



## **FORENSIC-GEOTECHNICAL EXPLORATION, DATA EVALUATION, AND SINKHOLE REMEDICATION / STABILIZATION SERVICES REPORT**

**Existing Sinkhole - Florida National Cemetery  
Proposed Stabilization Program  
6502 SW 102nd Avenue  
Bushnell, Sumter County, Florida**

**KCI Project No. 28133363.07  
VA Project No. 911NRM14001**

### **Prepared For**

Ms. Kara Roggenkamp, ASLA, LEED

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101 Bellevue Road  
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### **Prepared By**

*KCI Technologies, Inc.  
July 2014*





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17 July 2014

**Subject: Forensic-Geotechnical Exploration, Data Evaluation,  
and Sinkhole Remediation/Stabilization Services Report  
Existing Sinkhole - Florida National Cemetery  
Proposed Stabilization Program  
6502 SW 102nd Avenue  
Bushnell, Sumter County, Florida**

KCI Project No. 28133363.07  
VA Project No. 911NRM14001


Dear Ms. Roggenkamp:

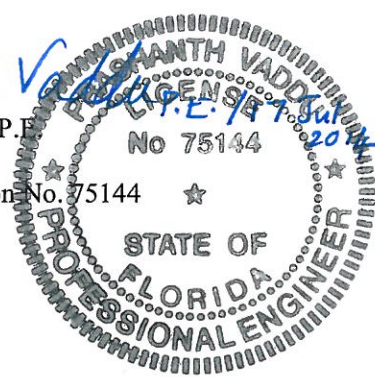
KCI Technologies Inc. is pleased to submit one (1) original plus an electronic “.pdf” version (via e-mail) of the *Forensic-Geotechnical Exploration, Data Evaluation, and Sinkhole Remediation/Stabilization Services Report* to M. T. R Landscape Architects, LLC (Client), for the project referenced above.


It has been a pleasure to work on this project. We look forward to being involved during the construction phase of the project as well. Please contact us should you have any questions or require additional information.

Sincerely,

**KCI Technologies, Inc.**

  
Prashanth Vaddu, P.E.  
Project Manager  
Florida Registration No. 75144



  
Dhirendra S. Saxena (Sax), P.E. F.ASCE  
Florida Registration No. 19387  
Forensic Engineering Corporate Practice Leader  
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## **1.0 INTRODUCTION**

### **1.1 Terms of Reference**

KCI Technologies Inc. was retained by M. T. R Landscape Architects, LLC, (client) to provide certain geotechnical exploration and stabilization/remediation services to address the existing sinkhole located on the Florida National Cemetery (FNC) property located at 6502 SW 102nd avenue, in Bushnell, Sumter County, Florida (hereafter referred to as the "project site"). Refer to **Figure 1** for a Project Site Location and Vicinity Map. These services were performed upon written authorization from the client.

### **1.2 Project Description and Background**

Based on a review of the "Scope of Work – Geotechnical Investigation" document dated 14 February 2014 and information provided by Mr. Jeffery R. Weiss, P.E. (KCI's Regional Practice Leader – Mechanical – Electrical, GMA), the client, and site reconnaissance, project details are summarized below:

1. An apparent subsurface subsidence appeared in mid-2013 within a pond area located on the FNC property located in Bushnell, Florida. Information indicating the location as well as two pictures of the subsurface subsidence was shared by the VA's personnel (via e-mail dated 26 February 2014) with KCI's representative.
2. During our site visit (3 June 2014) and interview with the Assistant Director of the facility (Mr. Bernard A. Blizzard), Mr. Blizzard indicated that the top of the subsurface subsidence may have widened due to the rains (prior to our site visit).
3. We were also informed that this general area (pond area) of FNC may be used in the future for a roadway as a part of future expansion of the cemetery.

