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December 6, 2013

Curt Stovall, P.E.
Engineer
Federal Facilities Unit
Hazardous Materials and Waste Management Division
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South, B2
Denver, CO 80246-1530

SUBJECT: Field Investigation Work Plan, Landfill Zone Operable Unit 2 (OU2), Former Lowry Air Force Base, Colorado

Dear Mr. Stovall,

IRG Redevelopment I (IRGI) is submitting this Field Investigation Work Plan to outline the initial subsurface investigation proposed at its property, which includes the former landfill (OU2), located at the former Lowry Air Force Base (Lowry). IRGI has received written comments on this document and has also received additional comments during several working sessions from the Colorado Department of Public Health and Environment ("CDPHE" or the "Department").

IRGI appreciates the Department's willingness to work with us on this important project. No modifications to this plan will be made without the Department's prior approval. If you have any questions regarding the procedures outlined in this plan, please contact me at (303) 972-6633.

Sincerely,
IRG-Redevelopment I, LLC

Brent C. Anderson
President

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Lowry Project File

Field Investigation Work Plan

Operable Unit 2 Landfill Zone
Lowry Vista Redevelopment Project
Denver, Colorado

Prepared for:

IRG Redevelopment I

7991 Shaffer Parkway, Suite 300

Littleton, Colorado

Prepared by:

IRG Assumptions, LLC

December 6, 2013

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Acronym List

ACM	Asbestos Containing Material
AF	US Air Force
AFB	Air Force Base
ASTM	American Society for Testing & Materials
bgs	below ground surface
CABI	Colorado-certified Asbestos Building Inspector
CAP	Corrective Action Plan
CDPHE	Colorado Department of Public Health and Environment
COC	Chain-of-custody
COI	Chemical of interest
DRO	Diesel Range Organics
DPT	Direct Push Technology
FID	Flame Ionization Detector
FFS	Focused Feasibility Study
FOSET	Finding of Suitability for Early Transfer
GC-MS	Gas chromatography–mass spectrometry
GRO	Gasoline-range organic
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSA	Hollow Stem Auger
ID	Inside Diameter
IDW	Investigative Derived Waste
IRGI	IRG Redevelopment I
kg	Kilogram
LAFB	Lowry Air Force Base
LPL	Low Permeability Layer
mg/L	milligrams per liter
OD	Outside Diameter
OU	Operable Unit
OU2	Operable Unit 2
PID	photoionization detector
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation
SACM	suspect asbestos containing material
SRI	Supplemental Remedial Investigation
SVOC	semi volatile organic compound
µg/L	micrograms per liter
USEPA	United States Environmental Protection Agency
VL	Vegetative Layer
VOC	Volatile Organic Compound

1.0 Introduction

IRG Redevelopment I, LLC (IRGI) submits the following Field Investigation Work Plan ("Work Plan") for the Operable Unit 2 (OU2) Landfill Zone located at the former Lowry Air Force Base (LAFB) in Denver, CO. The OU 2 Landfill Zone (Site) is located east of the AMLI apartments and north of East Alameda Avenue, between its intersections with Clinton and South Xenia Streets in Denver, Colorado (see Figure 1).

This Work Plan outlines the scope of the subsurface boring investigation that is planned on the Site to support the Lowry Vista redevelopment project. All work will be conducted in compliance with the requirements and procedures approved by the Colorado Department of Public Health and Environment (CDPHE) in the Cap Penetration Plan.

Since groundwater monitoring is not an objective of this investigation, all boreholes are to be abandoned the same day as drilling. Table 1 provides a summary of each of the planned borings and their planned boring depths.

2.0 Site Background

The OU2 Landfill Zone encompasses approximately 69.7acres and is located in the southern portion of the LAFB, approximately five miles east of downtown Denver. The OU2 Landfill Zone is bordered by Alameda Avenue to the south, the Westerly Creek Dam wetlands to the north, Westerly Creek to the east, and AMLI multi-family units to the west of the dam embankment.

The landfill was historically used for disposal of base-related waste and associated construction waste and debris primarily from training activities conducted at the former LAFB. Disposal most likely occurred from approximately 1948 until 1986. Disposal was generally done in trenches that were excavated in the landfill surface. IRGI conducted an extensive review of historical aerial photographs of the Lowry Vista site to identify trenching/disposal locations. Based on this analysis approximately 14 % of the overall area of the OU2 Landfill Zone is covered with waste disposal trenches (see Figure 2). It is assumed that the remaining area outside of the trenches is native or disturbed fill materials. In addition, major investigations were conducted at the OU2 Landfill Zone during the 1990 Remedial Investigation (RI), 1995 Supplemental Remedial Investigation (SRI), and the 1998 Focused Feasibility Study (FFS) to determine the nature and extent of contamination present in soil, soil gas, surface water, and groundwater. Reports for all of these activities are available as part of the Administrative Record for LAFB.

3.0 Scope/Specified Procedures

IRGI will perform this Work Plan in order to:

- Assess the location, contents, and distribution of waste trenches and other fill materials beneath the cap;
- Obtain geotechnical information for the design of buildings, roadways, and utilities; and,
- Ascertain if landfill gas exists directly above identified trenches to evaluate potential mitigation needs for the construction of residential and commercial buildings, roadways, and utilities.

The investigations will be accomplished by methods and procedures approved in the Cap Penetration Plan. This initial subsurface investigation will be performed by IRGI. In general, the scope of the subsurface investigation includes the following:

- Subsurface exploration will be conducted at approximately 267 direct push technology (DPT) boring locations inside the environmental mitigation zone (covenant boundary) to assess locations of waste trenches, subsurface soil conditions below the cap, and the condition of potential borrow source soil for beneficial re-use.

- A soil gas survey will be conducted by installing, using DPT, approximately thirty-one (31) soil gas probes at varying depths above trench locations at the Site.

- Subsurface geotechnical conditions will be investigated by drilling approximately 38 hollow stem auger (HSA) exploratory boring locations inside the environmental mitigation zone (covenant boundary). The geotechnical study is designed to assist in determining the design criteria for site development.

Initial locations of all borings will be surveyed and staked prior to mobilization. These locations are shown on Figure 3. Fieldwork, data collection, sampling for chemical analysis, and report preparation will be conducted under the supervision of an environmental professional. All site work will be completed by certified hazardous waste operations and emergency response (HAZWOPER)-trained personnel. Geotechnical analysis will be conducted under the supervision of a registered professional engineer. IRGI will provide on-site personnel with operational protocols to ensure that test hole advancement is in compliance with the Cap Penetration Plan and any applicable regulations and guidelines as they pertain to personnel safety, environmental monitoring, materials handling, equipment decontamination, etc..

Samples and materials brought to the surface will be visually assessed for the possible presence of solid waste, asbestos, hazardous materials, or otherwise impacted soil. This assessment will be performed by a qualified environmental professional, and IRGI will provide a Colorado-certified asbestos building inspector (CABI) for oversight of all soil disturbing activities to assure that materials are handled properly. If such materials are encountered, the contractor will be responsible for containing, characterizing, and arranging transport of those materials to an appropriate disposal facility. Specific requirements pertaining to environmental monitoring, specimen containment, and disposal procedures are described in further detail below.

Additionally, no trenching or larger-scale excavations will be performed as part of this investigation. All investigative derived waste (IDW) (soil, purge water, and decontamination water) will be containerized and characterized for disposal as out lined in the Cap Penetration Plan.

3.1 Subsurface Investigation Borings

Subsurface DPT borings are to be focused on defining the nature and extent of the trenches identified through aerial photographic analysis, evaluating subsurface conditions in areas identified for residential/commercial buildings, and to evaluate subsurface conditions in areas of potential grading and borrow source material. Continuous cores will be collected and logged by an onsite geologist utilizing DPT sampling methods. The borings will be advanced by continuous core DPT, using a new, clean disposable sample liner in an approximate 2.25-inch outer diameter, 4-foot-long core sampler at each borehole to collect samples to depth. All borings will be advanced under the supervision of a qualified engineer/geologist who will log the boreholes in the field. The field geologist will record a lithologic interpretation on the soil boring log.

A portion of the soil from each boring will be placed in a new, one quart ziplock® bag for headspace analysis utilizing a photoionization detector (PID) or a flame ionization detector (FID). PID/FID readings and corresponding depth intervals will also be noted on the log. If unusual staining, debris, odor, or elevated or readings are observed in any of these borings, it will also be described in detail in the field geologist's boring log.

It is not anticipated that environmental samples will be collected for chemical analyses from these boreholes (with the exception of soil to be screened for potential beneficial re-use). The presence or absence of landfill materials will be determined by both visual, PID/FID, and olfactory observation of the direct push returns. The actual number of test holes and their locations may vary slightly, depending on the anticipated dimensions of the trenches. The location of each boring will be staked and numbered. If refusal is encountered or if there is poor recovery such that an insufficient characterization can be made, a new borehole will be advanced and logged at an adjacent location and annotated in the field notes.

If debris is observed in the borings, the field geologist will collect and bag samples of the debris in order to conduct a visual assessment. If SACM is is identified in the debris, the field geologist will note the specific location and depth of the sample for incorporation into the characterization report. The IRGI CABI will make an initial assessment of the material and the IRGI Oversight Coordinator will be notified for final assessment, appropriate handling, and disposal of the suspect material.

Final borehole locations and depths will be determined in the field, as the subsurface profile becomes evident. All returns will be collected in s 55-gallon steel drum and characterized for disposal as directed in the Cap Penetration Plan.

