Seagull Environmental Technologies, Inc.

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June 5, 2012

Mr. Roy Crossland
Mini-START Project Officer
U.S. Environmental Protection Agency, Region 7
901 North 5th Street
Kansas City, Kansas 66101

Subject: **Quality Assurance Project Plan for a Targeted Brownfields Assessment**
Kuhlman Diecasting Site, Stanley, Kansas
EPA Region 7, Mini-START, Contract No. EP-S7-09-01, Task Order No. 0035
Task Monitor: Todd Davis, EPA Project Manager

Dear Mr. Crossland:

Seagull Environmental Technologies, Inc., is submitting the attached Quality Assurance Project Plan for a Phase II Targeted Brownfields Assessment (TBA) for the Kuhlman Diecasting site in Stanley, Kansas. If you have any questions or comments, please contact the project manager at (913) 220-5887.

Sincerely,

Jeff Pritchard, CHMM
Mini-START Project Manager

Hieu Q. Vu, PE
Mini-START Program Manager

Enclosures

QUALITY ASSURANCE PROJECT PLAN
FOR A PHASE II TARGETED BROWNFIELDS ASSESSMENT

KUHLMAN DIECASTING SITE, STANLEY, KANSAS

Mini-Superfund Technical Assessment and Response Team (Mini-START)

Contract No. EP-S7-09-01, Task Order No. 0035

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
901 N. 5th Street
Kansas City, Kansas 66101

June 5, 2012

Prepared By:

Seagull Environmental Technologies, Inc.
121 NE 72nd Street
Gladstone, Missouri 64118

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Region 7 Superfund Program
Addendum to the Generic QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (July 2007)
for the Kuhlman Diecasting Site

Project Information:

Project Name: Kuhlman Diecasting Site			**City:** Stanley	**State:** KS
EPA Project Manager: Todd Davis			**Project Manager:** Jeff Pritchard	
Approved By:			**Prepared For:** EPA Region 7 Superfund Division	
Title:	Mini-START Project Manager	Date:		
Approved By:				
Title:	Mini-START Program Manager	Date:		
Approved By:			**Prepared By:** Jeff Pritchard	
Title:	Mini-START QA Manager	Date:	**Date:** June 5, 2012	
Approved By:				
Title:	EPA Project Manager	Date:		
Approved By:			**Project Number:** EPS70901.0035	
Title:	EPA Region 7 QA Manager	Date:		

1.0 Project Management:

1.1 Distribution List

EPA—Region 7: Todd Davis, Project Manager
Diane Harris, QA Manager

Mini-START: Jeff Pritchard, Project Manager

1.2 Project/Task Organization

Todd Davis, of the EPA Region 7 Superfund Division, will serve as the EPA project manager for the activities described in this QAPP. Jeff Pritchard, with Seagull Environmental Technologies, Inc., will serve as the Mini-START project manager for field activities.

1.3 Problem Definition/Background:

Description: This site-specific Quality Assurance Project Plan form is prepared as an addendum to the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007), and contains site-specific data quality objectives for the sampling activities described herein.

☒ Description attached.
☐ Description in referenced report: _____ (Title) _____ (Date)

1.4 Project/Task Description:

☐ CERCLA PA ☐ CERCLA SI ☒ Brownfields Assessment ☐ Removal Action
☐ Other (description attached): ☐ Pre-CERCLIS Screening ☐ Removal Site Evaluation

Other Description:

Schedule: Field work is scheduled to begin in June 2012 and is anticipated to take 5 to 6 days to complete.

☐ Description in referenced report: _____ (Title) _____ (Date)

1.5 Quality Objectives and Criteria for Measurement Data:

a. Accuracy:	☒ Identified in attached table.
b. Precision:	☒ Identified in attached table.
c. Representativeness:	☒ Identified in attached table.
d. Completeness*:	☒ Identified in attached table.
e. Comparability:	☒ Identified in attached table.

Other Description:

*A completeness goal of 100 percent has been established for this project. However, if the completeness goal is not met, EPA may still be able to make decisions based on any or all of the remaining validated data. No "critical samples" have been identified for this project.

1.6 Specific Training/Certification Requirements:

☒ OSHA 1910 ☒ Special Equipment/Instrument Operator (describe below): ☐ Other (describe below):

Sampling personnel will be experienced in Geoprobe® operation and in the collection of soil and groundwater samples. Geoprobe® operation will be conducted under the supervision of a licensed Kansas Well Driller. Soil screening will be conducted by operators experienced with x-ray fluorescence (XRF) analyzers.

1.7 Documentation and Records:

☒ Field Sheets ☒ Daily Log ☐ Trip Report ☒ Area Maps ☐ Video
☒ Chain of Custody ☒ Health and Safety Plan ☒ Letter Report ☒ Photos

☒ Sample documentation will follow EPA Region 7 SOP 2420.05.
☒ Other: Analytical information will be handled according to procedures identified in Table 2.

2.0 Measurement and Data Acquisition:

2.1 Sampling Process Design:

☐ Random Sampling ☒ Transect Sampling ☒ Biased/Judgmental Sampling ☐ Stratified Random Sampling
☐ Search Sampling ☐ Systematic Grid ☐ Systematic Random Sampling ☒ Definitive Sampling
☐ Screening w/o Definitive Confirmation ☒ Screening w/ Definitive Confirmation
☒ Sample Map Attached

☒ Other (Provide rationale behind each sample): See Appendix A for additional sampling information.

The proposed sampling scheme will incoporate judgmental and transect sampling techniques with definitive laboratory analysis for soil, groundwater, surface water, and sediment, in accordance with the *Guidance for Performing Site Inspections Under CERCLA*, OSWER Directive #9345.1-05, September 1992, and *Removal Program Representative Sampling Guidance, Volume 1: Soil*, OSWER Directive 9360.4-10, November 1991. Judgmental sampling is the subjective (based) selection of sampling locations based on historical information, visual inspection, and the best professional judgment of the sampler(s). All subsurface soil samples will be field screened using an x-ray fluorescence spectrometer (XRF) for metals and a photoionization detector (PID) for volatile organic compounds (VOC). Samples will be submitted for laboratory analyses based on the field screening results. Additionally, all surface soil samples will be field screened for metals using an XRF. Approximately 50 percent (%) of screened samples will be submitted for laboratory analyses. See Appendices A and B for additional site-specific information and figures.

A summary of the anticipated maximum number of samples to be collected for laboratory analysis is provided in Table 1. The proposed number of samples represents a balance between cost and coverage, and a reasonable attempt to meet the study objectives while staying within the budget constraints of a typical Brownfields Assessment.

Sample Summary Location	Matrix	# of Samples*	Analysis
On-site Geoprobe® locations	Subsurface Soil	6	VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and Priority Pollutant Metals
On-site – southern portion of site near the main building and two former evaporation sanitary lagoons	Surface Soil	12	Chromium, copper, nickel, and zinc
On-site Geoprobe® temporary wells	Groundwater	4	VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and total and dissolved priority pollutant metals
On-site permanent monitoring wells	Groundwater	10	Total and dissolved chromium, copper, nickel, and zinc
Basement of main building	Water	3	Total chromium, copper, nickel, and zinc; total cyanide; and PCBs
Blue River	Surface Water	4	Total chromium, copper, nickel, and zinc
Process water basins, evaporation sanitary lagoons, and east pond	Surface Water	5	Total chromium, copper, nickel, and zinc; total cyanide; and PCBs
Blue River	Sediment	4	Chromium, copper, nickel, and zinc
Process water basins, evaporation sanitary lagoons, east pond, and basement of the main building	Sediment	10	Chromium, copper, nickel, and zinc; total cyanide; and PCBs

*NOTE: Number is approximate and may change depending on site conditions. QC samples are not included with these totals. See Table 1 for a complete sample summary.