*Limitations of the work performed for this project, including this report itself, are discussed in **Section 7.0**.*

### **1.3 Purpose and Scope of Work**

The purpose of the forensic-geotechnical exploration and stabilization/remediation services completed by KCI for the project site was to describe, in general terms, soil and ground-water conditions encountered at the site and to evaluate the subsurface conditions to delineate the lateral limits of the subsidence. To achieve this purpose, the scope of services included the following elements:

1. review of readily available site geological data, hydrogeological data, Florida Geological Society's sinkhole/subsidence database in conjunction with KCI's database of sinkholes and subsurface geotechnical information in the vicinity of the pond area;



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2. site visit by KCI's project engineer to evaluate existing site conditions to assist in planning the geophysical as well as geotechnical investigation(s);
3. geophysical survey, of an approximately 50-75 ft. radius from the center of the existing subsidence, using Ground Penetrating Radar (GPR);
4. advancing four Standard Penetration Test (SPT) borings into competent limestone in the vicinity of the existing subsidence in general accordance with applicable ASTM standards;
5. obtaining representative soil and rock samples from the test borings;
6. backfilling and/or grouting the boreholes in general accordance with applicable guidelines;
7. reviewing soil samples and evaluating generalized test boring data as well as ground-water conditions;
8. compiling the field exploration data, engineering conclusions, and stabilization/remediation recommendations including a remediation layout plan required to stabilize the subsidence/sinkhole; and,
9. providing one (1) original signed and sealed report by a registered engineer of the firm plus an electronic version (.pdf) via e-mail.

## **2.0 REVIEW OF READILY AVAILABLE INFORMATION**

As a part of our scope we have reviewed topographic map and potentiometric map prepared by United States Geological Survey (USGS) and soil survey map prepared by the United States Department of Agriculture – Natural Resource Conservation Service (USDA-NRCS).

### **2.1 Topographic and Potentiometric Maps**

Our review of the USGS topographic quadrangle titled "Saint Catherine Quadrangle" determined that the existing site is at an approximate elevation of 30 ft. (NAVD 1988 datum) (refer to **Figure 3 for Topographic Quadrangle Map**). We also reviewed the USGS potentiometric map titled "Potentiometric surface of the upper Floridan aquifer in the St. Johns River Water Management District and Vicinity, Florida, May 2009". The potentiometric map indicated the elevation of the upper Floridan aquifer at the project site to vary between approximately 36 and 58 ft. (NGVD 29 datum) (refer to **Figure 4 for a Potentiometric Map**).

## **2.2      Sinkhole Incidence Map Review**

Our review of both KCI's database as well as the Florida Geological Survey (FGS) database indicates that the nearest recorded subsidence/depression/sinkhole from the project site was approximately 5 miles away. As per the disclaimer on FGS's website "FGS maintains and provides a downloadable database of reported subsidence incidents statewide. While this data may include some true sinkholes, the majority of the incidents have not been field-checked and the cause of subsidence is not verified." The data presented in the sinkhole incidence map (**Figure 2**) is for informational purposes only and provides a relative perspective of sinkhole incidences in the vicinity of the project site.

## **2.3      Geological Setting and Soil Survey Map**

According to the Geology of Sumter County (Florida Geological Survey (FGS) Report of investigation 98), the project site is located in the Central or mid-peninsular zone of the major trans-peninsular physiographic divisions of Florida. The test borings performed by us confirm the general geology of the site indicating undifferentiated sands and clays underlain by limestone pinnacles and troughs.

Based on our review of the information from USDA-NRCS, the surficial shallow geology of the project site is dominated by Candler sand, 0 to 5 percent slopes (Map Unit "4") (refer to **Figure 5** for USDA-NRCS Soil Survey Map).

