



# **Terra Systems Inc.**

## **GIS Site Visualization Services**

### **Visualizing Data to Enable Better Decisions**

A geographic information system (GIS) is a great tool for visualizing, analyzing, and interpreting site data to better understand relationships, patterns, and trends for a site remediation system.

**Terra Systems Inc. GIS Site Visualization Services** focus on enabling our clients to better manage their data and site information, resulting in faster, more informed decisions about their sites. Related by accurate spatial information, an incredible amount of past or projected future data can be analyzed, interpreted and represented to facilitate decision making.

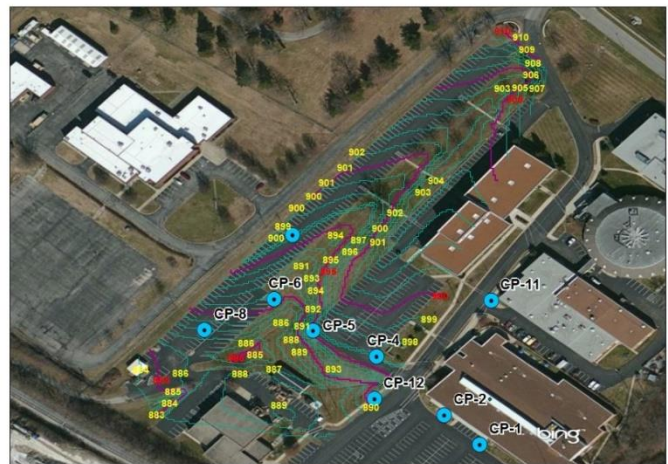
By understanding the remediation system characteristics, Terra Systems scientists and engineers are able to apply our knowledge and capabilities to provide GIS deliverables that enable better visualization of what is happening at a remediation site in three dimensions and over time.

#### **Site Visualization Product Examples**

##### **High Resolution Aerial Imagery**



##### **2D Site Maps**





TOC LEVELS SAMPLED JANUARY 2013 POST INJECTION 2  
 BY ANALYTICAL RESULT IN (mg/L)  
 RELATIVE TO DIRECT PUSH INJECTION LOCATIONS & INJECTION PLUME

ASSUMED  
 RADIUS OF INFLUENCE (ROI)  
 15ft @ ALL WELL LOCATIONS

0 45 90 180 270 Feet

Terra Systems  
 incorporated

corporate  
 office

108 Wilshire Road E  
 Fort Worth, TX 76102  
 Phone 817-766-8951  
 Fax 817-766-8954

**Williamsport Loyal Plaza**  
pH Levels Sampled July 2013

**Terra Systems**  
Environmental & Engineering Solutions  
1000 North 10th Street, Suite 100  
Williamsport, PA 17701  
717.326.1000  
www.terra-systems.com

**Scale:** 0 50 100 150 200 250 300 Feet

**Legend:**  
pH Level Below 6  
pH Level Above 6





# IN-SITU BIOREMEDIATION

The following table summarizes the groundwater sampling data extracted from the maps in the grid:

Sampling Date	Zone 1 (Green)	Zone 2 (Blue)	Zone 3 (Purple)
February 27, 2003	100% (100%)	100% (100%)	100% (100%)
March 13, 2003	100% (100%)	100% (100%)	100% (100%)
February 5, 2003	100% (100%)	100% (100%)	100% (100%)
February 5, 2003	100% (100%)	100% (100%)	100% (100%)
August 17, 2003	100% (100%)	100% (100%)	100% (100%)
February 18, 2003	100% (100%)	100% (100%)	100% (100%)
August 19, 2003	100% (100%)	100% (100%)	100% (100%)
February 15, 2003	100% (100%)	100% (100%)	100% (100%)
May 10, 2003	100% (100%)	100% (100%)	100% (100%)
August 1, 2003	100% (100%)	100% (100%)	100% (100%)
February 5, 2003	100% (100%)	100% (100%)	100% (100%)

**Author & Analyst**  
**Site Manager**  
**Subsiding & Site Data**  
**Site Remediation**  
**Author & Analyst**  
**Subsiding & Site Data**  
**Site Remediation**

**Terra Systems**  
incorporated

corporate office  
130 Hickman Road, Suite 1  
Clement, DE 19703  
Phone 302-790-9553  
Fax 302-790-9554

**PROJECT**  
Champlin Refinery  
Enid, OK

**Site Map Boring Locations & Cross Sections**

The graph displays boring locations and cross sections for the Champlin Refinery in Enid, OK. The Y-axis represents Elevation (ft) from 513000 to 513135. The X-axis represents Stationing (ft) from 2047735 to 2047825. The legend indicates that blue dots represent Boring Locations and red lines represent Cross Sections. The boring locations are labeled RM-S-1 through RM-S-100. The cross sections are labeled RDMP-1 through RDMP-100. The graph shows a general trend of increasing elevation with increasing stationing, with some fluctuations. The boring locations are clustered in the center of the graph, while the cross sections are located at the edges.