2.2 Sample Methods Requirements:

Matrix	Sampling Method	SOP(s) or other Method(s)
Soil	Surface soil samples will be collected with disposable stainless steel spoons. Subsurface soil samples will be collected with a Geoprobe® direct-push apparatus, using Macro-Core samplers fitted with polyvinyl chloride (PVC) liners, and transferred to the appropriate sample containers.	SOPs 4230.07, 4231.2012 & 4231.1707; Method 5035
Groundwater/Water	For the permanent and temporary Geoprobe® wells and water samples collected from the basement, water will be collected with a peristaltic pump through polyethylene tubing. For the permanent monitoring wells, groundwater samples will be collected after the wells have been purged using low-flow techniques and field water quality parameters have stabilized. For the temporary Geoprobe® wells, sampling equipment will be comprised of a Screen Point 15 sampling apparatus containing disposable PVC screens.	SOPs 4230.07 & 4231.2007
Surface water	Surface water samples will be collected directly into appropriate containers from the Blue River, process water basins, a pond, and evaporation sanitary lagoons.	SOP 4232.2013

Sediment	Sediment samples will be collected from the Blue River, process water basins, a pond, evaporation sanitary lagoons, and the basement of the main building using a hand-held auger.	SOP 4232.2016

☐ Other Description:

2.3 Sample Handling and Custody Requirements:

☒ Samples will be packaged and preserved in accordance with procedures defined in Region 7 EPA SOP 2420.06.
☒ COC will be maintained as directed by Region 7 EPA SOP 2420.04.
☐ Samples will be accepted according to Region 7 EPA SOP 2420.01.
☒ Other (Describe): Samples will be accepted in accordance with procedures established by a Seagull-contracted laboratory.

2.4 Analytical Methods Requirements:

☒ Identified in attached table.
☒ Rationale: The requested analyses have been selected based on historic information about the area and program experience with similar types of sites.
☐ Other (Describe):

2.5 Quality Control Requirements:

☐ Not Applicable
☒ Identified in attached table.
☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007).
☒ Field QC Samples: For this investigation, field QC samples will include one equipment rinsate blank (water), one water trip blank, and one water field blank. The equipment rinsate will evaluate the effectiveness of decontamination procedures for Geoprobe® sampling equipment. The trip blank will be used to assess transportation-related contamination. The field blank will be collected to evaluate contamination of sampling containers and/or preservatives and to assess contamination potentially introduced during the sampling and laboratory procedure(s). The blank samples will be submitted for the analyses listed in the attached tables. Evaluation of the blank samples depends on the levels of contamination found in environmental samples to determine whether the environmental samples are representative. Analytical results of the blank samples will be evaluated on a qualitative basis by the EPA project manager and EPA contractor(s) to determine a general indication of field-introduced and/or lab-introduced contamination. Because it is not necessary for total method precision to be evaluated for this project, no field duplicates will be collected.
☐ Other (Describe):

2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements:

☐ Not Applicable
☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007).
☒ Testing, inspection, and maintenance of field instruments (GPS unit, XRF, photoionization detector [PID], etc.) will be performed in accordance with manufacturers' recommendations. Testing, inspection, and maintenance of laboratory equipment will be performed in accordance with the previously referenced SOPs and/or manufacturers' recommendations.

2.7 Instrument Calibration and Frequency:

☐ Not Applicable
☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007).
☒ Calibration of laboratory equipment will be performed as described in the previously referenced SOPs and/or manufacturers' recommendations.
☒ Other (Describe): Calibration of field equipment (PID, etc.) will be performed as described in the previously referenced SOPs and/or manufacturers' recommendations.

2.8 Inspection/Acceptance Requirements for Supplies and Consumables:

☐ Not Applicable
☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007).
☒ All sample containers will meet EPA criteria for cleaning procedures for low-level chemical analysis. Sample containers will have Level II certifications provided by the manufacturer in accordance with pre-cleaning criteria established by EPA in *Specifications and Guidelines for Obtaining Contaminant-Free Containers.*
☐ Other (Describe):

2.9 Data Acquisition Requirements:

☐ Not Applicable
☒ In accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007).
☒ Previous data or information pertaining to the area (including other analytical data, reports, photos, maps, etc. that are referenced in this QAPP) has been compiled by EPA and/or its contractor(s) from other sources. Some of that data have not been verified by EPA and/or its contractor(s); however, that unverified information will not be used for decision-making purposes by EPA without verification by an independent professional qualified to verify such data or information.
☐ Other (Describe):

2.10 Data Management:

☐ All laboratory data acquired will be managed in accordance with Region 7 EPA SOP 2410.01.
☒ Other (Describe): Laboratory data will be managed in accordance with procedures established by the Seagull-contracted laboratory.

3.0 Assessment and Oversight:

3.1 Assessment and Response Actions:

☒ Peer Review ☒ Management Review ☐ Field Audit ☐ Lab Audit
☐ Assessment and response actions pertaining to analytical phases of the project are addressed in Region 7 EPA SOPs 2430.06 and 2430.12.
☒ Other (Describe): Assessment and response actions pertaining to analytical phases of the project will be in accordance with procedures established by the Seagull-contracted laboratory.

3.1A Corrective Action:

☒ Corrective actions will be at the discretion of the EPA project manager whenever problems appear that could adversely affect data quality and/or resulting decisions affecting future response actions pertaining to the area.
☐ Other (Describe):

3.2 Reports to Management:

☐ Audit Report ☒ Data Validation Report ☐ Project Status Report ☐ None Required

☒ A letter report describing the sampling techniques, locations, problems encountered (with resolutions to those problems), and interpretation of analytical results will be prepared and submitted to the EPA.
☒ Reports will be prepared in accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007).
☐ Other (Describe):

4.0 Data Validation and Usability:

4.1 Data Review, Validation, and Verification Requirements:

☐ Identified in attached table.
☒ Data review and verification will be performed in accordance with the Generic Quality Assurance Project Plan for Superfund Integrated Assessment and Targeted Brownfields Assessment Program (updated July 2007).
☐ Data review and verification will be performed by a qualified analyst and the laboratory's section manager as described in Region 7 EPA SOPs 2430.06, 2430.12, and 2410.10.
☒ Other (Describe): The analytical data package will be validated internally by the contracted laboratory in accordance with the laboratory's established SOPs. A Seagull chemist will conduct an external verification and validation of the laboratory data package using a method consistent with a Stage 2B validation, as described in the EPA Contract Laboratory Program (CLP) Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA 2009). A Stage 2B validation includes verification and validation based on completeness and compliance check of sample receipt conditions and sample-related and instrument-related QC results. The EPA Project Manager will be responsible for overall validation and final approval of the data, in accordance with the projected use of the results.

4.2 Validation and Verification Methods:

☐ Identified in attached table.
☐ The data will be validated in accordance with Region 7 EPA SOPs 2430.06, 2430.12, and 2410.10.
☒ The EPA project manager will inspect the data to provide a final review. The EPA Project Manager will review the data, if applicable, for laboratory spikes and duplicates, laboratory blanks, and field QC samples to ensure the data are acceptable. The EPA Project Manager will also compare the sample descriptions with the field sheets for consistency, and will ensure appropriate documentation of any anomalies in the data.
☒ Other (Describe): If any problems with field measurements or analytical data are identified by Seagull's data verification/validation, the Seagull project manager will verbally, and in writing if requested by EPA, explain with circumstances of the failure, describe any corrective action taken, and provide an opinion on the limitations and usefulness of the data to the EPA Project Manager.