## **3.0      FIELD EXPLORATION AND LABORATORY TESTING PROGRAM**

The field exploration program consisting of a site visit and interview with FNC personnel, geophysical and geotechnical investigation(s) was performed between 3 June 2014 and 17 June 2014. Selected photographs from the site visit as well as the follow up testing are appended to this report. During the site reconnaissance visit performed on 3 June 2014 by KCI's project engineer (Mr. Prashanth Vaddu, P.E.), Mr. Blizzard (Assistant Director at FNC) indicated that the general area of the existing pond (where the subsidence has occurred) may become a part of future expansion of the cemetery. However, since the details of future construction are unknown at this time we have not evaluated the future construction aspect in this report. The subsurface conditions at the project site were initially evaluated by performing a ground penetrating radar (GPR) survey at the project site.

### **3.1      Geophysical Survey**

Ground penetrating radar (GPR) survey of approximately 50-75 ft. radius from the center of the existing subsidence was performed on 3 June 2014 by KCI's subconsultant, GeoView, Inc. The GPR data was collected with a Mala radar system. The GPR settings used for the survey along with the methods employed for geological characterization studies are explained in GeoView's report appended to this report (refer to **Appendix A**). Subsequent to completion of the initial geophysical program and review of preliminary data with the client (via telephone) a geotechnical investigation was planned by KCI's engineers.

### **3.2      Geotechnical Investigation**

The geotechnical investigation consisting of four (4) standard penetration test (SPT) borings was performed by KCI's subcontractor, Standard Drilling Services, LLC, on 17 June 2014 in the presence of KCI's engineering representative. The test locations are illustrated in **Figure 7**.

The test borings were advanced by our subcontractor using a track-mounted drill rig with a manual hammer and a wet-rotary procedure. The SPT borings were performed in general accordance with ASTM – D- 1586. Representative soil samples were obtained using the split-barrel sampling procedure. In this procedure, a 2-in. outer-diameter, split-barrel sampler is driven into the soil by a 140-lb hammer with a free-fall of 30-in. The number of blows required to drive the sampler through a 12-in. interval is termed the Standard Penetration Resistance, or “N”, value, and is indicated for each sample on the boring log. The “N” value may be taken as an indication of the relative density of granular soils in-situ.

Soil samples obtained during the field exploration program were sealed immediately in the field and brought to KCI's laboratory for further examination. Boreholes were grouted/backfilled as per applicable guidelines. KCI's boring logs along with comments are presented in **Figure 8**. It should be noted that the indicated boundaries between soil types are approximate, and that actual transition between soil types may be gradual.

No survey for the as-drilled boring locations was performed. A survey may be performed to determine precise location and ground elevation for the tests.

### **3.3      Soil Classification**

Visual classification of all soil and rock samples in general accordance with ASTM D 2488 was performed by KCI's engineering representative(s) at KCI's Lakeland laboratory. The observations based on the visual classification are summarized at the respective sample depths on the boring logs presented in **Figure 8**.

All the soil samples will be retained by KCI for 90 days from the date of release of this report. Unless a written request to hold the soil samples for more than the stipulated time (90 days from the date of this report) is received from the client, all the soil samples collected by us will be discarded without any further notice.

## **4.0      SITE, GROUND-WATER, AND SOIL CONDITIONS**

### **4.1      Site Features**

The project site is located within the limits of FNC located at 6502 SW 102nd avenue in Bushnell, Sumter County, Florida, as illustrated on the Project Site Location and Vicinity Map presented in **Figure 1**. The depression/subsidence that appeared in 2013 was along the northwest portion of FNC property within an existing pond. The area around the subsidence is overgrown with grass and shrubs. A water inlet structure



was also observed along the northern portion of the pond closer to the roadway at least 100 ft. to the northeast of the existing depression/subsidence. The southern, eastern and western perimeters of the pond are surrounded by trees while the northern portion is bordered by a paved roadway. The existing pond is approximately 3 to 5 ft. deep in relation to the top of bank.

The existing subsidence is approximately centered within the southern half of the pond with a top that is approximately 12 ft. at the widest dimension and 15 ft. deep. While the top of the subsidence has sloughed-in and apparently increased in size (according to Mr. Blizzard) due to rain events that occurred prior to our site visit, the actual diameter of the subsidence seems to be approximately 2 ft. in diameter starting about 4 ft. below the ground surface to the bottom of the subsidence (approximately 15 ft. below ground).