3.1.1 Borings to Evaluate Soil in Proposed Grading Areas

The northern portion of the Site has been identified as a potential borrow source during initial site grading planning. An additional 52 shallow borings will be advanced on the northern portion of the Site to visually characterize the subsurface soils in proposed excavation areas. These borings are labeled CA-1 through CA-53 (CA-35 was deleted) and shown in purple on Figure 3. This soil will also be visually assessed for beneficial re-use as fill material for future redevelopment. These borings will be advanced to 3 feet below the proposed rough grading for the site. Up to 10 composite samples may be collected for chemical analysis from these shallow borings to evaluate the viability for re-use of the soil. It is anticipated that this set of borings will be completed first.

Composite sampling will consist of one aliquot from each boring (if the subsurface soil visually appears non-contaminated) will be collected from the upper five feet and composited into one sample for a grouping of five regionally significant borings outlined with blue lines on Figure 3. This composite sample will be homogenized in a clean one-gallon ziplock® bag. A single sample will be collected from this composite and placed in laboratory-provided sample jars, labeled, and placed on ice in a cooler for shipment to the laboratory under chain-o-custody (COC) protocols. This composite sample will be analyzed to document the conditions of the soil for potential for beneficial re-use. Composite samples will be analyzed for semi-volatile organic compounds (SVOCs) by EPA Method 8270, and for volatile organic compounds (VOCs) by EPA Method 8260B, Metals including radium 226 and 228, gasoline range organics (GRO) and diesel range organics (DRO) by EPA Method 8015B, dioxins, furans, pesticides, and herbicides. One field duplicate sample will also be collected for analysis.

3.1.2 Subsurface Borings to Evaluate/Confirm Trench Locations

Approximately 155 boreholes for shallow environmental exploration will be advanced to assess the locations of trenches identified during aerial photographic analysis. These borings are labeled

TC-1 through TC-155 and shown in orange on Figure 3. It is anticipated that this set of borings will be completed second. The boreholes will be advanced to varying depths below the existing grades to locate trench waste and identify clean or native soil. All borings will cease once waste has been identified and in no cases will borings be advanced further than the upper four feet of any waste body discovered.

The following criteria will be applied to determine if offset borings are necessary to locate the trench locations:

- If no waste is encountered to at least 15 feet bgs, then a second borehole will not be advanced outside the previous boring

- If waste is encountered in the initial borehole, the drilling will stop and a second borehole located approximately 10 feet outside the previous boring perpendicular to the orientation of the trench will be advanced to the maximum depth of 15 feet or until waste is encountered. All offset measurements will be made with a tape measure in the field from the initial location survey stake.

- If waste is encountered in the offset borehole, then a third borehole located approximately 10 feet outside the previous boring perpendicular to the orientation of the trench will be advanced to the maximum depth of 15 feet or until waste is identified

3.1.3 Borings to Evaluate Potential Redevelopment Areas

Approximately sixty borings will be advanced visually characterize the subsurface soil beneath areas identified for future redevelopment as potential residential and commercial building footprints. These borings are labeled FA-1 through FA-60 and shown in blue on Figure 3. These borings will be advanced to a maximum depth of 15 feet below ground surface (bgs) to evaluate the potential for waste to be present under proposed commercial and residential buildings. Borings will be advanced until waste is encountered, or auger refusal is encountered, or the borehole reaches 15 feet bgs, whichever occurs first. All borings will cease once waste has been identified and in no cases will borings be advanced further than the upper four feet of any waste body discovered. It is anticipated that this set of boring will be completed third.

3.2 Soil Gas Survey

The objectives of the soil gas sampling for the Site are as follows:

- Define current conditions in the vadose zone below the OU2 Landfill cap and above where waste trenches have been identified and residential or commercial construction is planned.
- Provide data necessary to target potential soil gas mitigation needs in the investigation area.

- Evaluate potential soil gas migration pathways.

These objectives will be met through installation and sampling of approximately thirty-one (31) soil gas probes using DPT at varying depths above trench locations as shown in magenta and labeled SG-1 through SG-31 on Figure 3. This will be a one-time sampling event to characterize soil gas conditions at the Site and augment the existing soil gas data set from the over six years of post-closure monitoring. Samples will be collected and analyzed for VOCs according to procedures outlined in the Cap Penetration Plan. It is anticipated that this set of borings will be performed as the last DPT borings, just before the HSA borings are performed.

3.3 Geotechnical Borings

The initial geotechnical exploration will be conducted at thirty-eight (38) locations along the alignment of proposed utilities and roadways. The approximate geotechnical borehole locations are labeled as GT-1 through GT-38 and shown in green on Figure 3. It is anticipated that this set of borings will be completed last. The geotechnical boreholes will be advanced to depths of approximately 12 feet below the existing grades. This may be modified based on the results of the previous DPT borings. Borings will be drilled utilizing a 4-inch, continuous-flight auger and a truck-mounted HSA drill rig. Geotechnical samples will be collected using a 2-inch diameter (OD) Standard split-spoon sampler or a 2.5-inch diameter (OD) modified California barrel sampler driven by blows of a 140 pound hammer falling 30 inches. Bulk samples may be collected from the cuttings at the discretion of the rig geologist. Geotechnical sampling will be collected with the initial sample being obtained below the low permeable layer (LPL). All borings will be advanced under the supervision of a qualified engineer/geologist who will log the boreholes in the field and prepare the geotechnical soil samples for transport to the contract geotechnical laboratory.

Samples collected will be returned to the contract laboratory where they will be visually examined and classified by an engineer and specific tests assigned. Laboratory tests will include dry density, moisture content, Atterburg limits, sieve analysis, and gradation.

If debris is observed in the borings or cuttings, the field geologist will collect and bag samples of the debris in order to conduct a visual assessment. If suspect asbestos containing material (SACM) is identified in the debris, the field geologist will note the specific location and depth of the sample for incorporation into the characterization report. The The IRGI CABI will make an initial assessment of the material and the IRGI Oversight Coordinator will be notified for final assessment, appropriate handling, and disposal of the suspect material.

The field geologist will document all daily activities on a field log including, but not limited to, a detail of all Site activities, general observations, and the nature of any waste material

encountered. All returns will be collected in s 55-gallon steel drum and characterized for disposal as described in the Cap Penetration Plan.

3.4 Field Documentation

The field geologist will document all daily activities on a field log including, but not limited to, a detail of all Site activities, general observations, and the nature of any waste material encountered. The original field logs will be maintained in IRGI's project files, and copies will be provided as an attachment to the final site report. The field log will consist of the field geologist's bound field notebook.

Lithology will be documented in accordance with American Society for Testing & Materials (ASTM) D-2488-90 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) (ASTM, 1990). Additional information will be recorded on Lithologic Log for each boring including the borehole location; drilling information; sampling information such as sample intervals, recovery, field parameters; and sample description information. Descriptive information to be recorded in the field will also include:

- Identification of the predominant particles size and range of particle sizes;
- Percent of gravel, sand, fines, or all three;
- Description of grading and sorting of coarse particles;
- Particle angularity and shape;
- Maximum particle size or dimension;
- Plasticity of fines;
- Color (using Munsell Color System);
- Moisture (dry, wet, or moist);
- Consistency of fine grained soils;
- Structure of consolidated materials;
- Cementation (weak, moderate, or strong); and
- Identification of the Unified Soil Classification System (USCS) group symbol.

Additional information to be recorded includes the depth to the water table, caving or sloughing of the borehole, changes in drilling rate, presence of organic materials, presence of fractures or voids in consolidated materials, and other noteworthy observations or conditions, such as the locations of geologic boundaries.

4.0 Data Evaluation and Reporting

All data resulting from this investigation will be presented in a written report submitted to CDPHE and included as an appendix to the Lowry Vista Redevelopment Plan. The report

will consist of a presentation of the raw analytical data, any deviations from the approved work plan, summaries of the review and verification effort, as appropriate, as well as interpretative findings relative to the data and observations. The report will also include the disposition of all IDW generated during the field effort including copies of all disposal manifests. Documentation will also include a description of all cap penetration repairs and any vegetative layer repairs that were required as a result of field efforts. Additional information that will also be included is:

- Survey Data
- Geotechnical test results
- Daily Reports and boring logs
- Photographs of work performed
- Certification of proper borehole abandonment

Analytical reports will contain final results, analytical methods, detection limits, method blank data, and results of quality control (QC) samples (where applicable). In addition, special analytical problems and/or any modifications of referenced methods will be noted. The number of significant figures reported will be consistent with the limits of uncertainty inherent in the analytical method. Data are normally reported in units commonly used for the analyses performed.

The final data report provided by the laboratories will include:

- Cover page/laboratory chronicle;
- Chain-of-custody sample request form;
- Sample data (including QC sample) results; and
- Case narrative describing data qualifiers, sample collection, sample preparation and analysis dates, and a description of any technical problems encountered with the analysis.

QC results include a method blank and laboratory control samples (LCSs). Sample data results, including QC sample results, will also be delivered in an electronic format. Laboratories are responsible for reviewing the electronic deliverable to ensure that the electronic data matches the hard copy reports.

IRGI will have a review of observation and analytical data performed. The purpose of analytical data review is to eliminate unacceptable data and to qualify data for any data quality limitations identified during review. In addition to the laboratory quality assurance (QA) review, all data deliverables will be evaluated, at a minimum, for the following:

- Compliance with requested testing;

- Completeness of analytical report; and
- Confirmation of receipt of all requested deliverables.

