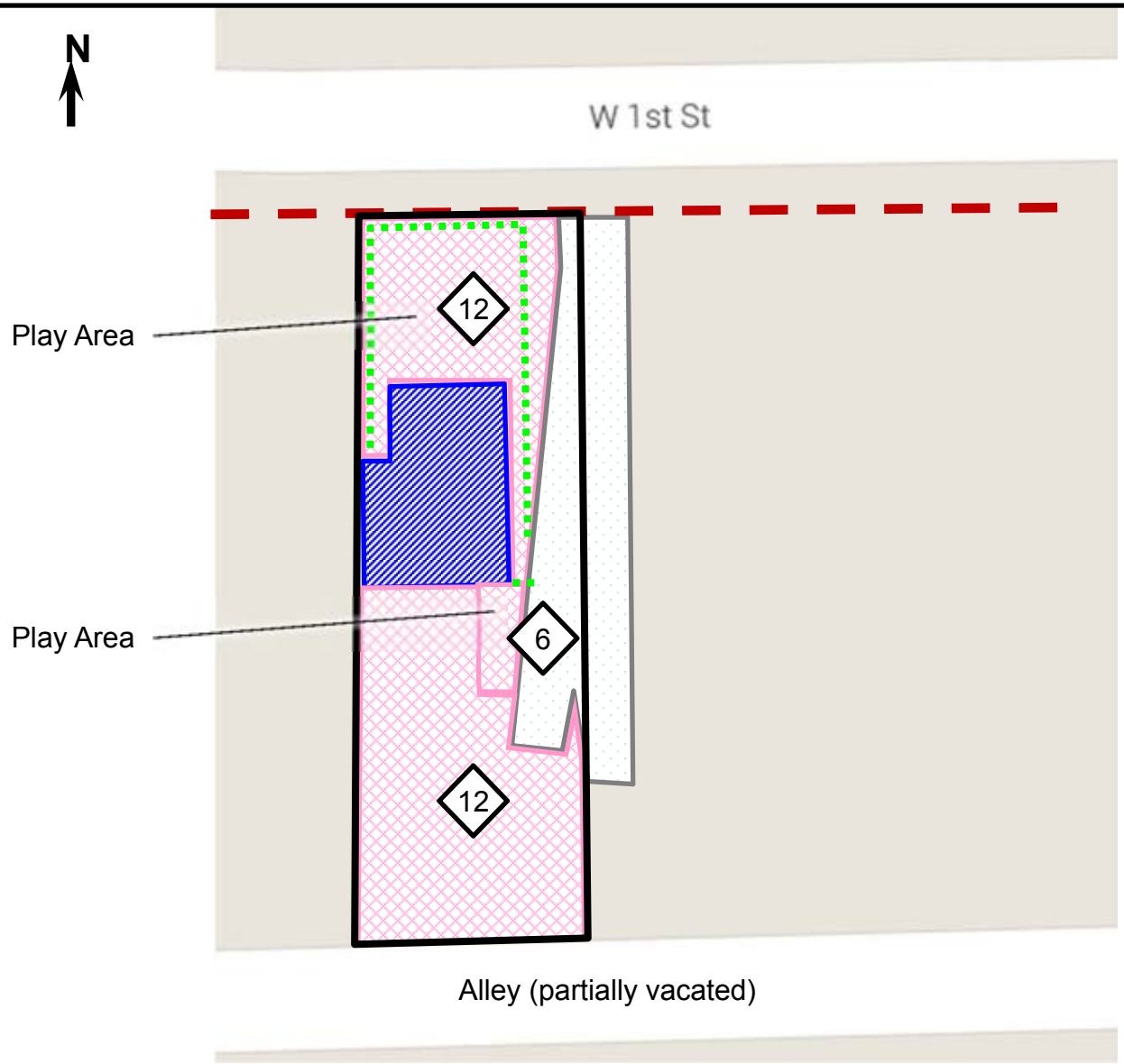
FIGURE 1

SITE LOCATION MAP
NATIONAL ZINC
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER
07-119-410

Map Source: Google Maps



0 ft 20 ft

PROJECT NAVIGATOR, LTD.

LEGEND

- PROPERTY BOUNDARY
- PAVED SIDEWALK
- BRICK SIDEWALK
- FENCE LINE
- STRUCTURE
- DRIVEWAY
- EXCAVATION AREA
- 6 EXCAVATION DEPTH (IN)

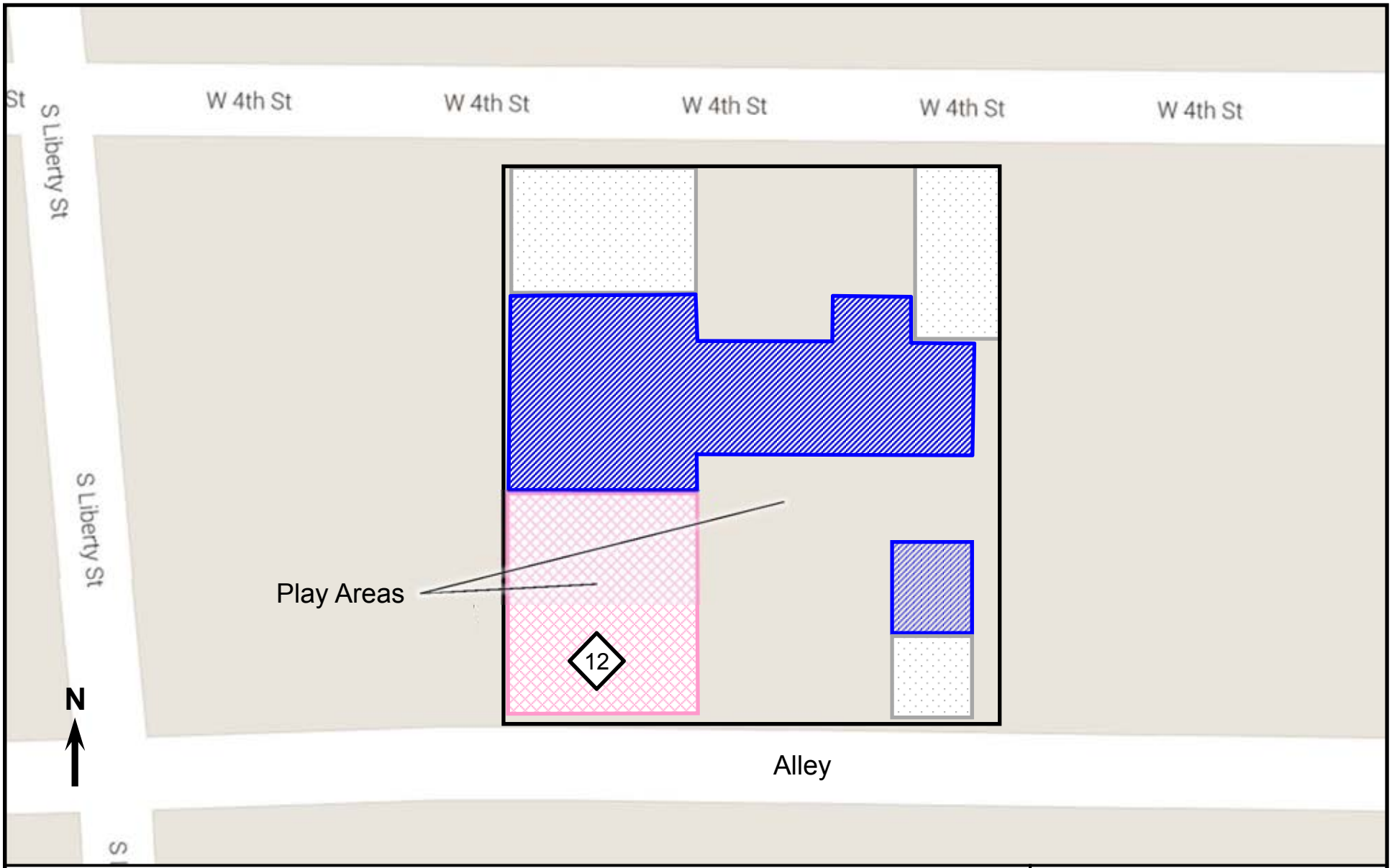
FIGURE 2

219 W 1ST
EXCAVATION FIGURE
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER
07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.



0 ft 20 ft

PROJECT NAVIGATOR, LTD.

LEGEND

- PROPERTY BOUNDARY
- PAVED SIDEWALK
- BRICK SIDEWALK
- FENCE LINE
- STRUCTURE
- DRIVEWAY
- EXCAVATION AREA
- 6 EXCAVATION DEPTH (IN)

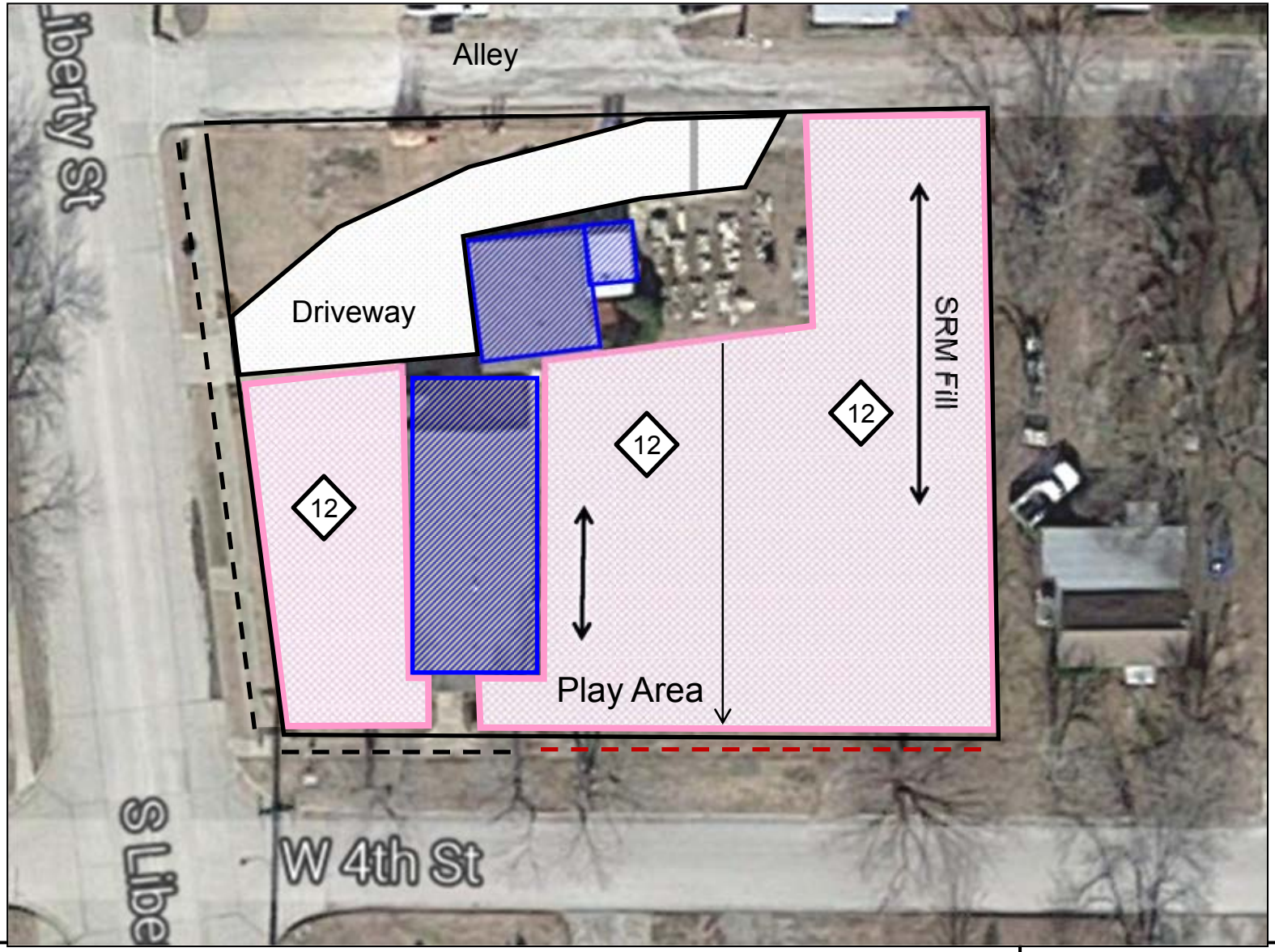
FIGURE 3

317 W 4TH
EXCAVATION FIGURE
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER
07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.



