Class 3 Permit Modification Request
Munitions Treatment Facility Permit
EPA I.D. No.: AZ5213830991

Submitted to:

Arizona Department of Environmental Quality

Prepared by:

U.S. Army Garrison Yuma Proving Ground
Directorate of Public Works
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Acronyms and Abbreviations

A.A.C	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AHWMAP	Arizona Hazardous Waste Management Act Permit
AOC	area of concern
APP	Aquifer Protection Program
AST	aboveground storage tank
AZ	Arizona
AZ-GPL	Arizona Groundwater Protection Level
CFR	Code of Federal Regulations
COPC	chemical of potential concern
GPL	groundwater protection level
mg/kg	milligram per kilogram
MAA	Main Administrative Area
MPN/g	most probable numbers per gram
MTF	Munitions Treatment Facility
NE	not established
NFA	No Further Action
NOD	Notice of Deficiency
NR-SRL	Non-Residential Soil Remediation Level
OB/OD	Open Burn/Open Detonation
PMR	Permit Modification Request
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
SWMU	solid waste management unit
USAGYPG	United States Army Garrison Yuma Proving Ground
USEPA	United States Environmental Protection Agency
YPG	Yuma Proving Ground

1.0 INTRODUCTION

This document contains a Class 3 Permit Modification Request (PMR) to the Arizona Hazardous Waste Management Act Permit (AHWMAP) for the Munitions Treatment Facility (MTF) at United States Army Garrison Yuma Proving Ground (USAGYPG), United States Environmental Protection Agency (USEPA) Identification Number AZ5213820991, hereinafter referred to as MTF.

1.1 PURPOSE

This submittal to modify the MTF Permit requests No Further Action (NFA) and removal of a total of fourteen (14) solid waste management units (SWMUs) and areas of concern (AOC) consisting of the following:

- Four (4) SWMUs for which clean closure was granted by the Arizona Department of Environmental Quality (ADEQ) on March 31, 2014, (HWP-EX2759).
- One (1) SWMU which was granted closure on June 19, 2006 but remains in the Permit, (Decision to Grant Clean Closure P-105294)
- Two (2) SWMUs for which an NFA request was sent to the Aquifer Protection Permit Unit in May of 2014; no response has been received as of this date, and
- Six (6) SWMUs and one (1) AOC that were deferred in the May 2013 Class 3 PMR, (HWP-EX2778), until an investigation could be completed to gather additional information.

1.2 BACKGROUND

1.2.1 Permit History

The ADEQ issued the MTF Permit to USAGYPG on July 20, 2007. A modification (Class 1) to the MTF Permit was requested by USAGYPG in August of 2008 to revise the dates included in the permit for constructing a flood protection berm for the open burn units. This PMR was granted by ADEQ in September of 2008.

In May of 2013, USAGYPG submitted a PMR to ADEQ that contained requests for Class 1, Class 2, and Class 3 revisions to the MTF Permit. The actions taken in response to this submittal are summarized below.

A Class 1 PMR was granted by ADEQ’s Waste Programs Division on September 16, 2013. This PMR requested revisions including: changes to the burn pad and burn pad design and specifications regarding refractory surfaces and burn pad grades; a change in the storm water protection berm width; and revisions to the retention basin design and specifications for the sealant used.

A Class 2 PMR was granted by ADEQ's Waste Programs Division on August 15, 2014. This revision approved changes to the MTF's Groundwater Monitoring Plan including:

- A reduction in the number of downstream monitoring wells from three (3) to one (1);
- Removing volatile organic compounds, semi-volatile organic compounds, nitrate/nitrite, and ammonia from the analyte monitoring list and limiting the groundwater analysis to explosives, perchlorate, and the Target Analyte List metals;
- Reducing the groundwater monitoring frequency from once per quarter to once in two (2) years (first two year sampling event scheduled for August 2016); and
- Updating the quarterly sampling results since May of 2011 in Permit Attachment 7.

The Class 3 PMR requested NFA consideration for 73 SWMUs. ADEQ issued an Notice of Deficiency (NOD), requesting additional information in January of 2014. Following a response from USAGYPG, ADEQ issued a second NOD in June of 2014. Following a response from USAGYPG, ADEQ issued a third NOD in February 2015. USAGYPG provided a response in March 2015 and is awaiting a decision from ADEQ regarding their consideration and determination of NFA for most of the SWMUs submitted in this Class 3 PMR.

1.2.2 Regulatory Status of the MTF Permit

The requirements outlined in Arizona Administrative Code (A.A.C.) R18-8-270 A., incorporating 40 Code of Federal Regulations (CFR) §270.4, apply to the MTF. The following describes the compliance status of the MTF Permit, as of May 2015:

1. The MTF has completed groundwater monitoring activities as required by the MTF Permit and has provided analytical results for each sampling event to ADEQ for review. The required groundwater monitoring frequency was reduced to once every two (2) years through a Class 2 PMR approved by ADEQ in August of 2014.
2. The MTF has complied with annual compliance reporting requirements contained in the Permit and required by A.A.C. R18-8-264.H, 270 A., 270 L., and 40 CFR §264.75 and §270.30 (1)(9).
3. There are no outstanding Notices of Violation or other enforcement actions issued to USAGYPG for noncompliance with the management of the MTF and hazardous waste generated at the facility. A copy of the last annual compliance inspection conducted by ADEQ is provided with this submittal as Attachment 1.

2.0 OVERVIEW OF THE PERMIT MODIFICATION REQUEST

This PMR is being submitted to request NFA determinations and removal of a total of fourteen (14) units currently included in the MTF Permit. Information in this submittal is organized in three (3) groups based upon the type of information available to support the NFA requests:

(1) Three (3) inactive units and one (1) SWMU within the Kofa Open Burn/Open Detonation (OB/OD) Facility that have received ADEQ's approval of closure activities;

(2) Three (3) SWMUs including SWMU 33/YPG-156, SWMU 33/YPG-177 and SWMU 52/YPG-44 for which NFA has been requested from the Aquifer Protection Program (APP) Unit; and

(3) Six (6) SWMUs and one (1) AOC (deferred in 2014) that were included in a soil investigations performed in May of 2014 and March of 2015. The "Soil Sampling of Selected Solid Waste Management Units" report is dated June of 2015, and is included as Attachment 3 of this PMR submittal. The two (2) sites for SWMU 33 (YPG-156 and YPG-177) were also included in the soil investigations.

1. The OB/OD units are:

   - SWMU 56/YPG-006a The Burn on Ground Area
   - YPG-006f The Abandoned South Pad
   - YPG-006g The Abandoned North Pad
   - YPG-006e The Trash Trench Area

   The ADEQ Hazardous Waste Permits Unit issued approval of the closure report for these four (4) units in a letter dated March 31, 2014, (HWP-EX2759), finding that remediation had been conducted in accordance with the corrective action requirements in USAGYPG's hazardous waste treatment permit. A copy of the ADEQ closure approval letter is provided in Attachment 2.

2. The SWMUs for which NFA was requested from the APP Unit in May 2014 include:

   - SWMU 33/YPG-156 Active Brine Lagoons
   - SWMU 33/YPG-177 Reverse Osmosis Water Treatment Plant
   - SWMU 52/YPG-44 Kofa Ammunition Deflagration Site

   A letter requesting NFA consideration for SWMU 33 (YPG-156 and YPG-177) and SWMU 52 (YPG-44) dated May 6, 2014 was sent to Mr. Bob Manley in the APP Unit.

A decision to grant clean closure (Decision to Grant Clean Closure P-105294) was granted in a letter dated June 19, 2006 for SWMU 52 from Mr. Bill Kopp, Hydrogeologist, in the ADEQ Groundwater Section. A copy of the ADEQ closure approval letter is provided in Attachment 2.

The units for SWMU 33 (YPG-156 and YPG-177) were included in the 2014-2015 investigation (discussed in the third group below), since a decision has not been received from the APP Unit.

3. The eight (8) SWMUs and one (1) AOC included in the 2014-2015 soil investigation and this PMR include:

- SWMU 5/YPG-110 Used Oil Aboveground Storage Tank (AST) at Building 204
- SWMU 64/YPG-113 Septic Tank and Drainfield at Building 2103
- SWMU 70/YPG-121 Septic Tank and Drainfield at Building 3558
- SWMU 75/YPG-129 Septic Tank and Drainfield at Building 6000
- SWMU 76/YPG-130 Septic Tank and Drainfield at Building 6003
- SWMU 78/YPG-132 Septic Tank and Drainfield at Building 6016
- AOC 7/YPG-162 Surface Impoundment in Southwest Corner of Main Administrative Area (MAA)
- SWMU 33/YPG-177 Evaporation Pond for Reverse-Osmosis Unit
- SWMU 33/YPG-156 Concrete Containment Basin for Oil-Water Separator

Investigation findings for each of the SWMUs and the AOC listed above are presented in this submittal in Section 4.0.

A summary of the SWMUs and AOC requested for NFA is provided in Table 1 (see Section 3.0.) The table provides a listing of the applicable NFA category, references to ADEQ's decision documents, as applicable, and the location of supporting documentation in this PMR.

2.1 COMPLIANCE WITH PERMIT MODIFICATION REQUIREMENTS

The following subsections contain information that addresses the requirements of R18-8-270 of the A.A.C., incorporating 40 CFR 270.42(c), "Permit modification at the request of the permittee."

2.1.1 Description of Proposed Changes

A.A.C. R18-8-270 A and Q (incorporating 40 CFR §270.42(c)(1)(i)) requires the MTF (as the applicant) to describe the exact change to be made to the permit conditions and supporting documents referenced in the permit.

1. Request termination of corrective action consideration for thirteen (13) SWMUs and one (1) AOC in the MTF Permit for which either closure or NFA has been granted or is being requested in this PMR. (See Attachments 2 and 3 for supporting information.)
2. Update the MTF Permit SWMU list (Appendix K and Installation Maps, Part B Application) to remove SWMUs that have been granted closure or NFA as documented in this PMR. (See Attachment 4 for supporting information.)
3. Update MTF Permit text in Attachments 1, 2, 3, 6, 9 and 14 to remove language that refers to the “old”, “new”, and/or “existing” OB pads to reflect the OB pads currently in use at YPG. (See Attachment 4 for revised text.)

USAGYPG acknowledges that they will remain responsible for protecting human health and the environment, and for complying with permit and regulatory requirements in the event that ADEQ approves the changes requested in this PMR.

2.1.2 Identification of Permit Modification

A.A.C. R18-8-270 A and Q (incorporating 40 CFR §270.42(c)(1)(ii)) requires the MTF to identify the appropriate class of modification requested. The proposed modifications are in compliance with Permit Part I, Section C Permit Actions and 40 CFR 272.42, Appendix I(C) and are classified as follows:

1. Request removal from the MTF Permit and NFA status for the four (4) inactive units at the Kofa OB/OD for which closure has been approved by the ADEQ Hazardous Waste Permits Unit **(Class 3 Modification)**.
2. Request removal from the MTF Permit and NFA status for three (3) SWMUs based upon the APP Unit’s concurrence that NFA is required **(Class 3 Modification)**.
3. Request NFA status for six (6) SWMUs and one (1) AOC for which soil investigations have been performed and NFA is supported **(Class 3 Modification)**.

2.1.3 Explanation of Permit Modification Need

A.A.C. R18-8-270 A and Q (incorporating 40 CFR §270.42(c)(1)(iii)) requires the MTF to discuss why the modification is needed.

1. Remove the four (4) inactive units at the Kofa OB/OD for which closure has been granted by ADEQ’s Hazardous Waste Permits Unit to ensure the MTR Permit SWMU list (Appendix K) and YPG Installation Maps contain accurate information.
2. Remove SWMU 52 for which NFA was granted by the APP Unit of ADEQ in June 2006 and remove SWMU 33 (including two YPG sites) based upon the results from the 2014-2015 investigation to ensure the MTR Permit SWMU list (Appendix K) and YPG Installation Maps contain accurate information.
3. Update the list of SWMUs and AOCs by removing the six SWMUs and one AOC based upon supporting documentation included in the 2014-2015 investigation results to

ensure the SWMU list (Appendix K) and YPG Installation Maps contain accurate information.

4. Update the text in the MTR Permit attachments to accurately reflect operations at the Kofa OB/OD Operation.

USAGYPG acknowledges that they will remain responsible for protecting human health and the environment, and for complying with permit and regulatory requirements in the event that ADEQ approves the changes requested in this PMR.

2.1.4 Provide Applicable Information

A.A.C. R18-8-270 A and Q (incorporating 40 CFR §270.42(c)(1)(iv)) requires the MTF to provide the applicable information required by 40 CFR §270.13 through §270.22, §270.62, §270.63 and §270.66. This information is provided in Table 2, describing the requirements in the MTF Permit that are affected by this PMR.

2.1.5 Signatory and Certification Requirements

A.A.C. R18-8-270 A and Q (incorporating 40 CFR §270.42(d)(1) and 40 CFR §270.30(k)) requires the person signing under paragraphs a and b to certify the document. The transmittal letter for this PMR contains the signed certification statement in accordance with the MTF Permit Part I Section E Duties and Requirements Part 11 Signatory and Certification Requirements.

2.1.6 Identification of Changes or Modification to Permit Text

The proposed text revisions in the Permit are identified using a red double underline and the strikethrough feature (~~strikethrough~~) for deleted information. All direct quotations are indicated by *italicized text*. Attachment 4 of this PMR submittal contains replacement pages for inclusion in the modified MTF Permit.

3.0 SWMUs AND AOC PROPOSED FOR NFA CONSIDERATION

The table below summarizes the SWMUs and AOCs submitted to ADEQ for termination of corrective action and an NFA decision by ADEQ. The NFA determination criteria applied to each SWMU/AOC is listed in the table and described the subsection below. Refer to the Attachments 2 and 3 for supporting documentation.

Table 1
SWMUs and AOCs Proposed for NFA

SWMU/ AOC #	YPG #	Unit Description	Category	ADEQ's Decision Document	PMR Reference
56	006a	Kofa Burn on Ground Area	6	March 31, 2014 HWP-EX2759	Attachment 2
–	006f	Kofa Abandoned South Pad Area	6	March 31, 2014 HWP-EX2759	Attachment 2
_	006g	Kofa Abandoned North Pad Area	6	March 31, 2014 HWP-EX2759	Attachment 2
–	006e	Kofa Trash Trench	6	March 31, 2014 HWP-EX2759	Attachment 2
52	44	Kofa Ammunition/Deflagration Facility	6	June 19, 2006 P-105294	Attachment 2
33	156	Active Brine Lagoons	5	No Decision (APP)	Attachments 2, 3
33	177	Reverse Osmosis Water Treatment	5	No Decision (APP)	Attachments 2, 3
5	110	Used Oil AST at Building 204	4	Previously Deferred	Attachment 3
64	113	Septic Tank and Drainfield at Building 2103	4	Previously Deferred	Attachment 3
70	121	Septic Tank and Drainfield at Building 3558	4	Previously Deferred	Attachment 3
75	129	Septic Tank and Drainfield at Building 6000	4	Previously Deferred	Attachment 3
76	130	Septic Tank and Drainfield at Building 6003	4	Previously Deferred	Attachment 3
78	132	Septic Tank and Drainfield at Building 6016	4	Previously Deferred	Attachment 3
7	162	Surface Impoundment at Southwest Corner of MAA	4	Previously Deferred	Attachment 3

ADEQ – Arizona Department of Environmental Quality
AOC – area of concern
MAA – Main Administrative Area
NFA – No Further Action
PMR – Permit Modification Request
SWMU – solid waste management unit
YPG – Yuma Proving Ground

3.1 NFA DETERMINATION CRITERIA

The six (6) criteria provided by ADEQ for determining NFA are as follows:

1. Reasonable efforts have been made to locate the site, but it cannot be located or does not exist. If it can be shown that the site does not exist, then a proposal may be made for a NFA determination.
2. The site was not used for the management or disposal of solid or hazardous waste or hazardous constituents. If this can be shown, then a proposal may be made for an NFA determination.
3. There was no release of hazardous constituents to the environment. If it can be shown that there was not, *nor is there likely to be a release*, then a proposal can be made for an NFA determination.
4. There was a release, but a site assessment indicates that the concentrations of hazardous constituents, hazardous waste decomposition products, and constituents subject to Arizona soil remediation levels (Title 18, Chapter 7, Article 1) are currently at acceptably low levels as determined by the ADEQ. The site assessment must include an assessment of the release and a site characterization, and adequate sampling at the site.
5. There was a release, but the site has been characterized and remediated under another regulatory authority. Documentation such as a closure report and approval by the regulatory authority is available and shows that the sites meets the closure performance criteria of R18-8-265 A. (40 CFR 265.111) or R18-8.264 A. (40 CFR 264.111). If the site meets the closure performance criteria, then the site may be proposed for an NFA determination.
6. There was a release, and the site has been remediated in accordance with the Arizona Hazardous Waste Management Act. Documentation such as a closure report and approval by ADEQ shows that the sites meets the closure performance criteria of R18-8-265 A. (40 CFR 265.111) or R18-8.264 A. (40 CFR 264.111). If the site meets the closure performance criteria, then the site may be proposed for an NFA determination.

The YPG Kofa Units were granted closure by ADEQ under the AZHWMA after a closure plan was submitted and approved, proposed closure actions were completed, and the closure report was approved by ADEQ. These units meet NFA criteria No. 6. The two sites at SWMU 33 (YPG-156 and YPG-177) have been characterized and remediated, as necessary, under the APP Program meeting NFA criteria No. 5. Approval has been requested from ADEQ's APP Unit. Results from the 2014-2015 soil sampling events provide the information requested by ADEQ for the remaining deferred SWMUs and AOC. These units meet NFA criteria No. 4.

4.0 DISCUSSION OF 2014-2015 INVESTIGATION RESULTS

The purpose of this investigation was to provide updated information requested by ADEQ in the January 17, 2014, NOD regarding whether chemicals of potential concern (COPCs) are present in the soils at selected SWMUs/AOCs deferred in the May 2013 Class 3 PMR. Findings in this report are intended to be considered along with the USEPA's 1999 Resource Conservation and Recovery Act (RCRA) Facility Assessment and Argonne National Laboratory's 2001 RCRA Phase I Facility Investigation, to demonstrate that if COPCs are present, they are at acceptably low levels and meet the criteria for NFA. A discussion of the investigation findings for eight SMWUs and one AOC included in the 2014-2015 investigation is provided below. The April 2015 investigation report is included as Attachment 3 of this submittal and includes details regarding the project work plan, sampling and analytical approach, field activities, quality assurance and quality control, and references.

SWMU 5/YPG-110

Soil samples collected from this SWMU consisting of a former vehicle maintenance and test site were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A), benzene, toluene, ethylbenzene, and xylenes (BTEX) (SW-846 Method 8260C) and semi-volatile organic compounds (SVOCs) (SW-846 Method 8270C). The locations of the collected soil samples are shown in Figure SI-2.1 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from the six soil samples collected on May 7, 2014. Analytical results of the detected COPCs demonstrated that the maximum reported concentrations were below their respective residential soil remediation levels (R-SRLs) and minimum groundwater protection levels (GPLs).