4.3 Reconciliation with User Requirements:

☒ If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded and re-sampling or re-analysis of the subject samples may be required by the EPA Project Manager.
☐ Other (Describe):

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for the Kuhlman Diecasting Site

Table 1: Sample Summary

Project Name: Kuhlman Diecasting Site	**Location:** Stanley, Kansas; See Appendix B, Figures 1 and 2	
Project Manager: Jeff Pritchard	**Activity/ASR #:** To be determined	**Date:** June 5, 2012

No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Methods	Analytical Method
6	Subsurface Soil	On-site Geoprobe® locations	To assess potential soil contamination from historical site operations	2-foot interval (between 0 and 20 feet below ground surface [bgs]) based on field screening results	VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and priority pollutant metals	EPA SOPs 4230.07, 4231.2012, & 4231.1707; Method 5035	EPA Methods 5035, 8260, 8270, 6010, & 7471; Methods OA-1 & OA-2
12	Surface Soil	On-site locations	To assess potential surface soil contamination from historical site operations	0 to 6 inches	Chromium, copper, nickel, and zinc	EPA SOPs 4231.2012 & 4231.1707	EPA Method 6010
4	Groundwater	On-site Geoprobe® temporary wells	To assess potential groundwater contamination from historical site operations	Directly below the water table	VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and total and dissolved priority pollutant metals	EPA SOPs 4230.07 & 4231.2007	EPA Methods 8260, 8270, 6020, & 7470; Methods OA-1 & OA-2
10	Groundwater	On-site permanent monitoring wells	To assess potential groundwater contamination from historical site operations	Screened Interval	Total and dissolved chromium, copper, nickel, and zinc	EPA SOP 4231.2007	EPA Method 6020
3	Water	Basement of main building	To assess potential water contamination from historical site operations	N/A	Total chromium, copper, nickel, and zinc; PCBs; and total cyanide	EPA SOP 4231.2007	EPA Methods 6020, 8082, & 9012
4	Surface Water	Blue River	To assess potential surface water contamination from site operations	N/A	Total chromium, copper, nickel, and zinc	EPA SOP 4232.2013	EPA Method 6020
5	Surface Water	Process water basins, evaporation sanitary lagoons, and east pond	To assess potential surface water contamination from site operations	N/A	Total chromium, copper, nickel, and zinc	EPA SOP 4232.2013	EPA Methods 6020, 8082, &9012
4	Sediment	Blue River	To assess potential impact on sediment from site operations	0-6 inches	Total chromium, copper, nickel, and zinc; PCBs, and total cyanide	EPA SOP 4232.2016	EPA Method 6010
10	Sediment	Process water basins, evaporation sanitary lagoons, east pond, and basement of the main building	To assess potential impact on sediment from site operations	0-6 inches	Chromium, copper, nickel, and zinc; PCBs; and total cyanide	EPA SOP 4232.2016	EPA Methods 6010, 8082, & 9012

Region 7 Superfund Program Addendum to the Generic QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (July 2007) for the Kuhlman Diecasting Site							
QC Samples							
1	Water	Trip blank	To assess transportation-related contamination	NA	VOCs	NA	EPA Method 8260
1	Water	Equipment Rinsate	To evaluate effectiveness of decontamination procedures for Geoprobe® sampling equipment	NA	VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and total priority pollutant metals	NA	EPA Methods 8260, 8270, 6020, & 7470; Methods OA-1 & OA-2
1	Water	Field blank	To assess field/laboratory-related contamination	NA	VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and total priority pollutant metals	NA	EPA Methods 8260, 8270, 6020, & 7470; Methods OA-1 & OA-2

Region 7 Superfund Program Addendum to the Generic QAPP for Superfund Integrated Site Assessment and Targeted Brownfields Assessment Activities (July 2007) for the Kuhlman Diecasting Site								
Table 2: Data Quality Objective Summary								
Project Name: Kuhlman Diecasting Site				**Location:** Stanley, Kansas; See Appendix B, Figures 1 and 2				
Project Manager: Jeff Pritchard				**Activity/ASR #:** To be determined			**Date:** June 5, 2012	
Analysis	**Analytical Method**	**Data Quality Measurements**					**Sample Handling Procedures**	**Data Management Procedures**
		Accuracy	**Precision**	**Representativeness**	**Completeness**	**Comparability**		
SOIL								
VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), metals (priority pollutant)	See Table 1	Per analytical method	Per analytical method	Biased/judgmental sampling, based on professional judgment of the sampling team	100%; no critical samples have been defined	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.
GROUNDWATER/WATER								
VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and total and dissolved metals (priority pollutant)	See Table 1	Per analytical method	Per analytical method	Biased/judgmental sampling, based on professional judgment of the sampling team	100%; no critical samples have been defined	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.
SEDIMENT								
Metals (chromium, copper, nickel, and zinc), PCBs, and total cyanide	See Table 1	Per analytical method	Per analytical method	Biased/judgmental sampling, based on professional judgment of the sampling team	100%; no critical samples have been defined	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.
SURFACE WATER								
Metals (chromium, copper, nickel, and zinc), PCBs, and total cyanide	See Table 1	Per analytical method	Per analytical method	Biased/judgmental sampling, based on professional judgment of the sampling team	100%; no critical samples have been defined	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.

APPENDIX A

SITE-SPECIFIC INFORMATION FOR THE KUHLMAN DIECASTING SITE

INTRODUCTION

Seagull Environmental Technologies, Inc. (Seagull) has been tasked by the U.S. Environmental Protection Agency (EPA), under the Mini-Superfund Technical Assessment and Response Team (Mini-START) contract, to conduct a Phase II Targeted Brownfields Assessment (TBA) for the Kuhlman Diecasting site. The Kuhlman Diecasting site has a well-documented environmental history associated with its past operation as an electroplating facility. Numerous environmental investigations have been conducted at the site and have identified elevated levels of site-related contaminants, metals in particular. The purpose of the Phase II TBA is to determine current contaminant concentrations and the extent of previously identified contamination. This Quality Assurance Project Plan (QAPP) identifies site-specific features and addresses elements of the sampling strategy and analytical methods proposed for this investigation.

SITE DESCRIPTION/BACKGROUND

The Kuhlman Diecasting (Kuhlman) site, hereafter referred to as the "site" or "subject property," is a defunct electroplating facility that covers approximately 35.15 acres and is bounded to the west and south by the Blue River. The site address is 16400 Mission Road, which is near 164th Street and Mission Road in Stanley, Kansas. The site is accessed off Mission Road by a gravel road that connects to West 163rd Street. The site is included on the Stilwell, Kansas, U.S. Geological Survey (USGS) 7.5-minute topographic series map (USGS 1991; see Appendix B, Figure 1). The site is located in Section 16, Township 14 South, Range 25 West. The coordinates for the approximate center of the site are 38.830741 degrees north latitude and 94.633464 degrees west longitude.

The property is currently owned by the Kuhlman Diecasting Company; however, it is not currently used for any beneficial purpose. On the site is a single-story, concrete block building that is 73,730 square feet (ft^2) in size. In addition, the site contains two process water storage basins, two wastewater evaporation sanitary lagoons, three capped lagoons (surface impoundments), and a pond (see Appendix A, Figure 2). The site is surrounded by a levee constructed to provide flood control. Additionally, a railroad line bisects the site in a north-south direction.

Operations on the subject property have included bulk oil storage/transfer, grain storage, and electroplating. Property information from the Johnson County Assessor website indicates the site building was constructed in 1904 (Environment International Government Ltd. [EIGov] 2011). Historical photographs show seven large aboveground storage tanks (AST) located at the site dating back to 1941. Kuhlman began electroplating operations at the site in 1962. Kuhlman manufactured zinc diecastings for

a variety of commercial and industrial customers. Kuhlman operations consisted of an electroplating process that used chromium, nickel, and copper plating on zinc diecastings. On November 30, 1990, Kuhlman ceased all operations and filed for bankruptcy.

Physical Setting

The site is located in eastern Johnson County in northeastern Kansas. Johnson County lies partly in the Osage Cuestas, a portion of the Osage Plains physiographic province. Most of Johnson County consists of gently rolling uplands with a greater relief along streams (Ecology and Environment, Inc. [E & E] 1995).