LEGEND

PROPERTY BOUNDARY	STRUCTURE
PAVED SIDEWALK	DRIVEWAY
BRICK SIDEWALK	EXCAVATION AREA
FENCE LINE	EXCAVATION DEPTH (IN)

0 ft 20 ft

PROJECT NAVIGATOR, LTD.

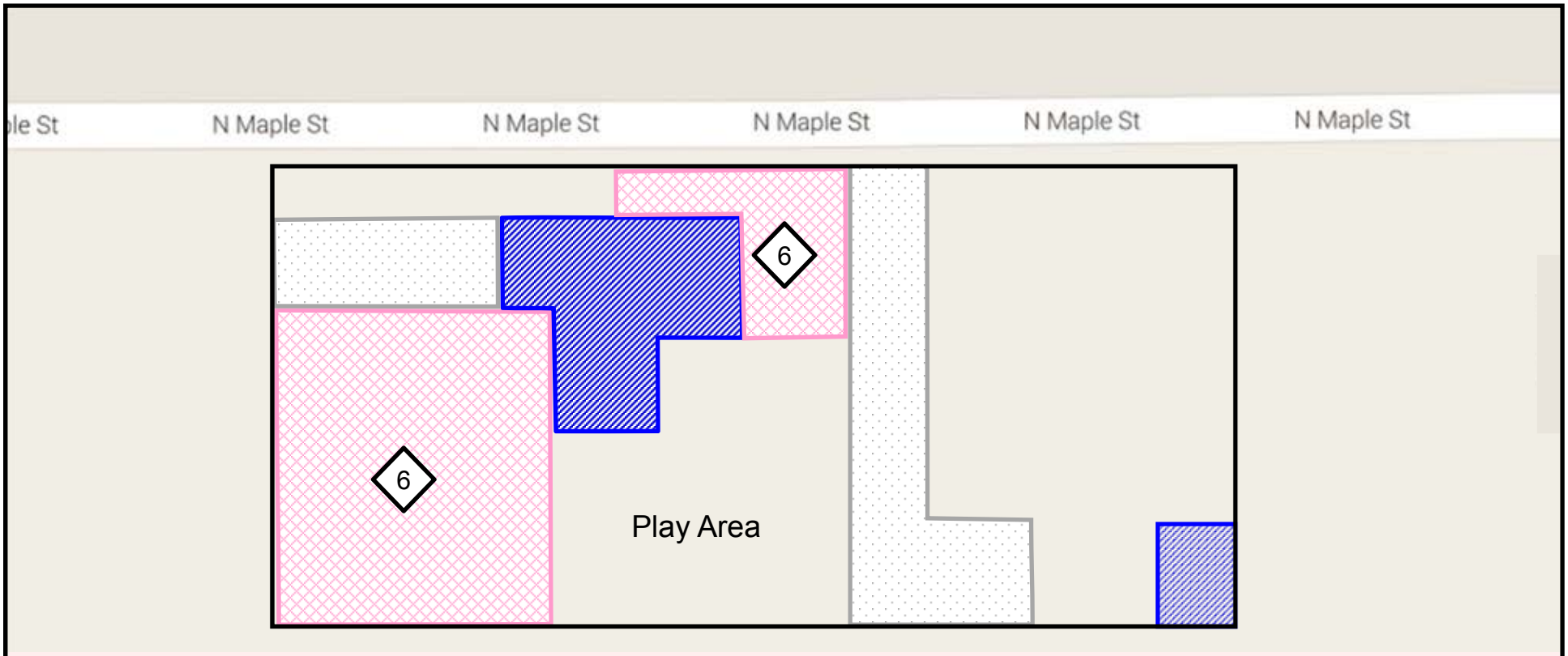
FIGURE 4

326 W 4TH
EXCAVATION FIGURE
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER 07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.



Approximate boundary of residential property use area based on fence and physical features.

N

LEGEND

	PROPERTY BOUNDARY		STRUCTURE
	PAVED SIDEWALK		DRIVEWAY
	BRICK SIDEWALK		EXCAVATION AREA
	FENCE LINE	6	EXCAVATION DEPTH (IN)

0 ft 50 ft

PROJECT NAVIGATOR, LTD.

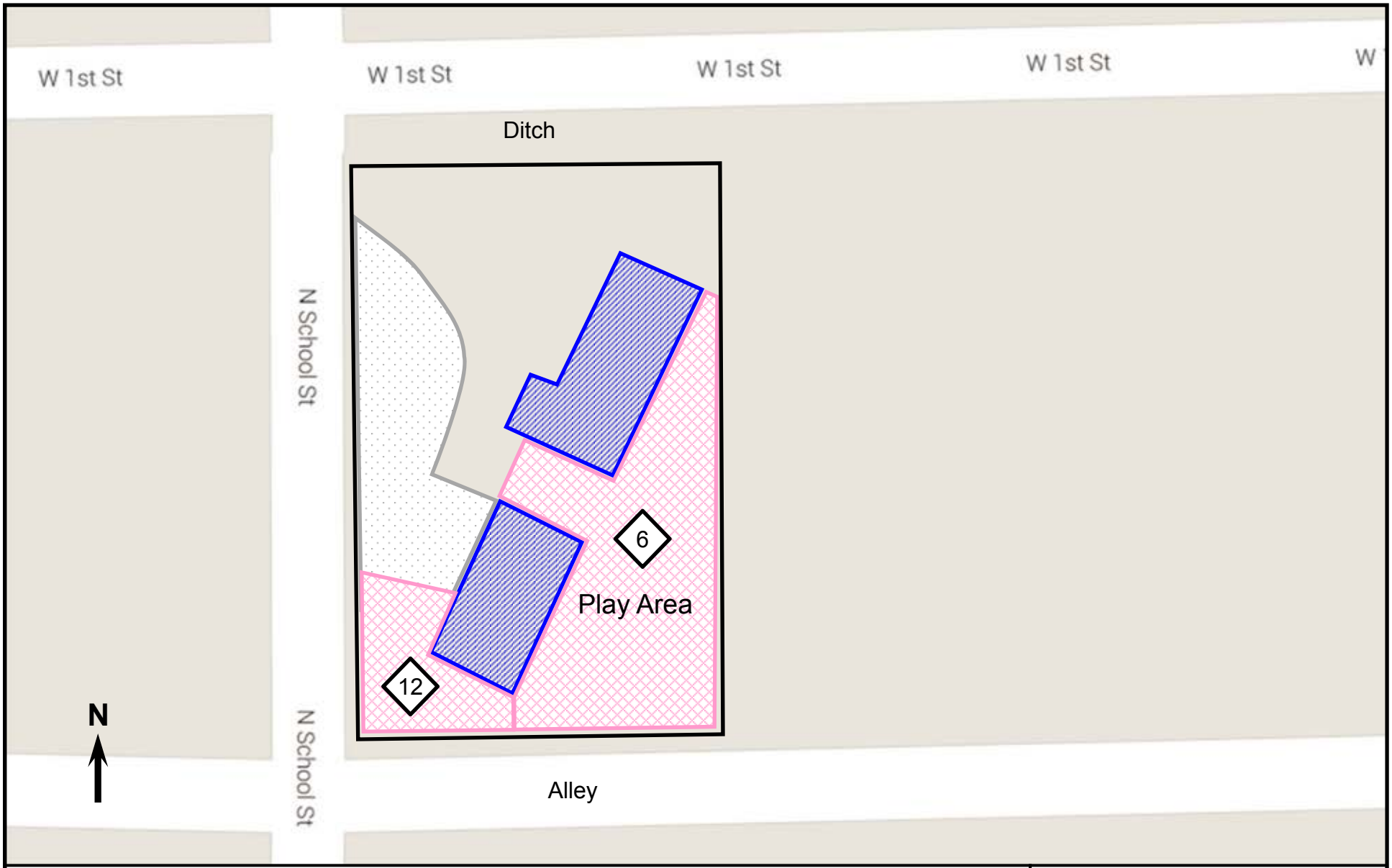
FIGURE 5

416 N MAPLE
EXCAVATION FIGURE
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER
07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.



0 ft 20 ft

PROJECT NAVIGATOR, LTD.

LEGEND

- PROPERTY BOUNDARY
- PAVED SIDEWALK
- BRICK SIDEWALK
- FENCE LINE
- STRUCTURE
- DRIVEWAY
- EXCAVATION AREA
- 6 EXCAVATION DEPTH (IN)