#### **4.2      Subsurface Soil and Ground-Water Conditions**

General subsurface soil conditions at boring locations were observed to be consistent with the soils encountered during previous investigation(s) performed by KCI at the FNC administration building.

1. Subsurface soils encountered within the exploration depths generally consisted of alternating layers of **poorly-graded sand (SP) and clayey sand (SC) underlain by clayey sand to sandy clay (SC-CL), weathered and/or fractured limestone (WLS), and Limestone (LS)** from the ground surface to boring termination depths of approximately 40 to 50 ft.
2. Depth to the top of competent limestone varied from approximately 33.5 ft. (in SB-2) to 38.5 ft. (in SB-3) below ground surface. A complete loss of drilling fluid circulation was observed in all of the borings at or slightly above the soil and weathered limestone interface.
3. No ground-water table was encountered in any of the test borings prior to introduction of drilling fluid at 10.0 ft. below ground surface. All of the borings were grouted with portland cement from the bottom to top of the borings immediately upon completion of drilling due to safety considerations. No stabilized ground-water table readings were recorded.

## **5.0 OBSERVATIONS, CONCLUSIONS, AND RECOMMENDATIONS**

Based on current conditions, data obtained during the field exploration program, information provided by the client, and laboratory testing program for this project, our observations, conclusions, and recommendations are presented below.

1. Based upon our review of the potentiometric maps and the water level observations within the test borings the likelihood of a downward hydraulic gradient being present at the project site cannot be ruled out. The presence of a downward hydraulic gradient is conducive to the formation of sinkholes.
2. The subsurface soils encountered within the test borings confirm the general subsurface geology of this general area of Florida. The limestone in this area of Sumter County is known to be overlain by sands and clays.
3. Test boring SB-2 penetrated sands all the way to the top of weathered limestone while the remaining borings encountered sands underlain by clays. The limestone depths varied between 18.5 ft. (in test boring SB-2) and 33.5 ft. (in test boring SB-1) confirming the pinnacles and troughs formation of the limestone in this general area of Florida.
4. The subsurface soils encountered at the project site are conducive to the formation of “Chimney Sinkholes”. Chimney sinkholes are features that have a near vertical shaft and are limited in diameter as the one observed within the pond area.
5. As outlined earlier in **section 2.0** of this report a GPR survey was performed by our subconsultant GeoView, Inc. on 3 June 2014 for a 50-75 ft. radius of the existing subsidence. The GPR data revealed a total of 11 anomalies within the surveyed area. The anomalies were numbered “1” through “11” rated for their significance with 1 being most significant and 11 being the least significant (refer to **Figure 6** for an overlay of the anomalies on an aerial).
6. Based upon the GPR survey results as outlined in GeoView’s report, GPR Anomalies 1 and 2 are characterized by a severe downwarping of 3 to 5 ft. toward a common center and possible discontinuity in the GPR reflector set associated with various soil horizons. GPR Anomalies 3 through 7 are characterized by a moderate downwarping of 1 to 3 feet toward a common center and possible discontinuity in the GPR reflector set associated with various soil horizons. GPR Anomalies 8 through 11 are characterized by a localized significant increase in the depth of penetration of the GPR signal only.
7. Based upon our evaluation of the site conditions and the conclusions drawn by our geophysical subconsultant, GPR Anomaly “1” (most severe as indicated by