Table

TABLE 1
Boring Depth Summary
Field Investigation Work Plan Landfill Zone, Operable Unit 2
Former Lowry Air Force Base, Colorado

Boring Number[1]	Approximate Existing Ground Surface[1] (ft amsl)	Approximate Future Excavation Surface[1] (ft amsl)	Planned Boring Depth[2] (ft bgs)	Approximate Elevation at Bottom of Boring (ft amsl)	Approximate 2003 Pre-cap Construction Elevation[3] (ft amsl)	Approximate 1953 Surface Elevation[4] (ft amsl)	1953 to 2003 vertical difference[5] (ft)	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface) (ft amsl)	Boring Depth to Top of Waste in Trench, if present[6] (ft bgs)
Cut Area (CA) Borings: 52 DPT borings total, Approximately 3 feet below future excavated surface									
CA 1	5414.2	5407.9	**9.3**	5404.9	5411.6	5410.5	1.0	5408.5	5.6
CA 2	5418.6	5412.9	**8.7**	5409.9	5413.5	5410.6	2.9	5408.6	10.0
CA 3	5405.6	5404.2	**5.0**	5400.6	5404.3	5409.6	-5.3	5407.6	-2.1
CA 4	5419.3	5410.4	**11.9**	5407.4	5413.5	5410.6	2.8	5408.6	10.7
CA 5	5404.2	5402.8	**5.0**	5399.2	5402.8	5409.6	-6.7	5407.6	-3.4
CA 6	5416.8	5405.5	**14.3**	5402.5	5413.4	5411.1	2.3	5409.1	7.6
CA 7	5402.7	5402.0	**5.0**	5397.7	5401.6	5410.1	-8.5	5408.1	-5.4
CA 8	5415.0	5406.2	**11.8**	5403.2	5413.7	5411.8	1.8	5409.8	5.1
CA 9	5404.1	5404.7	**5.0**	5399.1	5402.2	5410.9	-8.6	5408.9	-4.8
CA 10	5415.0	5408.4	**9.6**	5405.4	5413.4	5412.6	0.8	5410.6	4.4
CA 11	5410.0	5408.0	**5.0**	5405.0	5402.7	5411.7	-9.0	5409.7	0.4
CA 12	5415.1	5406.1	**12.0**	5403.1	5413.2	5413.3	-0.1	5411.3	3.8
CA 13	5408.9	5406.3	**5.6**	5403.3	5402.6	5412.3	-9.7	5410.3	-1.5
CA 14	5416.0	5403.5	**15.5**	5400.5	5413.3	5413.9	-0.6	5411.9	4.1
CA 15	5405.2	5402.8	**5.4**	5399.8	5402.6	5413.0	-10.4	5411.0	-5.8
CA 16	5417.5	5402.0	**18.5**	5399.0	5413.4	5414.1	-0.7	5412.1	5.5
CA 17	5403.7	5402.0	**5.0**	5398.7	5402.7	5412.9	-10.2	5410.9	-7.2
CA 18	5417.1	5403.5	**16.6**	5400.5	5413.6	5414.3	-0.7	5412.3	4.8
CA 19	5403.8	5402.1	**5.0**	5398.8	5403.2	5412.7	-9.5	5410.7	-6.9
CA 20	5416.3	5403.2	**16.1**	5400.2	5413.7	5414.5	-0.8	5412.5	3.8
CA 21	5403.8	5402.0	**5.0**	5398.8	5402.6	5412.3	-9.6	5410.3	-6.4
CA 22	5409.2	5402.0	**10.2**	5399.0	5407.2	5411.8	-4.6	5409.8	-0.6
CA 23	5410.2	5403.9	**9.3**	5400.9	5409.7	5410.4	-0.6	5408.4	1.8
CA 24	5408.1	5403.3	**7.8**	5400.3	5406.2	5409.1	-2.9	5407.1	1.1
CA 25	5408.8	5403.2	**8.6**	5400.2	5408.1	5409.1	-1.0	5407.1	1.7
CA 26	5406.4	5402.0	**7.4**	5399.0	5407.5	5407.5	0.0	5405.5	0.9
CA 27	5403.0	5402.0	**5.0**	5398.0	Outside Survey	5406.5	NA	5404.5	-1.5
CA 28	5406.9	5402.0	**7.9**	5399.0	5407.8	5407.8	0.0	5405.8	1.2
CA 29	5409.5	5403.3	**9.2**	5400.3	5409.2	5409.1	0.0	5407.1	2.4
CA 30	5412.1	5405.7	**9.4**	5402.7	5411.4	5411.3	0.1	5409.3	2.7
CA 31	5411.8	5405.3	**9.5**	5402.3	5411.4	5411.3	0.1	5409.3	2.5
CA 32	5412.2	5406.7	**8.5**	5403.7	5411.6	5411.2	0.4	5409.2	3.0
CA 33	5414.6	5413.3	**5.0**	5409.6	5414.0	5414.1	0.0	5412.1	2.5
CA 34	5416.9	5407.4	**12.5**	5404.4	5414.5	5414.2	0.3	5412.2	4.7
CA 35[7]	See Note 7								
CA 36	5416.7	5416.0	**5.0**	5411.7	5415.0	5414.4	0.6	5412.4	4.3
CA 37	5420.0	5411.7	**11.3**	5408.7	5417.3	5416.4	0.9	5414.4	5.7
CA 38	5416.5	5407.8	**11.7**	5404.8	5414.6	5414.5	0.1	5412.5	3.9
CA 39	5420.7	5416.1	**7.6**	5413.1	5420.7	5416.6	4.1	5414.6	6.2
CA 40	5416.4	5403.9	**15.5**	5400.9	5413.6	5414.6	-1.0	5412.6	3.7
CA 41	5419.0	5405.7	**16.3**	5402.7	5419.1	5416.0	3.1	5414.0	5.0
CA 42	5420.0	5408.8	**14.2**	5405.8	5417.4	5415.9	1.5	5413.9	6.0
CA 43	5418.3	5409.6	**11.7**	5406.6	5415.9	5415.4	0.5	5413.4	4.9
CA 44	5419.6	5404.9	**17.7**	5401.9	5420.8	5415.8	5.0	5413.8	5.8
CA 45	5422.5	5419.0	**6.5**	5416.0	5424.0	5417.7	6.3	5415.7	6.8

TABLE 1
Boring Depth Summary
Field Investigation Work Plan Landfill Zone, Operable Unit 2
Former Lowry Air Force Base, Colorado

Boring Number[1]	Approximate Existing Ground Surface[1]	Approximate Future Excavation Surface[1]	Planned Boring Depth[2]	Approximate Elevation at Bottom of Boring	Approximate 2003 Pre-cap Construction Elevation[3]	Approximate 1953 Surface Elevation[4]	1953 to 2003 vertical difference[5]	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface)	Boring Depth to Top of Waste in Trench, if present[6]
CA 46	5419.6	5404.0	**18.6**	5401.0	5420.1	5415.0	5.1	5413.0	6.5
CA 47	5421.7	5420.8	**5.0**	5416.7	5421.9	5416.9	5.1	5414.9	6.8
CA 48	5418.5	5406.1	**15.4**	5403.1	5418.7	5414.4	4.3	5412.4	6.0
CA 49	5421.2	5418.4	**5.8**	5415.4	5421.6	5415.7	5.8	5413.7	7.5
CA 50	5422.7	5413.2	**12.5**	5410.2	5423.1	5418.4	4.7	5416.4	6.3
CA 51	5422.8	5415.1	**10.7**	5412.1	5424.1	5418.7	5.4	5416.7	6.0
CA 52	5422.9	5417.5	**8.4**	5414.5	5424.7	5418.6	6.1	5416.6	6.3
CA 53	5423.0	5423.4	**5.0**	5418.0	5424.1	5418.1	5.9	5416.1	6.9
Trench Corner (TC) Borings: 155 DPT borings total; into top of waste inside trenches; step in/out if waste not encountered									
TC 1	5415.1	NA	**5.9**	5409.2	5412.8	5411.2	1.6	5409.2	5.9
TC 2	5415.3	NA	**6.0**	5409.3	5413.1	5411.3	1.8	5409.3	6.0
TC 3	5415.7	NA	**6.9**	5408.8	5412.1	5410.8	1.4	5408.8	6.9
TC 4	5420.4	NA	**11.7**	5408.7	5414.6	5410.7	3.9	5408.7	11.7
TC 5	5419.3	NA	**8.0**	5411.3	5416.1	5413.3	2.9	5411.3	8.0
TC 6	5419.2	NA	**7.7**	5411.5	5416.0	5413.5	2.5	5411.5	7.7
TC 7	5419.2	NA	**7.6**	5411.6	5416.0	5413.6	2.4	5411.6	7.6
TC 8	5419.4	NA	**7.5**	5411.9	5416.6	5413.9	2.6	5411.9	7.5
TC 9	5421.8	NA	**9.5**	5412.3	5418.6	5414.3	4.3	5412.3	9.5
TC 10	5421.9	NA	**9.4**	5412.5	5419.0	5414.5	4.5	5412.5	9.4
TC 11	5419.5	NA	**6.9**	5412.6	5418.0	5414.6	3.4	5412.6	6.9
TC 12	5420.1	NA	**7.3**	5412.8	5418.0	5414.8	3.2	5412.8	7.3
TC 13	5420.6	NA	**5.2**	5415.4	5418.6	5417.4	1.1	5415.4	5.2
TC 14	5422.8	NA	**9.8**	5413.0	5418.0	5415.0	3.0	5413.0	9.8
TC 15	5423.8	NA	**8.6**	5415.2	5420.9	5417.2	3.7	5415.2	8.6
TC 16	5424.5	NA	**8.7**	5415.7	5421.0	5417.7	3.3	5415.7	8.7
TC 17	5423.4	NA	**10.4**	5413.0	5418.1	5415.0	3.1	5413.0	10.4
TC 18	5421.7	NA	**5.0**	5416.7	5418.5	5418.8	-0.3	5416.8	4.9
TC 19	5422.2	NA	**5.0**	5417.2	5418.6	5419.6	-1.0	5417.6	4.6
TC 20	5422.0	NA	**5.0**	5417.0	5418.3	5420.2	-1.9	5418.2	3.8
TC 21	5425.1	NA	**8.3**	5416.8	5421.7	5418.8	2.9	5416.8	8.3
TC 22	5425.3	NA	**8.2**	5417.1	5421.9	5419.1	2.8	5417.1	8.2
TC 23	5426.4	NA	**6.2**	5420.2	5426.2	5422.2	4.0	5420.2	6.2
TC 24	5427.3	NA	**7.5**	5419.7	5427.0	5421.7	5.2	5419.7	7.5
TC 25	5429.8	NA	**9.2**	5420.6	5426.0	5422.6	3.4	5420.6	9.2
TC 26	5430.5	NA	**9.5**	5421.0	5426.5	5423.0	3.5	5421.0	9.5
TC 27	5428.5	NA	**9.8**	5418.7	5428.6	5420.7	7.9	5418.7	9.8
TC 28	5429.4	NA	**11.3**	5418.1	5429.0	5420.1	8.9	5418.1	11.3
TC 29	5432.0	NA	**9.9**	5422.1	5428.0	5424.1	3.9	5422.1	9.9
TC 30	5432.6	NA	**9.8**	5422.8	5428.7	5424.8	3.9	5422.8	9.8
TC 31	5434.2	NA	**5.0**	5429.2	5434.0	5431.3	2.7	5429.3	4.8
TC 32	5434.2	NA	**5.0**	5429.2	5434.0	5431.7	2.3	5429.7	4.5
TC 33	5434.2	NA	**5.1**	5429.1	5430.9	5431.1	-0.2	5429.1	5.1
TC 34	5434.4	NA	**5.0**	5429.4	5430.9	5431.5	-0.7	5429.5	4.9
TC 35	5434.8	NA	**6.3**	5428.5	5430.6	5430.5	0.1	5428.5	6.3
TC 36	5435.2	NA	**6.1**	5429.0	5430.7	5431.0	-0.3	5429.0	6.1
TC 37	5435.6	NA	**6.0**	5429.7	5430.5	5431.7	-1.2	5429.7	6.0
TC 38	5435.9	NA	**5.8**	5430.1	5430.8	5432.1	-1.3	5430.1	5.8