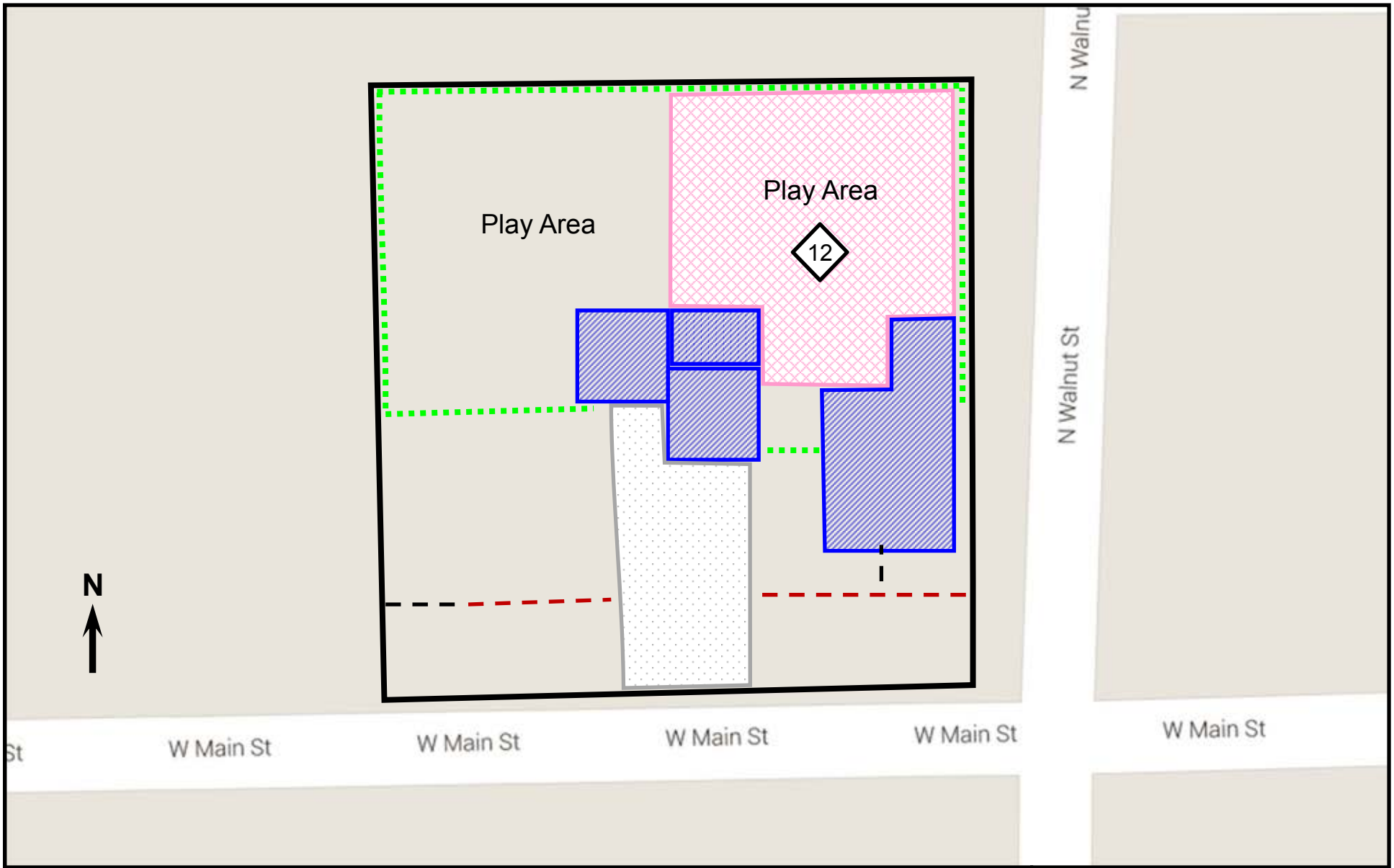
FIGURE 6

529 W 1ST
EXCAVATION FIGURE
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER
07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.



LEGEND

PROPERTY BOUNDARY	STRUCTURE
PAVED SIDEWALK	DRIVEWAY
BRICK SIDEWALK	EXCAVATION AREA
FENCE LINE	EXCAVATION DEPTH (IN)

0 ft 20 ft

PROJECT NAVIGATOR, LTD.

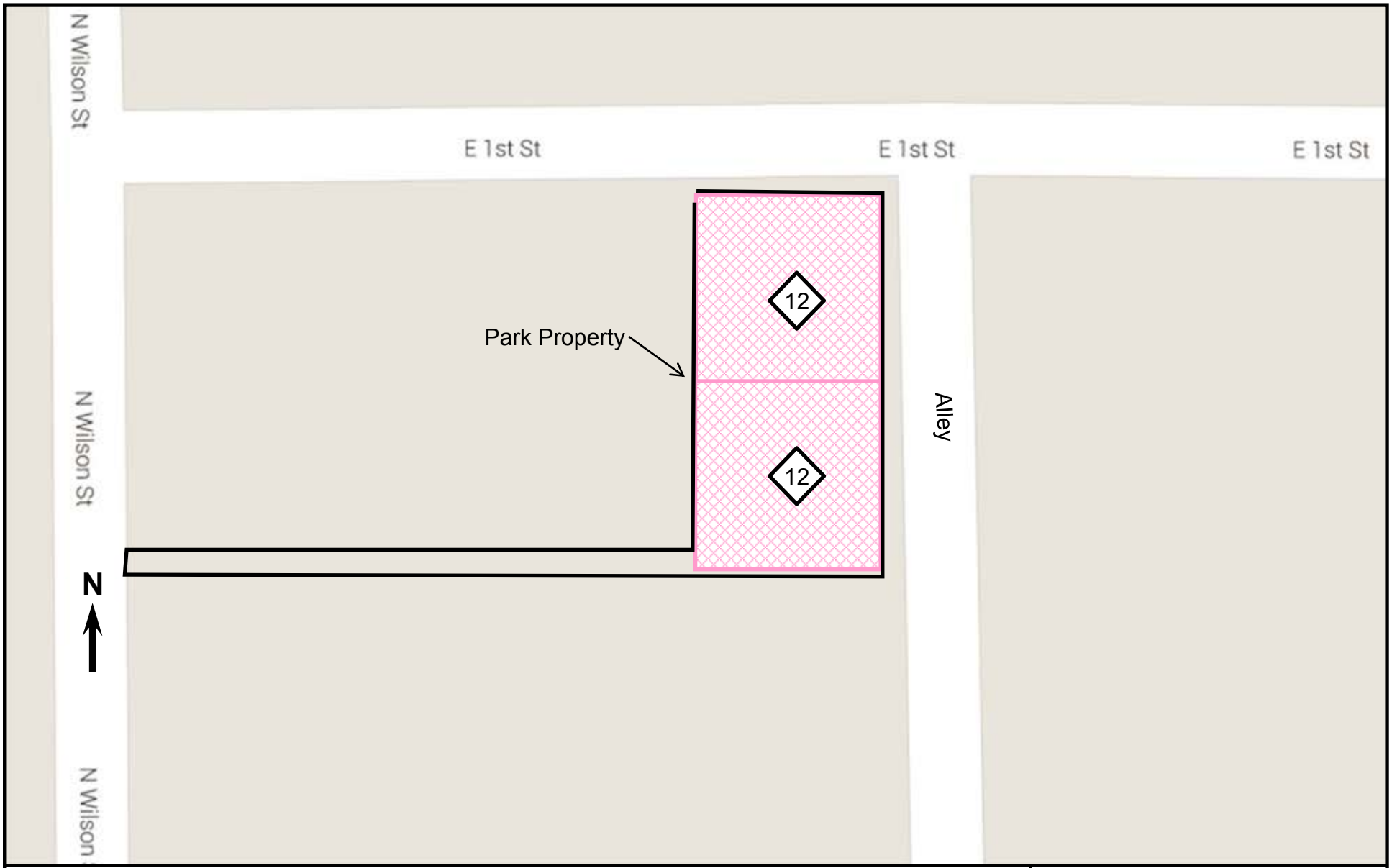
FIGURE 7

902 W MAIN
EXCAVATION FIGURE
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER 07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.



LEGEND

	PROPERTY BOUNDARY		STRUCTURE
	PAVED SIDEWALK		DRIVEWAY
	BRICK SIDEWALK		EXCAVATION AREA
	FENCE LINE	6	EXCAVATION DEPTH (IN)

0 ft 20 ft

PROJECT NAVIGATOR, LTD.

FIGURE 8

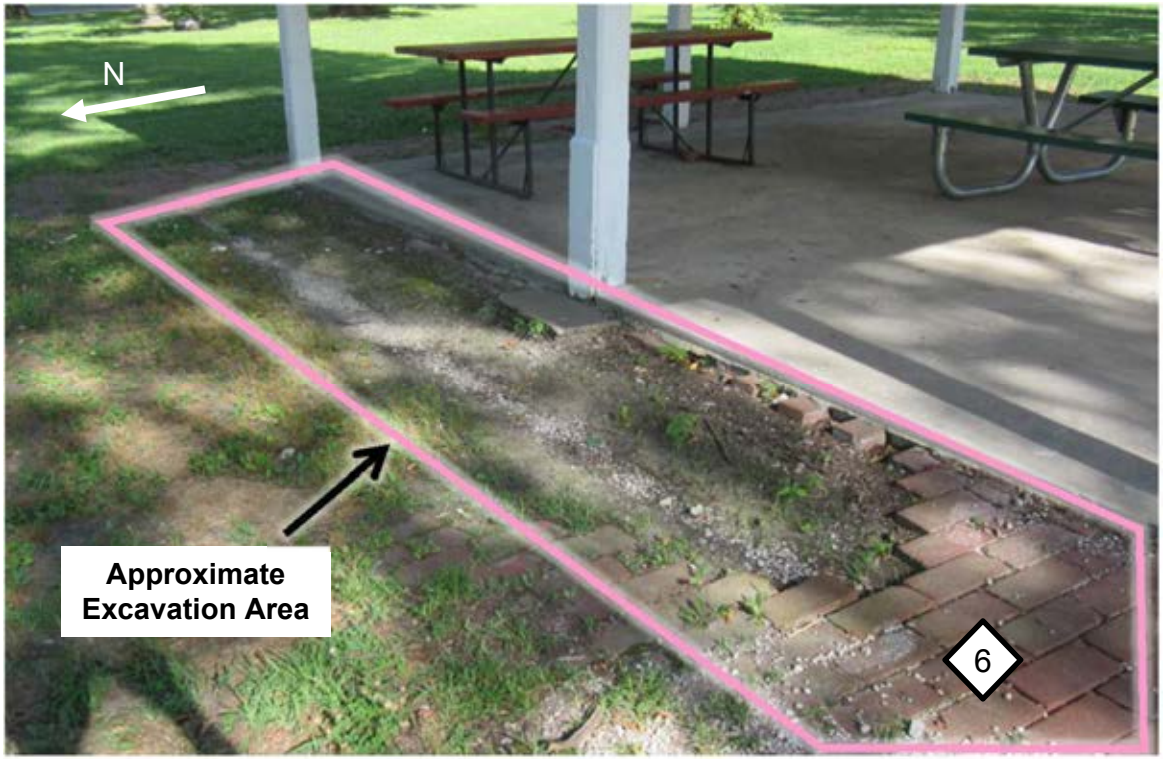
00 E 1ST
EXCAVATION FIGURE
CHERRYVALE, KANSAS

DATE: August 2015

PROJECT NUMBER
07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.

Logan Park East Side



0 ft 20 ft

PROJECT NAVIGATOR, LTD.