**Terra Systems** INCORPORATED  
135 Hickman Road, Suite 1  
Okemah, OK 73159  
Phone 405-766-8833  
Fax 405-766-8835

**PROJECT**  
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Enid, OK

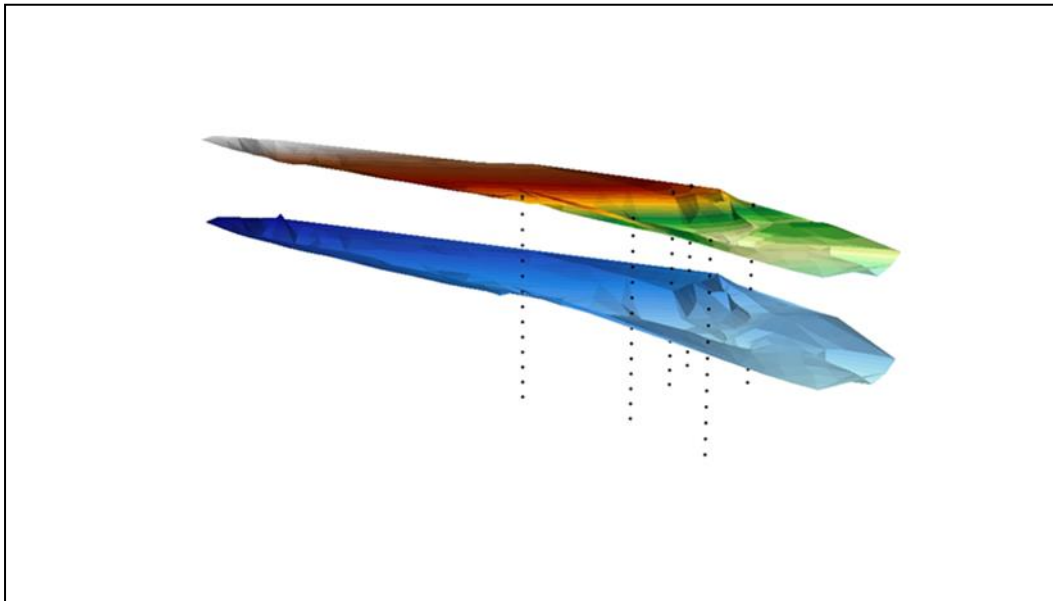
**CROSS SECTION**  
4

**RM-E-2** **RM-S-5** **2012 OB-1** **RM-S-3** **RM-S-1**

**ELEV** **10.8 ft US** **13.7 ft US** **7.2 ft US** **15.7 ft US** **ELEV**

**SC** **CL** **SP** **SW**

**Ground Water Elevation**





## **What Sets Terra Systems Inc. Apart from The Competition?**

**Remediation Experience** – Terra Systems’ scientists and engineers have been developing in situ bioremediation technology since the 1980’s. That experience enables us to offer proven bioremediation products and unequalled customer support unmatched by any of our competitors.

**Bioremediation Product Manufacturer** -- As a product manufacturer, we view environmental consulting companies as our customers, not our competitors and our goal is to make you successful with your clients. That commitment is embodied in our superior products combined with unequalled customer support. Terra Systems is a privately held company with no affiliation or ownership by any environmental consulting company.

**Sustainability Partnership** – As one component of Terra Systems’ Sustainability Partnership Program, GIS site visualization service is focused on assisting our customers reduce the site remediation carbon footprint by optimizing the remediation process. This typically translates into a “greener” lower cost remediation project.

**Integration with site engineering** – Because we are scientists and engineers that use GIS, we can assist with improved system designs, improved operations and maintenance recommendations, and improved system optimization recommendations.

## **GIS Services Provided**

### **Spatial Data Management, Analysis and Visualization**

- Standardize, organize, analyze, visualize client data
- High quality maps and models that empower our client’s ability to make faster, more informed decisions

### **GIS and CAD Integration**

- Tailored, integrated solutions, using both CAD and GIS capabilities

### **Environmental Remediation System Evaluation and Compliance**

- Use GIS to improve remediation system evaluation.
- Assist clients with tracking data for compliance with state and federal regulations