TABLE 1
Boring Depth Summary
Field Investigation Work Plan Landfill Zone, Operable Unit 2
Former Lowry Air Force Base, Colorado

Boring Number[1]	Approximate Existing Ground Surface[1]	Approximate Future Excavation Surface[1]	Planned Boring Depth[2]	Approximate Elevation at Bottom of Boring	Approximate 2003 Pre-cap Construction Elevation[3]	Approximate 1953 Surface Elevation[4]	1953 to 2003 vertical difference[5]	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface)	Boring Depth to Top of Waste in Trench, if present[6]
TC 39	5436.4	NA	**6.0**	5430.4	5430.8	5432.4	-1.6	5430.4	6.0
TC 40	5436.5	NA	**5.7**	5430.7	5431.1	5432.7	-1.6	5430.7	5.7
TC 41	5437.3	NA	**6.3**	5431.0	5431.6	5433.0	-1.4	5431.0	6.3
TC 42	5437.5	NA	**6.1**	5431.4	5431.9	5433.4	-1.5	5431.4	6.1
TC 43	5437.7	NA	**5.7**	5431.9	5432.6	5433.9	-1.4	5431.9	5.7
TC 44	5435.8	NA	**5.0**	5430.8	5434.1	5435.1	-1.0	5433.1	2.7
TC 45	5435.3	NA	**5.0**	5430.3	5434.4	5435.3	-0.9	5433.3	1.9
TC 46	5436.7	NA	**7.5**	5429.1	5431.4	5431.1	0.2	5429.1	7.5
TC 47	5436.9	NA	**7.3**	5429.6	5431.7	5431.6	0.1	5429.6	7.3
TC 48	5436.0	NA	**5.0**	5431.0	5434.1	5434.8	-0.7	5432.8	3.2
TC 49	5436.0	NA	**5.0**	5431.0	5434.4	5435.2	-0.8	5433.2	2.8
TC 50	5436.2	NA	**8.2**	5427.9	5431.1	5429.9	1.1	5427.9	8.2
TC 51	5436.6	NA	**8.1**	5428.5	5431.4	5430.5	0.9	5428.5	8.1
TC 52	5436.8	NA	**7.9**	5428.9	5431.7	5430.9	0.8	5428.9	7.9
TC 53	5437.3	NA	**7.4**	5430.0	5431.8	5432.0	-0.2	5430.0	7.4
TC 54	5437.5	NA	**7.2**	5430.3	5432.0	5432.3	-0.4	5430.3	7.2
TC 55	5437.6	NA	**7.0**	5430.6	5432.0	5432.6	-0.6	5430.6	7.0
TC 56	5437.8	NA	**6.9**	5430.9	5432.5	5432.9	-0.4	5430.9	6.9
TC 57	5438.0	NA	**6.5**	5431.5	5433.3	5433.5	-0.2	5431.5	6.5
TC 58	5436.0	NA	**5.0**	5431.0	5433.8	5433.8	-0.1	5431.8	4.2
TC 59	5434.4	NA	**5.0**	5429.4	5429.2	5431.7	-2.5	5429.7	4.7
TC 60	5434.7	NA	**5.0**	5429.7	5429.3	5432.1	-2.8	5430.1	4.6
TC 61	5435.5	NA	**5.0**	5430.5	5430.1	5435.0	-4.9	5433.0	2.5
TC 62	5435.9	NA	**5.0**	5430.9	5430.0	5435.0	-5.0	5433.0	2.9
TC 63	5435.8	NA	**5.0**	5430.8	5429.8	5435.0	-5.2	5433.0	2.8
TC 64	5436.2	NA	**5.0**	5431.2	5430.0	5435.0	-5.0	5433.0	3.2
TC 65	5434.7	NA	**5.7**	5429.0	5429.1	5431.0	-1.9	5429.0	5.7
TC 66	5435.1	NA	**5.1**	5430.0	5429.6	5432.0	-2.4	5430.0	5.1
TC 67	5435.4	NA	**5.1**	5430.3	5430.0	5432.3	-2.3	5430.3	5.1
TC 68	5435.7	NA	**5.0**	5430.7	5430.0	5432.9	-2.9	5430.9	4.8
TC 69	5436.5	NA	**5.0**	5431.5	5430.7	5434.4	-3.6	5432.4	4.2
TC 70	5436.7	NA	**5.0**	5431.7	5430.6	5434.5	-3.9	5432.5	4.2
TC 71	5436.3	NA	**5.0**	5431.3	5430.0	5434.4	-4.4	5432.4	3.9
TC 72	5436.6	NA	**5.0**	5431.6	5430.0	5434.8	-4.8	5432.8	3.8
TC 73	5437.4	NA	**5.0**	5432.4	5430.9	5435.7	-4.8	5433.7	3.7
TC 74	5437.6	NA	**5.0**	5432.6	5431.2	5435.8	-4.6	5433.8	3.8
TC 75	5437.6	NA	**5.0**	5432.6	5430.9	5435.8	-4.9	5433.8	3.8
TC 76	5437.8	NA	**5.0**	5432.8	5431.3	5435.9	-4.6	5433.9	3.9
TC 77	5438.0	NA	**5.0**	5433.0	5431.9	5436.0	-4.0	5434.0	4.0
TC 78	5437.0	NA	**5.0**	5432.0	5432.6	5436.1	-3.5	5434.1	2.9
TC 79	5437.2	NA	**5.0**	5432.2	5432.2	5435.8	-3.6	5433.8	3.4
TC 80	5435.6	NA	**5.0**	5430.6	5433.4	5435.9	-2.5	5433.9	1.6
TC 81	5416.2	NA	**5.3**	5410.9	5414.9	5412.9	2.1	5410.9	5.3
TC 82	5416.7	NA	**5.6**	5411.0	5415.7	5413.0	2.7	5411.0	5.6
TC 83	5416.8	NA	**5.6**	5411.2	5415.8	5413.2	2.6	5411.2	5.6
TC 84	5417.4	NA	**6.0**	5411.5	5416.5	5413.5	3.1	5411.5	6.0
TC 85	5418.0	NA	**6.2**	5411.7	5417.1	5413.7	3.4	5411.7	6.2

TABLE 1
Boring Depth Summary
Field Investigation Work Plan Landfill Zone, Operable Unit 2
Former Lowry Air Force Base, Colorado