LEGEND

	PROPERTY BOUNDARY		STRUCTURE
	PAVED SIDEWALK		DRIVEWAY
	BRICK SIDEWALK		EXCAVATION AREA
	FENCE LINE	6	EXCAVATION DEPTH (IN)

FIGURE 9

Logan Park Gazebo
EXCAVATION FIGURE
CHERRYVALE, KANSAS

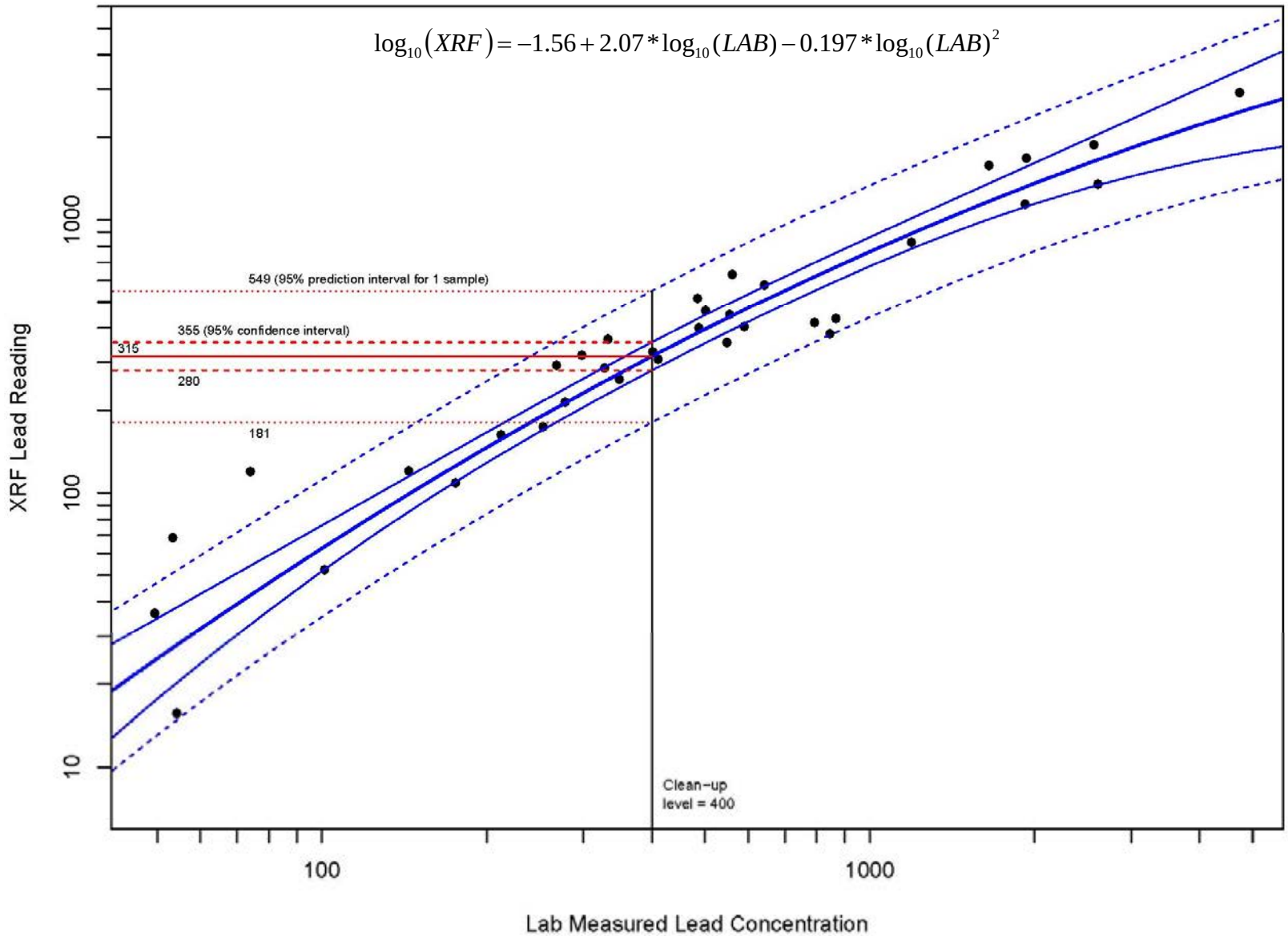
DATE: August 2015

PROJECT NUMBER
07-119-410

Map Source: Google Maps. Property boundary approximately located. Actual property boundaries and excavation limits will be determined in the field with parcel maps and surveys.

APPENDIX 1

Laboratory-Predicted Lead Concentrations



Laboratory and XRF Correction Table

Sample	Pb (XRF)	Pb Error (XRF)	Predicted Pb	As (XRF)	As Error (XRF)	Predicted As	Lab Confirmation Sample	Lab Pb	Pb Lab DUP	Lab As	As Lab Dup	Sample Type	SRM CLASS
316 N MONTGOMERY G-2-A	317	16	408.61	61	13	64.22	Lab Duplicate	298	129	34.2	14.6	Gradient Driveway	A
724 E 10th G-1-B	363	15	466.33	28	11	35.16	X	332		27.6		Gradient Ditch	B
2nd-CATHERINE G-1-B	327	13	421.22	52	11	56.22	X	401		62.9		Gradient Alley	A
625 W INDEPENDENCE DW-G-1-C	307	13	396.69		15		X	410		11.2		Gradient Driveway	A
117 N NEOSHO 1-B	405	15	518.93		16		Lab Duplicate	589	423	24.6	19.8	Commercial	A
117 N NEOSHO 3-C	1880	34	3165.54	97	26	91.43	X	2560		43.6		Commercial	A
219 W 1st 1-A	2905	41	6279.94	60	31	63.44	X	4730		23.5		Residential	A
305 W 3rd 2-B	291	13	377.08	20	10	27.13	X	268		15.7		Residential	B-Fill
312 W 4th G-2-A	260	14	338.85	18	10	24.34	X	349		13.2		Gradient Alley	A
326 W 4th 3-B	1347	26	2010.23		29		X	2610		16.3		Residential	A
334 W FRONT 2-A	214	11	283.35		12		X	278		19.3		Residential	A
334 W FRONT 6-A	163	10	222.67	21	8	28.26	X	212		12.4		Residential	A
416 N MAPLE 2-A	174	10	236.17	16	8	22.39	KDHE 11-6-14, PNL	253		15.2		Residential - Daycare	C
431 W Independence 2-A	462	16	592.62		17		X	501		13.9		Residential	B
500 W 1st 1-A	516	16	663.87	51	12	55.99	X	485		33		Residential	D
500 W 1st DW-A	341	16	438.32	41	12	47.21	MS/MSD PNL	756		31.8		Single Point	A
516 W 3rd 3-A	120	10	171.23	21	8	27.93	X	144		16.9		Residential	B
516 W 3rd G-1-A	399	15	511.05	30	11	36.41	X	487		23.5		Gradient Alley	A
516 W 3rd G-2-B	434	15	555.91		17		X	867		22.4		Gradient Alley	A
519 N NEOSHO DW-A	703	24	925.36	422	23	286.21	X	616		378		Single Point	A
529 W 1st 2-A	418	14	535.07	19	11	26.21	MS/MSD	793		13.9		Residential - Daycare	C
529 W 1st G-3-A	827	20	1109.95	29	15	35.73	X	1190		58.6		Gradient Ditch	D
600 E MAIN G-2-C	36	6	66.90	14	5	20.87	X	49.5		7.6		Gradient Sidewalk	D
600 W MAIN G-3-C	52	7	88.33		7		X	101		7.2		Gradient Sidewalk	D
603 E 4th 2-A	447	15	572.98		16		X	554		14.7		Residential	B-Fill
620 N LABETTE GA-2-A	285	12	369.14	23	9	30.17	X	328		17		Residential - Garden	B
620 W 3rd 4-A	353	13	453.85		15		X	548		12		Residential	C
000 E 1st PARK 2-A	1572	32	2466.43	42	24	47.90	X	1650		33.5		Residential Park	B
714 E 7th DT-A BO	1140	26	1626.29		29		X	1920		45.5		Ditch - Bottom	A
725 W MAIN DW-C	151	10	208.30	12	7	17.53	X	400		11.3		Single Point	B
902 W MAIN 2-B	575	18	744.27		20		X	641		13.6		Residential - Daycare	B-Fill
PARK WEST G-3-A	109	9	157.78	13	6	18.84	X	175		20.4		Gradient Alley	A
PARK WEST DITCH-B	16	6	36.82	17	5	23.26	X	54.3		11.2		Ditch - Bottom	D
W 3rd-N SCHOOL-A	1673	33	2685.58	93	25	88.54	KDHE 11-6-14, PNL	1930		66.6		Alley	A
FOOTBALL FIELD 3-B	381	14	487.87	22	11	28.75	X	844		34.8		Residential Park	B

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

December 30, 2014

Mark Landress
Project Navigator, Ltd.
10497 Town and Country Way
Suite 830
Houston, TX 77024

RE: Project: NATIONAL ZINC
Pace Project No.: 60184533

Dear Mark Landress:
Enclosed are the analytical results for sample(s) received by the laboratory on December 13, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mary Jane Walls for
Jamie Church
jamie.church@pacelabs.com
Project Manager

Enclosures

cc: Philip Jen, Project Navigator, Ltd.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: NATIONAL ZINC
Pace Project No.: 60184533

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60184533001	**600 E MAIN G-2-C**	Solid	12/11/14 16:30	12/13/14 08:10
60184533002	**000 E 1ST PARK 2-A**	Solid	12/11/14 16:35	12/13/14 08:10
60184533003	**334 W FRONT 6-A**	Solid	12/11/14 16:40	12/13/14 08:10
60184533004	**416 N MAPLE 2-A**	Solid	12/11/14 16:45	12/13/14 08:10
60184533005	**519 N NEOSHO DW-A**	Solid	12/11/14 16:50	12/13/14 08:10
60184533006	**714 E 7TH DT-A BO**	Solid	12/11/14 16:55	12/13/14 08:10
60184533007	**219 W 1ST 1-A**	Solid	12/11/14 17:00	12/13/14 08:10
60184533008	**902 W MAIN 2-B**	Solid	12/11/14 17:05	12/13/14 08:10
60184533009	**600 W MAIN G-3-C**	Solid	12/11/14 17:10	12/13/14 08:10
60184533010	**620 W 3RD 4-A**	Solid	12/11/14 17:15	12/13/14 08:10
60184533011	**516 W 3RD 3-A**	Solid	12/11/14 17:20	12/13/14 08:10
60184533012	**W 3RD-N SCHOOL-A**	Solid	12/11/14 17:25	12/13/14 08:10
60184533013	**326 W 4TH 3-B**	Solid	12/11/14 17:30	12/13/14 08:10
60184533014	**603 E 4TH 2-A**	Solid	12/11/14 17:35	12/13/14 08:10
60184533015	**PARK WEST DITCH B**	Solid	12/11/14 17:40	12/13/14 08:10
60184533016	**PARK WEST G-3-A**	Solid	12/11/14 17:45	12/13/14 08:10
60184533017	**117 N NEOSHO 3-C**	Solid	12/11/14 17:50	12/13/14 08:10
60184533018	**305 W 3RD 2-B**	Solid	12/11/14 17:55	12/13/14 08:10
60184533019	**431 W INDY 2-A**	Solid	12/11/14 18:00	12/13/14 08:10
60184533020	**725 W MAIN DW-C**	Solid	12/11/14 18:05	12/13/14 08:10

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: NATIONAL ZINC
Pace Project No.: 60184533

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60184533001	**600 E MAIN G-2-C**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533002	**000 E 1ST PARK 2-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533003	**334 W FRONT 6-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533004	**416 N MAPLE 2-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533005	**519 N NEOSHO DW-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533006	**714 E 7TH DT-A BO**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533007	**219 W 1ST 1-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533008	**902 W MAIN 2-B**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533009	**600 W MAIN G-3-C**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533010	**620 W 3RD 4-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533011	**516 W 3RD 3-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533012	**W 3RD-N SCHOOL-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533013	**326 W 4TH 3-B**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533014	**603 E 4TH 2-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533015	**PARK WEST DITCH B**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533016	**PARK WEST G-3-A**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533017	**117 N NEOSHO 3-C**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533018	**305 W 3RD 2-B**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60184533019	**431 W INDY 2-A**	EPA 6020	TT3	4	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: NATIONAL ZINC
Pace Project No.: 60184533