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Barium	190	48	92.7	15,000	170,000	12,000
Chromium	7.6	3.3	5.1	2,100[(a)]	4,500*	590
Lead	87	23	55	400	800	290

* 1997 non-residential SRL. Chromium (total) was removed from the SRL contaminant list published by ADEQ in 2007 (A.A.C. Title 18, Chapter 7, Appendix A).
A.A.C – Arizona Administrative Code
ADEQ – Arizona Department of Environmental Quality
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
NR-SRL – non-residential soil remediation level

SWMU 64/YPG-113

This area includes an inactive septic system but no other industrial activities were performed at the site. Soil samples collected at this SWMU were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and

7470A), soluble anions for nitrate and nitrite (SW-846 Method 9056), SVOCs (SW-846 Method 8270C), and total coliform count (SW-846 Method 9221F). The locations of the collected soil samples are shown in Figure SI-2.2 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from the five soil samples collected on May 8, 2014. Analytical results of the detected COPCs demonstrated that the maximum reported concentrations were below their respective R-SRLs and GPLs.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Barium	250	98	179.5	15,000	170,000	12,000
Chromium	6.7	3.8	5.3	2,100[(a)]	4,500*	590
Lead[1]	5.8	5.8	5.8	400	800	290
Total Coliform Count	<3 MPN/g			NE	NE	NE

* 1997 non-residential SRL. Chromium (total) was removed from the SRL contaminant list published by ADEQ in 2007 (A.A.C. Title 18, Chapter 7, Appendix A).
[1] Only one sample returned a measurable result.
A.A.C. – Arizona Administrative Code
ADEQ – Arizona Department of Environmental Quality
AZ GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
MPN/g – most probable numbers per gram
NE – not established
NR-SRL – non-residential soil remediation level

SWMU 70/YPG-121

This area has an active septic system handling domestic sewage but otherwise includes no industrial activities. Soil samples from this SWMU were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A) and soluble anions for nitrate and nitrite (SW-846 Method 9056). The locations of the collected soil samples are shown in Figure SI-2.3 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from a total of five soil samples collected on May 15, 2014 and May 13, 2015. Analytical results of the detected COPCs demonstrated that the maximum reported concentrations were below their respective R-SRLs and GPLs.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	9.4	8.1	8.9	10	10	290
Barium	200	160	173.3	15,000	170,000	12,000
Chromium	15	14	14.7	2,100[(a)]	4,500*	590
Lead	20	9.4	13.3	400	800	290
Nitrate as N	680	240	460	100,000[(b)]	1,000,000[(b)]	NE

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.
(b) 1997 NR-SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007.
ADEQ – Arizona Department of Environmental Quality
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
NE – not established
NR-SRL – non-residential soil remediation level

SWMU 75/YPG-129

This area has an inactive septic system which treated domestic sewage only and was removed and replaced in 2010. No other industrial activities were performed at this location. Soil samples were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A), soluble anions for nitrate and nitrite (SW-846 Method 9056), and total coliform count (SW-846 Method 9221F). The locations of the collected soil samples are shown in Figure SI-2.4 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from a total of two soil samples collected on May 12, 2014 and April 8, 2015. Analytical results of the detected COPCs demonstrated that the maximum reported concentrations were below their respective R-SRLs and GPLs.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	5.3	5.3	5.3	10	10	290
Barium	100	100	100	15,000	170,000	12,000
Chromium	31	31	31	2,100[(a)]	4,500*	590
Lead	10	10	40	400	800	290
Total Coliform	4 MPN/g	4 MPN/g	4 MPN/g	NE	NE	NE

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.
(b) 1997 NR-SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007.
ADEQ – Arizona Department of Environmental Quality
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
MPN/g – most probable numbers per gram
NE – not established
NR-SRL – non-residential soil remediation level

SWMU 76/YPG-130

This area has an active septic system handling domestic sewage from restrooms serving a training classroom but otherwise includes no industrial activities. Soil samples from this SWMU were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A) and soluble anions for nitrate and nitrite (SW-846 Method 9056). The locations of the collected soil samples are shown in Figure SI-2.5 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from a total of three soil samples collected on May 12, 2014 (nitrate and nitrite only) and one soil sample on April 8, 2015 (metals only). Analytical results of the detected COPCs demonstrated that the maximum reported concentrations were below their respective R-SRLs and GPLs.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic[1]	6.4	6.4	6.4	10	10	290
Barium[1]	130	130	130	15,000	170,000	12,000
Chromium[1]	8.3	8.3	8.3	2,100[(a)]	4,500*	590
Lead[1]	10	10	10	400	800	290
Nitrate as N	11	7.9	9.6	100,000[(b)]	1,000,000[(b)]	NE
Nitrate/Nitrite as N	11	7.9	9.6	6,500[(b)]	68,000[(b)]	NE

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.
(b) 1997 NR-SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007.
[1] Only one sample returned a measurable result.
ADEQ – Arizona Department of Environmental Quality
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
NE – not established
NR-SRL – non-residential soil remediation level

SWMU 78/YPG-132

This area has an active septic system handling domestic sewage from restrooms serving a Large Multi-Purpose Environmental Chamber operations building in which munitions and other military equipment are tested for use in extreme (hot-cold) environments. Soil samples from this SWMU were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A) and soluble anions for nitrate and nitrite (SW-846 Method 9056). The locations of the collected soil samples are shown in Figure SI-2.6 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from a total of four soil samples collected on May 14, 2014 and April 8, 2015. Analytical results of the detected COPCs demonstrated that the maximum reported concentrations were below their respective R-SRLs and GPLs.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic[1]	9.1	9.1	9.1	10	10	290
Barium[1]	200	200	200	15,000	170,000	12,000
Chromium	13	12	12.5	2,100[(a)]	4,500*	590
Nitrate as N	430	210	320	100,000[(b)]	1,000,000(b)	NE
Nitrate/Nitrite as N	430	210	320	6,500[(b)]	68,000(b)	NE

(a) Listed in 1997 NR-SRLs; removed from 2007 NR-SRL list.
(b) 1997 NR-SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007.
[1] Only one sample returned a measurable result.
ADEQ – Arizona Department of Environmental Quality
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
NE – not established
NR-SRL – non-residential soil remediation level

AOC 7/YPG-162

This area consists of a semi-natural depression that provides stormwater retention located west of the Howard Cantonment Area. Soil samples collected from this AOC were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A), BTEX (SW-846 Method 8260C) and SVOCs (SW-846 Method 8270C) to account for runoff that may have been received from other areas of the facility. The locations of the collected soil samples are shown in Figure SI-2.8 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from a total of ten soil samples and two duplicate samples collected on May 6, 2014 and May 7, 2014. Analytical results of the detected COPCs demonstrated that, with the exception of Arsenic, the maximum reported concentrations were below their respective R-SRLs and GPLs. The Arsenic results are discussed at the end of this section.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	**19**	5.9	**12.5**	10	10	290
Barium	770	65	417.5	15,000	170,000	12,000
Cadmium[1]	0.56	0.56	0.56	39	510	29
Chromium	19	7.0	13.3	2,100[(a)]	4,500[(a)]	590
Lead	11	5.0	7.9	400	800	290
Selenium	5.0	5.0	5.0	390	5,100	290

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.
(b) 1997 NR-SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007.
[1] Only one sample returned a measurable result.
ADEQ – Arizona Department of Environmental Quality
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
NR-SRL – non-residential soil remediation level

SWMU 33/YPG-156

This area consists of a polymer-lined inactive soil basin that served as an evaporation pond for a reverse-osmosis system that provided potable water to Buildings 6021 and 6027. The unit was decommissioned in 2011. Soil samples collected from this SWMU were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A), BTEX (SW-846 Method 8260C) and SVOCs (SW-846 Method 8270C). The locations of the collected soil samples are shown in Figure SI-2.7 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from a total of fifteen soil samples collected on May 15, 2014 and April 8-9, 2014. Analytical results of the detected COPCs demonstrated that, with the exception of Arsenic, the maximum reported concentrations were below their respective R-SRLs and GPLs. The Arsenic results are discussed at the end of this section.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	**22**	5	**13.2**	10	10	290
Barium	2200	120	484.4	15,000	170,000	12,000
Chromium	18	10	12.7	2,100[(a)]	4,500[(a)]	590
Lead	7.3	5.3	5.9	400	800	290

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
NR-SRL – non-residential soil remediation level

SWMU 33/YPG-177

This area consists of an inactive concrete basin with a polymer lining between the soil and the concrete that previously collected flow from an oil-water separator connected to a washrack near Building 6021. The washrack has not operated in the last 5 years but is operable. Soil samples collected from this SWMU were analyzed for metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (SW-846 Methods 6010B and 7470A), BTEX (SW-846 Method 8260C) and SVOCs (SW-846 Method 8270C). The locations of the collected soil samples are shown in Figure SI-2.9 of attached investigation report (Attachment 3).

The table below summarizes the results of the detected COPCs from a total of three soil samples collected on May 12, 2014 and April 9, 2014. Analytical results of the detected COPCs demonstrated that the maximum reported concentrations were below their respective R-SRLs and GPLs.

COPC	Maximum Detected (mg/kg)	Minimum Detected (mg/kg)	Average (mg/kg)	R-SRL (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Barium[1]	82	82	82	15,000	170,000	12,000
Chromium[1]	6.4	6.4	6.4	2,100[(a)]	4,500[(a)]	590

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.
[1] Only one sample returned a measurable result.
AZ-GPL – Arizona groundwater protection level
COPC – chemical of potential concern
mg/kg – milligram per kilogram
NR-SRL – non-residential soil remediation level

RESULTS ABOVE NON-RESIDENTIAL SOIL REMEDIATION LEVELS

Results for soil samples collected for SWMU 33 and AOC 7 included seven samples and four samples, respectively, which exceeded the R-SRL\NR-SRL for arsenic. The results were well below the minimum GPL. The 2015 soil sampling summary report states that "Typical arsenic concentrations for uncontaminated soils range from 1 to 40 mg/kg", and references the Agency for Toxic Substances and Disease Registry, 2007. This would be considered the naturally occurring Arsenic background concentrations at USAGYPG. The highest detect concentration of Arsenic in these samples is within the upper range of the background concentration for Arsenic at USAGYPG.

5.0 REGULATORY CROSSWALK

Table 2 below outlines the sections of the MTF Permit affected by this Class 3 PMR.

Table 2
Regulatory Cross-Reference

Regulatory Citation (40 CFR Part 270)	Regulatory Citation (40 CFR Part 264)	Description of Requirements	MTF Permit Part/Attachments	Modifications, Additions, Clarifications	
				Yes	No
§270.13		Contents of Part A Permit Application			✓
§270.14(b)(1)	§264.13(a)	General Facility Description	Att. 1	✓	
§270.14(b)(2)	§264.13(b)	Chemical and Physical Analyses	Part II, Section C General Waste Analyses, Att. 4 & 4B		✓
§270.14(b)(3)	§264.13(c)	Development and Implementation of Waste Analysis Plan	Att. 3		✓
	§264.13(c)	Off-site Waste Analysis Requirements	Att. 3		✓
	§264.13(a-c)	Security Procedures and Equipment	Part II, Section D Security, Att. 8 & 9		✓
§270.14(b)(4)	§264.13 (a-d)	General Inspection Requirements	Part II, Section E General Inspection Requirements, Att. 11		✓
§270.14(b)(5)	§264.174	Container Inspections	Part II, Section E General Inspection Requirements, Att. 11 & 11A		✓
§270.23(a)(2)	§264.602	Miscellaneous Units Inspections	Part II, Section E General Inspection Requirements, Att. 11 & 11A		✓
§270.14(b)(6)		Request for Waiver from Preparedness and Prevention Requirements of Part 264 Subpart C	NA		✓
§270.14(b)(7)	264 Subpart D	Contingency Plan Requirements	Part II, Section I, Contingency Plan, Att. 10		✓
	§264.51	Contingency Plan Design and Implementation	Part II, Section I, Contingency Plan, Att. 10		✓
	§264.52(a) & (c-f)	Contingency Plan Content	Part II, Section I, Contingency Plan, Att. 10		✓
	§264.53	Contingency Plan Copies	Part II, Section I, Contingency Plan, Att. 10		✓
	§264.54	Contingency Plan Amendment	Part II, Section I, Contingency Plan, Att. 10		✓
	§264.55	Emergency Coordinator	Part II, Section I, Contingency Plan, Att. 10		✓
	§264.56	Emergency Procedures	Part II, Section I, Contingency Plan, Att. 10		✓
§270.14(b)(8)		Description of Procedures, Instructions, or Equipment for:	Part II, Section H, Preparedness & Prevention Part III, Section E, Open Burn Unit Operations, Part IV, Section E, Open Detonations Unit Operations, Att. 6, 6B, 9 & 12	✓	

Regulatory Citation (40 CFR Part 270)	Regulatory Citation (40 CFR Part 264)	Description of Requirements	MTF Permit Part/Attachments	Modifications, Additions, Clarifications	
				Yes	No
§270.14(b)(8)(i)		Prevention of Hazards in Unloading Operations (e.g., Ramps and Special Forklifts)	Part II, Section H, Preparedness & Prevention Part III, Section E, Open Burn Unit Operations, Part IV, Section E, Open Detonations Unit Operations, Att. 6, 6B, 9, 12, & 12F	✓	
§270.14(b)(8)(ii)		Runoff or Flood Prevention (e.g., Berms, Trenches & Dikes)	Part II, Section H, Preparedness & Prevention Part III, Section E, Open Burn Unit Operations, Part IV, Section E, Open Detonations Unit Operations, Att. 6, 6B, 9, 12, & 12F	✓	
§270.14(b)(8)(iii)		Prevention of Contamination of Water Supplies	Part II, Section H, Preparedness & Prevention Part III, Section E, Open Burn Unit Operations, Part IV, Section E, Open Detonations Unit Operations, Att. 6, 6B, 9, 12, & 12F	✓	
§270.14(b)(8)(iv)		Mitigation of Effects of Equipment Failure and Power Outages	Part II, Section H, Preparedness & Prevention Part III, Section E, Open Burn Unit Operations, Part IV, Section E, Open Detonations Unit Operations, Att. 6, 6B, 9, 12, & 12F		✓
§270.14(b)(8)(v)		Prevention of Undue Exposure of Personnel (e.g., Personnel Protective Equipment)	Part II, Section H, Preparedness & Prevention Part III, Section E, Open Burn Unit Operations, Part IV, Section E, Open Detonations Unit Operations, Att. 6, 6B, 9, 12, & 12F	✓	
§270.14(b)(8)(v)§270.23(a)(2)	§264.601	Prevention of Releases to the Atmosphere	Part II, Section H, Preparedness & Prevention Att. 6, 6B & 9	✓	
	264 Subpart C	Preparedness & Prevention	Part II, Section H, Preparedness & Prevention Att. 2, 6, 6B & 9	✓	
	§264.31	Design and Operation of Facility	Part II, Section A, Att. 2-2H Part III, Section E, Open Burn Unit Operations, Part IV, Section E, Open Detonation Unit Operations Att. 6, 6B, 9 & 12	✓	
	§264.32	Required Equipment	Att. 9 & 10A	✓	
	§264.33	Testing and Maintenance of Equipment	Att. 9	✓	
	§264.34	Access to Communication/Alarm System	Part II, Section I, Att. 9 & 12		✓
	§264.35	Required Aisle Space	Part II, Section I, Att. 9		✓
	§264.37	Arrangements with Local Authorities	Part II, Section I, Att. 10C		✓
§270.14(b)(9)	§264.17(a-c)	Prevention of Accidental Ignition or Reaction of Ignitable, Reactive, or Incompatible Wastes	Att. 6 & 9	✓	

Regulatory Citation (40 CFR Part 270)	Regulatory Citation (40 CFR Part 264)	Description of Requirements	MTF Permit Part/Attachments	Modifications, Additions, Clarifications	
				Yes	No
§270.14(b)(10)		Traffic Patterns, Volumes and Controls, for Example: Identification of Turn Lanes, Identification of Traffic/Stacking Lanes, if appropriate, Description of Access Road Surface, Description of Access Road Load Bearing, Capacity Identification of Traffic Controls	Att. 1 & 1A, Figure A-5, Att. 10		✓
§270.14(b)(11) (i) and (ii)	§264.18(a)	Seismic Standard Applicability and Requirements	Att. 1 & 1B		✓
§270.14(b)(11) (iii)–(iv)	§264.18(b)	100-Year Floodplain Standard	Att. 1C		✓
	§264.18(c)	Other Location Standards	NA		✓
§270.14(b)(12)	§264.116(a-e)	Personnel Training Program	Att. 12-12F		✓
§270.14(b)(13)	264 Subpart G	Closure and Post-Closure Plans	Att. 14		✓
§270.14(b)(13)	§264.111	Closure Performance Standard	Att. 14		✓
§270.14(b)(13)	§264.118(a),(b)	Written Content of Closure Plan	Att. 14		✓
§270.14(b)(13)	§264.118(c)	Amendment of Closure Plan	Att. 14		✓
§270.14(b)(13)	§264.112(d)	Notification of Partial and Final Closure	Att. 14		✓
§270.14(b)(13)	§264.112(e)	Removal of Wastes & Decontamination/ Dismantling of Equipment	Att. 14	✓	
§270.14(b)(13)	§264.113	Time Allowed for Closure	Att. 14		✓
§270.14(b)(13)	§264.114	Disposal/ Decontamination	Att. 14	✓	
§270.14(b)(13)	§264.115	Certification of Closure	Att. 14 & 14B		✓
§270.14(b)(13)	§264.116	Survey Plat	Att. 14		✓
§270.14(b)(13)	§264.117	Post-Closure Care and Use of Property	Att. 14		✓
§270.14(b)(13)	§264.118	Post-Closure Plan; Amendment of Plan	Att. 14		✓
§270.14(b)(13)	§264.178	Closure/Containers	Att. 14	✓	
§270.14(b)(13)	§264.601	Environmental Performance Standards/Miscellaneous Units	Att. 14	✓	
§270.14(b)(14)	§264.603	Post-Closure Care	Att. 14		✓
§270.14(b)(15)	§264.119	Post-Closure Notices	Att. 14 & 14B		✓
	§264.142	Closure Cost Estimate	NA		✓
	§264.143	Financial Assurance	NA		✓
§270.14(b)(16)	§264.144	Post-Closure Cost Estimate	NA		✓
	§264.145	Post-Closure Financial Assurance	NA		✓
§270.14(b)(17)	§264.147	Liability Insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of Financial Coverage	NA		✓
§270.14(b)(19)(ii)	§264.18(b)	100-Year Floodplain	Att. 1C		✓
§270.14(b)(19)(iii)		Surface Waters	Att. 1		✓
§270.14(b)(19)(iv)		Surrounding Land Use	Att. 1		✓
§270.14(b)(19)(v)		Wind Rose	Att. 1		✓
§270.14(b)(19)(vii)	§264.14(b)	Access Controls	Att. 1		✓