Sedimentary rocks in northeast Kansas range from Late Pennsylvanian to Late Cambrian age. In the vicinity of the site, they have an aggregate thickness of approximately 1,700 feet. Structurally, the site lies within the Forest City basin. Shale and carbonates are the predominant lithologies of Paleozoic rocks in the Forest City basin, although sandstone composes the bulk of Late Cambrian and Early Ordovician-age formations. Middle Ordovician through Mississippian-age formations are typically thick-bedded limestone and dolomite interbedded with thick shale. The overlying Middle Pennsylvanian-age rocks are predominantly shale and channel sands with minor amounts of carbonates. The Upper Pennsylvanian-age rocks that underlie the site are cyclothermic shale and limestone formations, varying in thickness from several inches to several tens of feet.

Eastern Johnson County is underlain by the Upper Pennsylvanian-age Kansas City group. Within the Kansas City group, thick limestone and thin shale of the Bronson subgroup underlie thick shale and thin limestone of the Linn subgroup.

Unconsolidated sediments in the Blue River Valley are Wisconsinan to Recent. The thickness of the alluvium varies from approximately 30 feet in the northern and central portions of the site to approximately 20 feet in the southern portion of the site.

Previous investigations have determined that groundwater is located approximately 10 to 15 feet below ground surface (bgs). Groundwater flow at the site is to the south-southwest towards the Blue River.

Topsoil at the site belongs to the Kennebec and Chase series. Kennebec silt loam covers the southern portion of the site. Typical Kennebec soil is very dark grayish-brown becoming very dark gray with depth, slightly hard, friable, with weak to moderate fine granular structure. Kennebec soils are deep, moderately well drained, moderately permeable, and level (E&E 1995).

Based on a recent topographic map, the site is approximately 893 feet above mean sea level (amsl). The site is relatively flat, as it is located within a meander of the Blue River.

PREVIOUS INVESTIGATIONS

The site has a well-documented environmental history associated with Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigations and cleanups. Numerous investigations have been conducted at the site and have involved the collection of multimedia samples to determine if past site operations have resulted in releases of hazardous substances. Involved in those investigations and cleanups were the collection of soil (surface and subsurface), groundwater, surface water, and sediment samples. In addition, air, dust, and concrete samples were collected from within the building.

Because the site's environmental history is well documented, a complete discussion of past investigations at the site is not included in this QAPP. However, listed below are site reports that have been completed for EPA that summarize the site's history and results of environmental investigations and cleanups.

- Jacobs Engineering. 1988. RCRA Facility Assessment of Kuhlman Diecasting Site. Stanley, Kansas. EPA ID No. KSD006325013. July.
- Ecology and Environment, Inc. 1992. Removal Funded: Kuhlman Diecasting Co., Stanley, Kansas. Removal Assessment Phase II. TDD# T07-9107-035D. September 24.
- Ecology and Environment, Inc. 1993. Removal Funded: Kuhlman Diecasting Co., Stanley, Kansas. Removal Assessment Phase II. TDD# T07-9301-025. April 16.
- Ecology and Environment, Inc. 1995. Preliminary Assessment/Site Inspection for the Kuhlman Diecasting Site. Stanley, Kansas. TDD# T07-9412-506A. October 5.

From 1991 to 1992, an EPA-funded removal action was conducted at the site. During the removal action, over 1 million gallons of liquid wastes contaminated with metals and cyanide were treated on site and properly discharged. Wastes that could not be treated on site were transported off site for proper disposal. In 1992, following the completion of the removal action, EPA conducted a removal assessment to determine whether further removal activity would be required. The removal assessment determined elevated concentrations of metals – specifically, chromium, copper, nickel, and zinc – were present in soil (both surface and subsurface), groundwater, and sediment at the site. Nickel and zinc were detected at concentrations that exceeded EPA-established site-specific action levels; however, no further removal activity was conducted. Additionally, several other sampling activities have been completed at the Kuhlman site since the completion of the removal action. In 2002, EPA responded to a fire at the site and

collected three water samples from areas of pooled water created as a result of the fire-fighting efforts. Those samples were analyzed for total metals and cyanide. No contaminants were detected above levels of concern. In 2004, EPA conducted additional sampling activities that included the collection of groundwater samples from monitoring wells and surface soil samples from across the site. Only one groundwater sample, which was collected from monitoring well GM-17 (located downgradient of Lagoon #3) (see Appendix B, Figure 2), contained elevated levels site-related contaminants. Specifically, this sample contained elevated concentrations of chromium, copper, lead, nickel, and zinc. Numerous surface soil samples collected at locations surrounding the two wastewater evaporation sanitary lagoons in the southern portion of the site contained elevated concentrations of chromium, copper, nickel, and zinc. In 2010, the Johnson County Environmental Department collected three samples of water that had accumulated in the basement of the site building. These samples were collected to assist with an ongoing criminal investigation associated with the site (not an environmental criminal investigation). The samples were analyzed for total metals and volatile organic compounds (VOC). No contaminants were detected above levels of concern.

Most recently, a Phase I Environmental Site Assessment (ESA) was completed for the site by EIGov and Seagull (under contract to EPA Region 7). The Phase I ESA was completed as a TBA for EPA Region 7 and the Johnson County Government, which had applied for a Brownfields Grant to assess the site.

The following were findings from the Phase I TBA:

- Review of historical documents showed the subject property had been operated as a bulk oil storage facility. That former business could be a potential source of contamination. The likelihood of release and migration of hazardous materials or wastes from oil storage facilities pose a recognized environmental condition (REC) to the subject property.
- The subject property has a well-documented history of environmental investigations and cleanups associated with its past operation as an electroplating facility. The Kuhlman Diecasting Company conducted electroplating at the subject property from the early 1960s to 1990. Historical site operations as an electroplating facility which resulted in releases of hazardous substances to environmental media at the site pose a REC to the subject property.
- Records review and interviews conducted during the Phase I ESA determined that three RCRA post-closure units remain at the site. The three units are former surface impoundments that historically received waste from electroplating operations on the site. The units are currently capped. The Kansas Department of Health and Environment (KDHE) maintains post-closure authority over those units, while EPA Region 7 maintains regulatory authority over the entire site. The presence of the three RCRA post-closure units poses a REC to the subject property.

Based on the identification of those RECs, the Phase I ESA recommended the following:

- A Phase II ESA of the subject property should be conducted. The Phase II ESA should include the collection of surface and subsurface soil, groundwater, surface water, and sediment samples. Those samples should be analyzed for contaminants commonly associated with bulk oil storage facilities and electroplating facilities. Phase II sampling should be conducted to confirm historical investigation findings and address data gaps. Additionally, Phase II sampling should be conducted in consultation with EPA Region 7 and KDHE. Specific areas of concern that should be addressed during Phase II sampling are listed below.
- Past investigations have had limited focus on the east portion of the site (east of the railroad track). Historical records indicate that bulk oil storage tanks were located in that area. Future sampling should include the collection of soil and groundwater from this area to determine if historical site activities have resulted in a release of hazardous substances.
- Groundwater samples should be collected from permanent monitoring wells currently located at the site to characterize groundwater quality. Additionally, specific emphasis should be placed on the monitoring wells downgradient of and surrounding the three RCRA post-closure units (surface impoundments).
- Both surface and subsurface soil samples should be collected across the site to determine current concentrations of site-related contaminants, metals in particular. Past sampling results indicated that elevated concentrations of metals (chromium, copper, nickel, and zinc) exist in surface soil near the two wastewater evaporation sanitary lagoons in the southern portion of the site. Additionally, surface soils to the south and west of the building have been determined to contain elevated concentrations of site-related metals. Sampling should be conducted to delineate the lateral and vertical extent of contamination.
- Surface water and sediment samples should be collected from the two process water basins in the northern portion of the site, two wastewater evaporation sanitary lagoons in the southern portion of the site, and from several locations on the Blue River.