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974	JDL	1	PASI-M
60184533020	**725 W MAIN DW-C**	EPA 6020	TT3	4	PASI-M
		ASTM D2974	JDL	1	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 600 E MAIN G-2-C **Lab ID: 60184533001** Collected: 12/11/14 16:30 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**7.6**	mg/kg	0.71	20	12/17/14 18:56	12/18/14 11:33	7440-38-2	
Cadmium	**0.82**	mg/kg	0.11	20	12/17/14 18:56	12/18/14 11:33	7440-43-9	
Lead	**49.5**	mg/kg	0.14	20	12/17/14 18:56	12/18/14 11:33	7439-92-1	M6,R1
Zinc	**225**	mg/kg	7.1	20	12/17/14 18:56	12/18/14 11:33	7440-66-6	M6
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**34.9**	%	0.10	1		12/26/14 09:28		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 000 E 1ST PARK 2-A **Lab ID: 60184533002** Collected: 12/11/14 16:35 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**33.5**	mg/kg	0.61	20	12/17/14 18:56	12/18/14 11:52	7440-38-2	
Cadmium	**42.2**	mg/kg	0.098	20	12/17/14 18:56	12/18/14 11:52	7440-43-9	
Lead	**1650**	mg/kg	12.2	2000	12/17/14 18:56	12/18/14 12:08	7439-92-1	
Zinc	**29100**	mg/kg	611	2000	12/17/14 18:56	12/18/14 12:08	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**35.5**	%	0.10	1		12/26/14 09:28		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 334 W FRONT 6-A **Lab ID: 60184533003** Collected: 12/11/14 16:40 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**12.4**	mg/kg	0.51	20	12/17/14 18:56	12/18/14 11:27	7440-38-2	
Cadmium	**7.2**	mg/kg	0.081	20	12/17/14 18:56	12/18/14 11:27	7440-43-9	
Lead	**212**	mg/kg	1.0	200	12/17/14 18:56	12/18/14 12:11	7439-92-1	
Zinc	**1430**	mg/kg	50.9	200	12/17/14 18:56	12/18/14 12:11	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**9.0**	%	0.10	1		12/26/14 09:29		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 416 N MAPLE 2-A **Lab ID: 60184533004** Collected: 12/11/14 16:45 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**15.2**	mg/kg	0.48	20	12/17/14 18:56	12/18/14 11:30	7440-38-2	
Cadmium	**8.4**	mg/kg	0.077	20	12/17/14 18:56	12/18/14 11:30	7440-43-9	
Lead	**253**	mg/kg	0.96	200	12/17/14 18:56	12/18/14 12:15	7439-92-1	
Zinc	**2180**	mg/kg	48.1	200	12/17/14 18:56	12/18/14 12:15	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**6.3**	%	0.10	1		12/26/14 09:29		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 519 N NEOSHO DW-A **Lab ID: 60184533005** Collected: 12/11/14 16:50 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**378**	mg/kg	0.45	20	12/17/14 18:56	12/18/14 11:57	7440-38-2	
Cadmium	**3.0**	mg/kg	0.072	20	12/17/14 18:56	12/18/14 11:57	7440-43-9	
Lead	**616**	mg/kg	2.3	500	12/17/14 18:56	12/18/14 12:18	7439-92-1	
Zinc	**3460**	mg/kg	113	500	12/17/14 18:56	12/18/14 12:18	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**4.3**	%	0.10	1		12/26/14 09:29		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 714 E 7TH DT-A BO **Lab ID: 60184533006** Collected: 12/11/14 16:55 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**45.5**	mg/kg	0.46	20	12/17/14 18:56	12/18/14 12:00	7440-38-2	
Cadmium	**9.2**	mg/kg	0.074	20	12/17/14 18:56	12/18/14 12:00	7440-43-9	
Lead	**1920**	mg/kg	2.3	500	12/17/14 18:56	12/18/14 12:21	7439-92-1	
Zinc	**6080**	mg/kg	116	500	12/17/14 18:56	12/18/14 12:21	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.3**	%	0.10	1		12/26/14 09:29		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 219 W 1ST 1-A **Lab ID: 60184533007** Collected: 12/11/14 17:00 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**23.5**	mg/kg	0.43	20	12/17/14 18:56	12/18/14 12:02	7440-38-2	
Cadmium	**33.2**	mg/kg	0.069	20	12/17/14 18:56	12/18/14 12:02	7440-43-9	
Lead	**4730**	mg/kg	8.7	2000	12/17/14 18:56	12/18/14 12:46	7439-92-1	
Zinc	**28300**	mg/kg	434	2000	12/17/14 18:56	12/18/14 12:46	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.8**	%	0.10	1		12/26/14 09:30		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 902 W MAIN 2-B **Lab ID: 60184533008** Collected: 12/11/14 17:05 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**13.6**	mg/kg	0.47	20	12/17/14 18:56	12/18/14 12:05	7440-38-2	
Cadmium	**8.8**	mg/kg	0.076	20	12/17/14 18:56	12/18/14 12:05	7440-43-9	
Lead	**641**	mg/kg	2.4	500	12/17/14 18:56	12/18/14 12:49	7439-92-1	
Zinc	**2900**	mg/kg	118	500	12/17/14 18:56	12/18/14 12:49	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**11.3**	%	0.10	1		12/26/14 09:30		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 600 W MAIN G-3-C **Lab ID: 60184533009** Collected: 12/11/14 17:10 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**7.2**	mg/kg	0.59	20	12/17/14 18:56	12/18/14 12:32	7440-38-2	
Cadmium	**8.5**	mg/kg	0.094	20	12/17/14 18:56	12/18/14 12:32	7440-43-9	
Lead	**101**	mg/kg	0.12	20	12/17/14 18:56	12/18/14 12:32	7439-92-1	
Zinc	**1840**	mg/kg	585	2000	12/17/14 18:56	12/18/14 12:52	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.6**	%	0.10	1		12/26/14 09:30		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 620 W 3RD 4-A **Lab ID: 60184533010** Collected: 12/11/14 17:15 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**12.0**	mg/kg	0.60	20	12/17/14 18:56	12/18/14 12:35	7440-38-2	
Cadmium	**14.3**	mg/kg	0.096	20	12/17/14 18:56	12/18/14 12:35	7440-43-9	
Lead	**548**	mg/kg	12.0	2000	12/17/14 18:56	12/18/14 12:54	7439-92-1	
Zinc	**6160**	mg/kg	602	2000	12/17/14 18:56	12/18/14 12:54	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.8**	%	0.10	1		12/26/14 09:31		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 516 W 3RD 3-A **Lab ID: 60184533011** Collected: 12/11/14 17:20 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**16.9**	mg/kg	0.59	20	12/17/14 18:56	12/18/14 12:38	7440-38-2	
Cadmium	**3.7**	mg/kg	0.095	20	12/17/14 18:56	12/18/14 12:38	7440-43-9	
Lead	**144**	mg/kg	0.12	20	12/17/14 18:56	12/18/14 12:38	7439-92-1	
Zinc	**791**	mg/kg	59.4	200	12/17/14 18:56	12/18/14 12:57	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.9**	%	0.10	1		12/26/14 09:31		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: W 3RD-N SCHOOL-A **Lab ID: 60184533012** Collected: 12/11/14 17:25 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**66.6**	mg/kg	0.59	20	12/17/14 18:56	12/18/14 12:41	7440-38-2	
Cadmium	**67.1**	mg/kg	0.094	20	12/17/14 18:56	12/18/14 12:41	7440-43-9	
Lead	**1930**	mg/kg	11.8	2000	12/17/14 18:56	12/18/14 13:23	7439-92-1	
Zinc	**18500**	mg/kg	588	2000	12/17/14 18:56	12/18/14 13:23	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.9**	%	0.10	1		12/26/14 09:31		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 326 W 4TH 3-B **Lab ID: 60184533013** Collected: 12/11/14 17:30 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**16.3**	mg/kg	0.50	20	12/17/14 18:56	12/18/14 12:43	7440-38-2	
Cadmium	**9.7**	mg/kg	0.080	20	12/17/14 18:56	12/18/14 12:43	7440-43-9	
Lead	**2610**	mg/kg	10.0	2000	12/17/14 18:56	12/18/14 13:26	7439-92-1	
Zinc	**3680**	mg/kg	500	2000	12/17/14 18:56	12/18/14 13:26	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.0**	%	0.10	1		12/26/14 09:31		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 603 E 4TH 2-A **Lab ID: 60184533014** Collected: 12/11/14 17:35 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**14.7**	mg/kg	0.50	20	12/17/14 18:56	12/18/14 13:10	7440-38-2	
Cadmium	**5.1**	mg/kg	0.081	20	12/17/14 18:56	12/18/14 13:10	7440-43-9	
Lead	**554**	mg/kg	10.1	2000	12/17/14 18:56	12/18/14 13:29	7439-92-1	
Zinc	**1330**	mg/kg	505	2000	12/17/14 18:56	12/18/14 13:29	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.1**	%	0.10	1		12/26/14 09:32		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: PARK WEST DITCH B **Lab ID: 60184533015** Collected: 12/11/14 17:40 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**11.2**	mg/kg	0.55	20	12/17/14 18:56	12/18/14 13:12	7440-38-2	
Cadmium	**0.86**	mg/kg	0.087	20	12/17/14 18:56	12/18/14 13:12	7440-43-9	
Lead	**54.3**	mg/kg	0.11	20	12/17/14 18:56	12/18/14 13:12	7439-92-1	
Zinc	**271**	mg/kg	5.5	20	12/17/14 18:56	12/18/14 13:12	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.2**	%	0.10	1		12/26/14 09:32		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: PARK WEST G-3-A **Lab ID: 60184533016** Collected: 12/11/14 17:45 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**20.4**	mg/kg	0.41	20	12/17/14 18:56	12/18/14 13:15	7440-38-2	
Cadmium	**4.4**	mg/kg	0.065	20	12/17/14 18:56	12/18/14 13:15	7440-43-9	
Lead	**175**	mg/kg	0.81	200	12/17/14 18:56	12/18/14 13:32	7439-92-1	
Zinc	**1020**	mg/kg	40.6	200	12/17/14 18:56	12/18/14 13:32	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**14.5**	%	0.10	1		12/26/14 09:32		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 117 N NEOSHO 3-C **Lab ID: 60184533017** Collected: 12/11/14 17:50 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**43.6**	mg/kg	0.49	20	12/17/14 18:56	12/18/14 13:18	7440-38-2	
Cadmium	**38.5**	mg/kg	0.079	20	12/17/14 18:56	12/18/14 13:18	7440-43-9	
Lead	**2560**	mg/kg	9.8	2000	12/17/14 18:56	12/18/14 13:34	7439-92-1	
Zinc	**20200**	mg/kg	491	2000	12/17/14 18:56	12/18/14 13:34	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.3**	%	0.10	1		12/26/14 09:33		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 305 W 3RD 2-B **Lab ID: 60184533018** Collected: 12/11/14 17:55 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**15.7**	mg/kg	0.47	20	12/17/14 18:56	12/18/14 13:20	7440-38-2	
Cadmium	**3.9**	mg/kg	0.076	20	12/17/14 18:56	12/18/14 13:20	7440-43-9	
Lead	**268**	mg/kg	9.4	2000	12/17/14 18:56	12/18/14 14:07	7439-92-1	
Zinc	**1380**	mg/kg	472	2000	12/17/14 18:56	12/18/14 14:07	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**12.5**	%	0.10	1		12/26/14 09:33		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 431 W INDY 2-A **Lab ID: 60184533019** Collected: 12/11/14 18:00 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**13.9**	mg/kg	0.48	20	12/17/14 18:56	12/18/14 13:56	7440-38-2	
Cadmium	**7.3**	mg/kg	0.077	20	12/17/14 18:56	12/18/14 13:56	7440-43-9	
Lead	**501**	mg/kg	9.7	2000	12/17/14 18:56	12/18/14 14:09	7439-92-1	
Zinc	**1960**	mg/kg	483	2000	12/17/14 18:56	12/18/14 14:09	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.8**	%	0.10	1		12/26/14 09:33		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60184533