- GeoView) encompassing the existing subsidence was further explored through four test borings. The location of the test borings was strategically selected in coordination with the client.
8. The test borings were advanced in the approximate center(s) of Anomaly “1” and encountered relatively soft soils above the soil and WLS interface in conjunction with complete loss of drilling fluid circulation (LOC). Weathered/fractured limestone was encountered in all of the borings varying in relative density from very loose to dense.
  9. While some sinkhole activity indicators were noted in the borings, commissioned by us, majority of the sinkhole activity indicators were absent. Our evaluation indicated that the existing subsidence may very likely be isolated.
  10. However, out of abundance of caution and due to the presence of the significant anomaly (Anomaly “1”) we recommend stabilization of a 60 ft. x 60 ft. area that would encompass all the four test borings and the centers of the nearest anomalies identified in anomaly “1”.
  11. Due to the irregular character (relative density) and depth of the weathered/fractured limestone at this site accompanied by loss of circulation of drilling fluid we recommend that the stabilization/remediation program should begin at the top of the competent limestone encountered between 33.5 (near test boring SB-2/4) and 38.5 ft. (near SB-1/3). The details of the remediation program are outlined in the following sections (**Sections 5.1 through 5.4**).

## **5.1 Recommended Remedial Measures**

In order to specifically address a stabilization/remediation program for the subsoils at the project site, a two-stage grouting program consisting of primary and secondary control points is recommended as described below:

1. Compaction grouting (vertical points) around the perimeter of the proposed remediation limits (extending approximately 30 ft. from the center of the sinkhole) at a total of 12 primary grouting point locations (refer to **Figure 9** for the proposed grouting layout).
2. Compaction grouting (vertical points) inside the limits of the delineated remediation layout boundary at 13 secondary grouting point locations (refer to **Figure 9** for the proposed grouting layout).
3. We estimate the cost for the remediation program to range between \$43,000 and \$46,000. The cost range indicated is an estimate only and actual costs may vary

significantly. A tabulation of footage and grouting quantities is provided in this report (refer to **Table 1 – Estimated Quantities**) to secure bids from specialty contractors. It is estimated that 5 cubic yards and 3 cubic yards of grout may be pumped in each of the Primary and Secondary points, respectively. A total of 5 cubic yards of grout is estimated to be pumped in the center of the sinkhole.

4. In order to provide an effective and contained grouting program the primary grouting points must be completed prior to the secondary set of grouting points. The success of the remediation program will depend on the sequence in which the grouting program is accomplished. Accordingly, the subcontractor should follow the numerical sequence indicated on the grouting layout plan (**Figure 9**). The primary and secondary set of grouting points must be placed approximately at 10 ft. centers and grouted from the top of competent limestone ranging from an average depth of 33.5 to 38.5 ft. below ground surface within a 30 ft. radius of the existing sinkhole.
5. It is estimated that the Primary grout points and the points at the center of the sinkhole will consume more grout when compared to the secondary grout points.

A specific grouting layout plan that is best suited and customized for this project is appended to this report (refer to **Figure 9** for grouting layout). The cost estimate indicated under bullet item 3 of **section 5.1** includes costs associated with engineering monitoring and PRT program. Once a specialty subcontractor has been engaged by the client, KCI can provide grouting specifications and engineering services related to the construction/implementation of the remediation program at an additional cost.

## **5.2      Monitoring Program**

We strongly recommend that KCI be retained to monitor the compaction grouting activities to document injection locations, depths, rate of insertion/extraction, and quantities, as well as to recommend modifications in the injection program, as necessary, based on field observations.

## **5.3      Post Remediation Exploration**

After a 10-day stabilization period, following completion of the stabilization program, a post-remediation testing (PRT) program must be performed and will consist of SPT borings and/or piezocone penetration test (PCPT) soundings to assure effectiveness and acceptance of the grouting/stabilization/remediation program.

It is recommended that KCI be retained to review and monitor the remediation program as well as perform the post-remediation exploration and acceptance program. Otherwise, no responsibility for remediation compliance with the design concepts, plans, and recommendations presented herein will be assumed by KCI.

## **5.4      Supplemental Comments**

The compaction grouting program must be performed by a specialty contractor with a minimum of five years of experience in similar soil stabilization. KCI has worked with several contractors in the field who specialize in this type of work and can provide contact information for the same upon request. A copy of grouting program should be forwarded to at least three speciality sub-contractors for quotation.

