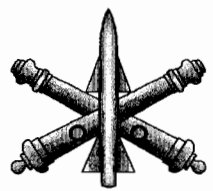


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**DRAFT
SAMPLING AND ANALYSIS PLAN**

McGREGOR RANGE AND DONA ANA RANGE SWMU SITES

FORT BLISS, NEW MEXICO



Prepared for:

UNITED STATES ARMY CORPS OF ENGINEERS

Contract No. W912BV-04-D-2005
Task Order No. 0019

U.S. ARMY CORPS OF ENGINEERS TULSA DISTRICT

Contracting Officer's Representative

Prepared by:

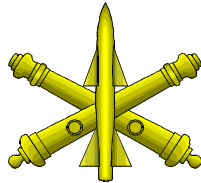
WESTON SOLUTIONS, INC.
2705 Bee Cave Road, Suite 100
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December 2005

W.O. No. 03886.525.019.0020



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COMMITMENT TO IMPLEMENT THE ABOVE SAMPLING AND ANALYSIS PLAN

Contractor's Project/Task Manager (print)	Signature	Date
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Contractor's QC Manager (print)	Signature	Date
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Others as Appropriate/Affiliation* (print)	Signature	Date
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Others as Appropriate/Affiliation* (print)	Signature	Date
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Others as Appropriate/Affiliation* (print)	Signature	Date
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* Commitment is required for any ancillary sampling, analytical, or data assessment support provided by a contractor or subcontractor. For example, the Contractor's laboratory QC manager or director should sign the title page if analytical services are provided.

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1.0 PROJECT BACKGROUND

1.1 PURPOSE

Weston Solutions, Inc. (WESTON®) has been contracted by the United States Army Corp of Engineers (USACE) under Contract No. W912BV-04-D-2005, Task Order No. 0019 to perform background soil investigation activities at Ft. Bliss McGregor Range Solid Waste Management Unit (SWMU) No. 20, SWMU No. 19, and SWMU No. 18 and Dona Ana Range SWMU No. 29 and SWMU No. 27B at the Fort Bliss Military Reservation. The work is being performed for Ft. Bliss and the U.S. Army Corps of Engineers Tulsa District, who is serving as the Contracting Officer's Representative.

This Sampling and Analysis Plan (SAP) was prepared according to the U.S. Army's EM 200-1-3 guidance titled *Requirements for the Preparation of Sampling and Analysis Plans* (USACE, 2001) to describe the activities that will be performed during this project.

The purpose of this project is to assess the background concentrations in surface soil of several metals including aluminum, arsenic, barium, cadmium, chromium, lead, mercury, silver and selenium. The background concentrations will be calculated for both the Dona Ana Range Camp and the McGregor Range Camp areas. The study at Dona Ana Range Camp will focus on the area around the closed sanitary landfill 12, (SWMU No. 27), the closed landfill 11 (SWMU No. 29) and the Dona Ana Range Camp oxidation pond (SWMU No. 27B). The study at the McGregor Range Camp will focus around the McGregor Range Camp oxidation pond (SWMU No. 19), the inactive open detonation site (SWMU No. 20) and the closed sanitary landfill 13 (SWMU No. 18). The data from this investigation is intended to be used to complete close-out activities for various Defense Environmental Restoration Accounts (DERA) funded sites at Fort Bliss.

1.2 SITE HISTORY

The United States Army Air Defense Center and Fort Bliss are located on approximately 1.2 million acres of land in far west Texas and southern New Mexico. Fort Bliss encompasses portions of three

counties (Dona Ana and Otero counties in New Mexico and El Paso county in Texas). The fort is presently an active training facility under the U.S. Army Training and Doctrine Command (TRADOC) with the primary mission of air defense. However, under the 2005 Base Realignment and Closure Act approved by Congress and the President, Fort Bliss will become a Forces Command (FORCSCOM) war fighting base with the departure of the Air Defense Artillery School and the arrival of the 1st Armored Division Reinforced. This change will take place over the next six years, assuring U.S. Army control and use of the Dona Ana and McGregor Range training properties in New Mexico for the foreseeable future. As part of its operations, Fort Bliss has and will continue to operate various training camps located throughout the reservation to fulfill the training support requirements of the Army. This background surface soil study is focused on several SWMUs associated with two of the range camps in New Mexico; the Dona Ana Range Camp in Dona Ana County, and the McGregor Range Camp in Otero County. A Facility Location Map is provided as Figure 1-1.

The Dona Ana Range Camp area is designed to house approximately 1,000 soldiers during maneuvers and contains four SWMU locations (Figure 1-2). The SWMU locations requiring background soil sampling are the Dona Ana oxidation pond (SWMU No. 27B) and the closed and capped Dona Ana landfills 11 and 12 (SWMU No. 29, and SWMU No. 27. The Dona Ana Range Oxidation Pond, is an oxidation/evaporation pond used to treat sanitary wastewater from the Dona Ana Range Camp. The pond is on approximately 4.14 acres in a sparsely populated area of the desert and receives wastewater via a gravity sewer from the Dona Ana Range Camp.

Dona Ana landfills 11 (a pre-WW-II site closed in 1942) and 12 (SWMU No. 29 and SWMU No. 27) received municipal sanitary waste related to housekeeping food service activities at the nearby camp. Soil investigations were performed and documented in the closure report submitted to New Mexico Environmental Department (NMED) in 2002 and 2004. The reports requested closure of the landfills under RCRA Permit No. 4212720101-01.

The McGregor Range Camp consists of logistical support and staging structures, housing, and equipment maintenance facilities and other support areas, and includes nine SWMUs (Figure 1-3). Three SWMUs are included in background study. SWMU No. 20, the inactive open detonation pit,

is located approximately 0.5 miles north of the McGregor Range Camp. The SWMU was formerly used as an open detonation site and was believed to have been utilized from 1955 to 1965 for the detonation of explosives and rockets. SWMU No. 20 is estimated to have been inactive since 1965. Three RCRA Facility Investigations (RFI) have been performed for SWMU No. 20 along with an RFI addendum.

SWMU No. 13, closed and capped sanitary landfill No. 13, is located south of the McGregor Range Camp. Landfill 13 was used for the disposal of municipal sanitary waste related to housekeeping food service activities at the nearby camp. Soil investigations were performed and documented in a closure report submitted to NMED in 2004. The report requested closure of the landfill under RCRA Permit No. 4212720101-01 in 2005.

The last SWMU included in the background soil sampling analyses is SWMU No. 19, McGregor Range Camp oxidation pond. The oxidation pond is located approximately 0.6 miles southeast of the Camp and is used to collect and treat all of the wastewater generated at the McGregor Range Camp. The pond is approximately 9.3 acres. An RFI for the oxidation pond was submitted to NMED in 1997. A supplemental RFI, submitted in July 2005, included an ecological risk assessment.

1.3 SUMMARY OF EXISTING DATA

This project is being performed to collect data that will serve as comparison data for previous studies performed at SWMUs on both the Dona Ana and McGregor Ranges. The data will be used to obtain statistically derived background metals concentrations in the surface soil.