Sample: 725 W MAIN DW-C **Lab ID: 60184533020** Collected: 12/11/14 18:05 Received: 12/13/14 08:10 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**11.3**	mg/kg	0.43	20	12/17/14 18:56	12/18/14 13:58	7440-38-2	
Cadmium	**4.6**	mg/kg	0.068	20	12/17/14 18:56	12/18/14 13:58	7440-43-9	
Lead	**400**	mg/kg	8.5	2000	12/17/14 18:56	12/18/14 14:12	7439-92-1	
Zinc	**1360**	mg/kg	426	2000	12/17/14 18:56	12/18/14 14:12	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**13.0**	%	0.10	1		12/26/14 10:39		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: NATIONAL ZINC
Pace Project No.: 60184533

QC Batch: MPRP/51311 — Analysis Method: EPA 6020
QC Batch Method: EPA 3050 — Analysis Description: 6020 MET
Associated Lab Samples: 60184533001, 60184533002, 60184533003, 60184533004, 60184533005, 60184533006, 60184533007, 60184533008, 60184533009, 60184533010, 60184533011, 60184533012, 60184533013, 60184533014, 60184533015, 60184533016, 60184533017, 60184533018, 60184533019, 60184533020

METHOD BLANK: 1866852 — Matrix: Solid
Associated Lab Samples: 60184533001, 60184533002, 60184533003, 60184533004, 60184533005, 60184533006, 60184533007, 60184533008, 60184533009, 60184533010, 60184533011, 60184533012, 60184533013, 60184533014, 60184533015, 60184533016, 60184533017, 60184533018, 60184533019, 60184533020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.48	12/18/14 11:19	
Cadmium	mg/kg	ND	0.076	12/18/14 11:19	
Lead	mg/kg	ND	0.095	12/18/14 11:19	
Zinc	mg/kg	ND	4.8	12/18/14 11:19	

LABORATORY CONTROL SAMPLE: 1866853

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	20	17.5	88	80-120	
Cadmium	mg/kg	20	18.3	92	80-120	
Lead	mg/kg	20	18.1	90	80-120	
Zinc	mg/kg	20	18.2	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1866854 1866855

Parameter	Units	60184533001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	7.6	28.1	28.7	32.6	37.5	89	104	75-125	14	20	
Cadmium	mg/kg	0.82	28.1	28.7	27.3	31.1	94	106	75-125	13	20	
Lead	mg/kg	49.5	28.1	28.7	75.2	93.3	91	152	75-125	22	20	M6,R1
Zinc	mg/kg	225	28.1	28.7	318	332	332	373	75-125	4	20	M6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: NATIONAL ZINC
Pace Project No.: 60184533

QC Batch: MPRP/51528 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60184533001, 60184533002, 60184533003, 60184533004, 60184533005, 60184533006, 60184533007, 60184533008, 60184533009, 60184533010, 60184533011, 60184533012, 60184533013, 60184533014, 60184533015, 60184533016, 60184533017, 60184533018, 60184533019

SAMPLE DUPLICATE: 1874014

Parameter	Units	60184533001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	34.9	35.9	3	30	

SAMPLE DUPLICATE: 1874015

Parameter	Units	10292780004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	8.8	8.9	1	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: NATIONAL ZINC
Pace Project No.: 60184533

QC Batch: MPRP/51529
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60184533020

SAMPLE DUPLICATE: 1874050

Parameter	Units	10291025001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	25.5	24.0	6	30	

SAMPLE DUPLICATE: 1874051

Parameter	Units	10291921009 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.5	11.8	12	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: NATIONAL ZINC
Pace Project No.: 60184533

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
R1	RPD value was outside control limits.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NATIONAL ZINC
Pace Project No.: 60184533

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60184533001	**600 E MAIN G-2-C**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533002	**000 E 1ST PARK 2-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533003	**334 W FRONT 6-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533004	**416 N MAPLE 2-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533005	**519 N NEOSHO DW-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533006	**714 E 7TH DT-A BO**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533007	**219 W 1ST 1-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533008	**902 W MAIN 2-B**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533009	**600 W MAIN G-3-C**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533010	**620 W 3RD 4-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533011	**516 W 3RD 3-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533012	**W 3RD-N SCHOOL-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533013	**326 W 4TH 3-B**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533014	**603 E 4TH 2-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533015	**PARK WEST DITCH B**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533016	**PARK WEST G-3-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533017	**117 N NEOSHO 3-C**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533018	**305 W 3RD 2-B**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533019	**431 W INDY 2-A**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533020	**725 W MAIN DW-C**	EPA 3050	MPRP/51311	EPA 6020	ICPM/22806
60184533001	**600 E MAIN G-2-C**	ASTM D2974	MPRP/51528		
60184533002	**000 E 1ST PARK 2-A**	ASTM D2974	MPRP/51528		
60184533003	**334 W FRONT 6-A**	ASTM D2974	MPRP/51528		
60184533004	**416 N MAPLE 2-A**	ASTM D2974	MPRP/51528		
60184533005	**519 N NEOSHO DW-A**	ASTM D2974	MPRP/51528		
60184533006	**714 E 7TH DT-A BO**	ASTM D2974	MPRP/51528		
60184533007	**219 W 1ST 1-A**	ASTM D2974	MPRP/51528		
60184533008	**902 W MAIN 2-B**	ASTM D2974	MPRP/51528		
60184533009	**600 W MAIN G-3-C**	ASTM D2974	MPRP/51528		
60184533010	**620 W 3RD 4-A**	ASTM D2974	MPRP/51528		
60184533011	**516 W 3RD 3-A**	ASTM D2974	MPRP/51528		
60184533012	**W 3RD-N SCHOOL-A**	ASTM D2974	MPRP/51528		
60184533013	**326 W 4TH 3-B**	ASTM D2974	MPRP/51528		
60184533014	**603 E 4TH 2-A**	ASTM D2974	MPRP/51528		
60184533015	**PARK WEST DITCH B**	ASTM D2974	MPRP/51528		
60184533016	**PARK WEST G-3-A**	ASTM D2974	MPRP/51528		
60184533017	**117 N NEOSHO 3-C**	ASTM D2974	MPRP/51528		
60184533018	**305 W 3RD 2-B**	ASTM D2974	MPRP/51528		
60184533019	**431 W INDY 2-A**	ASTM D2974	MPRP/51528		
60184533020	**725 W MAIN DW-C**	ASTM D2974	MPRP/51529		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60184533
60184533

Client Name: Project Navigator

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☑ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 8540 7504 5429 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T-239 / T-194 **Type of Ice:** Wet Blue None (circle one) ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 8.1

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 12/3/14

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☑No ☐N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: SL		13.
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☐Yes ☑No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☑No ☐N/A	
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☑No ☐N/A	17. List State: KS

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

12/15/14

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Project Navigator, LTD.
Address:	10497 Town & Country Way, Ste 830
	Houston, TX 77024
Email To:	pjen@projectnavigator.com
Phone: 832-215-5589	Fax: 713-468-4515
Requested Due Date/TAT:	Standard TAT

Section B Required Project Information:

Report To:	Philip Jen
Copy To:	
Purchase Order No.:	
Project Name:	National Zinc
Project Number:	

Section C Invoice Information:

Attention:	Same as Client
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 6020 Metals: Lead, Cd, Zn, As	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. (60184533)
1	600 E Main G-2-C	SL	C			12/11/14	16:30		1	X								X		WEFU 01
2	000 E 1st Park 2-A						16:35		1	X								X		02
3	334 W Front 6-A						16:40		1	X								X		03
4	416 N Maple 2-A						16:45		1	X								X		04
5	519 N Neosho DW-A						16:50		1	X								X		05
6	714 E 7th DT-A BO						16:55		1	X								X		06
7	219 W 1st 1-A						17:00		1	X								X		07
8	902 W Main 2-B						17:05		1	X								X		08
9	600 W Main G-3-C						17:10		1	X								X		09
10	620 W 3rd 4-A						17:15		1	X								X		010
11	516 W 3rd 3-A						17:20		1	X								X		011
12	W 3rd - N School - A						17:25		1	X								X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS		
	[signature] PNL	12/12/14	8:00	[signature] PAS1	12/13/14	0810	8.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Philip Jen

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12/11/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Project Navigator, LTD.
Address:	10497 Town & Country Way, Ste 830
	Houston, TX 77024
Email To:	pjen@projectnavigator.com
Phone: 832-215-5589	Fax: 713-466-4515
Requested Due Date/TAT:	Standard TAT

Section B Required Project Information:

Report To:	Philip Jen
Copy To:	
Purchase Order No.:	
Project Name:	National Zinc
Project Number:	

Section C Invoice Information:

Attention:	Same as Client
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: N	6020 Metals: Lead, Cd, As, Zn	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	326 W 4th 3-B	SL	C			12/11/14	17:30		1	X									X		WGFU 013
2	603 E 4th 2-A						17:35		1	X									X		014
3	Park West Ditch B						17:40		1	X									X		015
4	Park West G-3-A						17:45		1	X									X		016
5	117 N Neosho 3-C						17:50		1	X									X		017
6	305 W 3rd 2-B						17:55		1	X									X		018
7	431 W INDY 2-A						18:00		1	X									X		019
8	725 W Main DW-C						18:05		1	X									X		020
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	PNL	12/12/14	8:00	PASI	12/13/14	0810	8.1	Y	Y	Y

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Philip Jen

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12/11/14

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

February 11, 2015

Mark Landress
Project Navigator, Ltd.
10497 Town and Country Way
Suite 830
Houston, TX 77024

RE: Project: NATIONAL ZINC
Pace Project No.: 60187259

Dear Mark Landress:
Enclosed are the analytical results for sample(s) received by the laboratory on January 31, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jamie Church
jamie.church@pacelabs.com
Project Manager

Enclosures

cc: Philip Jen, Project Navigator, Ltd.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: NATIONAL ZINC
Pace Project No.: 60187259

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60187259001	**529 W 1ST G-3-A**	Solid	01/29/15 16:45	01/31/15 08:20
60187259002	**500 W 1ST 1-A**	Solid	01/29/15 16:50	01/31/15 08:20
60187259003	**516 W 3RD G-2-B**	Solid	01/29/15 16:55	01/31/15 08:20
60187259004	**529 W 1ST 2-A**	Solid	01/29/15 17:00	01/31/15 08:20
60187259005	**117 N NEOSHO 1-B**	Solid	01/29/15 17:05	01/31/15 08:20
60187259006	**516 W 3RD G-1-A**	Solid	01/29/15 17:10	01/31/15 08:20
60187259007	**FOOTBALL FIELD 3-B**	Solid	01/29/15 17:15	01/31/15 08:20
60187259008	**724 E 10TH G-1-B**	Solid	01/29/15 17:20	01/31/15 08:20
60187259009	**500 W 1ST DW-A**	Solid	01/29/15 17:25	01/31/15 08:20
60187259010	**2ND-CATHERINE G-1-B**	Solid	01/29/15 17:30	01/31/15 08:20
60187259011	**316 N MONTGOMERY G-2-A**	Solid	01/29/15 17:35	01/31/15 08:20
60187259012	**625 W INDEPENDENCE DW-G-1-C**	Solid	01/29/15 17:40	01/31/15 08:20
60187259013	**620 N LABETTE GA-2-A**	Solid	01/29/15 17:45	01/31/15 08:20
60187259014	**312 W 4TH G-2-A**	Solid	01/29/15 17:50	01/31/15 08:20
60187259015	**334 W FRONT 2-A**	Solid	01/29/15 17:55	01/31/15 08:20
60187259016	**117 N NEOSHO 1-B DUP**	Solid	01/29/15 18:00	01/31/15 08:20
60187259017	**316 N MONTGOMERY G-2-A DUP**	Solid	01/29/15 18:05	01/31/15 08:20