Regulatory Citation (40 CFR Part 270)	Regulatory Citation (40 CFR Part 264)	Description of Requirements	MTF Permit Part/Attachments	Modifications, Additions, Clarifications	
				Yes	No
§270.14(b)(19)(ix)		Injection and Withdrawal Wells	Att. 1		✓
§270.14(b)(19)(xi)		Drainage on Flood Control Barriers	Att. 1C		✓
§270.14(b)(19)(xii)		Location of Operational Units	Att. 1 Part B Application	✓	
§270.14(b)(20)		Other Federal Laws – Wild and Scenic Rivers Act, National Historic Preservation Act, Endangered Species Act, Coastal Zone Management Act, Fish and Wildlife Coordination Act, Executive Orders	Att. 1		✓
§270.15	264 Subpart I	Containers	Att. 11, 11A, & 11B		✓
	§264.171	Condition of Containers	Att. 11, 11A, & 11B		✓
	§264.172	Compatibility of Waste with Containers	Att. 11, 11A, & 11B		✓
	§264.173	Management of Containers	Att. 11, 11A, & 11B		✓
	§264.174	Inspections	Att. 11, 11A, & 11B		✓
§270.15(a)	§264.175	Containment Systems	Att. 11, 11A, & 11B		✓
§270.15(c)	§264.176	Special Requirements for Ignitable or Reactive Wastes	Att. 11, 11A, & 11B		✓
§270.15(d)	§264.177	Special Requirements for Incompatible Wastes	Att. 11, 11A, & 11B		✓
	§264.178	Closure	Att. 14		✓
§270.15(e)	§264.179	Air Emission Standards	Att. 11, 11A, & 11B		✓
§270.23	264 Subpart X	Miscellaneous Units	Permit Part I-VI		✓
§270.23(a)	§264.601	Detailed Unit Description	Att. 1	✓	
§270.23(b)	§264.601	Hydrologic, Geologic, and Meteorological Assessments	Att. 1		✓
§270.23(c)	§264.601	Potential Exposure Pathways	Part II, Section H, Preparedness & Prevention, Part III, Section E, Open Burn Unit Operations, Part IV Section E, Open Detonation Unit Operations, Att. 6, 6B, 9, & 12-12F.		✓
§270.23(d)		Demonstration of Treatment Effectiveness	Att. 11 & 13 – 13I		✓
	§264.602	Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action	Att. 11 & 13		✓
	§264.603	Post-Closure Care	Att. 14		✓
	264 Subpart E	Manifest System, Recordkeeping, and Reporting	Att. 15		✓
§270.14(d)	§264.101	Corrective Action for Solid Waste Management Units	Permit Part VI		✓

Att. – attachment
CFR – Code of Federal Regulations
MTF – Munitions Treatment Facility
NA – not applicable

ATTACHMENT 1

ADEQ COMPLIANCE INSPECTION

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
NOTICE OF INSPECTION RIGHTS

FACILITY INFORMATION	ADEQ INFORMATION
Facility Name (Customer): U.S. Army Garrison Yuma Proving Ground	**Date/Time of Inspection:** 11/18/14 1000
Facility Location (Place): U.S. Army Garrison Yuma Proving Ground, 301 C. Street Yuma, Az 85365	**County:** Yuma County
	Inspector: MACASHA Owens
Mailing Address: U.S. Army Garrison Yuma Proving Ground, 301 C Street	**Telephone:** 602 771-4351
Responsible Party:	**Accompanied by:** RAJ Paoede
On-Site Representative: Charles F. Ruerup	**ADEQ Follow-up Contact:**
Telephone: (928) 328-2977	MACASHA Owens
Title: Chief, Environmental Sciences	**Title:** HWICA Inspector
E-mail: Charles.f.ruerup.civ@mail.mil	**Telephone:** 602-771-4351

The ADEQ representative(s) identified above were present at the above address on the above listed date and time. Upon entry to the premises, the ADEQ representative(s) met with me, presented photo identification indicating that they are ADEQ employees and explained:

☒ **That the purpose of the inspection is to determine:**

☒ Compliance with Title 49 of the Arizona Revised Statutes, Title 18 of the Arizona Administrative Code* and/or:

Arizona Revised Statutes: Title 49, Chapter 5, Article 2.
Arizona Administrative Code: Title R18, Chapter 8, Article 201 *et seq.*
Permit/Agreement Number: AZ5213820991

☒ Qualification for a license issued pursuant to:

Arizona Revised Statutes: § 49-921 *et seq.*
Arizona Administrative Code: R-18-8-201 *et seq.*

☒ That this inspection is conducted pursuant to the authority granted in Arizona Revised Statutes § 49-104(B)(8) and/or:

Arizona Revised Statutes: §49-921 *et seq.*
Arizona Administrative Code: R-18-8-201 *et seq.*
Permit/Agreement Number: AZ5 213-820991

☒ **That the fee for this inspection is:** $0-.

*The Arizona Revised Statutes (A.R.S.) can be found on the internet: www.azleg.state.az.us/ArizonaRevisedStatutes.asp while the Arizona Administrative Code (A.A.C.) can be found at www.azsosaz.gov/public_services/Table_of_Contents.htm

While I have the right to refuse to sign this form, the ADEQ representatives may still proceed with the inspection

☒ I have read both sides of this notice and discussed any questions or concerns with the ADEQ representatives.

18 November 2014

Signature of Regulated Person or Authorized On-Site Representative Date

☐ The regulated person or authorized on-site representative refused to sign.

Name of Regulated Person or Authorized On-Site Representative Title

☐ The regulated person or an authorized on-site representative was not present at the facility.

11/18/14

Signature of ADEQ Representative Date

INSPECTION RIGHTS

☐ I understand that I can accompany the ADEQ representative(s) on the premises, except during confidential interviews.

☐ I understand that I have right to, on request:

- Copies of any original documents taken during the inspection, and that ADEQ will provide copies of those documents at ADEQ's expense;
- A split of any samples taken during the inspection, if the split of the samples would not prohibit an analysis from being conducted or render an analysis inconclusive;
- Copies of any analysis performed on samples taken during the inspection and that ADEQ would provide copies of this analysis at ADEQ's expense;
- Copies of any documents to be relied on to determine compliance with licensure or regulatory requirements if the agency is otherwise permitted by law to do so.

☐ I also understand that:

- Each person interviewed during the inspection must be informed that statements made by the person may be included in the inspection report;
- Each person whose conversation is tape recorded during the inspection must be informed that the conversation is being tape recorded;
- If an administrative order is issued or a permit decision is made based on the results of the inspection, I have the right to appeal that administrative order or permit decision. I understand that my administrative hearing rights are set forth in Arizona Revised Statutes § 41-1092 *et seq.* and my rights relating to an appeal of a final agency decision are found in Arizona Revised Statutes § 12901 *et seq*;
- If I have any questions or concerns about this inspection, I may contact the person listed as the ADEQ Follow-up Contact on the front of this form; ADEQ's Ombudsman at (602) 771-4881 toll free inside Arizona at (800) 2345677, extension, 771-4881); or the Arizona Ombudsman-Citizens' Aid office at (602) 277-7292 toll free at (800) 872-2879);
- If I have any questions concerning my rights to appeal an administrative order or permit decision, I may contact ADEQ's Office of Administrative Counsel at (602) 771-2212 (toll free inside Arizona at (800) 234-5677, extension 771-2212).

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITS AND PLAN REVIEW UNIT
COMPLIANCE CHECKLIST

Hazardous Waste Permit

U.S. Army Garrison Yuma Proving Ground

This checklist is provided as a tool for permit holders and ADEQ staff to have a consistent understanding of the major compliance expectations under this permit. This checklist is designed to be easy to read and follow. It is intended only to address the permit requirements that ADEQ feels are the most important to protect human health and the environment. This list does not include every permit condition and permit holders should ensure they understand the full requirements of their permit. This list does not supplant or supersede any legal requirement and is not binding on the permit holder or ADEQ staff.

FACILITY NAME: U.S. Army Garrison Yuma Proving Ground

PLACE ID: 1100

EPA ID NUMBER: AZ5 213 820 991

STREET ADDRESS: U.S. Army Garrison Yuma Proving Ground, 301 C. Street

CITY/STATE/ZIP: Yuma, AZ 85365

TELEPHONE NUMBER: (928) 328-2108

MAILING ADDRESS: U.S. Army Garrison Yuma Proving Ground, 301 C. Street, Yuma, AZ 85365

Inspection Date:
November 18, 2014

Date of Last Inspection:
January 2, 2014

Key: **C** = In Compliance **N** = Not in Compliance **P** = Pending

FACILITY INSPECTION

Waste Analysis

C N P		
C: ☑ N: ☐ P: ☐	1. Does the facility have a Waste Analysis Plan? 40 CFR § 264.13/Permit Part II/Permit Attachment 3	Comments:

Treatment, Storage, and Disposal

C N P		
C: ☐ N: ☑ P: ☐ Photograph(s)	1. Does the facility prevent unpermitted treatment, storage, or disposal of hazardous waste? Note: R18-8-270(B) and RCRA strictly prohibit the disposal of hazardous wastes without a permit. Disposal includes any release, discharge or dumping into the environment. Failure to properly respond to accidental spills is also considered disposal. Solid waste disposal is generally prohibited by ADEQ at any site that does not have "operational approval;" A.A.C. R18-8-270(B)(1)	Comments: PER PERMIT PART 6 3.2.5. PLEASE SAMPLE FOR RCRA METALS RETENTION SUMP.
C: ☑ N: ☐ P: ☐ Photograph(s)	3. Does the facility burn more than the following quantities of hazardous waste at the Kofa Munitions Treatment Facility (MTF)? 2,000 pounds net explosive weight (NEW) per pan 4,000 pounds NEW per day 730,000 pounds NEW per year Permit Part III	Comments:
C: ☑ N: ☐ P: ☐ Photograph(s)	4. Does the facility detonate more than the following quantities of hazardous waste at the Kofa MTF? 1,000 pounds NEW per day, 36,500 pounds NEW per year Permit Part IV	Comments:

Site Security

C N P		
C: ☑ N: ☐ P: ☐ Copies	1.Are the facility's security/safety features listed below in good condition/legible and being inspected/replaced as necessary: • Danger Signs • Fences • Gates • Locks Permit Part II/Permit Attachment 8	Comments:

Preparedness & Prevention

C N P ☑ ☐ ☐ Photograph(s)	1.Does the facility have the following required equipment to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment: • Communications system (e.g., range radio, cell phone)? • Device such as a telephone (e.g., landline phone box)? 40 CFR § 264.32/Permit Attachment 11	Comments:
C N P ☑ ☐ ☐ Photograph(s)	2. Is there a "No Smoking" sign conspicuously placed wherever there is a hazard from explosive hazardous waste? Note: Smoking and open flames must be confined in specifically designated areas, or smoking and open flames must be prohibited on the entire site. 40 CFR § 264.17(a)	Comments:
C N P ☑ ☐ ☐ Photograph(s)	3. Does the facility test and maintain the required equipment to assure its proper operation in time of an emergency? 40 CFR § 264.33/Permit Attachment 11	Comments:
C N P ☑ ☐ ☐ Photograph(s)	4. Does the facility have a communications system immediately available at operations and storage areas capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams (i.e. phone or radio)? 40 CFR § 264.32(b)/Permit Part II/Permit Attachment 11	Comments:

Munitions Treatment Facility

C N P ☑ ☐ ☐ Photograph(s)	1. Are the dirt roads on the Kofa MTF level and in good condition? Are there any depressions on the Kofa MTF where water can accumulate? Permit Part III/Permit Part IV/Permit Attachment 2	Comments: OBSERVED
C N P ☑ ☐ ☐ Photograph(s)	2. Is there any ash, scrap metal or any other residue/splatter on the following structures; or in the vicinity of the following structures: South OB Unit pad? South OB Unit pans? North OB Unit pad? North OB Unit pans? Permit Part III/Permit Part IV/Permit Attachment 2	Comments: observed

C N P ☑ ☐ ☐ Photograph(s)	3. Are there any cracks, depressions, erosion or any other form of damage to the following structures: OB Unit pads? South OB Unit pans? North OB Unit pad? North OB Unit pan? Permit Part III/ Permit Part IV/Permit Attachment 2	Comments:
C N P ☑ ☐ ☐ Photograph(s)	4. Is there any ash, scrap metal or any other residue/splatter on the following structures or in the vicinity of the following structures: OD Pit 1? OD Pit 2? OD Pit 3? Permit Part III/Permit Part IV/Permit Attachment 2	Comments:
C N P ☑ ☐ ☐ Photograph(s)	5. Are there any uneven areas/slopes, cracks, erosion or any other form of damages to the following structures: OD Pit 1? OD Pit 2? OD Pit 3? Permit Part III/ Permit Part IV/Permit Attachment 2	Comments:
C N P ☑ ☐ ☐ Photograph(s)	5. Is there a speed limit at the point where the road goes over the flood plain berm? Permit Part III/Permit Part IV/Permit Attachment 2	Comments:

Run-on / Run-off Controls

C N P ☑ ☐ ☐ Photograph(s)	1.Are there any cracks or erosion or any other damage to the: MTF Flood Protection Berm OD Pit 1 Berm OD Pit 2 Berm OD Pit 3 Berm North OB Unit Berm South OB Unit Berm Permit Part III/Part IV/Permit Attachment 2/Permit Attachment 3/Permit Attachment 6	Comments:
C N P	2.Are there any leaks from the Retention Basins at:	

☑ ☐ ☐ Photograph(s)	North OB Unit South OB Unit (Check the leak detection monitoring pipe in the Retention Basin) Permit Part III/Part IV/Permit Attachment 2/Permit Attachment 3/Permit Attachment 6	
C N P ☐ ☑ ☐ Photograph(s)	3.Is there any accumulated water in the Burn Pad sumps or Retention Basins at the: North OB Unit? South OB Unit? Permit Part III/Part IV/Permit Attachment 2/Permit Attachment 3/Permit Attachment 6	North sump of NORTH RETENTION BASIN (observed? inspection checklist ? SOUTH RETENTION BASIN (PER inspection checklist

INSPECTION RECORDS REVIEW

Operating Record

C N P ☑ ☐ ☐ Copies	1. Does USAGYPG keep a copy of THE MOST UP TO DATE Operating Record on site? Does the facility keep operating records for 3 years? The Operating Record must include: (a) A description and the quantity of each hazardous waste received and the method(s) and date(s) of its treatment, storage, and/or disposal at the facility as required by A.A.C. R18-8-264.A and 40 CFR 264.73(b)(1) (including 40 CFR 264 Appendix I); (b) The location of each hazardous waste within the facility, the quantity at each location, and cross references to specific manifest document numbers, in accordance with A.A.C. R18-8-264.A and 40 CFR 264.73(b)(2); (c) Records and results of waste analyses performed pursuant to A.A.C. R18-8-264.A and 40 CFR 264.73(b)(3); (d) Summary reports and details of all incidents pursuant to A.A.C. R18-8-264.A and 40 CFR 264.73(b)(4); (e) Records and results of inspections pursuant to A.A.C. R18-8-264.A and 40 CFR 264.73(b)(5); (f) Monitoring, testing or analytical data, and corrective action pursuant to A.A.C. R18-8-264.A and 40 CFR 264.73(b)(6); (g) Notices to generators pursuant to A.A.C. R18-8-264.A and 40 CFR 264.73(b)(7); (h) Copies of waste minimization documents required in Permit Conditions II.S (*Source Reduction Plans and Reports*). (i) The information contained in the land disposal restriction notice, and the certification and demonstration if applicable, as required by A.A.C. R18-8-264.A and 40 CFR 264.73(b)(15,16). 40 CFR § 268.73/Permit Part II	Comments:

Contingency Plan

C N P	Question	Comments
C N P ☑ ☐ ☐	1.Is the Contingency Plan maintained at the Environmental Sciences Division? 40 CFR § 262.53(a)/A.A.C. R-18-8-270(B)(1)/Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	2.Does the Contingency Plan include a map of the facility, site plan or drawing? 40 CFR § 265.52(e)/Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	3.Does the plan include an evacuation plan? Are evacuation routes accurately designated in contingency plan? Note: The evacuation plan must include signals to begin evacuation, evacuation routes, and alternate evacuation routes. 40 CFR § 265.52(f)/Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	4.Does the plan include a list of all required emergency equipment at the facility, including locations, descriptions and relevant capabilities? Note: The list must include what is also in the 90-day storage area. 40 CFR § 264.52(e) / Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	5.Does the plan include the names, addresses, and phone numbers (office and home) of all persons qualified as emergency coordinators? Note: The primary coordinator must be listed first, and others must be listed in the order in which they will assume responsibility as alternates. 40 CFR § 265.52(d)/ Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	6.Is there, at all times, an emergency coordinator on the premises or on call (able to reach the facility within two hours)? The emergency coordinator must be thoroughly familiar with all areas listed below: • All aspects of the contingency plan. • All operations and activities at the facility. • Location and characteristics of all waste. • Location of all records. • Layout of the entire facility. Note: The emergency coordinator must have the authority to commit the resources needed to carry out the contingency plan. 40 CFR § 265.55/Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	7.Does the plan include descriptions or arrangements agreed to by police and fire departments, hospitals, contractors, and State and local emergency response teams? 40 CFR § 265.52(c)/Permit Part II/Permit Attachment 10	Comments:

C N P	Question	Comments
C N P ☑ ☐ ☐	8.Was the plan and its updates submitted to all police and fire departments, and State and local emergency response teams that may be called upon during an emergency? The plan must specify names of the entities it is being submitted to. The facility must have copies of the transmittal letters. 40 CFR § 265.53(b)/ Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	9.Does the plan describe actions which must be taken to protect human health and environment in the event of a fire, explosion, or release, and specify when it will be implemented? • Immediately whenever there is a fire, explosion or release of hazardous waste constituents, which could threaten human health or the environment; 40 CFR § 265.51(b). • Immediately whenever there is an imminent or actual emergency situation; 40 CFR § 265.56(a). • Immediately whenever there is a release, fire or explosion; 40 CFR § 265.56(b). Note: At minimum, ADEQ considers an Emergency to be: 1) Any fire, explosion or release threatening outside the facility; 2) Any fire, explosion or release where outside assistance is necessary; or 3) Any fire, explosion or release where injuries or health effects have occurred to on-site workers or the public. 40 CFR § 265.52(a)/ Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	10.For any release, fire or explosion, does the plan call for the emergency coordinator to: • Immediately identify the exact character, exact source, amount and real extent of any released materials. • Assess possible hazards to human health or the environment, considering direct and indirect effects (e.g., toxic, irritating and asphyxiating gases; surface water.). • Immediately notify appropriate authorities if evacuation of local area may be advisable. • Be available to assist appropriate officials. • Immediately notify the ADEQ Emergency Response Unit (602) 771-2330 or (800) 234-5677 and either the on-scene government coordinator for the geographical area or the National Response Center (800) 424-8802. Note: The report must include the emergency coordinator's name and telephone number, name and address of facility, the time and type of incident, the name and quantity of materials involved, the extent of injuries, if any, the possible hazards to human health or the environment outside the facility. 40 CFR § 265.56/Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐ Copies	11.Does the plan specify that immediately after an emergency, the emergency coordinator will make necessary arrangements for treating, storing, or disposing of recovered waste, contaminated soil, surface water, or any other resulting material? 40 CFR § 265.56(g)/Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐	12.After an emergency, has the facility notified the Director of the Arizona Department of Environmental Quality or his designated alternate that the facility is in compliance with 40 CFR 265.56(h) before operations are resumed?	Comments:

Copies	40 CFR § 262.34(a)(4)/Permit Part II/Permit Attachment 10	
C N P ☑ ☐ ☐ Copies	13.Is the contingency plan sufficiently designed to minimize hazards to human health and the environment from fires, explosions or any release of hazardous waste or constituents? Note: The facility may use another plan that incorporates hazardous waste requirements, per 40 CFR § 265.52(b). Any release at minimum includes any release of hazardous waste outside a containment area (diked or bermed concrete floor, basin or other structure), any release over 55 gallons or involving more than one drum, any release of over 1 kg (2.20462 lbs.) of acutely toxic hazardous waste or any release of over 1 pound for tanks. 40 CFR § 265.51/A.A.C. R-18-8-270(B)(1)/Permit Part II/Permit Attachment 10	Comments:
C N P ☑ ☐ ☐ Copies	14.Have there been any changes to the contingency plan that need to be reviewed and amended? Was the revised plan sent to all USAGYPG emergency services and all local and state agencies that may be called upon to provide emergency services? 40 CFR § 265.54/Permit Part II/Permit Attachment 10	Comments:

Personnel Training

C N P ☐ ☐ ☑ Copies	1.Does the facility maintain the following documents and records at the facility: • The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job (d)(1); • A written job description for each position. This description must include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position; • A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position; • Records that document that the required training or job experience has been given to, and completed by, facility personnel. Note: Training records on current personnel must be kept until closure of the facility. Training records on former employees must be kept for at least three years from the date the employee last worked at the facility. 40 CFR § 264.16 / A.A.C. R18-8-270(B)(1) /Permit Part II / Permit Attachment 12	Comments: TRAAX Certifications Pending.
C N P ☐ ☐ ☑ Copies	2.Did facility personnel successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of 40 CFR § 265.16 for handling hazardous waste? Note: This program must be directed by a person trained in hazardous waste management procedures, and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed. 40 CFR § 264.16(a) / A.A.C. R18-8-270(B)(1)/Permit Part II / Permit Attachment 12	Comments:
C N P	3.Did facility personnel successfully complete the training program within six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later?	Comments:

☐ ☐ ☑ Copies	Note: Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the training requirements. 40 CFR § 264.16(b) / A.A.C. R18-8-270(B)(1) / Permit Part II / Permit Attachment 12	
C N P ☐ ☐ ☑ Copies	4.Did facility personnel attend annual review of the initial training? 40 CFR § 264.16(c) / A.A.C. R18-8-270(B)(1)/ Permit Part II /Permit Attachment 12	Comments:

Inspection Checklists

C N P ☑ ☐ ☐ Copies	1. Does the facility keep daily (when operating) inspection logs of the Munitions Treatment Facility? Do the inspections address: - Warning signs - Gates and locks - Communication systems - Emergency equipment and fire extinguishers - OB pads, pans and sumps - Retentions basins - OD pits and berms - Roads and speed limits - Flood plain protection berm 40 CFR § 264.174 /Permit Part II/ Permit Attachment 11 and 11a	Comments:
C N P ☑ ☐ ☐ Copies	2.Does the facility keep weekly inspection logs of the MTF? Do the inspections address: : - Warning signs - Gates and locks - Communication systems - Emergency equipment and fire extinguishers - OB pads, pans and sumps - Retentions basins - OD pits and berms - Roads and speed limits - Facility berm 40 CFR § 264.174 /Permit Part II/ Permit Attachment 11 and 11a	Comments:
C N P ☑ ☐ ☐ Copies	3.Does the facility keep semi-annual inspection logs of the MTF? Do the inspections address: : - South pad pan grounding - North pad pan grounding 40 CFR § 264.174 /Permit Part II/ Permit Attachment 11 and 11a	Comments:
C N P ☑ ☐ ☐	4.Does the facility keep 5-year inspection logs involving leak test of the underground pipe connecting the pad to the retention basin?	Comments:

Copies	40 CFR § 264.174 /Permit Part II/ Permit Attachment 11 and 11a	

Waste Minimization & Pollution Prevention

C N P ☑ ☐ ☐ Copies	1.Does the facility maintain Source Reduction Plans and Reports? A.A.C. R18-8-262(H)/40 CFR § 268.7(a)(8)/ Permit Part II.S/Permit Attachment 15	Comments:
C N P ☑ ☐ ☐ Copies	2.Does the facility have Annual Waste Minimization Certification on file? Permit Attachment II.U A.R.S. 49-961.A.2/ Permit Attachment II.U/Permit Attachment 15	Comments:

Corrective Action Plan

C N P ☑ ☐ ☐	Does the facility have an adequate Corrective Action Plan? 40 CFR § 264.100 / Permit Part VI	Comments:

Hazardous Waste Satellite Accumulation Area

C N P ☑ ☐ ☐	1.Are all hazardous waste satellite accumulation containers: • Located at or near point of initial generation? • Under the direct control of operator generating the waste? 40 CFR § 262.34(c)(1)/Permit Part III. F/Permit Attachment 11 & 11A	Comments: observed
C N P ☑ ☐ ☐	2.Are all hazardous waste satellite accumulation containers at or below the 55-gallons limit (or 1-quart of acute hazardous waste) for any one waste stream at any one work station/location? 40 CFR § 262.34(c)(1)/Permit Attachment 11 & 11A	Comments: one 55-gallon of ASH H.W. Below 55-gallons observed
C N P ☑ ☐ ☐	3.Are all hazardous waste satellite accumulation container (s) marked with the words "Hazardous Waste" or other words that identify the contents of the container(s)? 40 CFR § 262.34(c)(1)(ii)/Permit Attachment 11 & 11A	Comments:
C N P	4.Are all hazardous waste satellite accumulation containers closed? Evidence of:	Comments:

☑ ☐ ☐	• Tight fitting lids • Vapor tight/liquid tight • Roll-off tarps secured No evidence of: • Lid not secured or missing • Gaskets, lid, bung, vent; damaged, missing • Ring missing • Ring not secured & bolted • Funnel not screwed in tight • Funnel lid not tight, closed • Open/loose bung or vent • Inappropriate vent, flash arrester, vacuum breaker, pressure relief 40 CFR § 262.34 (c)(1)(i)/40 CFR § 265.173(a) / A.A.C. R18-8-262/A.A.C. R18-8-270(B)(1)/Permit Attachment 11 & 11A	
C N P ☑ ☐ ☐	5.Are all hazardous waste satellite accumulation containers in good condition? No evidence of: • Leaking, spilling, off-gassing • Punctured, holes, broken • Metal corrosion, rust, pitting, thinning; inside & outside • Plastic cut, gouged, heat deformed, softened, thinned • Bulging, creasing, & denting (not restorable to original shape) • Metal fatigue from fire, bending, wear • Chimes separated, bent, open, damaged, unsealed • Body weld open, bent, damaged, defective • Rolling rings dented, creased damaged Note:If not in good condition, transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some other way that complies with the requirements. 40 CFR § 262.34 (c)(1)(i)/40 CFR § 265.171/Permit Attachment 11 & 11A	Comments:
C N P ☑ ☐ ☐	6.Is the hazardous waste satellite accumulation container or liner compatible with the waste? (ex. Acids/water solutions in metal drums) 40 CFR § 262.34 (c)(1)(i)/40 CFR § 265.172/Permit Attachment 11 & 11A	Comments:
C N P ☑ ☐ ☐	7.If 55-gallons/1-quart of hazardous waste is exceeded, are the hazardous waste satellite accumulation containers moved to the central accumulation area within 3 days? 40 CFR § 262.34(c)(2)/Permit Attachment 11 & 11A	Comments: Nothing to observe this process but what is stated is their proces
C N P ☑ ☐ ☐	8.Are hazardous waste satellite accumulation containers marked with the accumulation start date as the date the excess amount began accumulating? 40 CFR §262.34(c)(2) and Permit Attachment 11 & 11A	Comments: SAME AS Above stated

Closure Plan

C N P		Comments:
C ☑ N ☐ P ☐ Copies	1.Does the facility have a Closure Plan? 40 CFR Subpart H(1)/Permit Part II.K/Permit Attachment 14	Comments:

Spill Reports

C N P		Comments:
C ☑ N ☐ P ☐ Copies	1. Has the facility had a release, fire or explosion in the last 15 days? Did the facility immediately notify the ADEQ Emergency Response Unit {(602) 771-2330 or (800) 234-5677}? Requests may be made for copies of 15-day written reports, any operating logs with records of spills and incidents, including those requiring fire department or 9-1-1 assistance. The reports must include: • Name, address, and telephone number of the owner or operator; • Name, address, and telephone number of the facility; • Date, time, and type of incident (e.g. fire, explosion); • Name and quantity of material(s) involved; • The extent of injuries, if any; • An assessment of actual or potential hazards to human health or the environment, where this is applicable; and • Estimated quantity and disposition of recovered material that resulted from the incident. 40 CFR § 265.56/A.A.C. R18-8-265(G)	Comments:

Additional Comments

Recommendations: N/A

ADEQ HAZARDOUS WASTE INSPECTIONS & COMPLIANCE UNIT

HAZARDOUS WASTE INSPECTION EXIT DEBRIEFING

Site Name: U.S. Army Garrison - YPG   EPA ID #: AZ5 213 820991

Location: U.S. Army Garrison, 301 C. STREET YUMA, AZ 85365   Inspection Date: 11/18/14

You have just received an inspection conducted to evaluate compliance with the Arizona Revised Statutes, Title 49. The following is intended to summarize some of the areas of concern noted during the inspection, and areas you should consider for follow up action. Be advised that additional reports and correspondence may be forthcoming. Any omissions in this report shall not be construed as a determination of compliance with applicable laws and rules.

1. **Waste Identification and Handling.**

   • PLEASE SAMPLE liquid in sump located @ South RETENTION BASIN.

2. **Containment Structures, Equipment and Procedures; Hazard Minimization.**

3. **Plans, Records, Reports, Other.**

☐ **Additional areas of concern can be found on the back of this form**

☐ **ADEQ Satisfaction Survey Card**

☐ **ADEQ Arizona Environmental Performance Track Program & Environmental Management System Survey Card**

☐ **In accordance with A.A.C. R18-8-280.A, a written response is required. This response must be submitted within 10 working days. Due on 12/4/14, your response must be certified in accordance with A.A.C. R18-8-280.C. Please attach the following paragraph at the end of all written responses:**

X MD 18 Nov 2014

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

☐ **No further action will be taken as a result of this inspection.**

	Facility Representative	Compliance Officer
Name:	MICHAEL STOVER	MALASHA OWENS
Signature:	Michael J. Stover	[signature]

Please mail your response documenting compliance with the instructions above to your compliance officer at the Arizona Dept. of Environmental Quality, Hazardous Waste Inspections and Compliance Unit, 1110 West Washington Street, Phoenix, Arizona 85007. Thank you.

The Arizona Department of Environmental Quality shall preserve, protect and enhance the environment and public health, and shall be a leader in the development of public policy to maintain and improve the quality of Arizona's air, land and water resources.

ATTACHMENT 2

ADEQ CLOSURE LETTERS

Janice K. Brewer
Governor

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Henry R. Darwin
Director

March 31, 2014
REF: HWP-EX2759

Mr. Richard Martin
Garrison Manager
U.S. Army Garrison Yuma Proving Ground
IMSW-YMA-PWE
301 C. Street
Yuma, Arizona 85365-9498

RE: APPROVAL OF THE CLOSURE REPORT FOR THE KOFA OPEN BURN/OPEN DETONATION FACILITY INACTIVE HAZARDOUS WASTE TREATMENT UNITS; U.S. ARMY GARRISON YUMA PROVING GROUND; EPA ID NO. AZ5 213 820 991; PLACE ID 1100; LTF ID 57638.

Dear Mr. Martin:

The Arizona Department of Environmental Quality (ADEQ) Hazardous Waste Permits Unit hereby accepts without further comment and approves the *Final Closure Report for Kofa Open Burn/Open Detonation Facility Inactive Hazardous Waste Treatment Units, U.S. Army Garrison Yuma Proving Ground.* The document was initially received on September 23, 2013, and revised pages were submitted on March 11, 2014 and March 31, 2014. Remediation was conducted per the corrective action requirements of USAGYPG's hazardous waste treatment permit.

If you have any questions, please contact Rajendra Paode at (602) 771-4165.

Sincerely,

Anthony Leverock, Supervisor
Hazardous Waste Permits Unit
Waste Programs Division

cc: Don Atkinson, ADEQ Remedial Projects Unit
Rajendra Paode, ADEQ Hazardous Waste Permits Unit

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janet Napolitano
Governor

Stephen A. Owens
Director

Decision to Grant Clean Closure No. # P -105294

June 19, 2006

Mr. Charles E. Botdorf
US Army Garrison Yuma
301 C Street IMSW-YMA-PWE
Yuma, Arizona 85365

Re: Decision to Grant Clean Closure P-105294 for US Army Garrison Yuma

Inventory Number:	P-105294	LTF ID:	40299
USAS Number:	504992-03	Place ID:	17936

Dear Mr. Botdorf:

The Arizona Department of Environmental Quality (ADEQ) has made a final decision to approve the Aquifer Protection Permit Partial Clean Closure, located at US Army Garrison Yuma, KOFA Ammunition Deflagration Test Facility pursuant to Arizona Revised Statutes § 49-252. The executive summary and the signed clean closure approval are enclosed for your records. Please contact me at (602) 771-4668 if you have any questions regarding this decision.

Sincerely,

Bill Kopp

Bill Kopp, Hydrologist, R.G.
Groundwater Section
Water Quality Division

By Certified Mail
Enclosures (2)

cc: Eric Wilson, Manager, Technical Support Unit, ADEQ
Lynne Dekarske, Administrative Assistant III, Groundwater Section, ADEQ

MU 0057

ATTACHMENT 3

2015 SOIL SAMPLING REPORT

Soil Sampling of Selected Solid Waste Management Units

U.S. Army Garrison Yuma Proving Ground
Yuma, Arizona

June 2015
(Rev: 2)

Abbreviations and Acronyms

A.A.C	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AOC	Area of Concern
bgs	below ground surface
CDA	Castle Dome Annex
CDH	Castle Dome Heliport
COPC	Contaminates of Potential Concern
DPT	Direct Push Technology
ESD	Environmental Sciences Division
ft.	Feet
GPL	Groundwater Protection Level
HCA	Howard Cantonment Area (previously known as Main Administrative Area)
KFR	KOFA Firing Range
mg/kg	Milligrams per kilograms
MS/MSD	matrix spike/matrix spike duplicate sample
MTF	Munitions Treatment Facility
NFA	No Further Action
NR-SRL	Non Residential Soil Remediation Level
North Wind	North Wind Resource Consulting
OB/OD	Open Burn/Open Detonation
OSHA	Occupational Safety and Health Administration
oz	Ounce
PM	Project Manager
PMR	Permit Modification Request
PPE	Personal Protection Equipment
PRG	Preliminary Remediation Goals
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation (Release Assessment)
SI	Site Investigation
SRL	Soil Remediation Level
SWMU	Solid Waste Management Unit
USEPA	United States Environmental Protection Agency
USAGYPG	U.S. Army Garrison Yuma Proving Ground
WCA	Walker Cantonment Area (previously known as Yuma Test Center and Material Test Area)
YPG	Yuma Proving Ground
YTC	Yuma Test Center

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Appendices

PROJECT WORK PLAN

WP-1 Introduction

This work plan (WP) and site investigation (SI) report has been prepared by North Wind Resource Consulting (North Wind) for the U.S. Army Yuma Garrison Proving Ground (USAGYPG) to outline the approach for investigation of selected Solid Waste Management Units (SWMUs) listed in Table WP-1 and present sampling and investigation results. These SWMUs were included in a RCRA Facility Assessment (RFA/RFI) completed by the U.S. Environmental Protection Agency (USEPA 1999).

WP-1.1 Site Description

Yuma Proving Ground (YPG) is a military installation operated by the Department of Army with a primary mission to test and evaluate military systems. The installation encompasses 1308 square miles of Sonoran Desert in southwest Arizona (Figure WP-1) and is composed of firing and aerial ranges, test tracks, maintenance shops, and other facilities needed to support the primary mission. There are several cantonment areas on the installation where support and mission activities occur: Howard Cantonment Area (HCA), Laguna Army Airfield, Walker Cantonment Area (WCA), Kofa Firing Range (KFR), Castle Dome Heliport (CDH), and Castle Dome Annex (CDA).

Table WP-1: Summary of SWMU Sites Investigated

YPG#	ADEQ#	DESCRIPTION	STATUS
YPG-44	SWMU 52	Kofa Ammunition Deflagration Site	**Not included for sampling** – Inactive site, Clean Closure and NFA was granted by ADEQ on June 19, 2006 (ADEQ 2006). See Appendix A
YPG-110	SWMU 5	Used oil AST at Bldg. 204	Inactive, AST removed. Soil samples collected.
YPG-113	SWMU 64	Septic tank and drain field - Bldg. 2103	Inactive septic system, building demolished in the mid to late 1990s. Soil samples collected.
YPG-121	SWMU 70	Septic tank and drain field - Bldg. 3558	Active septic system. Soil samples collected.
YPG-123	SWMU 65	Septic tank and drain field near Bldg. 3587 (Kofa Fire Station)	Not Sampled - Inactive, septic system removed when the KFR fire station was constructed at this site. Numerous utilities (potable water, electric, fiber optics) traverse and surround the recorded location.
YPG-129	SWMU 75	Septic tank and drain field - Bldg. 6000	Septic tank removed and replaced. Soil samples collected.
YPG-130	SWMU 76	Septic tank and drain field - Bldg. 6003	Active septic system, replacement in process. Soil samples collected.
YPG-132	SWMU 78	Septic tank and drain field - Bldg. 6016	Active septic system. Soil samples collected.
YPG-156	SWMU 33	Brine lagoon (Soil) at Castle Dome Annex (CDA), near Bldg. 6021	Inactive - reverse osmosis unit was decommissioned and removed. Soil samples collected.
YPG-162	AOC 7	Surface Impoundment in SW corner of MAA	Storm water retention basin. No plumbing features noted. Soil samples collected.
YPG-177	SWMU 33	Wash Rack discharge lagoon at CDA, near Bldg. 6021	Oil Water Separator concrete and poly lined containment basin. Soil samples collected.

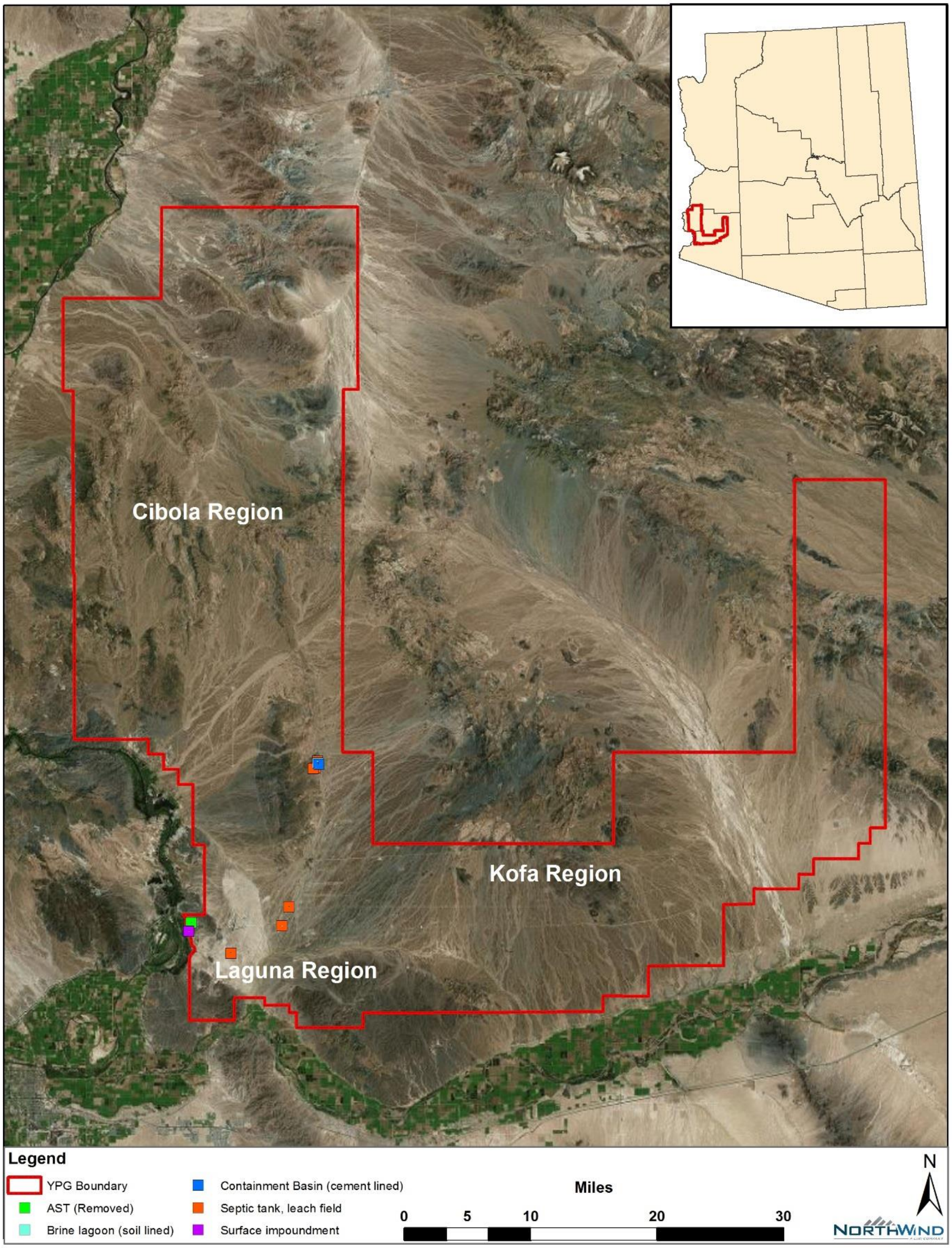

Figure WP-1: Yuma Proving Ground and General Location of Selected SWMUs

WP-1.2 Objective

The purpose of this site investigation is to supplement a RCRA Facility Assessment (RFA) completed by the U.S. Environmental Protection Agency in 1999 and a Phase I RCRA Facility Investigation (RFI) (Release Assessment) conducted by Argonne National Laboratory (ANL) in 2001 and to determine if releases of Contaminates of Potential Concern (COPC) have occurred at the selected SWMUs (see Table WP-1). USAGYPG will use the results of this investigation to determine an appropriate course of action for each site: proceed with NFA request or investigate further.