Surface soil samples were collected from SWMU No. 27B and SWMU No. 29 on the Dona Ana Range. Fort Bliss submitted an RFI in May 1997 and a *Post Closure Certification Report FTBL No. 11/SWMU No. 29 Dona Ana Landfill* in March 2005 summarizing sampling results and requesting closure of Landfill 11 (SWMU No. 29).

Fort Bliss submitted an RFI in May 1997, and a No Further Action Request (NFAR) in September 2000 to NMED to request closure of the Dona Ana oxidation pond. The report listed the results of

ten soil samples collected from the oxidation pond. Based on the RFI data, cadmium and selenium were reported at concentrations above the residential MSSLs in surface soil and sediment samples collected from within the Dona Ana Range Oxidation Pond. The area associated with the Dona Ana oxidation pond is approximately 5 acres.

Surface soil and/or sediment samples were collected from SWMU Nos. 19, 20, and 21 at the McGregor Range. Samples collected from the McGregor Range Oxidation Pond SWMU No. 19 are summarized in the *July 2005 Draft Supplemental RCRA Facility Investigation Report (RFI)*. Samples were collected from the pond sediment and surrounding surface soil during various site investigations from 1994 to 2004. Reported Constituents of Concern (COCs) were screened for potential risk to humans and ecological receptors, and assessed for risk to upper trophic level ecological receptors. Metals including arsenic, barium, chromium and lead were reported at concentrations in the sediment above the applicable ecological screening levels. The area associated with the McGregor Range oxidation pond is approximately 10 acres.

Analytical results for surface soil samples collected from the Inactive Open Detonation (OD) Site (SWMU No. 20) are summarized in the *December 2002 Voluntary Corrective Action Report*. Surface soil samples were collected from the SWMU area in three phases of the investigation from 1996 until 2002. A total of approximately 30 surface soil samples were collected from the site. The results of the RFI investigation indicate the presence of several metals including; arsenic, barium, cadmium, chromium, lead and silver. The total area associated with SWMU No. 20 is approximately 15 acres.

Surface soil samples collected from the McGregor Range Landfill are summarized in the *Post Closure Certification Report FTBL #13/SWMU 18 McGregor Range Camp Landfill* dated March 2005. Soil samples were collected from the landfill over a five year period. The results of the soil sampling are summarized in the July 1997, *Final RCRA Facility Investigation for Five Solid Waste Management Units for Ft Bliss, Texas*. The total area associated with the landfill is approximately 15 acres.

1.4 DEFINITION OF PROBLEM

Site-specific background concentrations for metals have not been established for the identified SWMUs on the McGregor Range and Dona Ana Range of the Ft. Bliss Army Reservation. Results of the previous surface soil investigations showed the presence of metals in the surface soil and sediments associated with the SWMUs. Because site-specific background concentrations have not been developed, there is no comparison data for evaluating whether the reported metals concentrations are indicative of releases from the SWMUs.

Figure 1-1
Site Location Map

Figure 1-2
Dona Ana Range SWMU Locations

Figure 1-3
McGregor Range SWMU Locations

2.0 PROJECT SCOPE AND OBJECTIVES

2.1 PROJECT OBJECTIVES

The objective of this project is to establish site-specific background metals concentrations for surface soil in the vicinity of two SWMUs on the Dona Ana Range, and three SWMUs on the McGregor Range. The site-specific background concentrations will be established in order to aide in the completion of the close-out activities for various Defense Environmental Restoration Account (DERA) funded sites at Fort Bliss. Approximately twenty surface soil samples will be collected in the vicinity of the Dona Ana Range Camp sites and thirty samples will be collected in the vicinity of the McGregor Range Camp sites. The site-specific background results will be used to complete the RFI addendum for the McGregor Range oxidation pond. The background concentrations are also intended to aide in the completion of closure documents and comment responses under a separate authorization, for other appropriate SWMUs on the McGregor and Dona Ana ranges.

2.2 SCOPE OF WORK OVERVIEW

The scope of work for this project is defined by the 20 July 2005 Scope of Work provided by the USACE and is limited to the development of background metals concentrations. Task 4, Ground Water Investigation, as presented in the 20 July Scope, is on-hold awaiting signature of an agreement between Fort Bliss and the New Mexico Environmental Department. In summary, the project will involve 1) the collection of twenty surface soil samples from the Dona Ana Range; 2) the collection of thirty surface soil samples from the McGregor Range; 3) the preparation of a final report; 4) response to agency comments; and 5) an RFI addendum for the McGregor Range oxidation pond. The completion of associated closure documentation and submittal to the appropriate agencies for the remaining SWMUs on the ranges will be done separately. A description of the background sampling procedure and statistical evaluation for this project is provided in Section 3.

2.3 APPLICABLE REGULATIONS AND STANDARDS

The projects at the SWMU sites on the Dona Ana Range and McGregor Range of Ft. Bliss are being performed in response to solid waste materials deposited at these sites. The RCRA of 1976 established provisions for the classification and management of solid and hazardous wastes in the United States. The U.S. Environmental Protection Agency (USEPA) has adopted regulations under Code of Federal Regulations (CFR) 40 CFR 260 through 266 regarding the management and proper disposal of these wastes, but has also authorized a number of states and territories to administer and enforce the RCRA program. The regulations adopted by a state or territory have to be at least as stringent as the federal regulations.

In New Mexico, the NMED is authorized by USEPA to administer and enforce RCRA. The EPA, and subsequently NMED, issued Fort Bliss a RCRA Permit (4212720101-01) for the open detonation unit on McGregor Range. The SWMUs are included in this permit. This background study, resulting report, and closure documents are intended to comply with the New Mexico State Regulations and the provisions of the Module V of Ft. Bliss' RCRA Part B Permit.

2.4 PROJECT ORGANIZATION AND RESPONSIBILITIES

WESTON has been contracted to complete the technical scope of work described in this SAP for Ft Bliss. The roles and responsibilities of key WESTON personnel on this assignment are as follows:

- **Program Manager:** Tom Hoskings P.E., Ph.D who serves as WESTON's Program Manager for other work done with the Corps of Engineers Tulsa District, will serve as the Program Manager's for this project. In this role, he is responsible for overseeing performance on this task order, ensuring that contract obligations are met and that deliverables are acceptable and submitted on schedule. Mr. Hoskings will represent WESTON in discussions regarding contractual issues.
- **Project Manager:** Stephen Mitchell, P.G. will serve as the Project Manager for this task order. Mr. Mitchell will be responsible for coordinating project activities with Ft Bliss and USACE, directing WESTON's staff, reviewing documents for technical quality, and completing the task order on schedule and at a level of quality acceptable to Ft. Bliss, and USACE. Mr. Mitchell has 15 years of experience performing environmental investigation and remediation projects, and has experience at Ft Bliss.