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: NATIONAL ZINC
Pace Project No.: 60187259

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60187259001	**529 W 1ST G-3-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259002	**500 W 1ST 1-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259003	**516 W 3RD G-2-B**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259004	**529 W 1ST 2-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259005	**117 N NEOSHO 1-B**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259006	**516 W 3RD G-1-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259007	**FOOTBALL FIELD 3-B**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259008	**724 E 10TH G-1-B**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259009	**500 W 1ST DW-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259010	**2ND-CATHERINE G-1-B**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259011	**316 N MONTGOMERY G-2-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259012	**625 W INDEPENDENCE DW-G-1-C**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259013	**620 N LABETTE GA-2-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259014	**312 W 4TH G-2-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259015	**334 W FRONT 2-A**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259016	**117 N NEOSHO 1-B DUP**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M
60187259017	**316 N MONTGOMERY G-2-A DUP**	EPA 6020	RJS	4	PASI-M
		ASTM D2974	JDL	1	PASI-M

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 529 W 1ST G-3-A **Lab ID: 60187259001** Collected: 01/29/15 16:45 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**58.6**	mg/kg	0.62	20	02/08/15 12:34	02/09/15 19:13	7440-38-2	
Cadmium	**25.5**	mg/kg	0.099	20	02/08/15 12:34	02/09/15 19:13	7440-43-9	
Lead	**1190**	mg/kg	1.2	200	02/08/15 12:34	02/10/15 14:20	7439-92-1	
Zinc	**6840**	mg/kg	618	2000	02/08/15 12:34	02/10/15 14:25	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**25.1**	%	0.10	1		02/05/15 10:03		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 500 W 1ST 1-A **Lab ID: 60187259002** Collected: 01/29/15 16:50 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**33.0**	mg/kg	0.56	20	02/08/15 12:34	02/09/15 19:17	7440-38-2	
Cadmium	**14.6**	mg/kg	0.089	20	02/08/15 12:34	02/09/15 19:17	7440-43-9	
Lead	**485**	mg/kg	1.1	200	02/08/15 12:34	02/10/15 14:45	7439-92-1	
Zinc	**2210**	mg/kg	55.8	200	02/08/15 12:34	02/10/15 14:45	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**20.0**	%	0.10	1		02/05/15 12:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 516 W 3RD G-2-B **Lab ID: 60187259003** Collected: 01/29/15 16:55 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**22.4**	mg/kg	0.52	20	02/08/15 12:34	02/09/15 19:22	7440-38-2	
Cadmium	**15.5**	mg/kg	0.084	20	02/08/15 12:34	02/09/15 19:22	7440-43-9	
Lead	**867**	mg/kg	1.0	200	02/08/15 12:34	02/10/15 14:50	7439-92-1	
Zinc	**3540**	mg/kg	52.5	200	02/08/15 12:34	02/10/15 14:50	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.5**	%	0.10	1		02/05/15 12:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 529 W 1ST 2-A **Lab ID: 60187259004** Collected: 01/29/15 17:00 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**13.9**	mg/kg	0.59	20	02/08/15 12:34	02/09/15 19:27	7440-38-2	R1
Cadmium	**13.7**	mg/kg	0.095	20	02/08/15 12:34	02/09/15 19:27	7440-43-9	R1
Lead	**793**	mg/kg	1.2	200	02/08/15 12:34	02/10/15 14:54	7439-92-1	M6,R1
Zinc	**2290**	mg/kg	59.2	200	02/08/15 12:34	02/10/15 14:54	7440-66-6	M6,R1
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**17.2**	%	0.10	1		02/05/15 12:40		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 117 N NEOSHO 1-B **Lab ID: 60187259005** Collected: 01/29/15 17:05 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**24.6**	mg/kg	0.37	20	02/08/15 12:34	02/09/15 20:06	7440-38-2	
Cadmium	**4.8**	mg/kg	0.060	20	02/08/15 12:34	02/09/15 20:06	7440-43-9	
Lead	**589**	mg/kg	0.75	200	02/08/15 12:34	02/10/15 15:09	7439-92-1	
Zinc	**1260**	mg/kg	37.4	200	02/08/15 12:34	02/10/15 15:09	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.9**	%	0.10	1		02/05/15 12:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 516 W 3RD G-1-A **Lab ID: 60187259006** Collected: 01/29/15 17:10 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**23.5**	mg/kg	0.56	20	02/08/15 12:34	02/09/15 20:11	7440-38-2	
Cadmium	**16.1**	mg/kg	0.090	20	02/08/15 12:34	02/09/15 20:11	7440-43-9	
Lead	**487**	mg/kg	0.11	20	02/08/15 12:34	02/09/15 20:11	7439-92-1	
Zinc	**3520**	mg/kg	56.4	200	02/08/15 12:34	02/10/15 15:14	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.7**	%	0.10	1		02/05/15 12:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: FOOTBALL FIELD 3-B **Lab ID: 60187259007** Collected: 01/29/15 17:15 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**34.8**	mg/kg	0.58	20	02/08/15 12:34	02/09/15 20:16	7440-38-2	
Cadmium	**66.7**	mg/kg	0.093	20	02/08/15 12:34	02/09/15 20:16	7440-43-9	
Lead	**844**	mg/kg	1.2	200	02/08/15 12:34	02/11/15 07:53	7439-92-1	
Zinc	**18500**	mg/kg	578	2000	02/08/15 12:34	02/11/15 07:58	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.2**	%	0.10	1		02/05/15 12:41		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 724 E 10TH G-1-B **Lab ID: 60187259008** Collected: 01/29/15 17:20 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**27.6**	mg/kg	0.50	20	02/08/15 12:34	02/09/15 20:21	7440-38-2	
Cadmium	**4.4**	mg/kg	0.080	20	02/08/15 12:34	02/09/15 20:21	7440-43-9	
Lead	**332**	mg/kg	0.10	20	02/08/15 12:34	02/09/15 20:21	7439-92-1	
Zinc	**4430**	mg/kg	50.3	200	02/08/15 12:34	02/10/15 15:18	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**7.0**	%	0.10	1		02/05/15 12:42		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 500 W 1ST DW-A **Lab ID: 60187259009** Collected: 01/29/15 17:25 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**31.8**	mg/kg	0.50	20	02/08/15 12:34	02/09/15 20:30	7440-38-2	M6,R1
Cadmium	**8.4**	mg/kg	0.080	20	02/08/15 12:34	02/09/15 20:30	7440-43-9	R1
Lead	**756**	mg/kg	1.0	200	02/08/15 12:34	02/11/15 08:03	7439-92-1	M6
Zinc	**2570**	mg/kg	49.8	200	02/08/15 12:34	02/11/15 08:03	7440-66-6	M6,R1
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**9.5**	%	0.10	1		02/05/15 12:42		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 2ND-CATHERINE G-1-B **Lab ID: 60187259010** Collected: 01/29/15 17:30 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**62.9**	mg/kg	0.50	20	02/08/15 12:34	02/09/15 20:26	7440-38-2	
Cadmium	**10.5**	mg/kg	0.080	20	02/08/15 12:34	02/09/15 20:26	7440-43-9	
Lead	**401**	mg/kg	0.10	20	02/08/15 12:34	02/09/15 20:26	7439-92-1	
Zinc	**1630**	mg/kg	49.9	200	02/08/15 12:34	02/10/15 16:02	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**18.6**	%	0.10	1		02/05/15 12:42		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 316 N MONTGOMERY G-2-A **Lab ID: 60187259011** Collected: 01/29/15 17:35 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**34.2**	mg/kg	0.50	20	02/08/15 12:34	02/09/15 21:10	7440-38-2	
Cadmium	**4.6**	mg/kg	0.080	20	02/08/15 12:34	02/09/15 21:10	7440-43-9	
Lead	**298**	mg/kg	0.10	20	02/08/15 12:34	02/09/15 21:10	7439-92-1	
Zinc	**2310**	mg/kg	50.2	200	02/08/15 12:34	02/11/15 08:17	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**12.6**	%	0.10	1		02/05/15 12:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 625 W INDEPENDENCE DW-G-1-C **Lab ID: 60187259012** Collected: 01/29/15 17:40 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**11.2**	mg/kg	0.55	20	02/08/15 12:34	02/09/15 21:15	7440-38-2	
Cadmium	**8.0**	mg/kg	0.088	20	02/08/15 12:34	02/09/15 21:15	7440-43-9	
Lead	**410**	mg/kg	0.11	20	02/08/15 12:34	02/09/15 21:15	7439-92-1	
Zinc	**1270**	mg/kg	55.0	200	02/08/15 12:34	02/10/15 16:11	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**10.9**	%	0.10	1		02/05/15 12:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 620 N LABETTE GA-2-A **Lab ID: 60187259013** Collected: 01/29/15 17:45 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**17.0**	mg/kg	0.53	20	02/08/15 12:34	02/09/15 21:20	7440-38-2	
Cadmium	**11.0**	mg/kg	0.085	20	02/08/15 12:34	02/09/15 21:20	7440-43-9	
Lead	**328**	mg/kg	0.11	20	02/08/15 12:34	02/09/15 21:20	7439-92-1	
Zinc	**3010**	mg/kg	53.2	200	02/08/15 12:34	02/10/15 16:16	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**21.7**	%	0.10	1		02/05/15 12:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 312 W 4TH G-2-A **Lab ID: 60187259014** Collected: 01/29/15 17:50 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**13.2**	mg/kg	0.47	20	02/08/15 12:34	02/09/15 21:25	7440-38-2	
Cadmium	**8.9**	mg/kg	0.075	20	02/08/15 12:34	02/09/15 21:25	7440-43-9	
Lead	**349**	mg/kg	0.093	20	02/08/15 12:34	02/09/15 21:25	7439-92-1	
Zinc	**1490**	mg/kg	46.6	200	02/08/15 12:34	02/10/15 16:21	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**16.2**	%	0.10	1		02/05/15 12:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 334 W FRONT 2-A **Lab ID: 60187259015** Collected: 01/29/15 17:55 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**19.3**	mg/kg	0.57	20	02/08/15 12:34	02/09/15 21:29	7440-38-2	
Cadmium	**8.7**	mg/kg	0.091	20	02/08/15 12:34	02/09/15 21:29	7440-43-9	
Lead	**278**	mg/kg	0.11	20	02/08/15 12:34	02/09/15 21:29	7439-92-1	
Zinc	**1570**	mg/kg	56.9	200	02/08/15 12:34	02/11/15 08:22	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**15.5**	%	0.10	1		02/05/15 12:43		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 117 N NEOSHO 1-B DUP **Lab ID: 60187259016** Collected: 01/29/15 18:00 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**19.8**	mg/kg	0.52	20	02/08/15 12:34	02/09/15 21:34	7440-38-2	
Cadmium	**3.3**	mg/kg	0.084	20	02/08/15 12:34	02/09/15 21:34	7440-43-9	
Lead	**423**	mg/kg	0.10	20	02/08/15 12:34	02/09/15 21:34	7439-92-1	
Zinc	**1280**	mg/kg	52.5	200	02/08/15 12:34	02/11/15 08:27	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**11.0**	%	0.10	1		02/05/15 12:44		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: NATIONAL ZINC
Pace Project No.: 60187259