Boring Number[1]	Approximate Existing Ground Surface[1]	Approximate Future Excavation Surface[1]	Planned Boring Depth[2]	Approximate Elevation at Bottom of Boring	Approximate 2003 Pre-cap Construction Elevation[3]	Approximate 1953 Surface Elevation[4]	1953 to 2003 vertical difference[5]	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface)	Boring Depth to Top of Waste in Trench, if present[6]
TC 86	5418.8	NA	**5.3**	5413.5	5417.9	5415.5	2.3	5413.5	5.3
TC 87	5420.3	NA	**5.9**	5414.4	5421.2	5416.4	4.8	5414.4	5.9
TC 88	5420.1	NA	**7.2**	5412.9	5420.4	5414.9	5.6	5412.9	7.2
TC 89	5420.4	NA	**7.4**	5413.0	5420.8	5415.0	5.8	5413.0	7.4
TC 90	5421.8	NA	**7.8**	5414.0	5420.0	5416.0	4.0	5414.0	7.8
TC 91	5422.2	NA	**8.1**	5414.0	5420.0	5416.0	4.0	5414.0	8.1
TC 92	5422.7	NA	**8.3**	5414.4	5420.0	5416.4	3.6	5414.4	8.3
TC 93	5423.2	NA	**9.7**	5413.5	5420.6	5415.5	5.1	5413.5	9.7
TC 94	5423.6	NA	**8.3**	5415.2	5422.3	5417.2	5.1	5415.2	8.3
TC 95	5423.7	NA	**8.3**	5415.3	5422.3	5417.3	5.0	5415.3	8.3
TC 96	5425.5	NA	**7.3**	5418.3	5425.0	5420.3	4.8	5418.3	7.3
TC 97	5426.2	NA	**7.2**	5419.0	5425.3	5421.0	4.3	5419.0	7.2
TC 98	5427.1	NA	**6.7**	5420.4	5425.6	5422.4	3.2	5420.4	6.7
TC 99	5426.3	NA	**5.2**	5421.1	5425.9	5423.1	2.8	5421.1	5.2
TC 100	5428.7	NA	**5.0**	5423.7	5428.2	5426.4	1.8	5424.4	4.2
TC 101	5428.5	NA	**5.8**	5422.7	5427.5	5424.7	2.8	5422.7	5.8
TC 102	5428.9	NA	**8.9**	5420.1	5426.8	5422.1	4.8	5420.1	8.9
TC 103	5429.5	NA	**9.3**	5420.2	5426.7	5422.2	4.5	5420.2	9.3
TC 104	5429.7	NA	**8.0**	5421.8	5428.1	5423.8	4.3	5421.8	8.0
TC 105	5430.2	NA	**8.1**	5422.1	5428.1	5424.1	4.0	5422.1	8.1
TC 106	5431.4	NA	**6.0**	5425.4	5428.7	5427.4	1.3	5425.4	6.0
TC 107	5431.8	NA	**5.9**	5425.9	5428.9	5427.9	1.0	5425.9	5.9
TC 108	5430.7	NA	**9.3**	5421.4	5428.1	5423.4	4.7	5421.4	9.3
TC 110	5431.1	NA	**9.3**	5421.7	5428.1	5423.7	4.4	5421.7	9.3
TC 110	5432.5	NA	**5.0**	5427.5	5429.0	5431.7	-2.7	5429.7	2.8
TC 111	5432.7	NA	**5.0**	5427.7	5429.0	5431.8	-2.8	5429.8	2.8
TC 112	5433.0	NA	**5.0**	5428.0	5429.0	5430.9	-1.9	5428.9	4.1
TC 113	5433.3	NA	**5.0**	5428.3	5429.0	5431.1	-2.1	5429.1	4.2
TC 114	5433.1	NA	**6.1**	5426.9	5428.1	5428.9	-0.8	5426.9	6.1
TC 115	5433.3	NA	**6.1**	5427.1	5428.1	5429.1	-1.1	5427.1	6.1
TC 116	5409.6	NA	**5.0**	5404.6	5408.4	5411.2	-2.8	5409.2	0.5
TC 117	5412.3	NA	**5.0**	5407.3	5411.8	5413.0	-1.1	5411.0	1.3
TC 118	5414.6	NA	**5.0**	5409.6	5412.9	5412.6	0.3	5410.6	4.0
TC 119	5417.0	NA	**5.0**	5412.0	5415.1	5414.6	0.5	5412.6	4.5
TC 120	5421.4	NA	**6.7**	5414.8	5422.9	5416.8	6.1	5414.8	6.7
TC 121	5421.5	NA	**6.0**	5415.5	5424.1	5417.5	6.6	5415.5	6.0
TC 122	5421.3	NA	**6.2**	5415.1	5417.7	5417.1	0.5	5415.1	6.2
TC 123	5423.6	NA	**8.0**	5415.6	5418.7	5417.6	1.0	5415.6	8.0
TC 124	5426.9	NA	**7.8**	5419.1	5424.0	5421.1	2.9	5419.1	7.8
TC 125	5427.4	NA	**7.7**	5419.8	5424.3	5421.8	2.5	5419.8	7.7
TC 126	5427.7	NA	**7.6**	5420.1	5426.1	5422.1	4.0	5420.1	7.6
TC 127	5428.6	NA	**7.3**	5421.2	5426.5	5423.2	3.2	5421.2	7.3
TC 128	5428.1	NA	**6.4**	5421.7	5426.1	5423.7	2.4	5421.7	6.4
TC 129	5429.2	NA	**6.2**	5423.0	5426.8	5425.0	1.8	5423.0	6.2
TC 130	5428.4	NA	**6.1**	5422.3	5427.9	5424.3	3.6	5422.3	6.1
TC 131	5429.5	NA	**6.1**	5423.4	5429.2	5425.4	3.8	5423.4	6.1
TC 132	5425.2	NA	**5.0**	5420.2	5424.7	5425.0	-0.4	5423.0	2.1

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Boring Number[1]	Approximate Existing Ground Surface[1]	Approximate Future Excavation Surface[1]	Planned Boring Depth[2]	Approximate Elevation at Bottom of Boring	Approximate 2003 Pre-cap Construction Elevation[3]	Approximate 1953 Surface Elevation[4]	1953 to 2003 vertical difference[5]	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface)	Boring Depth to Top of Waste in Trench, if present[6]
TC 133	5427.9	NA	**5.0**	5422.9	5427.6	5426.9	0.7	5424.9	3.0
TC 134	5433.0	NA	**6.2**	5426.7	5431.2	5428.7	2.5	5426.7	6.2
TC 135	5433.8	NA	**6.4**	5427.5	5431.5	5429.5	2.0	5427.5	6.4
TC 136	5432.0	NA	**5.0**	5427.0	5433.7	5429.2	4.5	5427.2	4.9
TC 137	5432.7	NA	**5.0**	5427.7	5432.4	5431.2	1.2	5429.2	3.5
TC 138	5427.1	NA	**5.0**	5422.1	5427.0	5430.1	-3.1	5428.1	-1.0
TC 139	5428.4	NA	**5.0**	5423.4	5430.0	5430.0	0.0	5428.0	0.4
TC 140	5428.5	NA	**5.0**	5423.5	5430.1	5429.7	0.3	5427.7	0.7
TC 141	5428.6	NA	**5.0**	5423.6	5430.3	5429.5	0.8	5427.5	1.2
TC 142	5432.2	NA	**5.0**	5427.2	5430.6	5432.5	-1.9	5430.5	1.7
TC 143	5432.6	NA	**5.0**	5427.6	5430.3	5433.0	-2.7	5431.0	1.6
TC 144	5434.5	NA	**6.6**	5427.9	5430.5	5429.9	0.6	5427.9	6.6
TC 145	5434.8	NA	**6.3**	5428.5	5431.0	5430.5	0.4	5428.5	6.3
TC 146	5435.1	NA	**5.8**	5429.4	5431.0	5431.4	-0.3	5429.4	5.8
TC 147	5435.8	NA	**5.6**	5430.2	5430.0	5432.2	-2.2	5430.2	5.6
TC 148	5434.5	NA	**8.3**	5426.2	5430.4	5428.2	2.2	5426.2	8.3
TC 149	5434.5	NA	**7.9**	5426.5	5430.6	5428.5	2.0	5426.5	7.9
TC 150	5434.8	NA	**7.0**	5427.8	5431.3	5429.8	1.4	5427.8	7.0
TC 151	5435.1	NA	**6.9**	5428.2	5431.3	5430.2	1.1	5428.2	6.9
TC 152	5435.1	NA	**6.0**	5429.2	5431.4	5431.2	0.3	5429.2	6.0
TC 153	5435.4	NA	**5.6**	5429.9	5431.6	5431.9	-0.2	5429.9	5.6
TC 154	5435.6	NA	**5.0**	5430.6	5431.8	5432.9	-1.1	5430.9	4.7
TC 155	5435.9	NA	**5.0**	5430.9	5432.7	5433.7	-1.0	5431.7	4.2
Bldg & Roadway Footprint Area (FA) Borings: 60 DPT Borings total; 15 ft bgs or until waste encountered or auger refusal									
FA 1	5418.1	NA	**15.0**	5403.1	5418.5	5413.9	4.6	5411.9	6.2
FA 2	5419.3	NA	**15.0**	5404.3	5419.1	5414.7	4.4	5412.7	6.6
FA 3	5419.7	NA	**15.0**	5404.7	5420.5	5416.2	4.3	5414.2	5.5
FA 4	5419.9	NA	**15.0**	5404.9	5418.2	5418.2	0.0	5416.2	3.7
FA 5	5421.4	NA	**15.0**	5406.4	5420.2	5420.2	0.0	5418.2	3.2
FA 6	5425.7	NA	**15.0**	5410.7	5422.0	5422.0	0.0	5420.0	5.7
FA 7	5417.9	NA	**15.0**	5402.9	5418.0	5413.8	4.2	5411.8	6.1
FA 8	5418.0	NA	**15.0**	5403.0	5417.6	5414.7	2.9	5412.7	5.3
FA 9	5419.1	NA	**15.0**	5404.1	5417.8	5416.4	1.4	5414.4	4.7
FA 10	5420.5	NA	**15.0**	5405.5	5419.4	5418.5	0.9	5416.5	4.0
FA 11	5421.9	NA	**15.0**	5406.9	5422.7	5420.4	2.2	5418.4	3.5
FA 12	5425.0	NA	**15.0**	5410.0	5422.5	5422.5	0.0	5420.5	4.6
FA 13	5424.1	NA	**15.0**	5409.1	5424.5	5422.2	2.3	5420.2	3.9
FA 14	5427.1	NA	**15.0**	5412.1	5427.7	5424.7	3.0	5422.7	4.4
FA 15	5429.3	NA	**15.0**	5414.3	5429.5	5425.0	4.5	5423.0	6.3
FA 16	5434.5	NA	**15.0**	5419.5	5431.7	5432.1	-0.4	5430.1	4.4
FA 17	5435.8	NA	**15.0**	5420.8	5431.4	5433.0	-1.6	5431.0	4.8
FA 18	5436.2	NA	**15.0**	5421.2	5431.6	5432.9	-1.3	5430.9	5.4
FA 19	5436.8	NA	**15.0**	5421.8	5431.8	5433.5	-1.8	5431.5	5.2
FA 20	5426.4	NA	**15.0**	5411.4	5422.5	5420.4	2.2	5418.4	8.1
FA 21	5428.8	NA	**15.0**	5413.8	5427.0	5423.5	3.4	5421.5	7.3
FA 22	5422.3	NA	**15.0**	5407.3	5420.7	5415.0	5.7	5413.0	9.2
FA 23	5422.8	NA	**15.0**	5407.8	5421.7	5416.4	5.2	5414.4	8.4