- **Project Geologist:** Russ K. Johnson will serve as the lead geologist and technical manager for this assignment. In this role, Mr. Johnson will be responsible for design of the sampling and analysis plan, providing technical direction of that work, overseeing preparation of the RFI Addendum, Background Sampling Report and responding to any comments received from Ft Bliss, USACE, or NMED on this task ordering any additional sampling activities that are required. Mr. Johnson is a Professional Geologist with 8 years of experience.

Other staff from WESTON’s Houston, Austin and El Paso offices will provide field support, CAD services, technical editing, and clerical support to complete this assignment. However, it is anticipated that the personnel named above will be the primary WESTON employees responsible for directing and completing work on this project.

2.5 PROJECT SCHEDULE

WESTON will perform this project within the 9 month schedule similar to that described in the Statement of Objectives. The tentative schedule for key project milestones is as follows:

Notice to Proceed:	5 November 2005
Draft Work Plan Submittal	20 December 2005
Receipt of Army Comments	15 February 2006
Final Work Plan Submittal	1 March 2006
Commencement of Field Work	1 April 2006
Completion of Field Work	15 April 2006
Receipt of Analytical Data	1 May 2006
Submittal of Draft Background Study	15 June 2006
Army Review of Draft Background Study	1 August 2006
Submittal of Draft Final RFI Addendum	1 October 2006

The review periods are estimated and beyond WESTON’s control. Additional time in the schedule could be required if comments are received later than planned, or require unforeseen effort beyond the scope of work described.

3.0 PROJECT ACTIVITIES

The project activities to be performed at the Ft. Bliss Dona Ana and McGregor Range SWMUs are described in the 20 July 2005 Scope of Work. The work will involve the collection of surface soil samples for the development of statistically derived background metal concentrations in surface soil, report preparation, and the submittal of closure documents and comment responses to the appropriate agencies. These activities are described on a task-by-task basis in this section.

3.1 TASK 1 – REGULATORY REVIEW

WESTON has reviewed the regulatory comments addressing the February 2005 Supplemental RFI Report associated with the McGregor Range Oxidation Pond (SWMU No. 21). WESTON will provide individual responses to agency comments for submittal to NMED. After the completion of the Background Study as described in Section 3.2, WESTON will prepare an addendum to the RFI Report incorporating the relevant comment responses and new relevant information resulting from the background study. The RFI addendum will be prepared for Ft. Bliss and USACE review and approval, prior to submittal to NMED.

3.2 TASK 2 – BACKGROUND STUDY

WESTON will collect surface soil samples for the development of site-specific background concentrations of selected metals. Twenty samples will be collected from the Dona Ana Range and 30 samples will be collected from the McGregor Range. The samples will be analyzed for aluminum, arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium. The background sample locations are described in the following sections.

3.2.1 Selection of Background Sample Locations

The background sampling plan was developed based on the guidance provided in the USEPA *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites*

(USEPA, 2002). Background, as defined by USEPA (2002), is “substances or locations that are not influenced by the release from a site and are usually described as naturally occurring or anthropogenic: (1) naturally occurring substance present in the environment in forms that have not been influenced by human activity; (2) anthropogenic substances are natural and human-made substances present in the environment as a result of human activity (not specifically related to the site in question)” (USEPA 2002). The background reference area is the area where background samples are collected for comparison with samples collected on site. The reference area should have the same physical, chemical, geological, and biological characteristics as the site being investigated, but has not been affected by activities on the site. The ideal background reference area would have the same distribution of concentrations of chemicals of concern as those that would be expected on the site, if the site had never been impacted. Background reference sites are normally selected from offsite areas.

Background sample locations were selected first by identifying the extent of the affected areas based on previous site investigations, and then moving a minimum of 750 ft outside of the perimeter of the affected area. Secondly, the soil type, as reported by the National Resource Conservation Service, was identified in the affected area. Background sample locations were selected in areas with the same soil type as identified in the site area. Third, roadways were identified and sample locations were selected a minimum of 100 ft away from a roadway. In addition, the location of the affected area in comparison to a road was identified, and the background sample locations were selected to be similar in relation to roads, or other developed areas. Finally, the selected background locations were compared to other sites within the range boundaries that were identified as SWMUs. Any background location selected within a potential SWMU was moved a minimum of 750 ft outside of the SWMU.

Dona Ana Range Sample Locations

Background sample locations selected for the Dona Ana Range are shown on Figure 3-1. Background COC concentrations for the Dona Ana range will be developed for two SWMUs, SWMU No. 29 and SWMU No. 27B. SWMU No. 27B the Dona Ana Oxidation Pond is located within the Reyab silt loam soil type. Ten sample locations were identified within this soil type. SWMU No. 27B is approximately 375 ft from the roadway. Therefore, the selected background

sample locations are also located a minimum of 375 ft from roadways. The sample locations are a minimum of 750 ft from any known affected areas including motor pools, vehicle maintenance areas, and any other disturbed areas.

SWMU No. 29, the closed Dona Ana Sanitary Landfill 11, is within the Piquin very gravely sandy loam soil type. Ten sample locations were identified within the soil type. Although SWMU No. 29 is located within 25ft of a roadway, the background sample locations proposed are a minimum of 100 ft from a roadway. The background sample locations are a minimum of 750 ft from any known affected areas, including vehicle maintenance areas, motor pools or other disturbed areas. Approximate sample locations are shown on Figure 3-1. During the field mobilization, exact locations for collection of the background samples will be selected based on the existing biological cover. Exact sample locations will be selected to most closely mimic the conditions of the affected area. In addition, a visual inspection will be performed prior to sampling to avoid collecting a sample in a visually affected or disturbed area. The locations of the background samples collected will be recorded during collection using GPS.

McGregor Range Sample Locations

Background sample locations selected for the McGregor Range are shown on Figure 3-2. Background COC concentrations for the McGregor range will be developed for three SWMUs, SWMU No. 18, SWMU No. 19 and SWMU No. 20. All three SWMUs are located within the Copia-Nations complex soil type. Thirty sample locations were selected from within this soil type, at a minimum of 750 ft from any affected area. Sample locations are a minimum of 100 ft from a roadway, and samples were selected between and surrounding the three SWMUs. During the field mobilization, exact locations for collection of the background samples will be selected based on the existing biological cover. Exact sample locations will be selected to most closely mimic the conditions of the affected area. In addition, a visual inspection will be performed prior to sampling to avoid collecting a sample in a visually affected or altered area. The exact sample locations will be recorded at the time of collection using GPS.

Although Meyer Range Oxidation Pond is not included in this investigation, it is anticipated that future investigation for the range will include comparisons to background. As shown in Figure 3-3,

the soil type of the Meyer Pond is the Copia-Nations complex, and therefore, background samples selected during this investigation may also provide valid background concentrations for future investigations of the Meyer Range.

3.2.2 Sampling Method and Field Screening Requirements

The soil samples will be collected as discrete samples. No composite samples will be collected. The samples will be collected using disposable scoops or clean stainless steel trowels. Samples collected for metals analyses will be placed into a disposable aluminum pan or bowl, homogenized, and placed into the sample containers provided by the laboratory. Care will be taken to collect samples of similar soil grain size for each sample collected in a soil type within each of the Ranges. In addition, care will be taken to remove obvious pieces of rock debris and organic matter (e.g., roots) from the samples. Since background samples will be collected from unaffected areas, no field screening will be performed.