Sample: 316 N MONTGOMERY G-2-A DUP **Lab ID: 60187259017** Collected: 01/29/15 18:05 Received: 01/31/15 08:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050							
Arsenic	**14.6**	mg/kg	0.40	20	02/08/15 12:34	02/09/15 21:39	7440-38-2	
Cadmium	**2.1**	mg/kg	0.064	20	02/08/15 12:34	02/09/15 21:39	7440-43-9	
Lead	**129**	mg/kg	0.080	20	02/08/15 12:34	02/09/15 21:39	7439-92-1	
Zinc	**864**	mg/kg	20.1	100	02/08/15 12:34	02/09/15 21:44	7440-66-6	
Dry Weight	Analytical Method: ASTM D2974							
Percent Moisture	**12.4**	%	0.10	1		02/05/15 12:44		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: NATIONAL ZINC
Pace Project No.: 60187259

QC Batch: MPRP/52213 — Analysis Method: EPA 6020
QC Batch Method: EPA 3050 — Analysis Description: 6020 MET
Associated Lab Samples: 60187259001, 60187259002, 60187259003, 60187259004, 60187259005, 60187259006, 60187259007, 60187259008, 60187259009, 60187259010, 60187259011, 60187259012, 60187259013, 60187259014, 60187259015, 60187259016, 60187259017

METHOD BLANK: 1893844 — Matrix: Solid
Associated Lab Samples: 60187259001, 60187259002, 60187259003, 60187259004, 60187259005, 60187259006, 60187259007, 60187259008, 60187259009, 60187259010, 60187259011, 60187259012, 60187259013, 60187259014, 60187259015, 60187259016, 60187259017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.46	02/09/15 19:03	
Cadmium	mg/kg	ND	0.073	02/09/15 19:03	
Lead	mg/kg	ND	0.092	02/09/15 19:03	
Zinc	mg/kg	ND	4.6	02/09/15 19:03	

LABORATORY CONTROL SAMPLE: 1893845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	16.9	16.0	95	80-120	
Cadmium	mg/kg	16.9	17.0	100	80-120	
Lead	mg/kg	16.9	17.3	102	80-120	
Zinc	mg/kg	16.9	16.6	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1893846 1893847

Parameter	Units	60187259004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	13.9	24.2	21.7	41.5	31.6	115	81	75-125	27	20	R1
Cadmium	mg/kg	13.7	24.2	21.7	40.8	31.5	113	82	75-125	26	20	R1
Lead	mg/kg	793	24.2	21.7	637	474	-644	-1470	75-125	29	20	M6,R1
Zinc	mg/kg	2290	24.2	21.7	2180	1720	-467	-2650	75-125	24	20	E,M6, R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1893848 1893849

Parameter	Units	60187259009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	31.8	20.4	16.9	48.3	38.8	81	42	75-125	22	20	M6,R1
Cadmium	mg/kg	8.4	20.4	16.9	32.5	25.7	118	102	75-125	24	20	R1
Lead	mg/kg	756	20.4	16.9	781	705	118	-308	75-125	10	20	M6
Zinc	mg/kg	2570	20.4	16.9	3590	2340	4970	-1360	75-125	42	20	E,M6, R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: NATIONAL ZINC
Pace Project No.: 60187259

QC Batch: MPRP/52246
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60187259001

SAMPLE DUPLICATE: 1894699

Parameter	Units	10295839001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	1.9	1.9	3	30	

SAMPLE DUPLICATE: 1894726

Parameter	Units	60187259001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	25.1	25.3	1	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: NATIONAL ZINC
Pace Project No.: 60187259

QC Batch: MPRP/52250 | Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60187259002, 60187259003, 60187259004, 60187259005, 60187259006, 60187259007, 60187259008, 60187259009, 60187259010, 60187259011, 60187259012, 60187259013, 60187259014, 60187259015, 60187259016, 60187259017

SAMPLE DUPLICATE: 1894814

Parameter	Units	60187259004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.2	17.4	1	30	

SAMPLE DUPLICATE: 1894815

Parameter	Units	60187259009 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	9.5	9.6	1	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: NATIONAL ZINC
Pace Project No.: 60187259

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
R1	RPD value was outside control limits.

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NATIONAL ZINC
Pace Project No.: 60187259

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60187259001	**529 W 1ST G-3-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259002	**500 W 1ST 1-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259003	**516 W 3RD G-2-B**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259004	**529 W 1ST 2-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259005	**117 N NEOSHO 1-B**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259006	**516 W 3RD G-1-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259007	**FOOTBALL FIELD 3-B**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259008	**724 E 10TH G-1-B**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259009	**500 W 1ST DW-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259010	**2ND-CATHERINE G-1-B**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259011	**316 N MONTGOMERY G-2-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259012	**625 W INDEPENDENCE DW-G-1-C**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259013	**620 N LABETTE GA-2-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259014	**312 W 4TH G-2-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259015	**334 W FRONT 2-A**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259016	**117 N NEOSHO 1-B DUP**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259017	**316 N MONTGOMERY G-2-A DUP**	EPA 3050	MPRP/52213	EPA 6020	ICPM/23177
60187259001	**529 W 1ST G-3-A**	ASTM D2974	MPRP/52246		
60187259002	**500 W 1ST 1-A**	ASTM D2974	MPRP/52250		
60187259003	**516 W 3RD G-2-B**	ASTM D2974	MPRP/52250		
60187259004	**529 W 1ST 2-A**	ASTM D2974	MPRP/52250		
60187259005	**117 N NEOSHO 1-B**	ASTM D2974	MPRP/52250		
60187259006	**516 W 3RD G-1-A**	ASTM D2974	MPRP/52250		
60187259007	**FOOTBALL FIELD 3-B**	ASTM D2974	MPRP/52250		
60187259008	**724 E 10TH G-1-B**	ASTM D2974	MPRP/52250		
60187259009	**500 W 1ST DW-A**	ASTM D2974	MPRP/52250		
60187259010	**2ND-CATHERINE G-1-B**	ASTM D2974	MPRP/52250		
60187259011	**316 N MONTGOMERY G-2-A**	ASTM D2974	MPRP/52250		
60187259012	**625 W INDEPENDENCE DW-G-1-C**	ASTM D2974	MPRP/52250		
60187259013	**620 N LABETTE GA-2-A**	ASTM D2974	MPRP/52250		
60187259014	**312 W 4TH G-2-A**	ASTM D2974	MPRP/52250		
60187259015	**334 W FRONT 2-A**	ASTM D2974	MPRP/52250		
60187259016	**117 N NEOSHO 1-B DUP**	ASTM D2974	MPRP/52250		
60187259017	**316 N MONTGOMERY G-2-A DUP**	ASTM D2974	MPRP/52250		

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60187259

60187259

Client Name: Project Navigator

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 8540 7504 5418 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ ZIPLOC

Thermometer Used: T-239 / T-194 **Type of Ice:** Wet / Blue / None (circle one) ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 2.3

Temperature should be above freezing to 6°C

Date and initials of person examining contents: JB 1/31

Chain of Custody present:	☒Yes	☐No	☐N/A	1.
Chain of Custody filled out:	☒Yes	☐No	☐N/A	2.
Chain of Custody relinquished:	☒Yes	☐No	☐N/A	3.
Sampler name & signature on COC:	☒Yes	☐No	☐N/A	4.
Samples arrived within holding time:	☒Yes	☐No	☐N/A	5.
Short Hold Time analyses (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time requested:	☐Yes	☒No	☐N/A	7.
Sufficient volume:	☒Yes	☐No	☐N/A	8.
Correct containers used:	☒Yes	☐No	☐N/A	
Pace containers used:	☒Yes	☐No	☐N/A	9.
Containers intact:	☒Yes	☐No	☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes	☐No	☒N/A	11.
Filtered volume received for dissolved tests?	☐Yes	☐No	☒N/A	12.
Sample labels match COC:	☒Yes	☐No	☐N/A	
Includes date/time/ID/analyses Matrix: SL				13.
All containers needing preservation have been checked.	☐Yes	☐No	☒N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☐Yes	☒No		Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes	☐No	☒N/A	
Pace Trip Blank lot # (if purchased):				15.
Headspace in VOA vials (>6mm):	☐Yes	☐No	☒N/A	16.
Project sampled in USDA Regulated Area:	☐Yes	☒No	☐N/A	17. List State: KS

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jami Church Date: 2/2/15

F-KS-C-003-Rev.7, 04December2012

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

Section A Required Client Information:

Company:	Project Navigator, LTD.
Address:	10497 Town & Country Way, Ste 830
	Houston, TX 77024
Email To:	pjen@projectnavigator.com
Phone: 832-215-5589	Fax: 713-466-4545
Requested Due Date/TAT:	Standard TAT

Section B Required Project Information:

Report To:	Philip Jen
Copy To:	
Purchase Order No.:	
Project Name:	National Zinc
Project Number:	

Section C Invoice Information:

Attention:	Same as Client
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 6020 Metals (Pb, Zn, As, Cd)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60187259
1	529 W 1st G-3-A	SL	C			1/29/15	1645		1	X								X		BPBN 001
2	500 W 1st 1-A						1650		1	X								X		002
3	516 W 3rd G-2-B						1655		1	X								X		003
4	529 W 1st 2-A						1700		1	X								X		004
5	117 N Neosho 1-B						1705		1	X								X		005
6	516 W 3rd G-1-A						1710		1	X								X		006
7	Football Field 3-B						1715		1	X								X		007
8	724 E 10th G-1-B						1720		1	X								X		008
9	500 W 1st DW-A						1725		1	X								X		009
10	2nd-Catherine G-1-B						1730		1	X								X		010
11	316 N Montgomery G-2-A						1735		1	X								X		011
12	625 W Independence DW-G-1-C						1740		1	X								X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
MS/MSD for Sample: 529 W 1st 2-A	PNL	1/30/15	900		1/31	0820	2.3	Y	Y	Y
MS/MSD for Sample: 500 W 1st DW-A										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Philip Jen

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 1/29/15

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	Project Navigator, LTD.
Address:	10497 Town & Country Way, Ste 830
	Houston, TX 77024
Email To:	pjen@projectnavigator.com
Phone: 832-215-5589	Fax: 713 468 4515
Requested Due Date/TAT:	Standard TAT

Section B Required Project Information:

Report To:	Philip Jen
Copy To:	
Purchase Order No.:	
Project Name:	National Zinc
Project Number:	

Section C Invoice Information:

Attention:	Same as Client
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): Y/N N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: 6020 Metals (Pb, Zn, Hg, Cd)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60187259
1	620 N Labette GA-2-A	SL	C			1/29/15	1745		1	X								X		BP84 013
2	312 W 4th G-2-A	↓	↓			↓	1750		1	X								X		014
3	334 W Front 2-A	↓	↓			↓	1755		1	X								X		015
4	117 N Neosho 1-B DUP	↓	↓			↓	1800		1	X								X		016
5	316 N Montgomery G-2-A DUP	↓	↓			↓	1805		1	X								X		017
6																				
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[signature] PNL	1/30/15	9:00	[signature] Pace	1/31	0820	2.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Philip Jen

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 1/29/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007