SAMPLING STRATEGY AND METHODOLOGY

The sampling activities are tentatively scheduled to be conducted in June 2012 and will require approximately 5 to 6 days to complete. Anticipation is that three Seagull employees will be required to perform the activities described in this QAPP. When applicable, the standard operating procedures (SOP) and chain-of-custody (COC) procedures referenced in the QAPP will be followed throughout the sampling activities to verify the integrity of the samples from the time of collection until submittal to the laboratory for analysis. Disposal of investigation-derived wastes (IDW) and procedures for equipment and personal decontamination will be addressed in a site-specific health and safety plan prepared by Seagull. Most IDW is expected to consist of disposable sampling supplies (gloves, paper towels, tubing, etc.) that will be disposed of off site as uncontaminated solid waste. Descriptions of the sampling strategy and procedures are presented below.

Soil Sampling

Subsurface Soil Sampling

Subsurface soil samples will be collected from six boring locations (see Appendix B, Figure 3). All of those boring locations will be on the east portion of the site where bulk oil storage was conducted. A review of site documents has determined that limited investigation has been conducted on this portion of the site; therefore, this sampling is being conducted to determine impacts as a result of historic site operations. At each of the boring locations, continuous soil cores will be collected with a Geoprobe® direct-push apparatus.

At each of the boreholes, a Geoprobe® Macro-Core soil sampler fitted with a disposable polyvinyl chloride (PVC) sleeve will be advanced to 20 bgs, groundwater, or refusal, whichever is encountered first. It is anticipated that groundwater will be encountered between 10 to 15 feet bgs. The soil cores will be retrieved and screened for VOCs with a photoionization detector (PID) and for metals with an x-ray fluorescence spectrometer (XRF). All soil cores will be logged to determine lithology and soil characteristics. One sample will be collected from a 2-foot interval from each of the borings. The specific 2-foot sample intervals will be selected based on field screening results, visual observations, and sampler judgment. In general, sample intervals that yield the highest PID and/or XRF readings will be selected for sampling. However, if no PID or XRF readings above background are observed at a boring location, then the 2-foot sample interval will be determined by the field project manager based on field observations and sampler judgment. These field observations and sampler judgment will involve identifying visually stained soil or abnormal soil characteristics. If no contamination is indicated based on field screening readings, visual observations, or sampler judgment, then the bottom 2-foot interval of soil from the boring will be sampled.

Soil samples collected from the six borings will be submitted for laboratory analysis of site-related contaminants. Specifically, soil samples will be submitted for analysis of VOCs, total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) (by Method OA-1) and diesel range organics (DRO) (by Method OA-2), polynuclear aromatic hydrocarbons (PAH), and priority pollutant metals. Soil samples for analysis of VOCs and TPH-GRO will be collected following EPA Method 5035 guidelines, which will involve placing approximately 5 grams of soil into two 40-milliliter (mL) volatile organic analysis (VOA) vials pre-preserved with sodium bisulfate and one VOA vial preserved with methanol. Soil samples for analysis of TPH-DRO, PAHs, and metals will be removed from the PVC sleeves and placed in disposable aluminum pie pans for homogenization prior to transfer to 8-ounce glass jars.

Following sample collection, excess soil will be returned to the respective boreholes. Remaining void space in the boreholes will be filled with bentonite.

Pertinent data, including analyses to be performed and exact sample locations, will be recorded on field sheets. All soil samples will be stored in coolers maintained at or below 4 degrees Celsius (°C) pending submittal to a Seagull-contracted laboratory.

Surface Soil Sampling

To assess metals concentrations in surface soil at the site, surface soil samples will be collected and screened with an XRF. Surface soil samples will be collected from areas located in the south-southwest portion of the site. Specficially, the surface soil study area will surround the two wastewater evaporation sanitary lagoons (see Appendix B, Figure 4). The 2004 EPA sampling activities identified elevated concentrations of metals (specifically chromium, copper, nickel, and zinc) in surface soil at and surrounding the lagoons. The 2004 findings varied from the findings of the 1992 and 1993 EPA removal assessments. Therefore, the proposed surface soil sampling has been designed to delineate the extent of metals-contaminated surface soil. It should be noted that removal assessment activities completed by EPA in 1992 and 1993 involved extensive surface soil sampling/screening. Those activities identified two other areas at the site that contained elevated concentrations of chromium, copper, nickel, and zinc. Those areas were immediately north of the north process water storage basin and just west of the site building. However, because those areas were well characterized, additional surface soil sampling in those areas is not planned as part of this Phase II TBA.

In the proposed surface soil sampling area, transect lines spaced 100 feet apart will be established (running north and south), and sample points will be located at 100-foot intervals along those transect lines (see Appendix B, Figure 4). At each of those transect sample points, a 25-foot by 25-foot cell will be created, with the borehole serving as the center of the cell. In each cell, a five-aliquot composite sample will be collected from the upper 6 inches of soil with a disposable stainless steel spoon. The surface soil samples will be placed in clean dedicated aluminum pie pans, homogenized, passed through a number 10 (2 millimeter [mm]) sieve, and then screened for metals (for chromium, copper, nickel, and zinc, in particular) with the XRF. Three separate XRF readings will be obtained from each sample. The average of the three XRF readings (for all four of the specified metals) will be calculated and recorded in the site logbook. Approximately 50 percent (approximately 12 samples, based on 24 proposed surface soil sample locations) of the surface soil samples screened with the XRF will be transferred to 8-ounce jars and submitted for laboratory analysis of chromium, copper, nickel, and zinc. The XRF readings for

this project will be considered valid screening level data, if a comparison between the XRF values and the corresponding laboratory results for yields a regression coefficient (r^2) of at least 0.7.

Pertinent data, including analyses to be performed and exact sample locations, will be recorded on field sheets. All soil samples will be stored in coolers maintained at or below 4 degrees Celsius °C pending submittal to a Seagull-contracted laboratory.

Water Sampling

Temporary Geoprobe® Wells

Four groundwater samples will be collected from temporary Geoprobe® wells that will be installed at the east portion of the site (see Appendix B, Figure 3). These samples will be collected to determine if historic bulk petroleum storage has impacted this portion of the site. At each temporary Geoprobe® well location, a Geoprobe® Screen Point 15 groundwater sampling apparatus will be driven below the water table, and a disposable 4-foot-long PVC screen will be deployed. A peristaltic pump with disposable polyethylene tubing will be used for collection of groundwater samples from the temporary Geoprobe® wells. From each temporary Geoprobe® well, a grab sample will be collected; therefore, no monitoring of water quality parameters for stabilization criteria will be required. Immediately after sampling, the temporary wells will be removed, and the open boreholes will be filled with bentonite.

The temporary well samples will be submitted for analysis of VOCs, TPH-GRO (OA-1), PAHs, TPH-DRO (OA-2), and priority pollutant metals. Water samples submitted for analysis of VOCs and TPH-GRO will be collected in four 40-mL vials preserved with hydrochloric acid (HCl) to a pH<2. Water samples that will be analyzed for PAHs and TPH-DRO will be collected in 1-liter glass bottles (two per sample). Water samples that will be analyzed for metals will be collected in two 1-liter polyethylene bottles (one each for total and dissolved metals) and preserved with nitric acid (HNO_3) to a pH<2. Dissolved metals samples will be filtered in the field.

Permanent Monitoring Wells

Ten groundwater samples will be collected from permanent monitoring wells currently located at the site. Table 1 summarizes the monitoring wells to be sampled. Those wells are located across the site and have been selected to represent site-wide groundwater quality (see Appendix B, Figure 3). The wells will be sampled using a low-flow, or "micro-purge" technique. This sampling method involves placement of a pump intake at a specific depth within the screened interval (generally towards the middle or top of the screen) and discharging at a flow rate of 0.1 to 0.5 liters per minute (L/min). If the aquifer is suitably

transmissive to prevent significant drawdown (> 0.1 meter) at these pumping rates, this technique can be used as a means of reducing pre-sampling purge volumes. Generally, no specialized equipment is required other than devices to monitor flow rates and field parameters of the well discharge. The technique can be performed with peristaltic, bladder, or electrical submersible pumps. As each well is purged, field parameters will be monitored continuously using a water quality instrument. A sample will be collected when all field parameters have stabilized, indicating the purge discharge is representative of aquifer conditions.