3.2.3 Analytical Requirements

The soil samples collected during the background assessment will be analyzed using USEPA SW-846 methods for metals (aluminum, arsenic, silver, barium, cadmium, chromium, mercury, lead, and selenium). The samples will be analyzed as follows:

Analyte	Method
Aluminum	SW-846, 6010B
Arsenic	SW-846, 6010B
Silver	SW-846, 6010B
Barium	SW-846, 6010B
Cadmium	SW-846, 6010B
Chromium	SW-846, 6010B
Mercury	SW-846, 7471A
Lead	SW-846, 6010B
Selenium	SW-846, 6010B

3.2.4 Quality Assurance Sample Collection Frequency

One field duplicate sample will be collected for every 10 field samples, for a total of two duplicates on the Dona Ana Range, and three duplicates on the McGregor Range. The analytical results obtained for these samples will be compared to allow an independent assessment of the precision of the reported laboratory results. These samples will be collected as split samples of the soil samples, according to the procedures described above.

3.3 CALCULATION OF BACKGROUND CONCENTRATIONS

Site-specific background concentrations for the selected metals will be calculated based on the analytical results of the samples collected. Background concentrations will be developed for each soil type on each of the ranges. Individual site-specific background concentrations will be developed for SWMU No. 29 and SWMU No. 27 on the Dona Ana Range because the SWMUs are located within different soil types. The site-specific background concentrations calculated for the McGregor Range Camp will be applicable for all three SWMUs (No. 18, No. 19 and No. 20) because all three SWMUs are located within the same soil type.

The site-specific background concentrations will be calculated following a statistical method provided in the USEPA document *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites*. The guidance will be used to assure that a reliable representation of background concentrations of chemicals in the soil is established. The statistical method to be applied for the Ft. Bliss Ranges will involve parametric and non-parametric tests based on the distribution of the background sample data. Once the data are tested for distribution, a comparison between means, using the t-test, 95% Upper Confidence Limit (UCL) or 95% Upper Prediction Limit (UPL), will be calculated if the data are normally or lognormally distributed.

If the selected data set for comparison to background are not normally or lognormally distributed, a non-parametric test for background will be applied. Both the distribution tests and the statistical analyses for background concentration will be performed using the EPA Pro-UCL software. The software follows the calculations described in the Interim Final Guidance for Statistical Analysis of

Groundwater Monitoring Data at RCRA Facilities (EPA, 1989), and the Addendum to Interim Final Guidance (EPA, 1992).

The calculated result of the statistical test will provide the upper bound of the mean background concentrations for the chemicals of concern with a 95% confidence interval. The calculated background concentration will be compared to the on-site concentrations. If the COC concentration in potentially impacted areas exceeds the calculated background concentration, then the chemical will be treated as site-related. Otherwise, if the COC concentration does not exceed the calculated background concentration, the chemical will be treated as background.

Figure 3-1
Dona Ana Range Proposed Background Sample Locations and Soil Types

Figure 3-2
McGregor Range Proposed Background Sample Locations and Soil Types

Figure 3-3
McGregor Range/Meyer Range Oxidation Pond and Soil Types

4.0 FIELD SAMPLING PROCEDURES

Sampling activities will be performed using the methods described in this section.

4.1 SAMPLING METHODS

Representative surface soil samples will be collected from the 0-to-6-inch depth interval. The sampler will don a clean pair of disposable thin nitrile or latex gloves before collecting the sample. A clean shovel or trowel will be used to remove any gravel or vegetation, and the soil will be collected using a disposable plastic scoop. Soil removed from the sample location will be homogenized in a disposable aluminum pan or stainless-steel mixing bowl prior to being placed in the sample jar. Each sample will be transferred into the appropriate clean sample container using the disposable plastic scoop. The sample container will be labeled, sealed in a re-sealable plastic bag, and placed on ice in a shipping container (e.g., cooler) while at the site. Information about each sample will be recorded on sample labels, in the field logbook, and on chain-of-custody forms as described in Section 4.4.

4.2 FIELD QC SAMPLING PROCEDURES

Duplicate quality control/quality assurance (QA/QC) samples will be collected during the investigation to verify the precision of the laboratory results. In addition, extra sample volume will be collected from several selected locations enabling the laboratory to perform Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses and monitor the effects of potential matrix interferences.

One duplicate QA/QC sample will be collected for every 10 samples as described in Section 3. Duplicate sampling collection will be accomplished by dividing the portion of the recovered material to be sampled into three aliquots, and placing each aliquot into separate sets of sample containers. The sample and an accompanying “blind” duplicate (referred to as the “QC” sample) will be shipped to the primary laboratory. The blind duplicate samples will be labeled in such a way that the laboratory can not associate them with their counterpart samples (e.g., they will be assigned a station number that does not exist). If requested by the USACE, a third sample aliquot can be

prepared for independent analysis by a USACE-contracted laboratory. The third aliquot will be given a label identical to the sample with the addition of “QA” in the sample identification, and this portion of the sample will be shipped to the third-party lab provided by the USACE.

Extra sample volume for the laboratory MS/MSD analyses will be collected at a rate of 1 per 20 samples collected. In general, where extra sample volume is collected for MS/MSD analyses, a triple sample volume will be collected in three separate sample containers. MS/MSD volumes will not be considered separate samples. All three volumes will be identified as the same sample and will be shipped to same laboratory.

The need for trip blanks and rinsate blanks is not anticipated. Trip blanks are not planned as water sampling for volatile organics is not part of the scope. Rinsate blanks are not planned as it is anticipated that the soil and sediment samples will be collected using disposable equipment.

Proper documentation of all QA/QC sampling activities (e.g., identifying the sample and associated QA/QC samples) will be maintained in the field logbook.

4.3 DECONTAMINATION PROCEDURES

It is anticipated that disposable equipment can be used to perform most of the sampling described in this plan. However, in the event that non-disposable equipment is used, it will be decontaminated prior to, in between, and after each use during the course of the field activities. The following decontamination procedure will be used for non-disposable equipment:

1. Brush away loose dirt or debris.
2. Wash with small amounts of phosphate-free detergent (i.e. Liqui-nox) and potable or distilled water solution to remove soil material.
3. Rinse with clean potable or distilled water.
4. Air-dry on a clean surface.

Disposable sampling equipment also will be cleaned following the above-mentioned procedure prior to its disposal. As a result of this decontamination, it is anticipated that disposable sampling

equipment and personal protective equipment (PPE) can be placed in plastic trash bags or 55-gallon drums and managed as non-hazardous waste materials. As existing data do not indicate that chemicals of concern are present above risk-based standards, and the samples will be collected outside of the known affected areas, it is anticipated that the small amounts of equipment wash water can be placed in the location from which the sample was collected.