Stabilization by grouting is not an exact science and, therefore, KCI's best judgment and consideration of geotechnical remediation options were used in developing comments for this specific project. The grouting method recommended for this site should mitigate the effects of the unique underground conditions at the specific area of remediation but does not guarantee or warranty that any future subsidence will not occur at this area, or at any other location on the project site. The grout quantities provided in this report are merely estimates based on our experience with similar projects. The grouting quantities may vary significantly during construction/implementation of the remediation program.

## **6.0      CONSTRUCTION CONSIDERATIONS**

Due to nature of the site subsurface conditions, it is imperative that KCI be retained to provide and perform the engineering and quality control testing services during the construction phase of the project. The services to be provided by KCI include:

- ▶ monitoring of subsurface grouting and post-grouting acceptance testing;
- ▶ general quality control testing during remediation/stabilization.

**A sound geotechnical engineering evaluation does not end with the final design. Design is an ongoing process throughout construction/implementation. Because of KCI's familiarity with the project site, its condition as related to geotechnical design elements, and the intent of the engineering design, we are most qualified to address issues during construction/implementation.**

## **7.0      LIMITATIONS**

### **7.1      General**

This geotechnical engineering services report has been prepared solely for the exclusive use of the client, **M. T. R Landscape Architects, LLC and the Veterans Administration Office (VA)**, in accordance with generally accepted geotechnical engineering standards. No other warranty is expressed nor implied. It should be noted that the information presented in this report addresses only soils and deposits normally influenced by the proposed construction. Other conditions may exist which were not detected or were not made known to KCI.

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## **7.2      Scope of Services**

This report has been prepared to aid in the evaluation of subsurface conditions only at the locations of test borings illustrated in **Figure 7**. The scope of services is limited to the specific project and location described herein, and the description of the project represents KCI's understanding of significant project aspects related to soil characteristics. In the event that any changes in the design or location of the structure as outlined in the report are planned, KCI must be informed so that the changes can be reviewed and the observation, comments, and conclusions of this report modified or approved in writing. **Any conclusions or recommendations made by others based on the data contained herein are not the responsibility of KCI, unless we are given the opportunity to review those conclusions and recommendations.**

## **7.3      Changed Conditions**

The information submitted in this report is based upon the data obtained from borings performed at locations indicated in the Test Location Plan and from any other information discussed in this report. **The report does not reflect any variations which occur between these borings. In the performance of subsurface exploration, specific information is obtained at specific locations at specific times. However, it is known that site and subsurface conditions can change with time and under anthropologic influences. Additionally, variations in soil, rock, and ground-water conditions exist on most sites between boring locations.** The nature and extent of the variations may not become evident until construction. If variations then appear, it will be necessary to re-evaluate the recommendations of this report after performing on-site observations during the construction period and noting the characteristics of any variations.

It is the responsibility of the client to see that the recommendations in this report are brought to the attention of all concerned parties. Because of the possibility of unanticipated subsurface conditions occurring, it is recommended that a "changed condition" clause be provided in contracts with the general contractor and with subcontractors involved in foundations or earthwork construction. Furthermore, it is recommended that KCI be retained to review the site preparation and foundation phases of construction. Otherwise, no responsibility for construction compliance with the design concepts, plans, specifications, and recommendations presented herein can be assumed.

## **7.4      Reproduction**

The reproduction of any portion of this report in plans or other engineering documents supplied to parties other than the client or assigned parties must bear the language indicating that the information contained in the report is for general information only, and that neither the client nor KCI are liable to such parties.