TABLE 1

SUMMARY OF MONITORING WELLS

Monitoring Well	Total Depth of Well	Screened Interval (feet bgs)
GM-1	29.5[A]	5.0-29.5
GM-2	29.5[A]	11.0-29.5
GM-5	17.5[A]	7.5-17.5
GM-7	22.5[A]	7.5-22.5
GM-8	30.0[A]	20.0-30.0
GM-10	32.5[A]	22.5-32.5
GM-12	25.0[B]	15.0-25.0
GM-13	27.5[A]	17.5-27.5
GM-15	25.0[B]	15.0-25.0
GM-17	25.0[B]	15.0-25.0

Notes:

A Feet below ground surface
B No reference for depth measurement, assumed to be feet below top of casing
bgs Below ground surface

The permanent monitoring well samples will be submitted for analysis of total and dissolved chromium, copper, nickel, and zinc. Those metals are the primary site contaminants. Sample collection and handling will be in accordance with the protocol listed above.

A field sheet will be completed for each groundwater sample. The field sheets will include the exact sample locations and analyses to be performed. All water samples will be stored in coolers maintained at or below 4 °C until they are submitted to the Seagull-contracted laboratory.

Basement – Water Sampling

To determine if site-related contaminants are present in the water collected in the basement of the site building, water samples will be collected from three locations (see Appendix B, Figure 3). Samples will be collected through access points (i.e. holes) in the concrete floor of the first floor of the building. At

each location, a water sample will be collected by lowering disposable polyethylene tubing into the basement and withdrawing the water with a peristaltic pump. The water samples will be submitted for analysis of total chromium, copper, nickel, and zinc; polychlorinated biphenyls (PCB); and total cyanide. PCBs have been added for analysis because PCBs are commonly associated with diecasting operations, and a review of historical reports did not indicate previous analysis for PCBs. Cyanide has been added due to the historical presence of the contaminant at the site – in particular, its storage inside the building. Water samples that will be analyzed for PCBs will be collected in 1-liter glass bottles (two per sample). Water samples that will be analyzed for cyanide will be collected in 1-liter polyethylene bottles (one for each sample) and preserved with sodium hydroxide to a pH>12. Water samples that will be analyzed for total metals will be collected in 1-liter polyethylene bottles (one for each sample) and preserved with HNO_3 to a pH<2. The water samples will be handled in accordance with the same methodology as described above for monitoring well samples.

Surface Water/Sediment Sampling

To determine impacts of site operations to the Blue River and on-site water bodies, surface water and sediment samples will be collected (see Appendix B, Figure 4). Specifically, the on-site water bodies include the two wastewater evaporation sanitary lagoons, the two process water basins, and the pond located on the east portion of the site (referred to as the east pond).

Surface Water

Nine surface water samples are proposed to be collected. Those include four samples from the Blue River (including a background location), one sample from each of the two wastewater evaporation sanitary lagoons, one sample from each of the two process water basins, and one sample from the east pond. The surface water samples will be collected prior to collection of the sediment samples. The surface water samples will be collected by immersing sample containers directly into the water.

Surface water samples will be submitted for analysis of total chromium, copper, nickel, and zinc. Each surface water sample submitted for the listed metals will be collected in a 1-liter polyethylene bottle preserved with HNO_3 to a pH<2. Additionally, surface water samples collected from the wastewater evaporation sanitary lagoons and process water basins will be submitted for analysis of PCBs and total cyanide. Water samples that will be analyzed for PCBs will be collected in 1-liter glass bottles (two per sample). Water samples that will be analyzed for cyanide will be collected in 1-liter polyethylene bottles (one for each sample) and preserved with sodium hydroxide to a pH>12.

Sediment

Fourteen sediment samples are proposed to be collected. Those include four samples from the Blue River (including a background location), one sample from each of the two wastewater evaporation sanitary lagoons, two samples from each of the process water basins, one sample from the east pond, and three samples from basement of the site building. The sediment samples from the Blue River and basement of the site building will be grab samples collocated with the surface water samples collected from those locations. The sediment samples collected from the other locations (lagoons, water basins, and east pond) will each be 5-aliquot composites. All sediment samples will be collected from the top 6 inches of sediment using a hand-held auger. Since two samples are proposed to be collected from each of the process water basins, each basin will be divided in half, and five-aliquot sediment sample will be collected from each half.

Sediment samples will be submitted for analysis of chromium, copper, nickel, and zinc. Additionally, the sediment samples collected from the wastewater evaporation sanitary lagoons, basement of the building, and process water basins will be submitted for analysis of PCBs and total cyanide. The sediment samples will be placed in a disposable aluminum pie pan, homogenized, and transferred to 8-ounce jars. The samples will be stored in coolers maintained at or below 4 °C until they are submitted to the Seagull-contracted laboratory. Pertinent data, including analyses to be performed and sample location data, will be recorded on field sheets for each sample.

QUALITY CONTROL

To evaluate sample quality control (QC), one equipment rinsate blank (water), one field blank (water), and one trip blank (water) will be collected, as specified in Section 2.5 of the QAPP form. The equipment rinsate sample will be collected during the course of field activities (as determined by the Seagull Project Manager), following decontamination of the Geoprobe® Screen Point 15 groundwater sampler. Decontamination of the Geoprobe® samplers and rods will be conducted using a tap water and Alconox wash and tap water rinse. Because it is not necessary for total method precision to be evaluated for this project, no field duplicates will be collected.

ANALYTICAL METHODS

All samples will be submitted to a Seagull-contracted laboratory. Seagull will competitively bid the analytical work from its pool of pre-qualified laboratories. Soil, groundwater, surface water, and sediment samples will be analyzed according to EPA SW-846 Methods for VOCs (Method 8260), PAHs

(Method 8270), TPH-GRO (Method OA-1), TPH-DRO (Method OA-2) (Methods OA-1 and OA-2 are not SW-846 Methods), PCBs (Method 8082), cyanide (9012), and metals (including mercury) (Methods 6010 and 7471 for soil, and Methods 6020 and 7470 for water/liquid). Soil and groundwater analytical results will be compared to Risk-Based Standards for Kansas developed by the KDHE (KDHE 2010). Standard detection limits and turnaround times for those methods will be adequate for this project. Appropriate containers and physical/chemical preservation techniques will be employed during the field activities to help verify that representative analytical results are obtained. Submittal of samples to the laboratory is expected in June or early July 2012.

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U.S. Geological Survey (USGS). 1991. Stilwell, Kansas, 7.5-minute Series Topographic Quadrangle Map.