Specific procedures for personnel decontamination are included in the HASP. It is anticipated that the field work will be performed in Level D, and that a minimum amount of PPE and decontamination fluids will be generated during the investigation.

4.4 FIELD OPERATIONS DOCUMENTATION

WESTON's field geologist or other designated on-site personnel will be responsible for recording and documenting relevant and appropriate information regarding project activities, sampling methods, and data collected during performance of field activities at the site. The following general guidelines will be followed in documenting fieldwork:

- Documentation will be maintained in a dedicated field logbook.
- Logbook documentation will be completed in waterproof ink. Written errors will be crossed out with a single line and initialed.
- Project logbooks and other documentation (e.g., field forms and geologic logs) will be stored in the project files after completion of the fieldwork. Copies of field notes will be made available to oversight personnel upon request.

Field logbooks will include records of pertinent activities related to specific sampling tasks. They will be bound books with hard covers and sequentially numbered pages. The front of each book will contain the logbook number, project number, and the site name. Logbooks will be numbered sequentially, if more than one is used. The books will remain on-site or in the custody of the field Team Leader until they are completed, after which they will be stored in the project files.

The field logbook will be maintained on a real-time basis and will include, where applicable and appropriate, the following information:

- Date, time of specific activities, and weather conditions.
- Names of all personnel on the site, including visitors.
- Specific details regarding sampling activities, including sampling locations, type of sampling, sampling technique, depth, media, and sample numbers.
- Specific problems and resolutions.
- Identification numbers of monitoring instruments used that day.
- Field preparation techniques and sample preservation methods.
- Required laboratory analyses.
- Chain-of-custody details, including sample identification numbers and shipping-receipt (airbill) numbers.
- Initials of the person responsible for completing the logbook on every page.

Field forms may be used in conjunction with logbooks to summarize data collected in the field notebook; however, the information on field forms must be recorded in the field notebook first, so that all notes are bound together in one place. Field forms also may be used to prompt the field personnel to obtain complete and correct information. Original copies of forms will be kept in the project files, and copies will be made available to oversight personnel upon request.

4.5 PHOTOGRAPHIC RECORDS

Photographs will be taken during the site assessment activities, as allowed by Ft Bliss, to document the establishment of the sampling locations, sample collection and handling procedures, and any other activities or conditions that need to be documented. A written log will be kept that assigns a sequential number to each photograph taken, briefly describes the activity or condition photographed, and states the location and purpose of the photograph.

4.6 SAMPLE DOCUMENTATION

After samples are collected and transferred to the appropriate sample containers, the sampler will enter information into the field logbook. The information entered for each sample will include the sample identification, the date and time of collection, the initials of the sampler, the sample matrix, depth of sample, and any other information necessary to document that the sample is representative of site conditions (e.g., soil type). Any unusual conditions encountered during the collection or handling of the sample also will be documented in the field logbook. The procedures described below will be used so that each sample collected during the assessment will be documented.

Samples will be identified according to the area type (i.e., SWMU No. 18, 19, 27), sample type, sample station number, and sample depth. Sample designations will be such that they can be entered into database programs to facilitate management, recovery, and reporting of data. The general sample designations will conform to the following format:

MG27-SB-zz

Where:

MG27 = Indicates “McGregor Range SWMU 27”

SB = Sample matrix: “S” for soil, “B” for background

zz = Depth in inches below ground surface (bgs) of the upper limit of the sample interval, e.g. “00” for a surface soil sample and “06” for a sample interval beginning at 6 inches bgs.

4.7 SAMPLE LABELS

A sample label will be completed for each sample container. The information recorded on the sample label will include the project name and/or number, sample identification, date and time of sample collection, initials of the sampler, depth of sample, and requested analyses.

4.8 CHAIN-OF-CUSTODY RECORDS

Standard chain-of-custody forms provided by the laboratory will be filled out for each batch of samples. General information on the chain-of-custody form will include the project name and/or number, contact information for the person responsible for managing data, required turnaround times for the sample batch, and any special instructions to the laboratory. A separate line on the chain-of-custody form will be filled out for each sample with information including the sample identification, date and time of sample collection, sample matrix, container type, preservatives (if applicable), and requested analyses.

4.9 DATA MANAGEMENT AND RETENTION

Participating laboratories will report analytical data in both hard-copy analytical reports and electronic data deliverables (EDDs). EDDs will be used to populate a spreadsheet containing information regarding each sample and the analytical results of the sample analysis. The information on the spreadsheet will include sample identification, sampling date, chemical abstract service (CAS) number of the analyte, the applicable risk-based standards and the analytical result. Hard-copy analytical reports will be used to check the EDD results for accuracy and will include a laboratory QA/QC summary. The hard-copy reports will be included in the RFI Addendum.

4.10 SAMPLE PACKAGING AND SHIPPING REQUIREMENTS

The samples collected during the investigation will be packaged and shipped as follows:

- As samples are collected, the labeled sample containers will be placed in individual re-sealable plastic bags and placed into a shipping container (i.e. cooler).
- At the end of each day, each cooler will be packed with fresh ice and sufficient packing material (bubble-wrap or equivalent) to prevent container movement and breakage during shipment. Ice will be contained in two 1-gallon re-sealable plastic bags to prevent liquid from contacting samples.
- Chain-of-custody forms, identifying each sample and the required analyses, will be placed inside re-sealable plastic bags inside each cooler.

- The shipping containers will be properly sealed using packing tape and a custody seal will be placed over the cooler lid.

- Temperature blanks will be included in each sample cooler. Temperature blanks will consist of 40 mL vials filled with distilled water.

The coolers will be shipped via an overnight delivery service to the participating laboratories.

5.0 NON-MEASUREMENT DATA ACQUISITION

The investigation of SWMUs will include the collection of non-measurement data as needed to address comments on the RFI Report and justify the background sample locations selected. It is anticipated that the response to comments will largely rely on the non-measurement data included in the previous RFI reports and that significant efforts to collect additional non-measurement data will not be required for this phase of work. The non-measurement data gathering activities for that will be performed during this project are described below.

5.1 SITE RECONNAISSANCE

WESTON will perform site reconnaissance activities prior to completing the work. The goal of the site reconnaissance will be to compare current site conditions with those described in the previous RFI reports to assess whether any significant changes have occurred since the time the reports were prepared. No significant changes in site conditions observed during the performance of this project are expected. Any observed changes will be described in the RFI Addendum and Background Sampling Report.

5.2 AERIAL PHOTOGRAPHS

No additional aerial photography review is planned for this phase of the project.

5.3 ENVIRONMENTAL SETTING

The environmental setting of the site was characterized during the initial RFI. No further collection of non-measurement data to characterize the environmental setting of the site is planned.

5.4 SITE HISTORY

A review of SWMU operations previously was provided in the RFI reports. It is assumed that the information in the RFIs are reasonably accurate based on available information. Unless noted during the performance of the background study, no further investigation of site history is planned.

5.5 RELEASE CHARACTERIZATION

No release of hazardous constituents from soil is known.

5.6 GEOLOGICAL/HYDROGEOLOGICAL DATA

Geological and hydrogeological information was included in the RFI reports. No further geological investigations are planned.