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## **8.0 REFERENCES**

<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

<http://www.dep.state.fl.us/geology/geologictopics/sinkhole.htm>

<http://www.usgs.gov/pubprod/>

<http://fl.water.usgs.gov/PotMap/>

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**Table 1 – Stabilization/Remediation Bidding Estimate Table**

<b>Item no</b>	<b>Item</b>	<b>Unit type</b>	<b>Quantity</b>	<b>Unit Price</b>	<b>Estimated Cost</b>
1	Mobilization/ Demobilization / Permitting	Lump Sum	1		
2	Predrilling of grout pipe	Lineal feet	900		
3	Grout quantity	Cubic yards	100		
<b>TOTAL COST</b>					<b>\$</b>

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VA Project No. 911NRM14001

KCI Technologies Inc.  
17 July 2014

# PHOTOGRAPHS

Site reconnaissance and testing

Ms. Kara Roggenkamp, ASLA, LEED Green Associate  
M. T. R Landscape Architects, LLC  
**Forensic-Geotechnical Exploration, Data Evaluation,  
and Sinkhole Remediation/Stabilization Services Report**  
**Existing Sinkhole - Florida National Cemetery**  
Proposed Stabilization Program  
6502 SW 102nd Avenue  
Bushnell, Sumter County, Florida  
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**Photo 1: View of the existing sinkhole**



**Photo 2: Top view of the existing sinkhole**

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**Photo 3: View of the GPR survey in progress**



**Photo 4: View of SPT drilling in progress**

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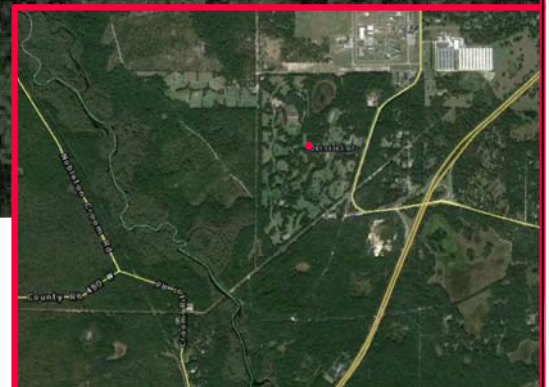
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## Figures

- Figure 1:** Project Site Location and Vicinity Map
- Figure 2:** Sinkhole Incidence Map
- Figure 3:** USGS Topographic Quadrangle Map
- Figure 4:** Potentiometric Surface Map – May 2009
- Figure 5:** USDA-NRCS Soil Survey Map
- Figure 6:** GPR Anomalies Map
- Figure 7:** GPR Anomalies, Test Location Plan, and Remediation/Stabilization Area Limits
- Figure 8:** Subsurface Soil Stratigraphy
- Figure 9:** Stabilization/Remediation Layout Plan



C:\KCI\2014\28133363\07 Florida National Cemetery Sinkhole\ Drawing Files\ KCI DWG\28133363-07 2011 C3D.dwg, Fig. 1 Site Location Map, 8-V



WGS84  
LAT: 28.607410° N  
LONG: 82.214443° W  
28133363.07.dwg (07-09-2014)

TITLE

Project Site Location and Vicinity Map

SOURCE

Google Earth

DATE 9 July 2014

DRAWN BY JCox

CHECKED BY DSS

SCALE

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PROJECT NO.

28133363.07

FIGURE NO.