APPENDIX B

FIGURES

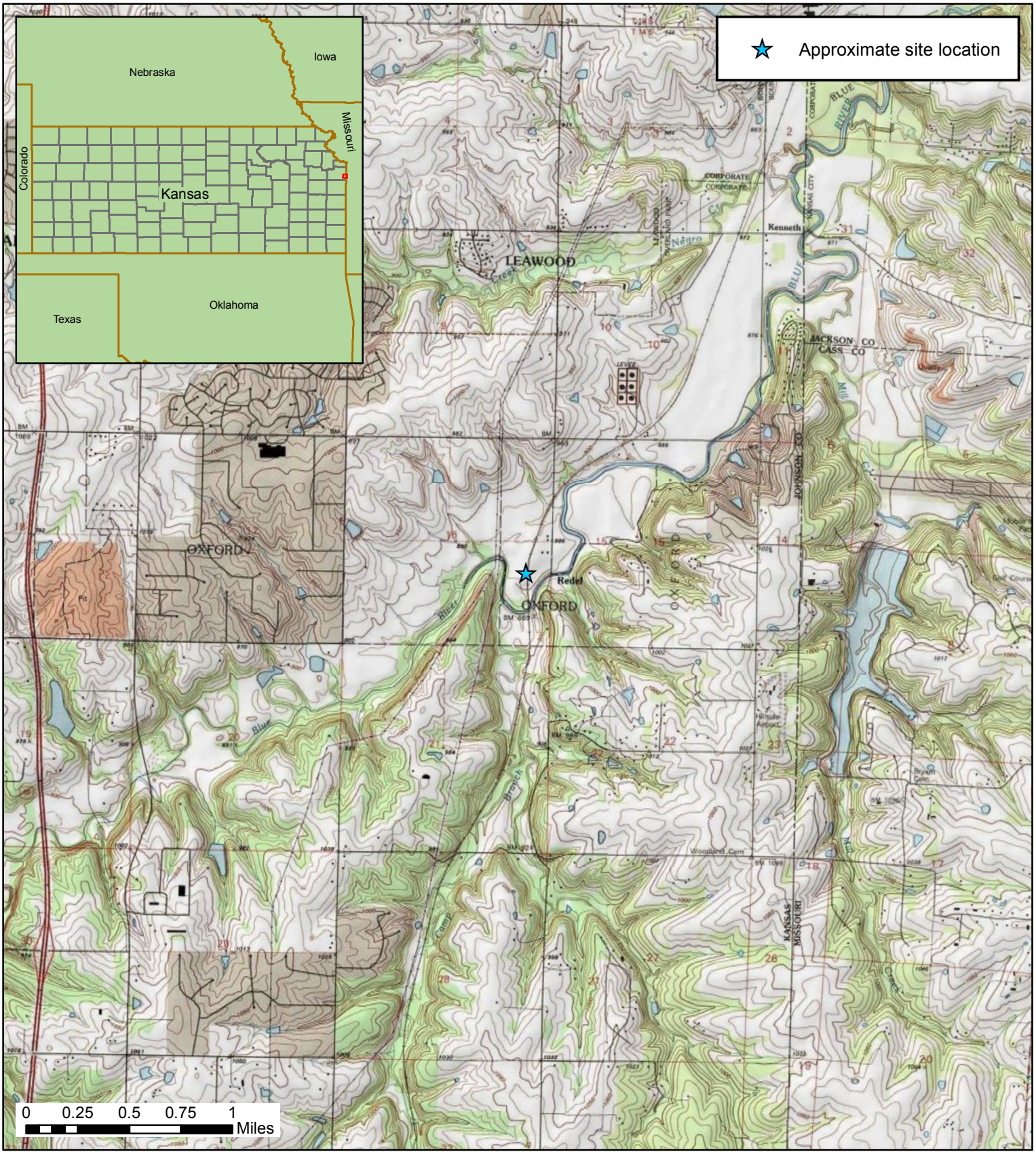

Figure 1
Site Location Map

Kuhlman Diecasting Site, Stanley, Kansas

Seagull Environmental Technologies, Inc.

Source: U.S. Geological Survey

Date: June 2012

Project No: EPS70901.0035

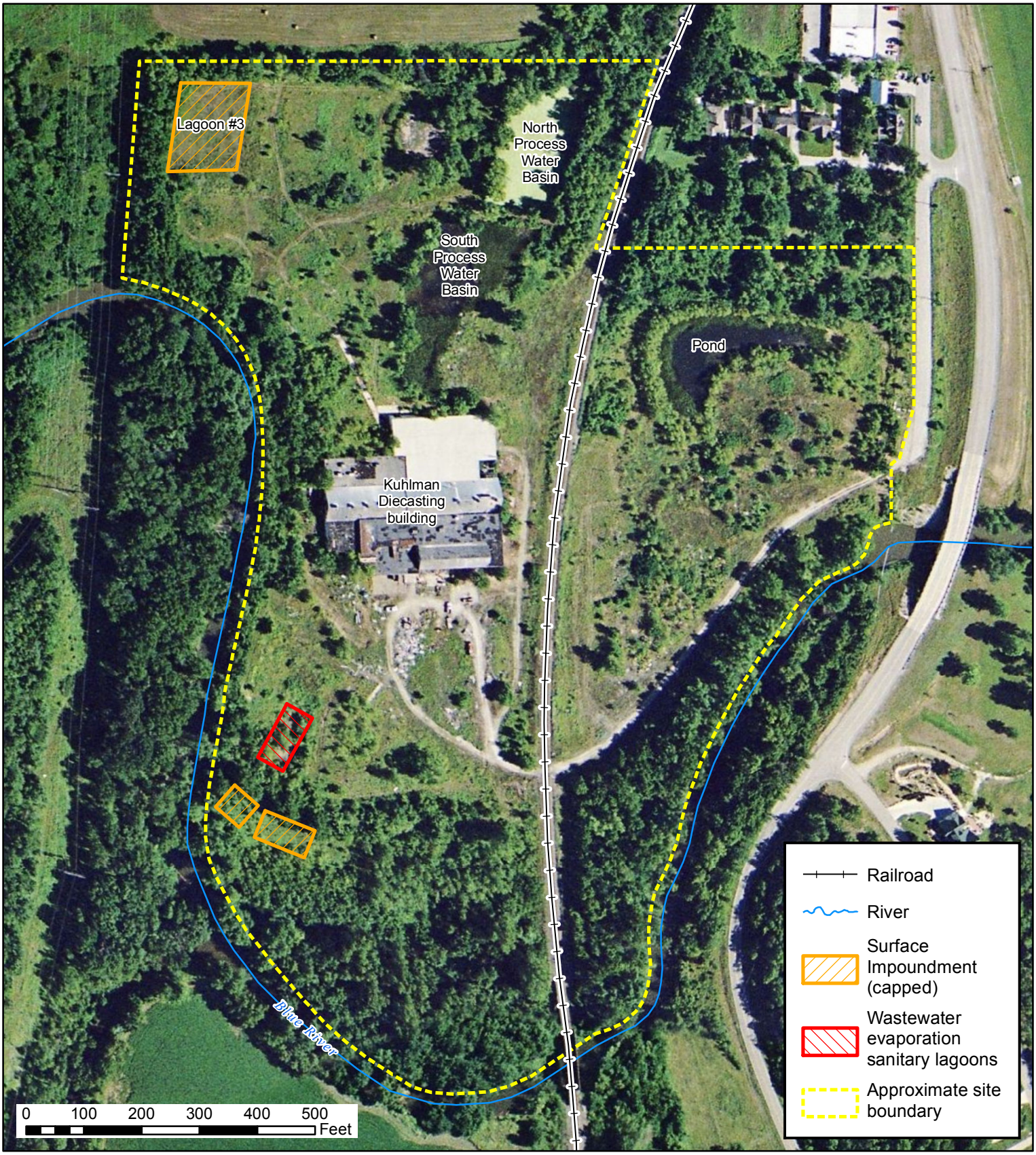

Figure 2
Site Aerial Map

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Kuhlman Diecasting Site, Stanley, Kansas

Seagull Environmental Technologies, Inc.