5.7 RECEPTORS AND EXPOSURE PATHWAYS

The RFI report previously presented receptor information, and it is assumed that information will still be adequate for pursuing closure of SWMUs.

5.8 WATER WELL SURVEY

No water well survey is planned for this phase of work.

5.9 COC TOXICITY FACTORS AND CHEMICAL/PHYSICAL PARAMETERS

Relevant chemical and physical properties, including toxicity and mobility information, for any chemicals of concern identified during this phase of work will be evaluated as necessary to describe the site conditions and develop appropriate background concentrations.

6.0 REFERENCES

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Malcolm Pirnie, Inc, USACOE-Fort Worth, *Voluntary Corrective Action Report, FTBL-011/SWMU-29, FTBL-012/SWMU-27, FTBL-013/SWMU-18*, February 2002.

Malcolm Pirnie, Inc, *No Further Action Request (NFAR) Dona Ana Oxidation Pond*, September 2000

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NMED (New Mexico Environmental Department) Resource Conservation and Recovery Act (RCRA) Hazardous Waste Facility Operation Permit (Permit No. MN4213720101-01), June 1995.

Roy F. Weston, Inc, *RCRA Facility Investigation and Addendum Report, Fort Bliss, Texas*, 1997.

Thompson Professional Group, Inc., USACOE-Kansas, *Final Report – RCRA Facility Investigation for Five Solid Waste Management Units for Ft Bliss, Texas*, July 1997.

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Thompson Professional Group, Inc., *Post Closure Certification Report FTBL #13/SWMU 18 McGregor Range Camp Landfill*, March 2005

USACE, *Requirements for the Preparation of Sampling and Analysis Plans*, EM-200-1-3, 2001.

USEPA, *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites*, USEPA, 2002.

Weston Solutions Inc., *Supplemental RFI, McGregor Range Oxidation Pond, SWMU No. 19 Fort Bliss*, July 2005

Weston Solutions, *Voluntary Corrective Action Report Open Detonation OD Site SWMU No. 20*, December 2002

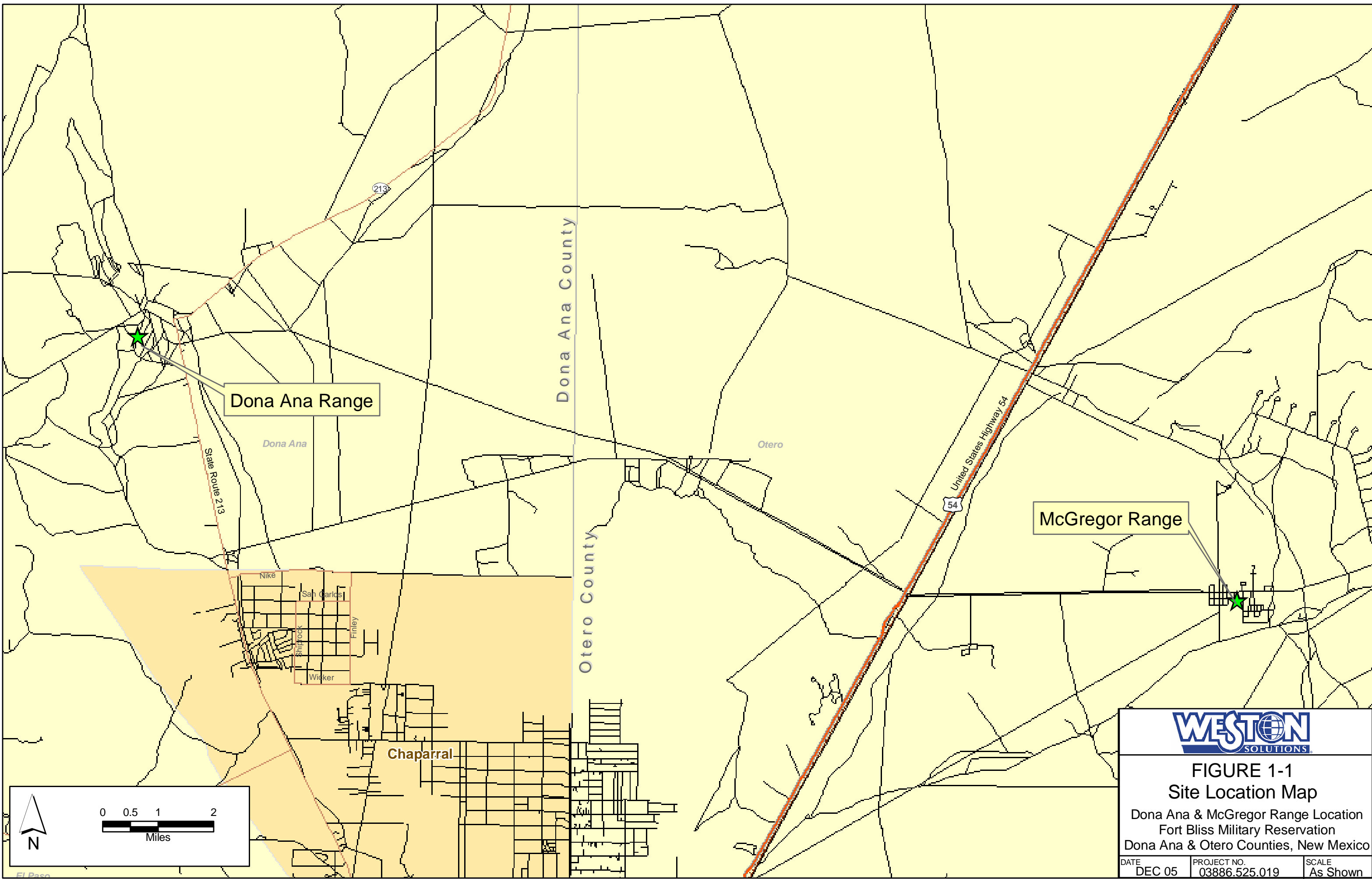
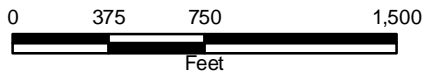


FIGURE 1-1
Site Location Map

Dona Ana & McGregor Range Location
 Fort Bliss Military Reservation
 Dona Ana & Otero Counties, New Mexico