TABLE 1
Boring Depth Summary
Field Investigation Work Plan Landfill Zone, Operable Unit 2
Former Lowry Air Force Base, Colorado

Boring Number[1]	Approximate Existing Ground Surface[1]	Approximate Future Excavation Surface[1]	Planned Boring Depth[2]	Approximate Elevation at Bottom of Boring	Approximate 2003 Pre-cap Construction Elevation[3]	Approximate 1953 Surface Elevation[4]	1953 to 2003 vertical difference[5]	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface)	Boring Depth to Top of Waste in Trench, if present[6]
FA 24	5425.0	NA	**15.0**	5410.0	5423.2	5419.3	3.9	5417.3	7.7
FA 25	5421.7	NA	**15.0**	5406.7	5419.1	5417.5	1.6	5415.5	6.2
FA 26	5417.4	NA	**15.0**	5402.4	5417.0	5416.3	0.6	5414.3	3.0
FA 27	5423.4	NA	**15.0**	5408.4	5422.7	5419.5	3.2	5417.5	5.9
FA 28	5427.5	NA	**15.0**	5412.5	5425.4	5423.8	1.6	5421.8	5.7
FA 29	5429.9	NA	**15.0**	5414.9	5426.3	5425.0	1.3	5423.0	6.9
FA 30	5427.6	NA	**15.0**	5412.6	5426.5	5423.6	2.9	5421.6	6.0
FA 31	5430.1	NA	**15.0**	5415.1	5429.7	5425.8	3.9	5423.8	6.3
FA 32	5431.6	NA	**15.0**	5416.6	5428.9	5426.9	2.0	5424.9	6.7
FA 33	5429.2	NA	**15.0**	5414.2	5434.5	5428.9	5.6	5426.9	2.4
FA 34	5431.5	NA	**15.0**	5416.5	5430.8	5427.5	3.3	5425.5	6.0
FA 35	5431.3	NA	**15.0**	5416.3	5431.1	5428.4	2.7	5426.4	4.9
FA 36	5434.1	NA	**15.0**	5419.1	5432.0	5428.7	3.3	5426.7	7.4
FA 37	5433.7	NA	**15.0**	5418.7	5431.9	5429.7	2.2	5427.7	6.0
FA 38	5434.8	NA	**15.0**	5419.8	5437.9	5435.0	2.9	5433.0	1.8
FA 39	5436.4	NA	**15.0**	5421.4	5440.0	5430.7	9.3	5428.7	7.7
FA 40	5436.3	NA	**15.0**	5421.3	5440.0	5432.5	7.5	5430.5	5.9
FA 41	5436.0	NA	**15.0**	5421.0	5436.8	5435.2	1.6	5433.2	2.8
FA 42	5436.3	NA	**15.0**	5421.3	5431.8	5431.1	0.7	5429.1	7.2
FA 43	5417.8	NA	**15.0**	5402.8	5416.9	5413.6	3.3	5411.6	6.1
FA 44	5432.7	NA	**15.0**	5417.7	5428.0	5428.3	-0.3	5426.3	6.4
FA 45	5433.0	NA	**15.0**	5418.0	5428.2	5428.4	-0.2	5426.4	6.5
FA 46	5433.2	NA	**15.0**	5418.2	5428.5	5428.6	0.0	5426.6	6.6
FA 47	5433.5	NA	**15.0**	5418.5	5429.8	5429.0	0.8	5427.0	6.6
FA 48	5433.8	NA	**15.0**	5418.8	5430.0	5429.2	0.8	5427.2	6.6
FA 49	5434.0	NA	**15.0**	5419.0	5429.9	5429.4	0.5	5427.4	6.6
FA 50	5434.6	NA	**15.0**	5419.6	5430.0	5429.8	0.3	5427.8	6.9
FA 51	5434.8	NA	**15.0**	5419.8	5430.2	5429.9	0.4	5427.9	7.0
FA 52	5434.8	NA	**15.0**	5419.8	5430.5	5430.0	0.5	5428.0	6.8
FA 53	5434.7	NA	**15.0**	5419.7	5430.9	5430.3	0.5	5428.3	6.4
FA 54	5434.8	NA	**15.0**	5419.8	5431.1	5430.5	0.6	5428.5	6.3
FA 55	5435.1	NA	**15.0**	5420.1	5431.3	5430.6	0.7	5428.6	6.5
FA 56	5433.7	NA	**15.0**	5418.7	5431.6	5431.2	0.4	5429.2	4.5
FA 57	5433.6	NA	**15.0**	5418.6	5432.8	5431.7	1.1	5429.7	3.9
FA 58	5433.6	NA	**15.0**	5418.6	5434.3	5432.3	2.1	5430.3	3.3
FA 59	5433.9	NA	**15.0**	5418.9	5435.3	5433.8	1.5	5431.8	2.1
FA 60	5434.6	NA	**15.0**	5419.6	5434.4	5434.9	-0.5	5432.9	1.7
Soil Gas (SG) Borings: 31 DPT borings total; varying depths into top of waste trenches									
SG 1	5420.2	NA	**9.0**	5411.3	5416.0	5413.3	2.7	5411.3	9.0
SG 2	5420.2	NA	**8.8**	5411.4	5416.0	5413.4	2.6	5411.4	8.8
SG 3	5420.9	NA	**8.5**	5412.4	5418.0	5414.4	3.6	5412.4	8.5
SG 4	5422.6	NA	**7.2**	5415.4	5417.2	5417.4	-0.2	5415.4	7.2
SG 5	5424.0	NA	**11.0**	5413.0	5418.9	5415.0	3.9	5413.0	11.0
SG 6	5429.3	NA	**9.6**	5419.7	5426.7	5421.7	5.1	5419.7	9.6
SG 7	5431.2	NA	**8.9**	5422.3	5429.2	5424.3	4.9	5422.3	8.9
SG 8	5426.1	NA	**6.8**	5419.3	5425.0	5421.3	3.7	5419.3	6.8
SG 9	5427.0	NA	**5.0**	5422.0	5426.9	5424.6	2.2	5422.6	4.4

TABLE 1
Boring Depth Summary
Field Investigation Work Plan Landfill Zone, Operable Unit 2
Former Lowry Air Force Base, Colorado