WP-2 Background

The SWMUs that are the subject of this WP and SI were included in as part of two previous investigations; the 1999 RFA (USEPA) and 2001 RFA (Argonne). Both reports recommended further investigation and possible sampling (soil and or groundwater) for each of the SWMUs included in this effort.

In June 2013, USAGYPG (EPA ID No. AZ5 213 820 991) submitted a Class 3 Permit Modification Request (PMR) to the Arizona Department of Environmental Quality (ADEQ) for the Munitions Treatment Facility (MTF), Permit#58493. The PMR included a request for No Further Action (NFA) determinations for several SWMUs and Areas of Concern (AOC) listed in Appendix K of the original MTF Permit, including the SWMUs that are the subject of this investigation.

ADEQ responded to the Class 3 PMR on January 17, 2014 requesting further information or action related to the SWMUs listed in Table WP-1 prior to making an NFA determination.

WP-3 Project and Data Quality Objectives

Additional data is needed to support a determination of “No Further Action” on the selected SWMUs, or if further investigation is warranted for this effort.

The primary objective of this investigation is to determine if past and current operation of the SWMUs has resulted in soil contamination that exceeds the Soil Remediation Levels (SRLs) established by the State of Arizona A.A.C., Title 18, Chapter 7, Article 2 for hazardous chemicals and minimum Groundwater Protection Levels (GPLs) for the COPC listed below in Table WP-2 and determine if investigation of groundwater was warranted. The set of analytical parameters specific to site varied by SWMU investigated and are listed under each SWMU description in the Site Investigation sections of this report.

Table WP-2: Regulatory Screening Thresholds for COPCs

Contaminates of Potential Concern	Analytical Method	Action Levels: NR-SRLs *(a)* mg/kg	Action Levels: GPLs *(b)* mg/kg
Arsenic	6010B	10[1]	290
Barium	6010B	170000	12,000
Cadmium	6010B	510	29
Chromium, total (1/6 ration CR VI/Cr III)	6010B	*4500 (c)*	590
Chromium III	6010B	1000000	NE
Chromium VI	6010B	65	NE
Lead	6010B	800	290
Mercury	7470A	310	12
Selenium	6010B	5100	290
Silver	6010B	5100	NE

Contaminates of Potential Concern	Analytical Method	Action Levels	
		NR-SRLs *(a)* mg/kg	GPLs *(b)* mg/kg
Benzene	8260B	1.4	0.71
Ethylbenzene	8260B	400	0.28
Toluene	8260B	650	400
Xylenes, Total	8260B	420	2200
Nitrate	9056	1000000 *(c)*	NE
Nitrite	9056	68000 *(c)*	NE
Total Coliform Count *(d)*	9221F	NA	NA
Acenaphthene	8270C	29000	NE
Aniline	8270C	3000	NE
Anthracene	8270C	240000	NE
Benzidine	8270C	0.0075	NE
Benz[a]anthracene	8270C	21	NE
Benzo[a]pyrene	8270C	2.10	NE
Benzo[b]fluoranthene	8270C	21	NE
Benzoic acid	8270C	1000000	NE
Benzo[k]fluoranthene	8270C	210	NE
Benzyl alcohol	8270C	180000	NE
Bis(2-chloroethyl)ether	8270C	5.8	NE
bis (2-chloroisopropyl) ether	8270C	790	NE
Bis(2-ethylhexyl) phthalate	8270C	1200	NE
Butyl benzyl phthalate	8270C	120000	NE
Carbon Tetrachloride	8270C	5.5	1.6
4-Chloroaniline	8270C	2500	NE
beta-Chloronaphthalene	8270C	110	NE
2-Chlorophenol	8270C	240	NE
Chrysene	8270C	2000	NE
Dibenz(a,h)anthracene	8270C	2.10	NE
Dibenzofuran	8270C	140	NE
1,2-Dichlorobenzene	8270C	600	NE
1,3-Dichlorobenzene	8270C	600	NE
1,4-Dichlorobenzene	8270C	79	NE
3,3-Dichlorobenzidine	8270C	38	NE
2,4-Dichlorophenol	8270C	12000	NE
Diethyl phthalate	8270C	490000	NE
2,4-Dimethylphenol	8270C	12000	NE
Dimethyl phthalate	8270C	1000000	NE
Di-n-butyl phthalate	8270C	62000	NE
2,4-Dinitrophenol	8270C	1200	NE
2,4-Dinitrotoluene	8270C	1200	NE
2,6-Dinitrotoluene	8270C	620	NE
Di-n-octyl phthalate	8270C	25000	NE
1,2-Diphenylhydrazine(as Azobenzene)	8270C	160	NE
Fluoranthene	8270C	22000	NE
Fluorene	8270C	26000	NE
Hexachlorobenzene	8270C	11	NE
Hexachlorobutadiene	8270C	180	NE

Contaminates of Potential Concern	Analytical Method	Action Levels	
		NR-SRLs *(a)* mg/kg	GPLs *(b)* mg/kg
Hexachlorocyclopentadiene	8270C	3700	NE
Hexachloroethane	8270C	6200	NE
Indeno[1,2,3-cd]pyrene	8270C	21	NE
Isophorone	8270C	18000	NE
2-Methylphenol	8270C	31000	NE
3-Methylphenol	8270C	31000	NE
4-Methylphenol	8270C	3100	NE
Naphthalene	8270C	190	NE
2-Nitroaniline	8270C	1800	NE
3-Nitroaniline	8270C	180	NE
4-Nitroaniline	8270C	820	NE
Nitrobenzene	8270C	100	NE
N-Nitrosodi-n-propylamine	8270C	2.5	NE
N-Nitrosodiphenylamine	8270C	3500	NE
N-Nitrosomethylethylamine	8270C	0.34	NE
Pentachlorophenol	8270C	90	NE
Phenol	8270C	180000	NE
Pyrene	8270C	29000	NE
Pyridine	8270C	15000	NE
1,2,4-Trichlorobenzene	8270C	220	NE
2,4,5-Trichlorophenol	8270C	62000	NE
2,4,6-Trichlorophenol	8270C	62	NE

a) Arizona Administrative Code (A.A.C)., March 30, 2007
b) Minimum GPLS from *A Screening Method to Determine Soil Concentration Protective of Groundwater, September, 1996*
c) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.
d) Performed for closed/inactive septic systems only.
NE – Not Established
NA – Not Applicable

Data quality is defined by its representativeness, precision, comparability, and completeness. Representativeness of the data is dependent on site selection and the number of samples taken, which are easily addressed in the sampling plan design. The requirements for precision, comparability, and completeness of the data vary between data types but all are enhanced by the use of standardized sampling and analysis protocols and standardized reporting procedures. Data quality objectives (DQOs) are continually being updated as the project progresses and data is generated.

The planning and project team is comprised of the YPG RCRA Program Manager (team lead and decision maker), and professional technical expertise and services provided by North Wind including a project manager, engineers, soil scientists, quality assurance specialist, and field sampling technicians.

WP-3.1 Information and Data Inputs

WP-3.1.1 Records Research and Existing Data

North Wind researched available records and interview YPG personnel with current and historical knowledge of the selected SWMU sites to determine the following characteristics and status for each SWMUs listed in Table WP-1.

- Regulatory status
  - YPG project records
  - ADEQ databases of contacts
- Soil characteristics
  - YPG soil survey (1991)
- Depth and quality of groundwater
  - Existing well data (monitoring or production)
  - Previous Site investigations or data from sites nearby
- Identify past and on-going activities at each of the selected SWMUs
- Determine the COPCs that may have been released at each site

WP-3.1.2 Analytical Data Collection

Based on the information and data collected during the above research YPG will identify needs for collection of field data to determine if soil contamination warrants further investigation. Continued use of the installation as a military test and evaluation facility and cost effectiveness will also be key decision factors that may influence decisions for further actions. Soil samples collected will be analyzed against the AZ NR-SRLs and GPLs for COPCs listed in Table WP-2.

WP-3.2 Project Changes

In the event utilities are identified in the selected locations during the Dig Permit process or other information comes to light, North Wind will coordinate with YPG to make adjustments or modifications as needed to ensure data collection is adequate and valid to the extent analysis will support the decision process.

SITE INVESTIGATION REPORT

SI-1 Sampling and Analytical Approach

The SWMUs in this supplemental SI are located in or adjacent to various cantonment areas on the installation (see Figure WP-1). Detailed descriptions of each SWMU and the sampling approach/methods implemented for each of the sites are provided below. All samples were collected in accordance with the field sampling plan included as Appendix B.

Depth and method of sampling was determined based on several considerations, including soil type, depth to groundwater, operational safety and security, location of buried utilities, current use (active/inactive), accessibility, and mission activities. All detected COPCs were evaluated against the action levels presented in Table WP-2. The evaluation was further based on continued use of the installation as a military test and evaluation facility.

North Wind used a truck mounted direct push technology (DPT) or handheld auger, as determined by field conditions at each location, to collect subsurface soil samples at each targeted SWMU. Samples were collected at 2 feet below ground surface (bgs) and at 12 feet (bgs) unless refusal occurred; in which case a soil sample was collected the deepest point achieved prior to refusal. Surface samples were collected at two locations (YPG-129/SWMU 75 and YPG-130/SWMU 76) due to rugged terrain and shallowness of bedrock in those locations.

SI-1.1 Sampling Design and Rationale

North Wind reviewed the RFI (USEPA, 1999) and RFA (Argonne, 2001), as well as any drawings or as-builts that were available from DPW prior to initiating any field activities. Drawings were only found for the following SWMUs.

- SWMU 64/YPG-113: Septic tank and drain field - Bldg. 2103
- SWMU 75/YPG-129: Septic tank and drain field - Bldg. 6000
- SWMU 76/YPG-130: Septic tank and drain field - Bldg. 6003
- SWMU 78/YPG-132: Septic tank and drain field - Bldg. 6016
- SWMU 33/YPG-156: Brine lagoon (Soil) at Castle Dome Annex (CDA)

North Wind also met with staff from DPW with experience and historical knowledge regarding the locations, specifications, leach lines, etc.; and whether the unit was still active or in operation. A Dig Permit was also processed to mar any underground utilities in the vicinity of the project sites.

Based on the findings of the research conducted in accordance with the work plan and preliminary site surveys a sampling strategy for each of the SWMUs was developed (see Table SI-1).

Table SI-1: Sampling Strategies and Rationale.

SWMU	Analytical Parameters	Sampling Method	Rationale
YPG-44/SWMU 52	NOT SAMPLED	None	Inactive site, Clean Closure was granted by ADEQ on June 19, 2006 (ADEQ 2006). See Appendix A
YPG-110/SWMU 5	Metals (6010B and 7470A) BTEX list (8260B) SVOCs (8270C)	DPT	Bldg. 204 historically served as combined vehicle and test maintenance and has been used in recent years for facilities maintenance activities and storage.

SWMU	Analytical Parameters	Sampling Method	Rationale
YPG-113/SWMU 64	Metals (6010B and 7470A) Soluble Anions for Nitrate and Nitrite (9056) Total Coliform Count (9221F)	DPT	Inactive septic system. The building previously served by this septic unit was a communications facility and no industrial activities were performed at this location. The building was demolished in the mid to late 1990's and no other connections to the septic system were noted in drawings or located during the site survey.
YPG-121/SWMU 70	Metals (6010B and 7470A) Soluble Anions for Nitrate and Nitrite (9056)	DPT and Handheld Auger	Active septic system that serves Bldg. 3558; sentry post and office space adjacent to Bldg. 3557; Cable/Fiber Optic Station. No industrial activities are currently or were historically performed at the sentry post and only domestic sewage is collected in the septic system.
YPG-123/SWMU 65	NOT SAMPLED	None	Inactive septic system. System was removed when the Bldg. 3189; KFR fire station was constructed at this site in 1995. Numerous utilities (potable water, electric, fiber optics) traverse and surround the recorded location, making it impracticable to conduct boring for collection of subsurface boring samples. Historical records and interviews with DPW staff indicate that the previous septic served a small dinning facility and no industrial activities were performed or connected to the system.
YPG-129/SWMU 75	Metals (6010B and 7470A) Soluble Anions for Nitrate and Nitrite (9056) Total Coliform Count (9221F)	Surface sample - Hand trowel	Inactive septic system that previously served Bldg. 6000; Test Operations/Communications facility. This septic system was removed and replaced in 2010. No industrial activities are currently or were historically performed at this location and only domestic sewage was collected in the septic system.
YPG-130/SWMU 76	Metals (6010B and 7470A) Soluble Anions for Nitrate and Nitrite (9056)	Surface sample - Hand trowel	Active septic system. The septic system serves Bldg. 6003; Training classrooms/office space with latrine facilities. No industrial activities are currently or were historically performed at this location and only domestic sewage is collected in the septic system.

SWMU	Analytical Parameters	Sampling Method	Rationale
YPG-132/SWMU 78	Metals (6010B and 7470A) Soluble Anions for Nitrate and Nitrite (9056)	DPT and Handheld Auger	Active septic system. Bldg. 6016 is a latrine facility that serves Bldg. 6015; LMPEC operations, which conducts extreme environment (hot-cold) testing on munitions and other military equipment. Bldg. 6016 is located in a small building adjacent to Bldg. 6015 and only domestic sewage is collected in the septic system connected to the latrine building.
YPG-156/SWMU 33	Metals (6010B and 7470A) BTEX list (8260B) SVOCs (8270C)	DPT and Handheld Auger	Inactive soil basin with polymer liner that served solely as an evaporation pond for brine effluent from a reverse osmosis (RO) unit used to provide potable water to buildings 6021 and 6027. The RO unit was decommissioned in 2011 when the CDA cantonment area was connected to the KFR Public Water System (PWS# AZ14-367) and the evaporation pond has been inactive since that time. No records or evidence was found to indicate effluent from industrial activities were ever discharged into this evaporation pond.
YPG-162/AOC 7	Metals (6010B and 7470A) BTEX list (8260B) SVOCs (8270C)	DPT	This SWMU, located west of the HCA cantonment area, is a semi-natural depression that functions as a retention basin for storm water flow. No plumbing or other manmade fixtures were found at the site. Due to the potential for collection of run-off from unknown activities, BTEX and SVOCs were include in the analytical suite.
YPG-177/SWMU 33	Metals (6010B and 7470A) BTEX list (8260B) SVOCs (8270C)	Handheld Auger	Inactive concrete containment basin with a polymer liner installed between the concrete and soil. This containment basin is designed to collect flow from an oil water separator connected to a wash rack within the fenced compound around building 6021. This compound is used intermittently for military units that train at USAGYPG. The wash rack has not been used in more than 5-years, but is still operable.

SI-2 Field Sampling Activities and Results

The sections below present details of sampling for each SWMU and provide a summary of all COPC detected through laboratory analysis. Details regarding all analytical results, including those not-detected are included in Appendix C.

SI-2.1 YPG-110 (SWMU 5)

SI-2.1.1 Site Investigation

The original RFI and RFA investigations described YPG-110/SWMU 5 as an AST within a concrete containment basin located behind Bldg. 204 located in the HCA (previously known as the Main Administrative Area). Building 204 and the surrounding area historically served as the combined vehicle maintenance facility for test vehicles and the AST was previously used for collection of used oil. Based on site reconnaissance, personal communication with multiple DPW staff, and AST records from the YPG Environmental Sciences Division (ESD), it was determined that the AST was removed in 2013. The containment basin remains in place. No records were found to indicate any spills occurred in or outside of the containment basin. Bldg. 204 and surrounding complex were transferred for use by DPW in the early to mid-1990s and has served multiple uses since that time including maintenance of landscaping equipment and storage of associated supplies. The containment pad is still in useable condition and at the time of the site visit, 55-gallon drums of POLs (new and used) were being stored on spill pallets placed in the containment basin and on a concrete pad next to the basin. No soil staining was observed during the site survey.

Soils in this area are classified as Gunsight-Chuckwalla (SCS [NRCS], 1991). This soil complex is a very deep fan alluvium material that is an extremely to very gravely sandy or silt loam. These soils are typically very deep, well drained with moderate to rapid runoff potential and moderate permeability. The soils surrounding the containment basin were very compacted, probably from extended use of the area by large military and construction type vehicles.

Depth to groundwater in this area is documented as ranging from 30 to 45 ft. (YPG monitoring well data: MW1) and may be slightly deeper at the actual site since the monitoring well that data was obtained from is located to the south east of the site at a slightly lower elevation and closer to the Colorado River.

SI-2.1.2 Site Work Plan

The primary COPCs identified in the RFI and RFA for this SWMU were petroleum hydrocarbons and metals. During the site survey and preliminary investigation it was decided to include Semi Volatile Organic Compounds (SVOCs) in the analytical suite to address other activities, such as landscape maintenance, that may have occurred at the site since the location has been operated for by DPW for other activities and uses. Based on past and current use of this site the following analytical methods were recommended for samples collected at site; RCRA metals (6010B and 7470A), BTEX list (8260B), and SVOCs (8270C).

North Wind proposed to collect subsurface soil (at least two grab samples from three individuals bore holes) samples at the site to determine if any of the COPCs for this site were present in the soil. One sample would be collected at a depth of 2 ft. and one at 12 ft., or point of refusal. Figure SI-2.1 shows the location of the SWMU and each sample point.