1



**KCI TECHNOLOGIES**  
ENGINEERS | PLANNERS | SCIENTISTS | CONSTRUCTION MANAGERS

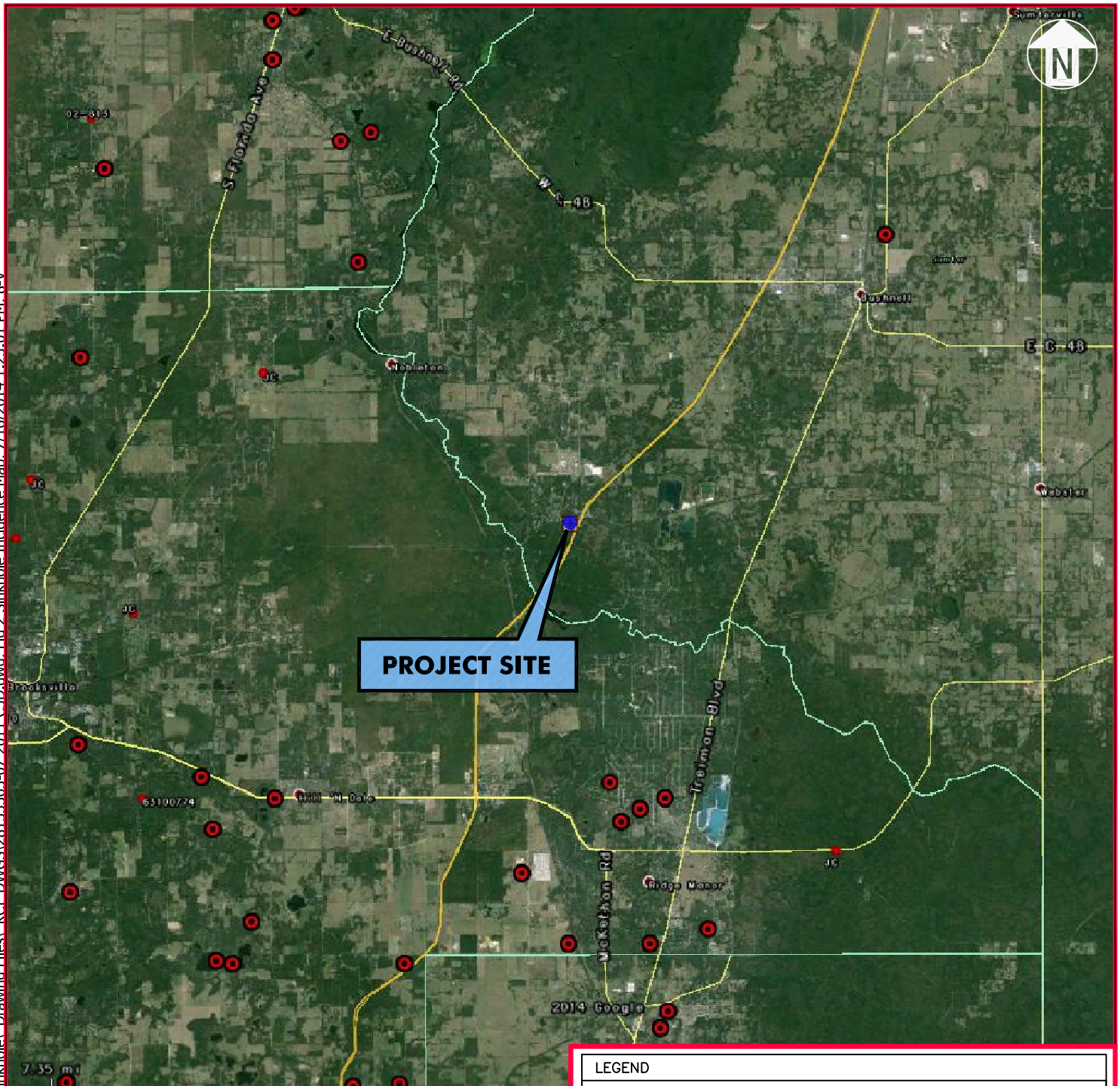
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C:\KCI\2014\28133363\07 Florida National Cemetery Sinkhole\ Drawing Files\ KCI\_DWG\28133363-07 2011 C3D.dwg, Fig 2 Sinkhole Incidence Map, 7/16/2014 1:23:01 PM, 8-V



WGS84  
LAT: 28.607410° N  
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28133363.07.dwg (07-09-2014)

#### LEGEND

-  Project Site Location
-  FGS-DEP Records of Documented Sinkhole Location(s)
-  Personal Records of Sinkhole Location(s)

#### Sinkhole Incidence Map

SOURCE Google Earth, Personal Records and FGS Database

DATE 9 July 2014

DRAWN BY JCoX

CHECKED BY DSS

SCALE nts

PROJECT NO. 28133363.07

FIGURE NO. 2

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