Source: ArcGIS Online, Bing Maps Aerial Imagery, 2011

Date: June 2012

Project No: EPS70901.0035

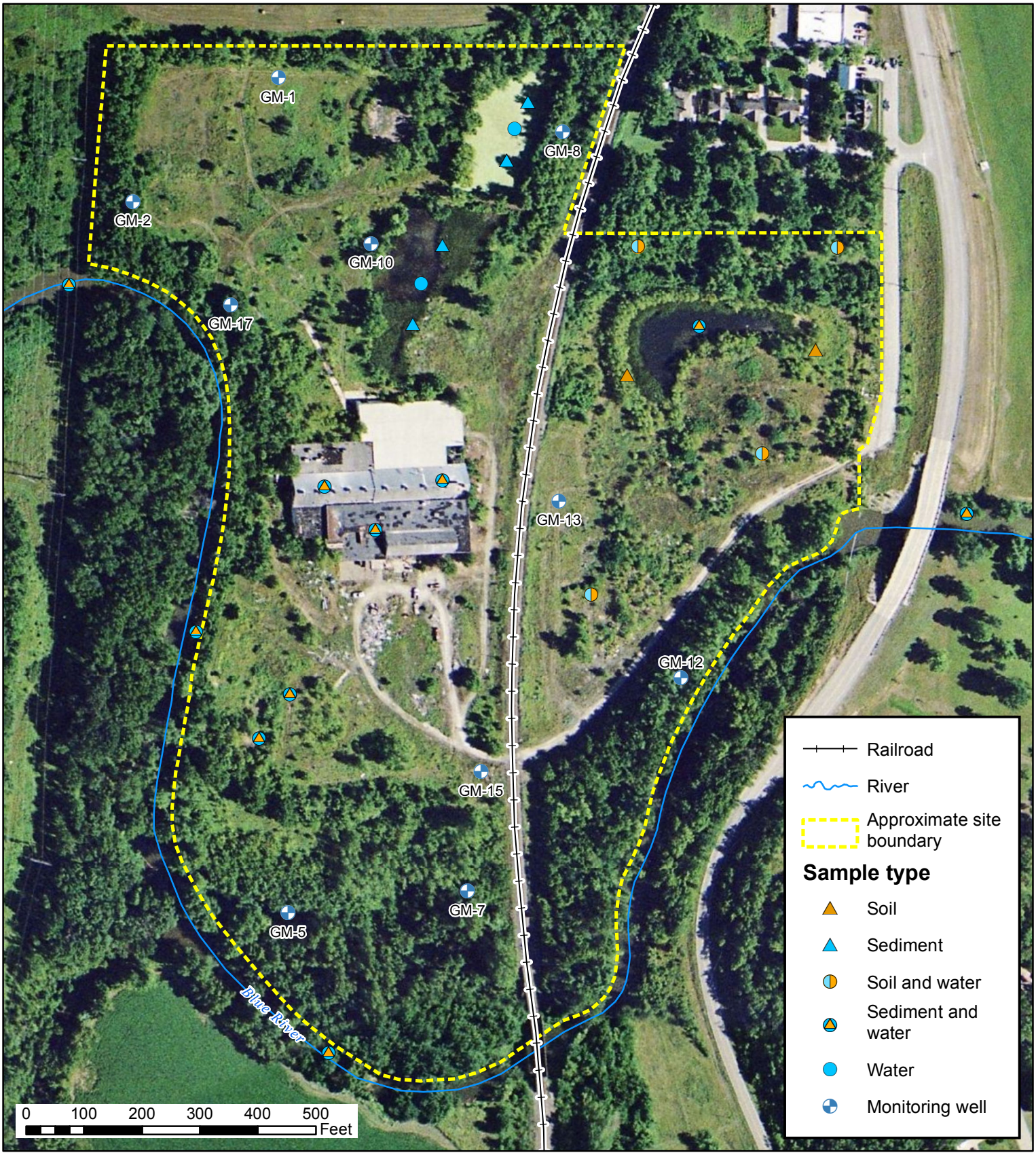

Figure 3
Proposed Sample Location Map

Kuhlman Diecasting Site, Stanley, Kansas

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Seagull Environmental Technologies, Inc.

Source: ArcGIS Online, Bing Maps Aerial Imagery, 2011

Date: June 2012

Project No: EPS70901.0035

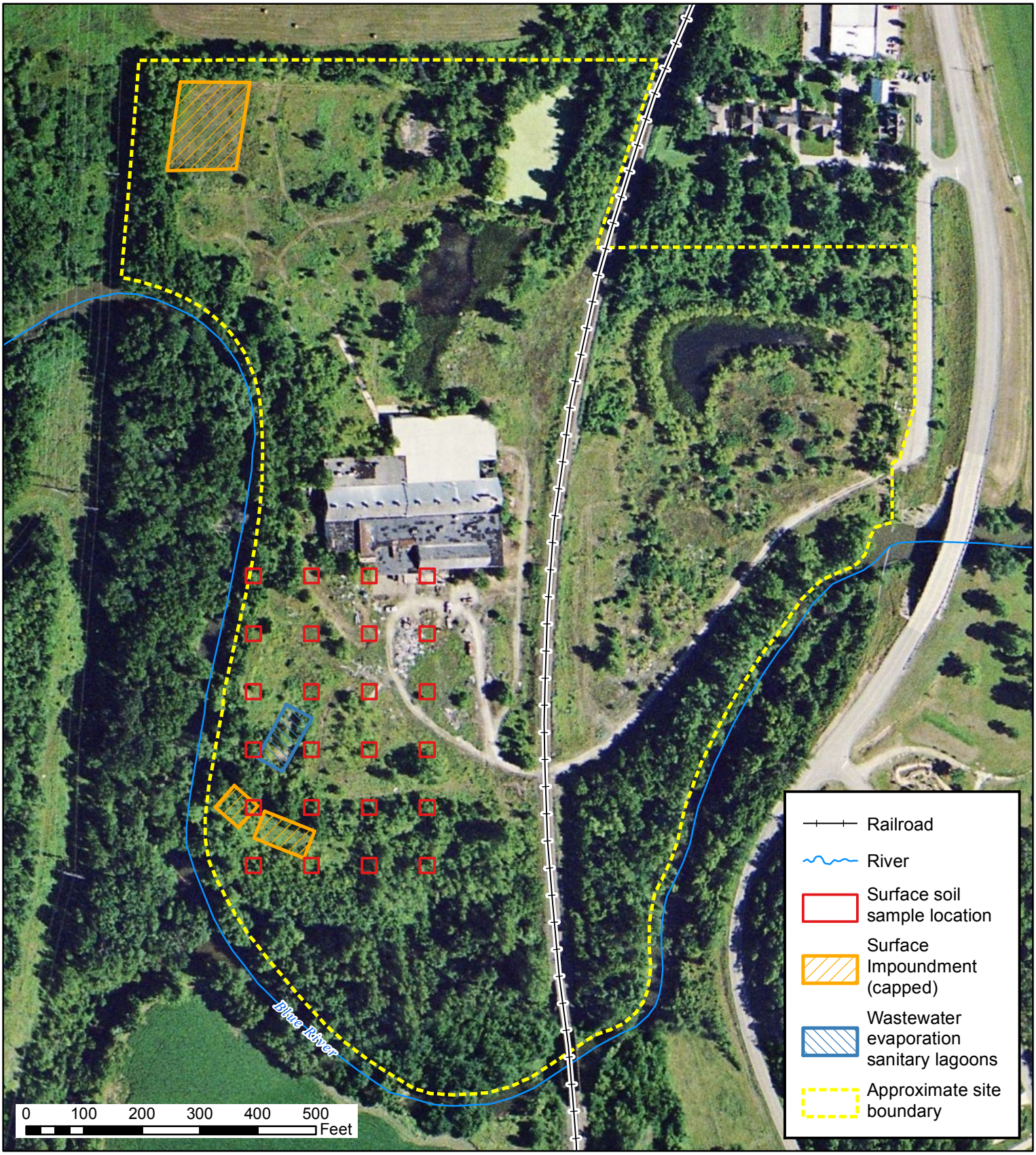

Figure 4
Proposed Surface Soil Sample Location Map

Kuhlman Diecasting Site, Stanley, Kansas

Seagull Environmental Technologies, Inc.

Source: ArcGIS Online, Bing Maps Aerial Imagery, 2011

Date: June 2012

Project No: EPS70901.0035