DATE	PROJECT NO.	SCALE
DEC 05	03886.525.019	As Shown

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LEGEND



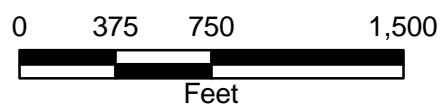
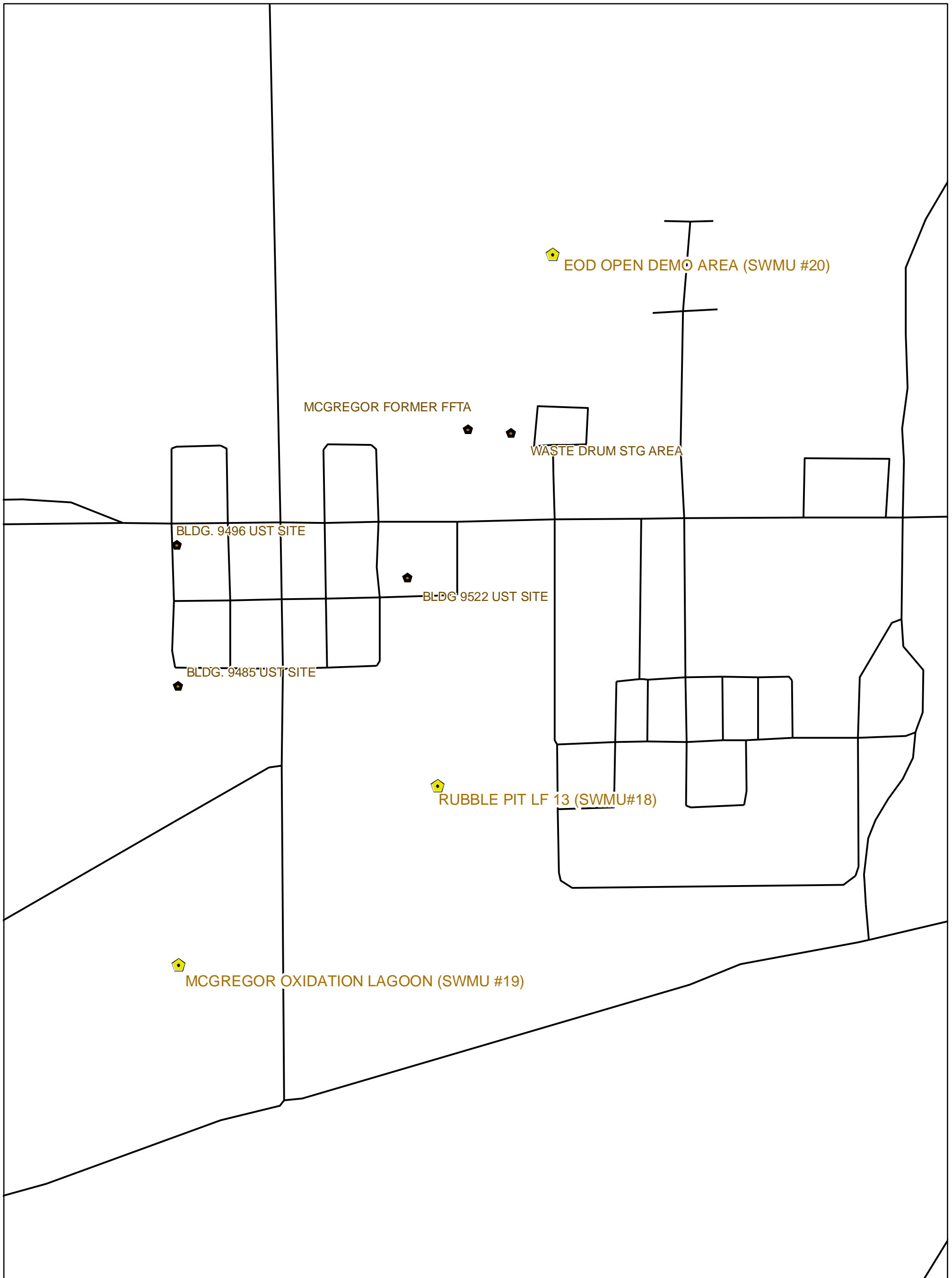
-  SWMU Location Requiring Background Sampling
-  SWMU Location



FIGURE 1-2

Dona Ana Range SWMU Locations
 Fort Bliss Military Reservation
 Dona Ana County, New Mexico

DATE	PROJECT NO.	SCALE
DEC 05	03886.525.019	1" = 750'



LEGEND



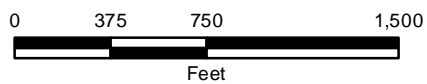
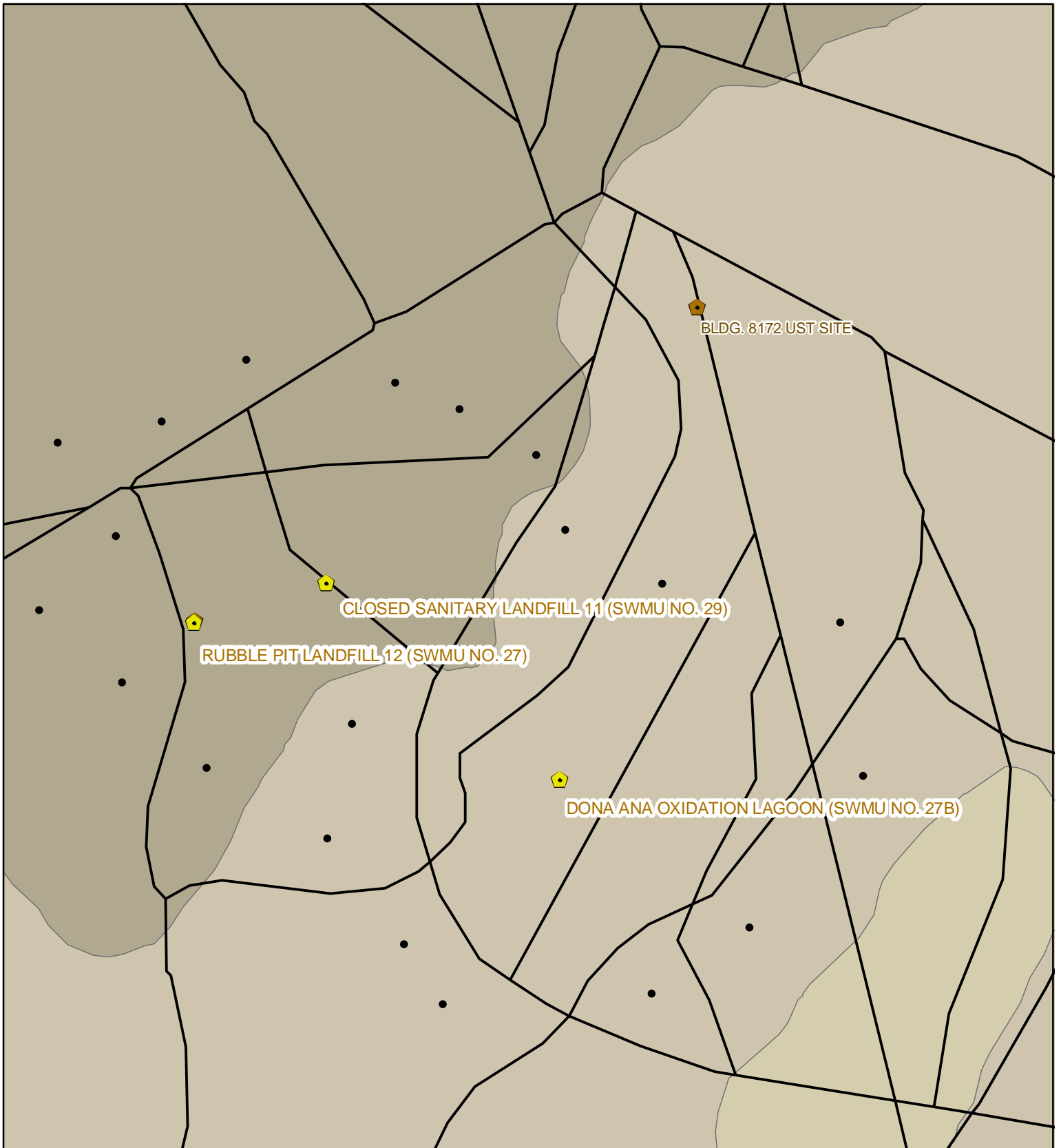
-  SWMU Location Requiring Background Sampling
-  SWMU Location