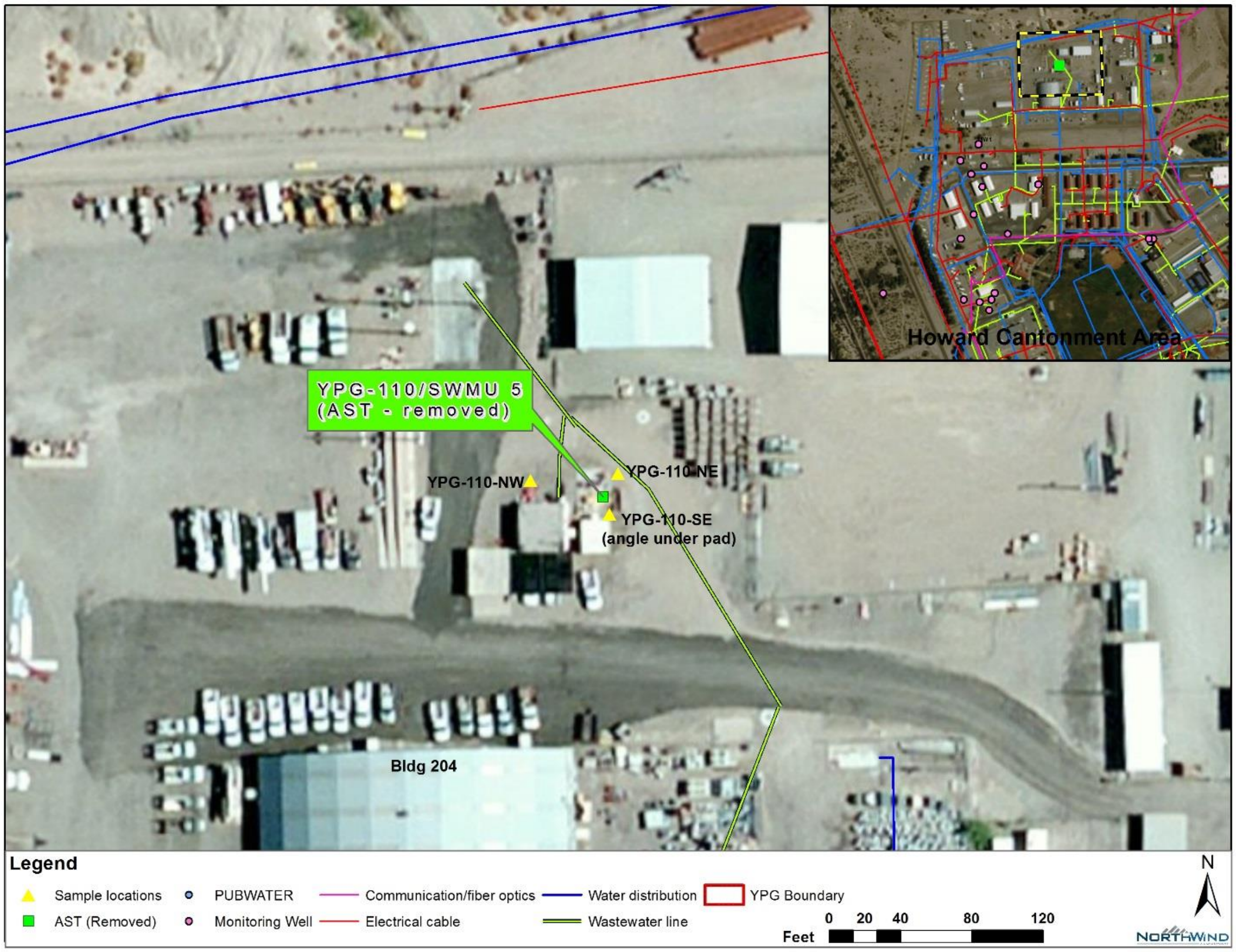

Figure SI-2.1: YPG-110/SWMU 5, Bldg. 204 Used Oil AST (removed)

SI-2.1.3 Sampling Summary

North Wind collected six samples at YPG110/SWMU 5 on May 7, 2014. Samples were collected from vertical bore holes made in two locations adjacent to the containment basin: one to the northwest of the pad and one at the southeast corner of the pad. Additional samples were collected from under the containment basin from a bore hole that was drilled at an angle to the northeast of the basin. All bore holes were made using a truck mounted DPT rig with all equipment being cleaned and decontaminated between each new hole and sample point. Two grab samples were collected from each sample point, as listed in Table SI-2.1a.

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection.

Table SI-2.1a: Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Comments
YPG - 110-NE-2	5/7/2014	3639357	73935	2	Direct Push Grab	*None*
YPG - 110-NE-12	5/7/2014	3639357	739352	12	Direct Push Grab	*None*
YPG - 110-NW-2	5/7/2014	3639356	739340	2	Direct Push Grab	*None*
YPG - 110-NW-12	5/7/2014	3639356	739340	12	Direct Push Grab	*None*
YPG - 110-SE-2	5/7/2014	3639351	739351	2	Direct Push Grab	Angle drill to reach under concrete containment
YPG - 110-SE-12	5/7/2014	3639351	739351	9	Direct Push Grab	Angle drill Refusal at 9 ft.

SI-2.1.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A), BTEX list (8260B), and SVOCs (8270C). Table SI-2.1b provides a listing of the COPCs that were detected in analyses of soil samples collected at YPG-110. Lab analysis for all other COPCs analyzed for this site were reported as not detected (See Appendix C).

Table SI-2.1b: Summary of COPCs Detected at YPG-110/ SWMU 5

Contaminant of Potential Concern	Highest Level detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Barium	190	170,000	12,000
Chromium	7.6	*4500 **	590
Lead	87	800	290
* 1997 non-residential SRL. Chromium (total) was removed from the SRL contaminant list published by ADEQ in 2007 (A.A.C. Title 18, Chapter 7, Appendix A).			

SI-2.1.5 Conclusions/Recommendations

The AST was inactive for several years prior to the site investigation and no soil staining was observed during the site survey. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling. No further action is recommended for this SWMU.

SI-2.2 YPG-113 (SWMU 64)

SI-2.2.1 Site Investigation

The original RFI and RFA investigations described YPG-113/SWMU 64 is an inactive leach tank that serviced a communication building. The communication building was demolished several years ago. Design drawings for this tank, obtained from DPW, define the septic system as a septic tank and leach tank in tandem. No industrial activities were performed in this building and only domestic sewage was collected in the septic system connected to this building.

Soils in this area are classified as Superstition-Rositas (SCS [NRCS], 1991). This soil complex is comprised of wind and water deposited sand that are very deep and somewhat excessively drained with very slow runoff potential and rapid permeability.

Depth to groundwater in this area is documented as ranging from 143 to 167 ft. (YPG monitoring well data: MW12 and Well M).

SI-2.2.2 Site Work Plan

The primary COPCs identified in the RFI and RFA for this SWMU were listed as unknown. The RFI recommended assessment of disposal activities and soil sampling. Records and interviews conducted with DPW and other personnel confirmed that no industrial activities were conducted at this facility. Based on activities that occurred in Bldg. 2103, analytical methods for samples collected at this site are RCRA metals (6010B and 7470A), Soluble Anions for Nitrate and Nitrite (9056), and Total Coliform (9221F).

North Wind proposed to collect subsurface soil samples at the site, at least two grab samples from two individuals bore holes, to determine if any of the COPCs for this site were present in the soil. One sample would be collected at 2 ft. and one at 12 ft., or point of refusal. Figure SI-2.2 shows the location of the SWMU and each sample point.

SI-2.2.3 Sampling Summary

North Wind collected five samples at YPG-113/ SWMU 64 on May 8, 2014. Samples were collected from two vertical bore holes located slightly northeast of where the building was known to be and where evidence of vegetation was noted. All bore hole were made using a truck mounted DPT rig with all equipment being cleaned and decontaminated between each new hole and sample point.

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection. One sample was also collected for analysis of Total Coliform by a local laboratory (AgriTrend) licensed in Arizona for EPA method 9221F. Table SI-2.2a provides details for each sample collected at YPG-113/ SWMU 64.

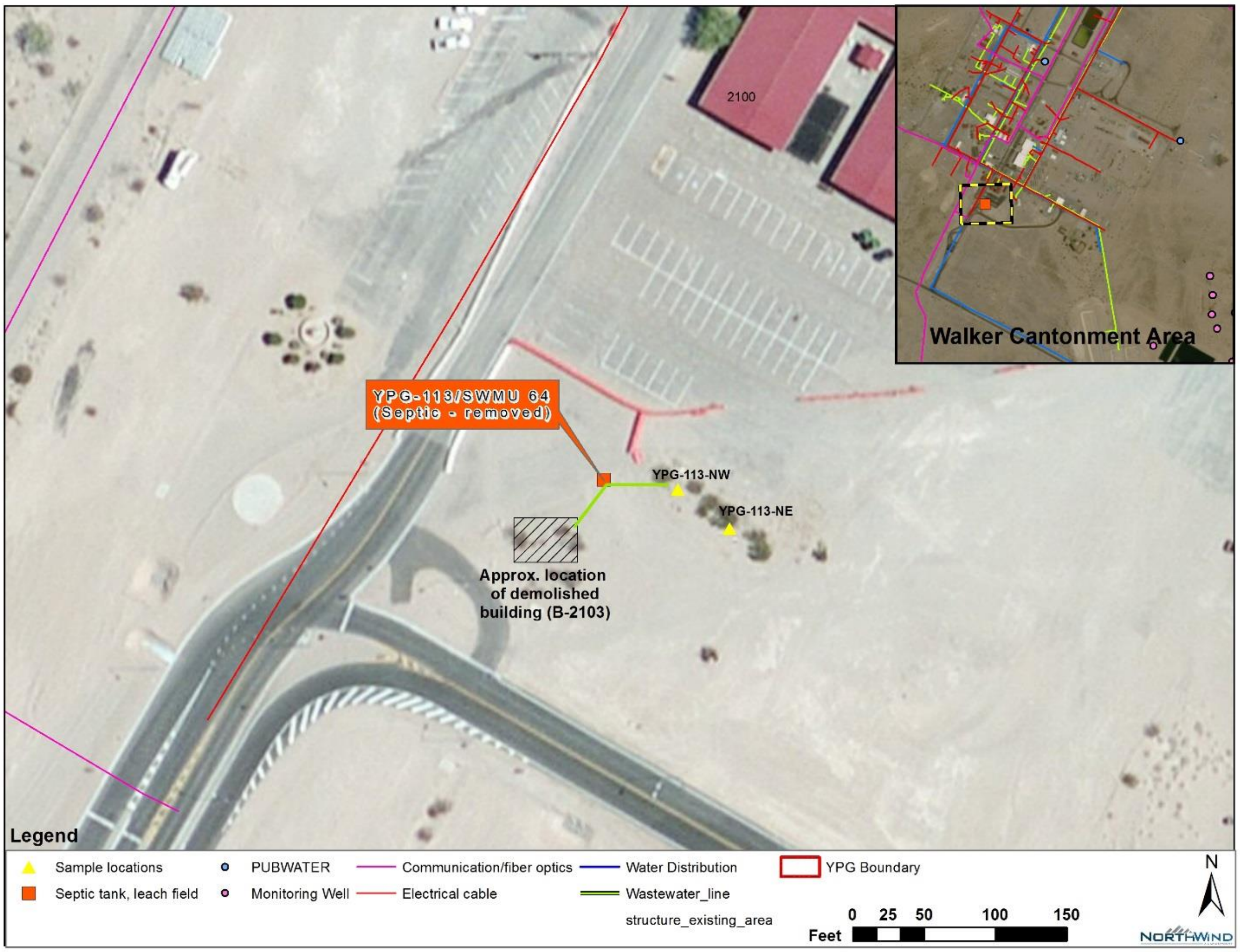

Figure SI-2.2: YPG-113/SWMU 64, Bldg. 2013 (removed) Septic System (inactive)

Table SI-2.2a: YPG-113/SWMU 64 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Comments
YPG - 113-NE-2	5/8/2014	3636177	743710	2	Direct Push Grab	*None*
YPG - 113-NE-12	5/8/2014	3636177	743710	12	Direct Push Grab	*None*
YPG - 113-NW-2	5/8/2014	3636184	743701	2	Direct Push Grab	*None*
YPG - 113-NW-2-C	5/8/2014	3636184	743701	2	Direct Push Grab	Total Coliform Sample
YPG - 113-NW-12	5/8/2014	3636184	743701	12	Direct Push Grab	*None*

SI-2.2.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A) and Total Coliform Count (9221F). Table SI-2.2b provides a summary of the COPCs detected in analyses of soil samples from SWMU 64/YPG-113 sample site. Other COPCs analyzed for this site were not detected. Lab analysis for all other COPCs analyzed for this site were reported as not detected (See Appendix C).

Table SI-2.2b: Summary of COPCs Detected at YPG-113/SWMU 64

Contaminant of Potential Concern	Highest Level detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Barium	250	170,000	12,000
Chromium	6.4	*4500 **	590
Lead	5.8	800	290
Total Coliform Count	<3 MPN/g	NE	NE

* 1997 non-residential SRL. Chromium, total was removed from the SRL contaminant list published by ADEQ in 2007 (A.A. C. Title 18, Chapter 7, Appendix A.

SI-2.2.5 Conclusions/Recommendations

The building served by the septic system designated as YPG113/SWMU 64 was demolished several years prior to the site investigation. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling. No further action is recommended for this SWMU.

SI-2.3 YPG-121 (SWMU 70)

SI-2.3.1 Background

The original RFI and RFA investigations reported YPG-121/SWMU 70 as being an active septic tank and drain field that serves Bldg. 3558, a sentry post. Bldg. 3558 is located adjacent to Bldg. 3557. No as-built or other design drawings were found for this septic system. Therefore, North Wind staff coordinated with DPW to obtain information regarding the location of the septic tank and associated leach field. Based on information provided by DPW plumbing staff, North Wind defined a sample area approximately 100 ft. x 100 ft.

Soils found at this location are a narrow band of Riverbend-Carrizo, within a larger plot of Cristobal-Gunsight family (SCS [NRCS], 1991). The Riverbend-Carrizo family of soils are comprised of stream terraces and floodplains, and are generally very deep. These soils are composed of very gravelly coarse sand and very gravely loamy sand that are excessively drained with slow runoff and rapid to very rapid permeability. The depth to groundwater in this area is documented as ranging between 240 ft. to 330 ft. bgs (YPG data: Well I, H & J).

SI-2.3.2 Site Work Plan

The RFI listed COPCs at this SWMU as unknown, with possible soil contamination. Contamination of groundwater is unlikely due to the activities performed at the site and the depth to groundwater in this locality.

Since only the latrine located in Bldg. 3558 is connected to the septic system and no industrial activities are currently or were historically performed in this building the COPCs in effluent from the septic system are likely to be similar to those found in typical domestic sewage. Therefore, analytical methods selected for samples collected at this site were RCRA metals (6010B and 7470A), and Soluble Anions for Nitrate and Nitrite (9056). This is an active septic system; therefore, analysis of Total Coliform (9221F) was not performed.

North Wind proposed to collect two samples each from two individual bore holes; one sample at 2 ft. (bgs) and one from 12 ft. (bgs), or at the point of refusal. Collection of samples would be accomplished using a truck mounted DPT rig or hand auger and split spoon sample core, depending on access and subsurface soil conditions. Figure SI-2.3 shows the location of the SWMU and each sample point.

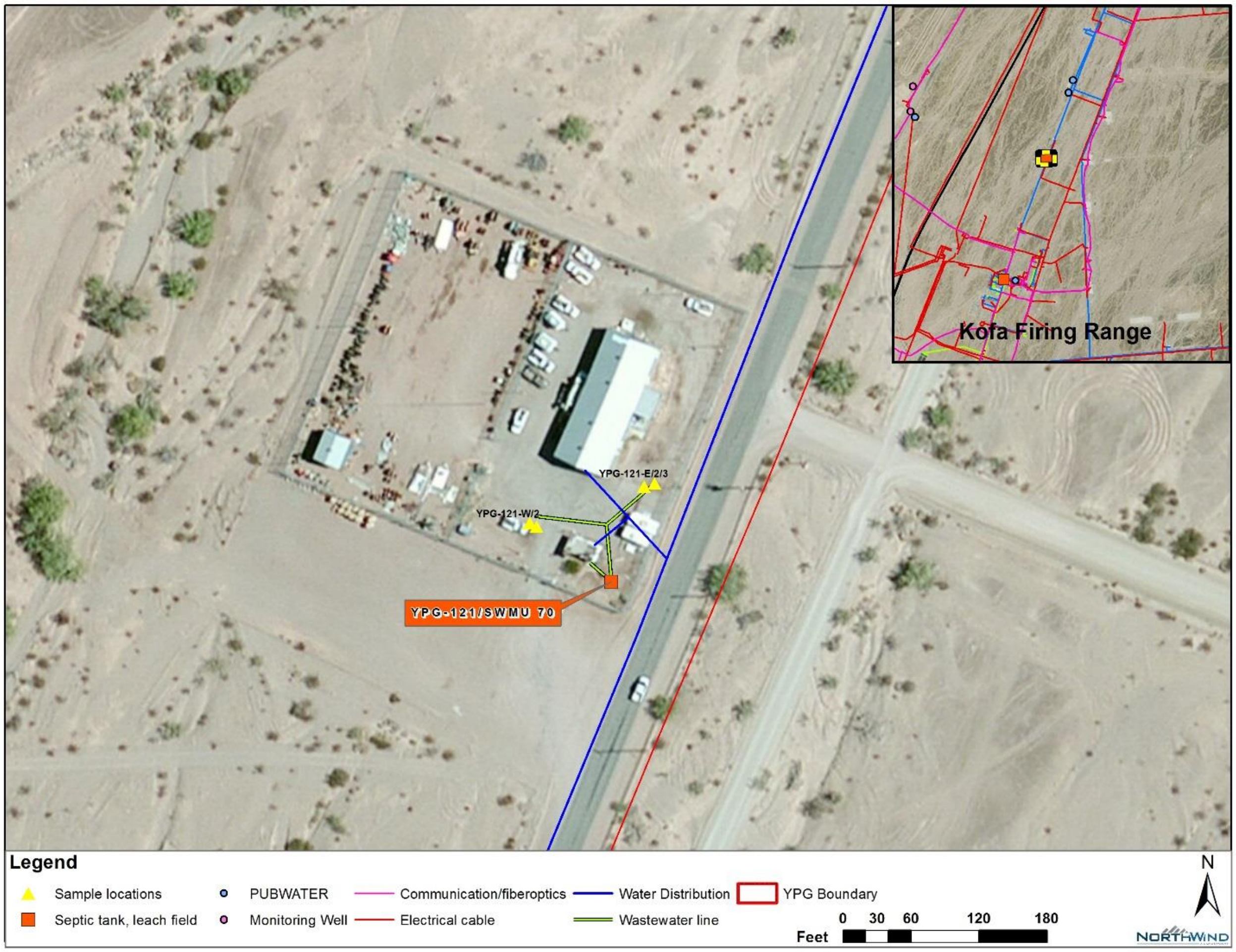

Figure SI-2.3: YPG-121/SWMU 70 (Building 3558) and Sample Location

SI-2.3.3 Sampling Summary

North Wind collected samples at YPG-121/SWMU 70 on May 15, 2014 and on April 13, 2015. Samples collected in May 2014 were taken from two individual boreholes using a truck mounted DPT rig. The samples collected in April 2015 were taken from two new bore holes, adjacent to the originals, using a hand auger and split spoon sample core. Table SI-2.3a provides details for each sample collected at YPG-121/SWMU 70.

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection.

Table SI-2.3a: YPG-121/SWMU 70 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG-121-E	5/15/2014	3641320	749767	2	Direct Push Grab	Refusal
YPG-121-W	5/15/2015	3641310	749743	2	Direct Push Grab	Refusal
YPG-121-E2	4/13/2015	3641320	749772	2	Hand Auger Grab	none

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG-121-E3	4/13/2015	3641320	749772	3	Hand Auger Grab	Refusal
YPG-121-W2	4/13/2015	3641310	749732	2	Hand Auger Grab	Refusal

SI-2.3.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A) and Soluble Anions for Nitrate and Nitrite (9056). Table SI-2.3b is a summary for the maximum of any COPCs detected in soil samples taken at YPG-121/SWMU 70. Other COPCs analyzed for this site were not detected. Details regarding the analysis results for samples collected at YPG-121/SWMU 70 are provided in Appendix C.