Boring Number[1]	Approximate Existing Ground Surface[1]	Approximate Future Excavation Surface[1]	Planned Boring Depth[2]	Approximate Elevation at Bottom of Boring	Approximate 2003 Pre-cap Construction Elevation[3]	Approximate 1953 Surface Elevation[4]	1953 to 2003 vertical difference[5]	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface)	Boring Depth to Top of Waste in Trench, if present[6]
SG 10	5428.0	NA	**5.0**	5423.0	5428.0	5427.0	0.9	5425.0	3.0
SG 11	5430.8	NA	**7.9**	5423.0	5428.2	5425.0	3.3	5423.0	7.9
SG 12	5429.6	NA	**8.2**	5421.5	5428.0	5423.5	4.5	5421.5	8.2
SG 13	5431.3	NA	**9.5**	5421.7	5428.5	5423.7	4.8	5421.7	9.5
SG 14	5435.6	NA	**5.7**	5429.9	5430.9	5431.9	-1.0	5429.9	5.7
SG 15	5436.8	NA	**6.9**	5429.9	5430.8	5431.9	-1.1	5429.9	6.9
SG 16	5437.5	NA	**6.8**	5430.7	5432.8	5432.7	0.0	5430.7	6.8
SG 17	5436.2	NA	**8.8**	5427.4	5431.3	5429.4	1.8	5427.4	8.8
SG 18	5437.5	NA	**5.6**	5432.0	5431.9	5434.0	-2.1	5432.0	5.6
SG 19	5436.7	NA	**5.0**	5431.7	5430.0	5435.2	-5.1	5433.2	3.5
SG 20	5435.6	NA	**5.0**	5430.6	5430.0	5433.3	-3.3	5431.3	4.4
SG 21	5435.2	NA	**5.0**	5430.2	5429.3	5432.2	-2.9	5430.2	5.0
SG 22	5428.0	NA	**6.6**	5421.4	5427.0	5423.4	3.6	5421.4	6.6
SG 23	5427.1	NA	**7.6**	5419.5	5426.1	5421.5	4.6	5419.5	7.6
SG 24	5428.6	NA	**5.4**	5423.2	5428.5	5425.2	3.3	5423.2	5.4
SG 25	5428.5	NA	**5.4**	5423.1	5427.9	5425.1	2.8	5423.1	5.4
SG 26	5432.1	NA	**5.0**	5427.1	5435.4	5431.2	4.2	5429.2	3.0
SG 27	5433.2	NA	**6.4**	5426.8	5431.4	5428.8	2.6	5426.8	6.4
SG 28	5432.1	NA	**5.0**	5427.1	5430.6	5432.3	-1.7	5430.3	1.7
SG 29	5435.0	NA	**8.1**	5426.8	5430.8	5428.8	2.0	5426.8	8.1
SG 30	5435.4	NA	**8.3**	5427.1	5431.1	5429.1	2.0	5427.1	8.3
SG 31	5435.8	NA	**8.6**	5427.2	5431.2	5429.2	2.0	5427.2	8.6
Geotechnical (GT) Borings: 38 HSA borings total, 12 ft below existing grade, may be modified based on DPT borings									
GT 1	5431.8	NA	**12.0**	5419.8	5430.7	5430.7	0.0	5428.7	3.1
GT 2	5430.5	NA	**12.0**	5418.5	5430.4	5430.2	0.1	5428.2	2.2
GT 3	5432.3	NA	**12.0**	5420.3	5430.3	5427.8	2.5	5425.8	6.5
GT 4	5432.7	NA	**12.0**	5420.7	5430.3	5428.5	1.8	5426.5	6.2
GT 5	5434.0	NA	**12.0**	5422.0	5432.4	5430.2	2.2	5428.2	5.8
GT 6	5433.6	NA	**12.0**	5421.6	5430.9	5430.8	0.1	5428.8	4.8
GT 7	5434.6	NA	**12.0**	5422.6	5430.0	5430.4	-0.4	5428.4	6.2
GT 8	5435.0	NA	**12.0**	5423.0	5430.7	5430.2	0.5	5428.2	6.7
GT 9	5435.3	NA	**12.0**	5423.3	5430.8	5431.3	-0.5	5429.3	6.0
GT 10	5435.8	NA	**12.0**	5423.8	5428.0	5432.1	-4.1	5430.1	5.7
GT 11	5436.6	NA	**12.0**	5424.6	5432.2	5434.0	-1.9	5432.0	4.6
GT 12	5435.8	NA	**12.0**	5423.8	5431.0	5432.1	-1.1	5430.1	5.7
GT 13	5436.2	NA	**12.0**	5424.2	5430.0	5431.6	-1.6	5429.6	6.6
GT 14	5436.3	NA	**12.0**	5424.3	5430.7	5430.8	0.0	5428.8	7.6
GT 15	5436.4	NA	**12.0**	5424.4	5431.7	5429.8	1.8	5427.8	8.6
GT 16	5435.8	NA	**12.0**	5423.8	5430.9	5430.4	0.5	5428.4	7.4
GT 17	5435.2	NA	**12.0**	5423.2	5431.0	5433.1	-2.0	5431.1	4.2
GT 18	5434.9	NA	**12.0**	5422.9	5430.1	5433.8	-3.7	5431.8	3.1
GT 18	5434.4	NA	**12.0**	5422.4	5428.7	5430.9	-2.1	5428.9	5.5
GT 20	5428.7	NA	**12.0**	5416.7	5428.2	5425.4	2.8	5423.4	5.3
GT 21	5430.0	NA	**12.0**	5418.0	5428.0	5426.8	1.2	5424.8	5.3
GT 22	5431.2	NA	**12.0**	5419.2	5427.6	5427.3	0.3	5425.3	5.9
GT 23	5432.4	NA	**12.0**	5420.4	5427.6	5428.1	-0.5	5426.1	6.3
GT 24	5433.4	NA	**12.0**	5421.4	5429.2	5428.8	0.4	5426.8	6.6

TABLE 1
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Former Lowry Air Force Base, Colorado

Boring Number[1]	Approximate Existing Ground Surface[1]	Approximate Future Excavation Surface[1]	Planned Boring Depth[2]	Approximate Elevation at Bottom of Boring	Approximate 2003 Pre-cap Construction Elevation[3]	Approximate 1953 Surface Elevation[4]	1953 to 2003 vertical difference[5]	Approximate Top of Waste Trench Elevation (assumed 2' below 1953 surface)	Boring Depth to Top of Waste in Trench, if present[6]
GT 25	5434.3	NA	**12.0**	5422.3	5429.9	5429.7	0.3	5427.7	6.6
GT 26	5434.6	NA	**12.0**	5422.6	5430.7	5430.2	0.5	5428.2	6.4
GT 27	5434.4	NA	**12.0**	5422.4	5431.6	5431.0	0.6	5429.0	5.4
GT 28	5433.8	NA	**12.0**	5421.8	5435.3	5433.0	2.3	5431.0	2.8
GT 29	5433.2	NA	**12.0**	5421.2	5429.8	5428.5	1.3	5426.5	6.7
GT 30	5432.3	NA	**12.0**	5420.3	5430.4	5427.9	2.5	5425.9	6.4
GT 31	5431.9	NA	**12.0**	5419.9	5430.9	5427.0	3.9	5425.0	6.9
GT 32	5431.8	NA	**12.0**	5419.8	5430.8	5426.9	3.9	5424.9	6.9
GT 33	5432.2	NA	**12.0**	5420.2	5430.9	5427.9	3.0	5425.9	6.3
GT 34	5433.4	NA	**12.0**	5421.4	5431.3	5429.1	2.2	5427.1	6.3
GT 35	5434.2	NA	**12.0**	5422.2	5431.8	5430.1	1.7	5428.1	6.1
GT 36	5435.1	NA	**12.0**	5423.1	5434.9	5431.8	3.1	5429.8	5.3
GT 37	5436.0	NA	**12.0**	5424.0	5437.7	5434.6	3.1	5432.6	3.4
GT 38	5436.0	NA	**12.0**	5424.0	5438.2	5435.6	2.5	5433.6	2.4

Total Boring Depth: 3086.9 feet
DPT total boring depth: 2630.9 feet
HSA total drill depth: 456.0 feet

Notes:

A vertical error as large as +/- 3 feet may be present in the above data as the datums used on the three different surveys used to create this spreadsheet are not known for certain.

Yellow highlighted cells showing negative numbers indicate locations where the estimated 1953 top of trench waste elevation is higher than the existing grade today. Except for TC-138, these locations are all located on the extreme north slope of the site and off the landfill cap. TC-138 is located on the east border of the site, along the channelized Westerly Creek. It is estimated that both of these locations were excavated during the Westerly Creek Dam construction in the 1980's.

[1] Boring locations, numbers, existing surface elevation, and planned excavation surface obtained from Figure 3. Boring types are listed in their anticipated chronological order of completeness.

[2] The planned depths were taken from the work plan. For CA, TC, and SC borings where the calculated top of trench waste is less than 5 feet, the planned boring depth was set at 5.0 feet to account for the cap and subgrade thickness.

[3] 2003 Pre-cap Topographic survey prepared by Zylstra Baker for MACTEC in 2003.

[4] 1953 Topographic survey prepared by Wilson and Co. Engineers for the Department of the Air Force on April 10, 1953.

[5] Negative numbers in this column denote areas where the 2003 surface was lower than the 1953 surface

[6] Waste trenches may or may not be present at any given location.

[7] Cut Area boring CA-35 was deleted because it was mistakenly placed in a fill area.