FIGURE 1-3

McGregor Range SWMU Locations
Fort Bliss Military Reservation
Otero County, New Mexico

DATE DEC 05	PROJECT NO. 03886.525.019	SCALE 1" = 750'
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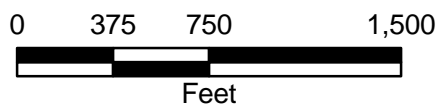
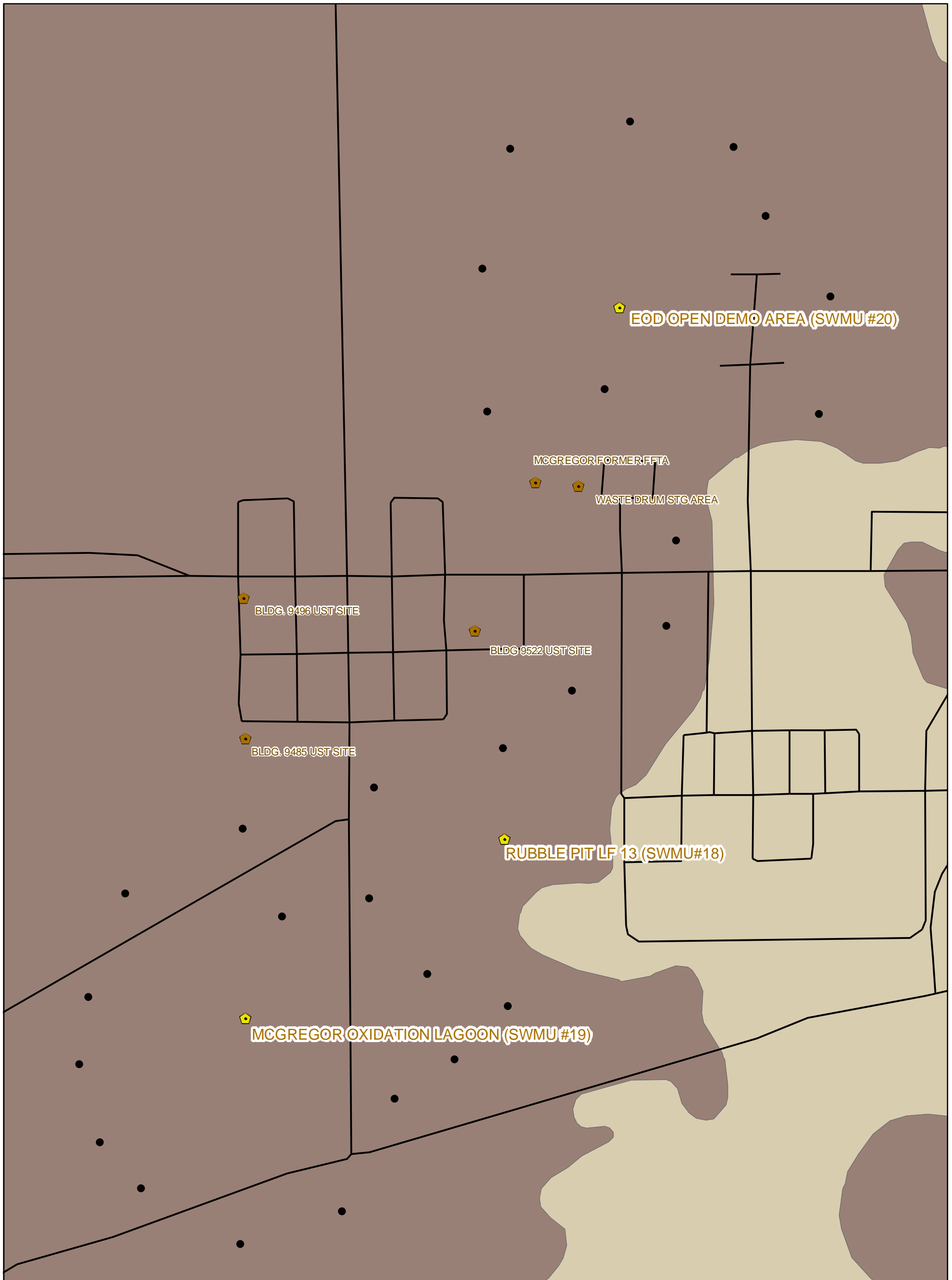
LEGEND

- Background Sample Location
- ⬠ SWMU Location Requiring Background Sampling
- ⬠ SWMU Location
- Reyab silt loam, 1 to 3 % slopes
- Piquin very gravelly sandy loam, 5 to 15 % slopes



FIGURE 3-1
 Dona Ana Range
 Proposed Background Sample Locations
 and Soil Types
 Fort Bliss Military Reservation
 Dona Ana County, New Mexico

DATE DEC 05	PROJECT NO. 03886.525.019	SCALE 1" = 750'
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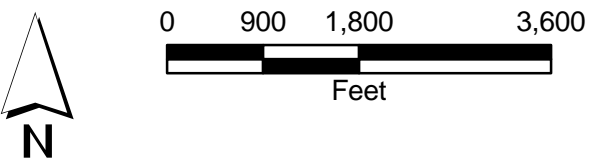
LEGEND

- Background Location
- ⬡ SWMU Location Requiring Background Sampling
- ⬢ SWMU Location
- Hueco loamy fine sand, 1 to 3 % slopes
- Copia-Nations complex, 1 to 3 % slopes



FIGURE 3-2
 McGregor Range
 Proposed Background Sample Locations
 and Soil Types
 Fort Bliss Military Reservation
 Otero County, New Mexico

DATE DEC 05	PROJECT NO. 03886.525.019	SCALE 1" = 750'
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LEGEND

- Background Location
- ⬠ SWMU Location Requiring Background Sampling
- ⬠ SWMU Location
- Hueco loamy fine sand, 1 to 3 % slopes
- Copia-Nations complex, 1 to 3 % slopes



FIGURE 3-3
McGregor Range
Myer Range Oxidation Pond
and Soil Types
Fort Bliss Military Reservation
Otero County, New Mexico

DATE DEC 05	PROJECT NO. 03886.525.019	SCALE 1" = 750'
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SOURCE: USDA Natural Resources Conservation Service

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