Table SI-2.3b: Summary of COPCs Detected at YPG-121/SWMU 70

Contaminant of Potential Concern	Highest Level detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	9.4	10	290
Barium	200	170000	12000
Chromium	15	4500 (a)	590
Lead	20	800	290
Nitrate as N	680	1000000 (b)	NE

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.

(b) 1997 non-residential SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007.

SI-2.3.5 Conclusions/Recommendations

The septic system designated as YPG-121/SWMU 70 is an active system that serves Building 3557. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling. No further action is recommended for this SWMU.

SI-2.4 YPG-129 (SWMU 75)

SI-2.4.1 Background

The RFI and RFA described YPG-129/SWMU 75 as a septic system that served Bldg. 6000. Building 6000 is a communication facility located on a hilltop at CDA in the central portion of Cibola region. This building is used intermittently for communication related testing and no industrial activities are performed in this building. The septic tank and leach lines that comprised YPG-129/SWMU 75 were removed in 2010 and replaced to the east of Bldg. 6000 with an updated septic system (APP permit #20100132). The previous septic tank was located at the southwest corner of the building with the leach lines running down the south slope of the hill and continuing along a small wash to the southeast. Only domestic sewage was collected in this septic system.

Soils found at this location are Lithic Torriorthents and Typic Torriorthents with some rock outcrops (SCS [NRCS], 1991). These soils are formed from igneous and metamorphic rocks and are extremely gravelly with cobbles and boulders. Bedrock in this area can be as shallow as 2 feet in depth. The area is somewhat excessively drained with rapid runoff and moderate to moderately rapid permeability. The exact depth to groundwater at the site is unknown; however, groundwater in this region is documented as being in excess of 600 ft. (YPG data: Well M).

SI-2.4.2 Site Work Plan

The RFI listed COPCs at this SWMU as unknown, with possible soil contamination. Contaminated groundwater was determined to be unlikely. Based on drawings obtained from DPW, North Wind defined a sample area approximately 5ft x 5ft to the southeast of the hilltop. Since no industrial activities are performed in Bldg. 6000 effluent from the septic system was likely similar to typical domestic sewage; therefore, analytical methods for samples collected at this site were RCRA metals (6010B and 7470A), Soluble Anions for Nitrate and Nitrite (9056), and Total Coliform (9221F).

Due to the shallowness of soils, North Wind proposed to collect surface samples using a handheld auger or trowel because of inaccessibility for the truck mounted GeoProbe®. Figure SI-2.4 shows the location of the SWMU and each sample point.

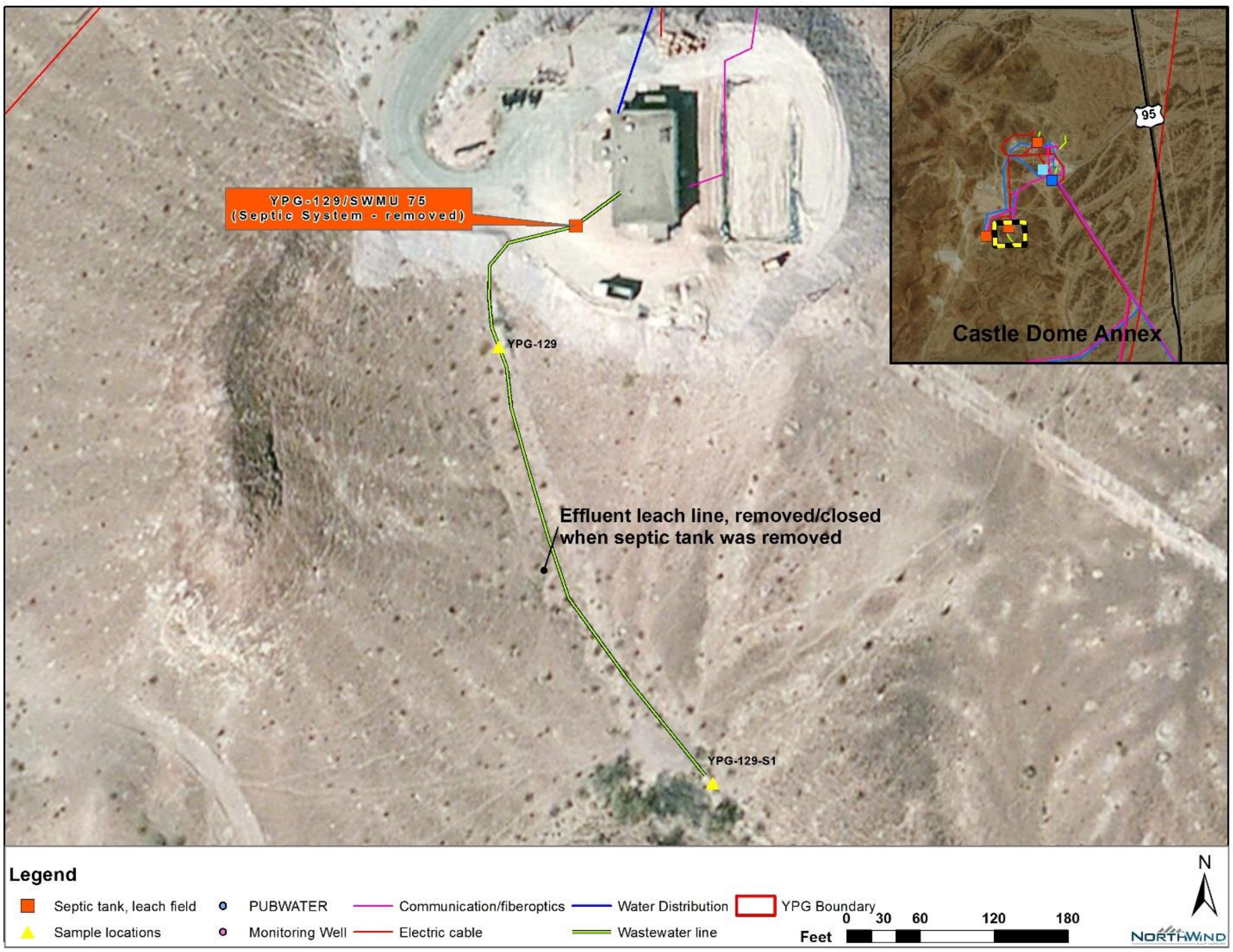

Figure SI-2.4: YPG-129/SWMU 75 (Building 6000) and Sample Location

SI-2.4.3 Sampling Summary

North Wind collected samples at YPG-129/SWMU 29 on May 12, 2014 and March 8, 2015. Due to the shallowness of bedrock in this location, the sample plot was limited to surface soils to a depth of approximately 4 inches (bgs). Table SI-2.4a provides location and details for each sample collected at YPG-129/SWMU 75.

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection. The coliform sample was analyzed with 24 hours by a local Arizona certified laboratory (AgriTrend).

Table SI-2.4a: YPG-129/SWMU 75 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG-129-S1	4/8/2015	3656170	752468	Surface	Composite	none
YPG-129	5/12/2014	3656160	752461	Surface	Composite	Total Coliform Sample

SI-2.4.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A), Soluble Anions for Nitrate and Nitrite (9056), and Total Coliform Count (9221F). Table SI-2.4b provides a summary of the COPCs detected in soil samples taken at YPG-129/SWMU 75. Other COPCs analyzed for this site were not detected. Details regarding the analysis results for samples collected at YPG-129/SWMU 75 are provided in Appendix C.

Table SI-2.4b: Summary of COPCs Detected at YPG-129/SWMU 75

Contaminant of Potential Concern	Highest Level detected (mg/Kg)	NR-SRL (mg/Kg)	AZ GPL (mg/Kg)
Arsenic	5.3	10	290
Barium	100	170000	12000
Chromium	31	4500 (a)	590
Lead	10	800	290
Total Coliform Count	4 MPN/g	na	na

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.

SI-2.4.5 Conclusions/Recommendations

The septic system designated as YPG-129/SWMU 75 was located adjacent to building 6000. This system was removed in 2010 and replaced with a modern system that is regulated under an Aquifer Protection Permit from ADEQ. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling. No further action is recommended for this SWMU.

SI-2.5 YPG-130 (SWMU 76)

SI-2.5.1 Background

YPG-130/SWMU 76 is an active septic system that serves Bldg. 6003. This facility is located on a hilltop at CDA in the central Cibola Region of YPG. Bldg. 6003 is used regularly for troop training in a classroom setting. No industrial activities are currently preformed in this building and only domestic sewage is collected in the septic systems connected to this building. Further, no records were found to indicate that industrial activities ever occurred at this site. The septic tank and drain field that comprise YPG-130/SWMU 76 are currently active. Drawings obtained from DPW depict the tank buried slightly bgs on the eastern edge of the hilltop with the leach line running northeast down the slope of the hilltop. This septic system is in the process of being replaced as part of a large renovation project at Bldg. 6003.

Soils found at this location are Lithic Torriorthents and Typic Torriorthents formed from igneous and metamorphic rocks with some rock outcrops (SCS [NRCS], 1991). These soils are very shallow and comprised of extremely gravelly with cobbles and boulders. Bedrock in this area can be as shallow as 2 feet in depth. The area is somewhat excessively drained with rapid runoff and moderate to moderately rapid permeability.

The exact depth to groundwater at the site is unknown; however, groundwater in this region is documented as being in excess of 600 ft. (YPG data: Well M).

SI-2.5.2 Site Work Plan

The RFI and RFA listed COPCs at this SWMU as unknown, with possible soil contamination. Contaminated groundwater was determined to be unlikely.

Based on the drawings obtained from DPW, North Wind defined a sample area approximately 5ft x 5ft below the northeast slope of the hilltop. Since no industrial activities were conducted at this facility COPCs in effluent from the septic system are likely to be similar to that found in typical domestic sewage; therefore, analytical methods for samples collected at this site are RCRA metals (6010B and 7470A), Soluble Anions for Nitrate and Nitrite (9056). This is an active septic system, so analysis of Total Coliform (9221F) will not be performed.

North Wind proposed to collect surface samples using a handheld auger or trowel due to the shallowness of soils and because of inaccessibility for the truck mounted DBT rig. Figure SI-2.5 shows the location of the SWMU and each sample point.

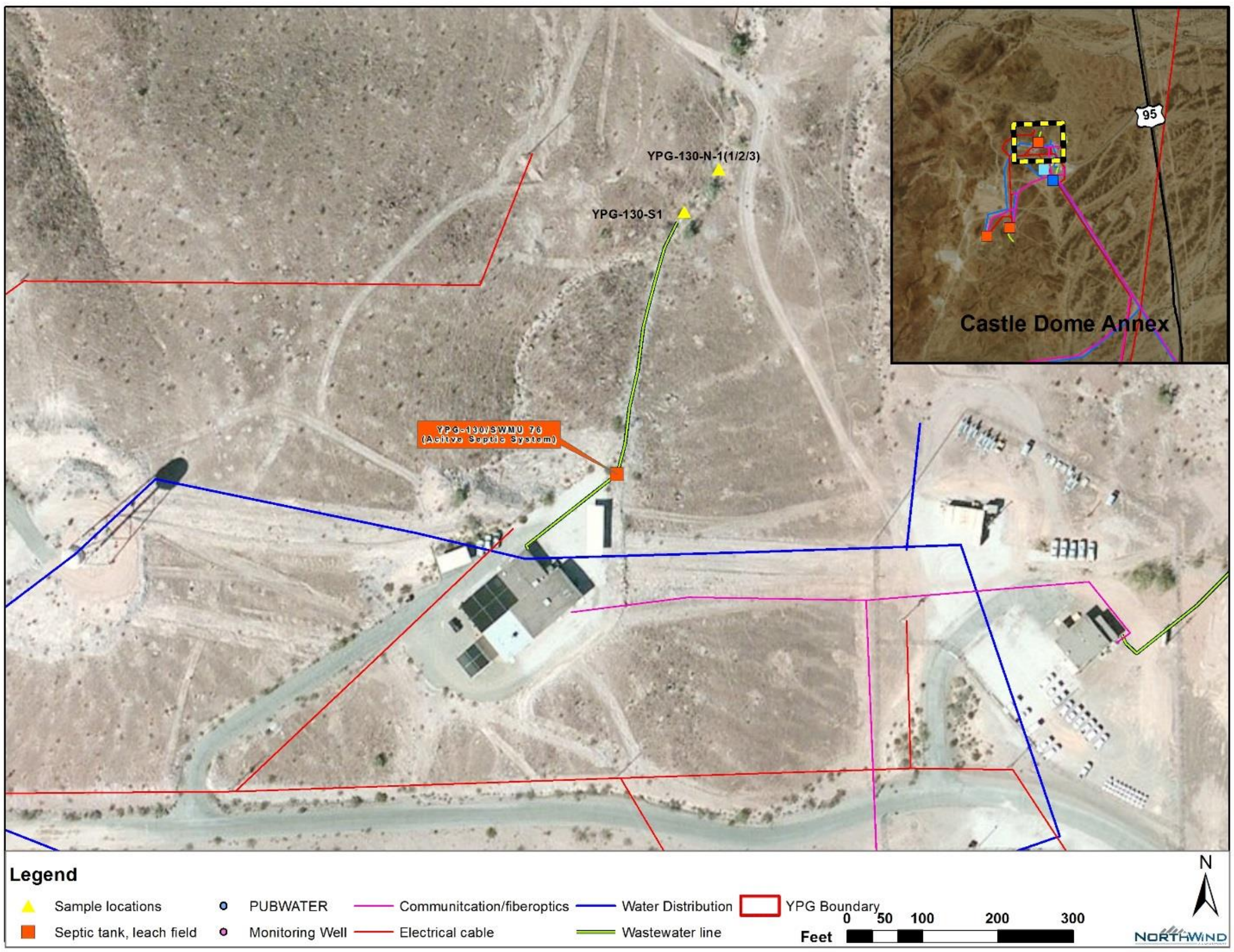

Figure SI-2.5: YPG-130/SWMU76 (Building 6003) and Sample Location

SI-2.5.3 Sampling Summary

North Wind collected three samples at YPG-130/SWMU 76 on May 12, 2014 and one sample on April 8, 2015. Due to the shallowness of bedrock in this location, the sample plot was limited to surface soils to a depth of approximately 4 in. (bgs). Table SI-2.5a provides details for each sample collected at YPG 130/SWMU 76.

Samples were preserved on ice and shipped the same day as sample collection to an Arizona certified laboratory (Test America – Phoenix).

Table SI-2.5a: YPG-130/SWMU 76 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG - 130-N-1-1	5/12/2014	3657010	752460	Surface	Composite	*None*
YPG - 130-N-1-2	5/12/2014	3657010	752460	Surface	Composite	*None*
YPG - 130-N-1-3	5/12/2014	3657010	752460	Surface	Composite	*None*
YPG-130-S1	4/8/2015	3657000	752461	Surface	Composite	*None*

SI-2.5.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A) and Soluble Anions for Nitrate and Nitrite (9056). Table SI-2.5b is a summary of the COPCs detected in soil samples taken at YPG-130/SWMU 76. Other COPCs analyzed for this site were not detected. Details regarding all analysis results are provided in Appendix C.

Table SI-2.5b: Summary of COPCs Detected at YPG-130/SWMU 76

Contaminant of Potential Concern	Highest Level detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	6.4	10	290
Barium	130	170000	12000
Chromium	8.3	4500 (a)	590
Lead	10	800	290
Nitrate as N	11	1000000 (b)	ND
Nitrate Nitrite as N	11	68000)b)	ND

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.

(b) 1997 non-residential SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007 (A.A. C. Title 18, Chapter 7, Appendix A).

SI-2.5.5 Conclusions/Recommendations

The septic system designated as YPG-130/SWMU 76 serves building 6003 and was an active system at the time of the site investigation. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling. No further action is recommended for this SWMU.

SI-2.6 YPG-132 (SWMU 78)

SI-2.6.1 Background

The RFI and RFA described YPG-132/SWMU 78 as an active septic tank and drain field that serves Bldg. 6015 at CDA in the central Cibola Region. This facility is used to perform extreme environment testing on munitions and other military equipment. The latrine facilities for this building are located in a small building (6016) adjacent to Bldg. 6015 and only domestic sewage is collected in the septic system connected to the latrine building. North Wind obtained drawings from DPW that depict the tank as a precast concrete tank with leach lines running down slope to the east of Bldg. 6016 and then “T”ing to the north and south.

Soils found at this location are Lithic Torriorthents and Typic Torriorthents, formed from igneous and metamorphic rocks, with some rock outcrops (SCS [NRCS], 1991). The soils are extremely gravelly with cobbles and boulders. Bedrock in this area can be as shallow as 2 ft. in depth. The area is somewhat excessively drained with rapid runoff and moderate to moderately rapid permeability. The exact depth to groundwater at the site is unknown; however, groundwater in this region is documented as being in excess of 600 ft. (YPG data: Well M).

SI-2.6.2 Site Work Plan

The RFI listed COPCs at this SWMU as unknown, with possible soil contamination. Contamination of groundwater is unlikely due to the activities performed at the site and the extreme depth to groundwater in this locality.

Based on the drawings North Wind defined an area approximately 50 ft. x 100 ft. east of Bldg. 6016. Since only the latrine is connected to the septic system and no industrial activities are conducted in the latrine the COPCs in effluent from the septic system are likely to be similar to those found in typical domestic sewage. Therefore, analytical methods for samples collected at this site are RCRA metals (6010B and 7470A), and Soluble Anions for Nitrate and Nitrite (9056). This is an active septic system, so analysis of Total Coliform (9221F) was not be performed.

North Wind proposed to collect two samples each from two individual bore holes using a truck mounted DPT rig or hand held auger. Samples were to be collected from 2 ft. (bgs) and from 12 ft. (bgs), or at the point of refusal. Figure SI-2.6 shows the location of the SWMU and each sample point.