ft = feet

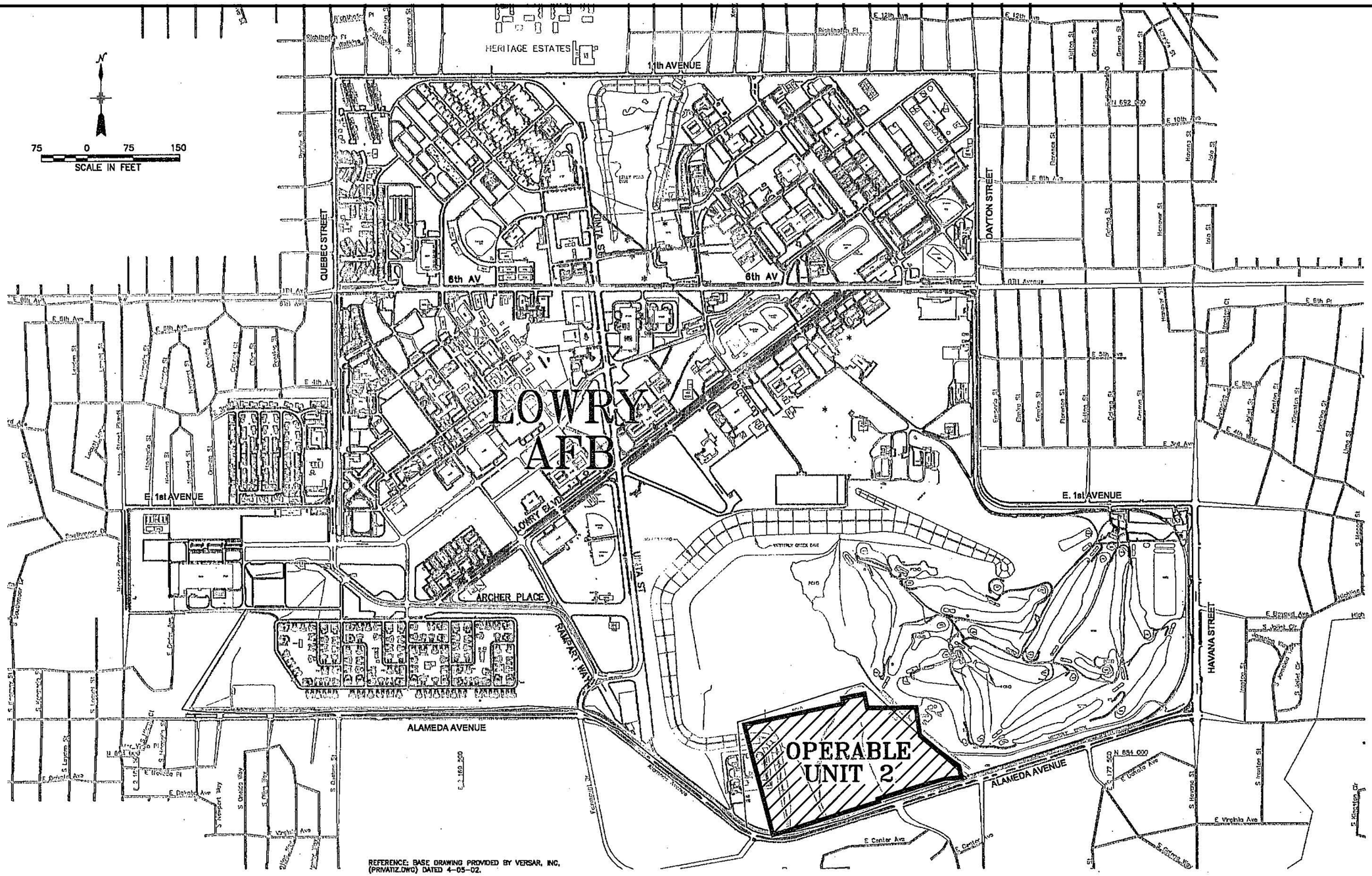
amsl = above mean sea level

bgs = below ground surface

DPT = direct push technology

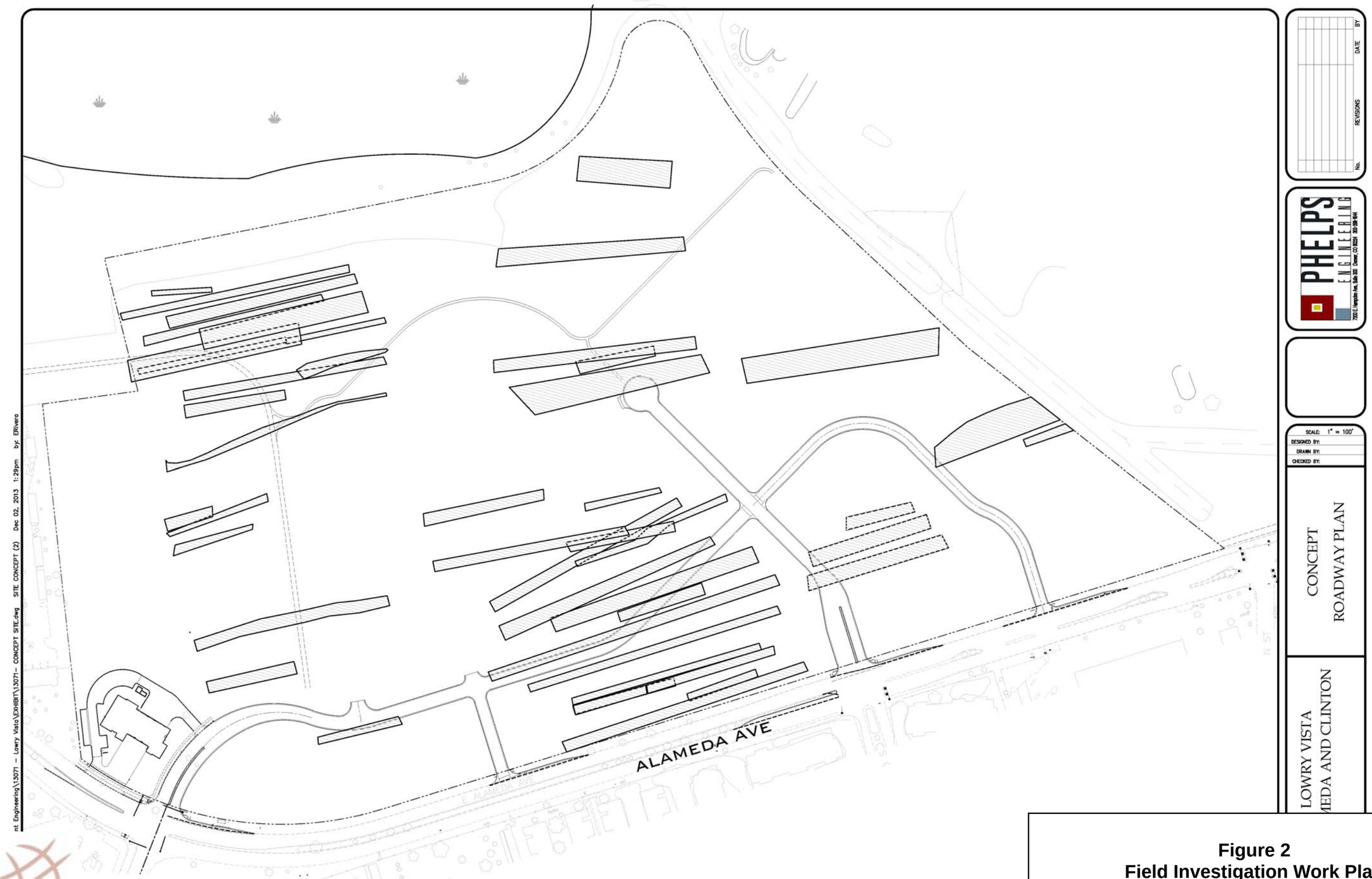
HSA = hollow stem auger

Figures



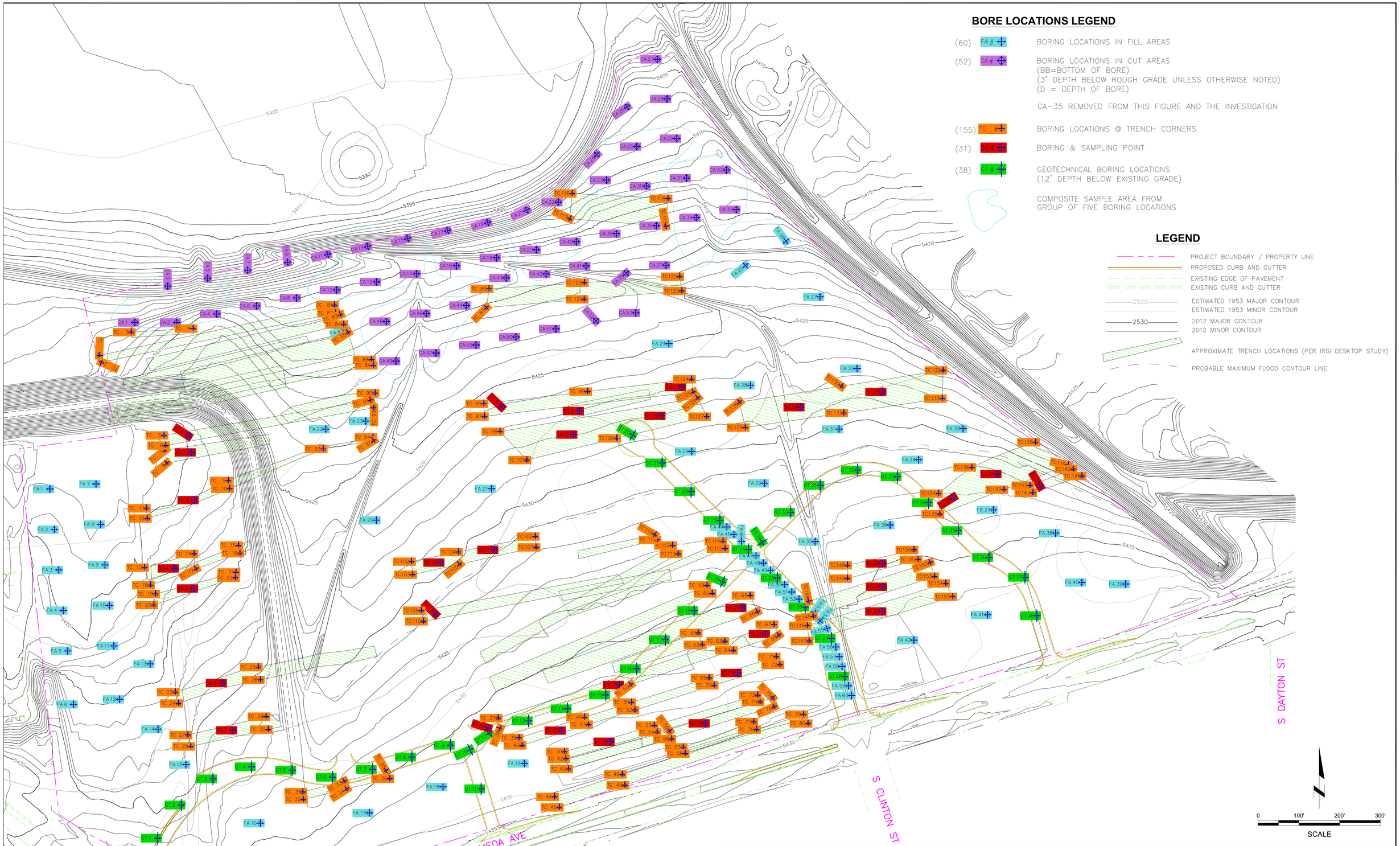
IRG

Figure 1
Field Investigation Work Plan
Landfill Zone Operable Unit 2
Former Lowry Air Force Base
IRG– Assumptions, LLC



IRG

Figure 2
Field Investigation Work Plan
Landfill Zone Operable Unit 2
Former Lowry Air Force Base
IRG– Assumptions, LLC



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Lowry Vista Redevelopment Project

Project Number:	Date:	Engineer:	Drawn By:
WA-001853-0002	November 26, 2013	BAC	KDWK

Figure 3

Boring Location Plan
Field Investigation Work Plan
Operable Unit 2 Landfill Zone