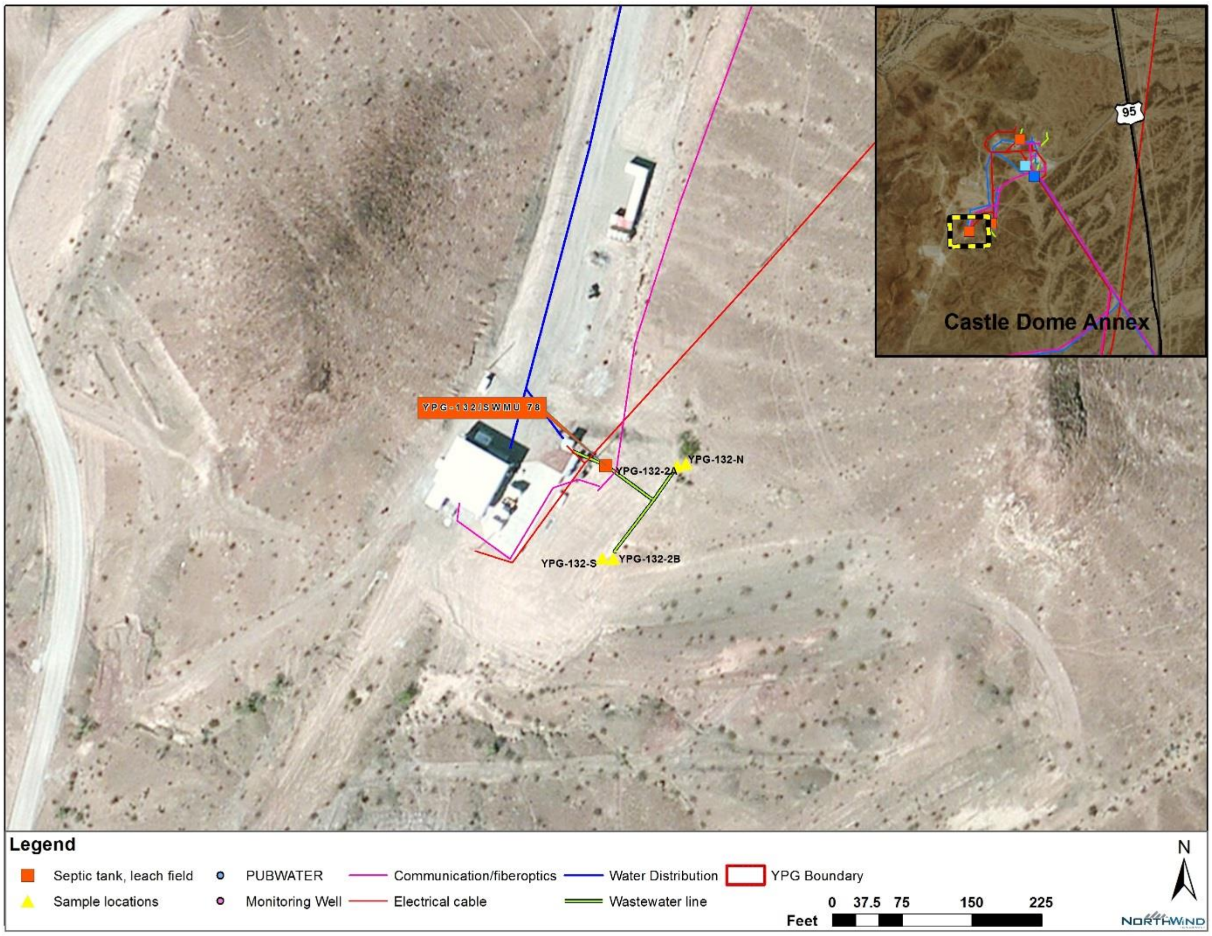

Figure SI-2.6: YPG-132/SWMU 78 (Building 6016) and Sample Location

SI-2.6.3 Sampling Summary

North Wind collected samples at YPG-132/SWMU 78 on May 14, 2014 from two individual boreholes using a truck mounted DPT rig. A single sample was collected from 3 ft. (bgs) at each sample point; further depth was not possible due to refusal. On April 8, 2015, North Wind collected additional samples from two adjacent bore holes using a hand held auger. A single sample was collected at 2 ft. (bgs) from each new bore hole; further depth was again not possible due to refusal. Table SI-2.6a provides details for each sample collected at YPG-132/SWMU 78.

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection.

Table SI-2.6a: YPG-132/SWMU 78 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG - 132-S	5/14/2014	3656091	751990	3	Direct Push Grab	Refusal
YPG - 132-N	5/14/2014	3656117	752010	3	Direct Push Grab	Refusal
YPG-132-2A	4/8/2015	3656114	752008	2	Hand Auger Grab	Refusal

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG-132-2B	4/8/2015	3656110	752010	2	Hand auger Grab	Refusal

SI-2.6.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A) and Soluble Anions for Nitrate and Nitrite (9056). Table SI-2.6b is a summary of the COPCs detected in soil samples taken at YPG-132/ SWMU 78. Other COPCs analyzed for this site were not detected. Details regarding the analysis results for samples collected at YPG-132/ SWMU 78are provided in Appendix C.

Table SI-2.6b: Summary of COPCs Detected at YPG-132/SWMU 78

Contaminant of Potential Concern	Highest Level Detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	9.1	10	290
Barium	200	170000	12000
Chromium	13	4500 (a)	590
Nitrate as N	430	1000000 (b)	NE
Nitrate Nitrite as N	430	68000 (b)	NE

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.

(b) 1997 non-residential SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007 (A.A. C. Title 18, Chapter 7, Appendix A).

SI-2.6.5 Conclusions/Recommendations

The septic system designated as YPG-132/SWMU 78 serves building 6016 and is an active system. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling. No further action is recommended for this SWMU.

SI-2.7 YPG-156 (SWMU 33)

SI-2.7.1 Background

At the time of the initial RFI (1999) SWMU 33 was combined as a single SWMU that included YPG-156 and YPG-177. Also during the 1999 investigation SWMU 33 was inaccurately described as being located at Castel Dome Heliport (CDH); however, this SWMU is actually located at Castle Dome Annex (see figure WP-1) in the central Cibola Region of YPG, which is approximately 3.25 miles northwest of CDH. The RFI and subsequent RFA described SWMU 33 as a reverse osmosis water treatment plant brine lagoon[s], one soil lined (YPG-156) and one cement lined (YPG-177).

YPG-156 is a soil basin with polymer liner approximately 200 ft. x 200 ft. and 4 ft. deep that served solely as an evaporation pond for brine effluent from a reverse osmosis (RO) unit previously used to provide potable water to buildings 6021 and 6027 located just east of the evaporation pond. The RO unit was decommissioned in 2011 when the CDA cantonment area was connected to the KFR Public Water System (PWS# AZ14-367) and the evaporation pond has been inactive since that time. This basin has no connection or relationship to the concrete containment basin (YPG-177) located immediately to the southeast.

Soils in this area are classified as Cristobal-Gunsight (SCS [NRCS], 1991). This soil complex is generally formed from mixed fan alluvium and ranges from extremely gravelly silt loam to extremely cobbly sandy loam. These soils are typically well drained with very slow to moderate permeability and medium runoff potential. The top surface soils inside the basin were finer grained and unconsolidated with the subsurface soils being more compacted and very coarse to and gravelly.

The exact depth to groundwater at the site is unknown; however, groundwater in this region is documented as being in excess of 600 ft. (YPG data: Well M).

SI-2.7.2 Site Work Plan

The RFI identified the primary COPCs at this SWMU as metals and unknown (1999) and recommended monitoring groundwater. Due to depth to groundwater and the shallowness of bedrock in this area groundwater sampling or monitoring is not warranted at this time.

North Wind proposed to collect subsurface soil samples at the site to determine if any of the COPCs for this site are present in the soil. At least two grab samples were to be collected from five individuals bore holes. One at 2 ft. and one at 12 ft., or point of refusal. Since bedrock is known to be very shallow in this area and refusal may occur prior to reaching 6ft (bgs), hand auguring may be used in lieu of mechanical drilling. Figure SI-2.7 shows the location of the SWMU and each sample point.

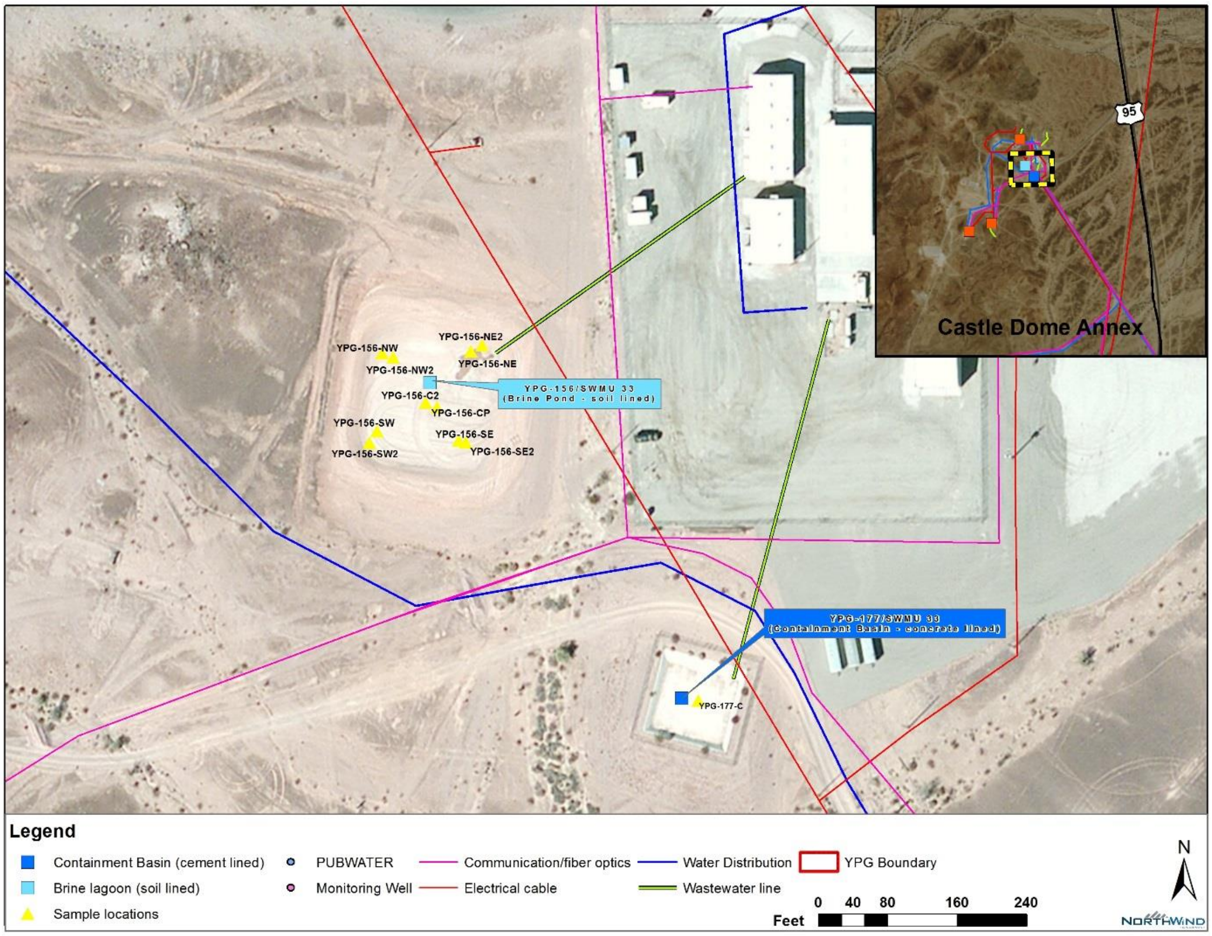

Figure SI-2.7: YPG-156/SWMU 33 and Proposed Sample Locations

SI-2.7.3 Sampling Summary

North Wind collected seven samples at YPG-156/SWMU 33 on April8-9, 2015. Samples were collected from five individual boreholes using a hand auger and split spoon sample core. One sample was collected at 2ft. (bgs) at each location and at the point of refusal. Table SI-2.7a provides details for each sample collected at YPG-132/ SWMU 78. The polymer liner was encountered in all bore holes at approximately 10 to 12 in. (bgs).

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection.

Table SI-2.7a: YPG-156/SWMU 33 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Comment
YPG-156-SW-2	5/15/2014	3656663	752458	2	Direct Push Grab	*None*
YPG-156-SW-12	5/15/2014	3656663	752458	4	Direct Push Grab	Refusal
YPG-156-NE-2	5/15/2014	3656690	752488	3	Direct Push Grab	Refusal
YPG-156-NW-2	5/15/2014	3656690	752458	5.5	Direct Push Grab	Refusal

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Comment
YPG-156-SE-2	5/15/2014	3656660	752482	2	Direct Push Grab	
YPG-156-CP-2	5/15/2014	3656670	752475	2	Direct Push Grab	Refusal
YPG-156-SW2	4/8/2015	3656660	752455	2	Hand Auger Grab	
YPG-156-SW4	4/9/2015	3656660	752455	4	Hand Auger Grab	Refusal
YPG-156-SE2	4/9/2015	3656660	752484	2	Hand Auger Grab	
YPG-156-SE5	4/9/2015	3656660	752484	5	Hand Auger Grab	Refusal
YPG-156-NE2	4/9/2015	3656690	752485	2	Hand Auger Grab	
YPG-156-NE5	4/9/2015	3656690	752485	5	Hand Auger Grab	Refusal
YPG-156-NW2	4/9/2015	3656680	752462	2	Hand Auger Grab	
YPG-156-NW3	4/9/2015	3656680	752462	3	Hand Auger Grab	Refusal
YPG-156-C2	4/9/2015	3656672	752470	2	Hand Auger Grab	Refusal

SI-2.7.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A). Table SI-2.7b is a summary of COPCs detected in analyses of soil samples collected at YPG-156/SWMU 33. Other COPCs analyzed for this site were not detected. Details regarding the analysis results for samples collected at YPG-156/ SWMU 33 are provided in Appendix C.

Table SI-2.7b: Summary of COPCs Detected at YPG-156/SWMU 33

Contaminant of Potential Concern	Highest Level detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	22	10	290
Barium	2200	170000	12000
Chromium	18	4500 (a)	590
Lead	7.3	800	290

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.

SI-2.7.5 Conclusions/Recommendations

The RO unit that discharged brine to the lagoon designated as YPG-156/SWMU 33 was removed when the CDA was connected to the KFR water system. Arsenic was detected at 22 mg/kg, which is above the NR-SRL (10 mg/kg) but below the AZ-GPL (290 mg/kg). Soil and groundwater in this geographic region are known to have naturally occurring levels of arsenic above residential and non-residential soil remediation levels. Drinking water at CDA is now provided from the KFR water treatment plant, which includes treatment for arsenic. All other detected COPCs were well below the NR-SRL and AZ-GPL action levels. Groundwater sampling is not warranted based on depth to groundwater in this area. No further action is recommended for this SWMU.

SI-2.8 YPG-162 (AOC 7)

SI-2.8.1 Site Investigation

The original RFI and RFA investigations described YPG-162/AOC 7 as surface impoundments in the SW corner of the Howard Cantonment Area (HCA) and "west" of the Gila Gravity canal. The location as well as the description and suppositions regarding past use as possible wastewater lagoons were inaccurate. This site is located east of the Gila Gravity canal and slightly southwest of the entrance to the HCA cantonment and is comprised of a single earthen depression approximately 115 ft. x 45 ft. This SWMU is a semi-natural depression that functions as a retention basin for storm water flow. A weir has been placed in the center of the depression to measure depth of any standing storm water. No plumbing or other manmade fixtures were found at the site.

Soils in this area are classified as Gunsight-Chuckwalla (SCS [NRCS], 1991). This soil complex is a very deep fan alluvium material that is an extremely to very gravely sandy or silt loam. These soils are typically very deep, well drained with moderate to rapid runoff potential and moderate permeability. The soils observed during the site survey were fine silty sand in the upper most layer with a thick caliche layer encountered at 4 ft. (bgs) to maximum depth of bore hole (~12 ft., bgs).

Depth to groundwater in this area is documented as ranging from 12 to 20 ft. (YPG monitoring well data: AAFES, MW 5 & MW 6). No buried or overhead utilities were located in the immediate vicinity of the site.

SI-2.8.2 Site Work Plan

The RFI and RI listed the primary COPCs at this SWMU as unknown. The point of generation for storm water run-off that flows into this depression is from facilities on the western edge of the HCA cantonment area. These facilities include the AAFES minimart/gas station (Bldg.707) and the YPG skills development center (Bldg.710).

Based on past and current use of facilities in the vicinity of this site, analytical methods for samples collected at this site are RCRA metals (6010B and 7470A), BTEX list (8260B) and SVOCs (8270C).

North Wind proposed to collect subsurface soil samples at the site to determine if any COPCs are present in the soil. At least two grab samples were to be collected from each of the five individual bore holes using a truck mounted DPT rig; one at 2 ft. and one at 12 ft., or point of refusal, from each bore hole. Figure SI-2.8 shows the location of the SWMU and each sample point.

SI-2.8.3 Sampling Summary

North Wind collected ten samples from an area approximately 115.ft. x 45.ft. at YPG-162/AOC 7 on May 6 and 7, 2014. Samples were collected from five individual boreholes using a truck mounted DPT rig. Two samples were collected from each sample point: one sample at 2 ft. (bgs) and one from 12 ft. (bgs), or at the point of refusal.

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection. Table SI-2.8a provides details for each sample collected at YPG-162/AOC 7.

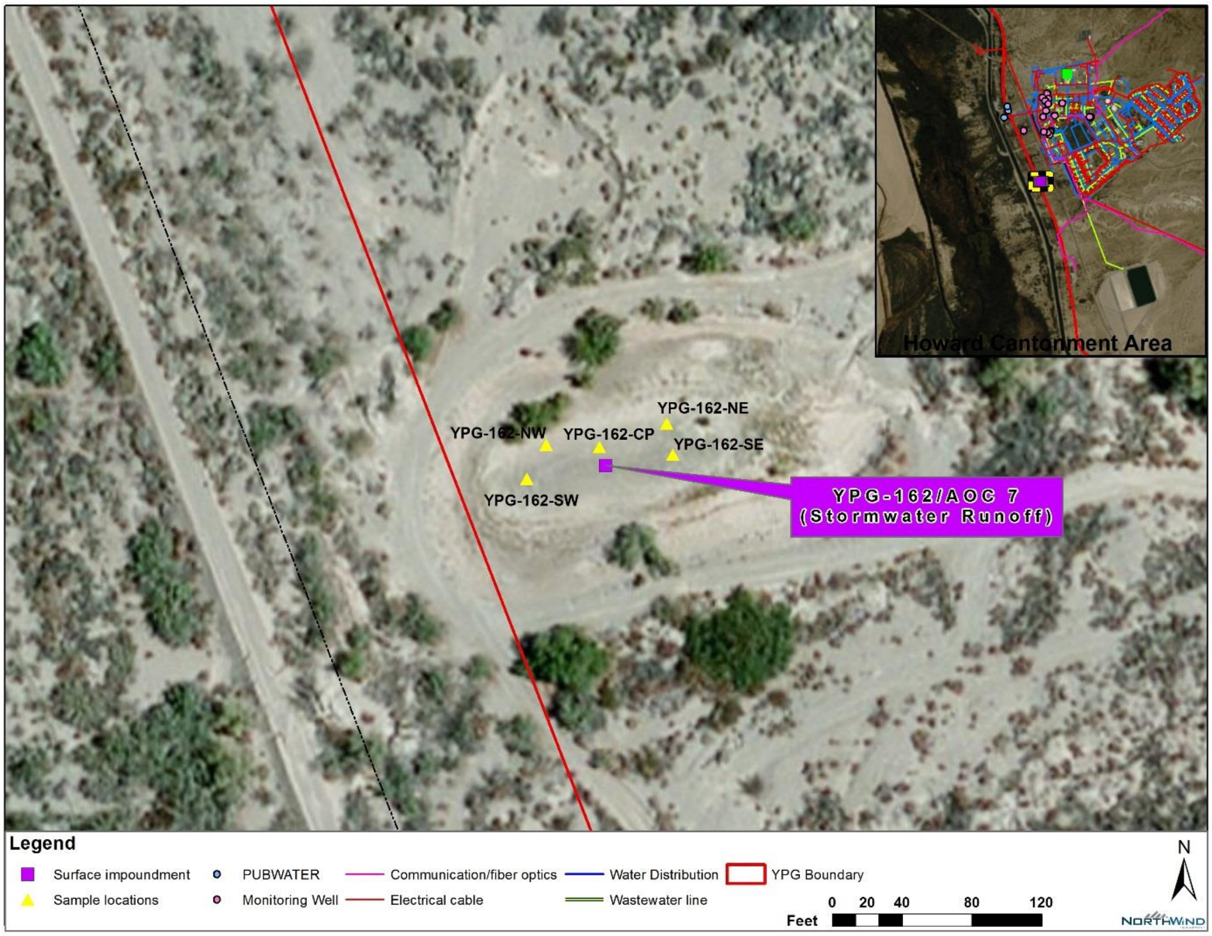

Figure SI-2.8: YPG-162/AOC 7 and Sample Locations

Table SI-2.8a: YPG-162/AOC 7 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG-162-SW-2	5/6/2014	3638426	739110	2	Direct Push Grab	*None*
YPG-162-SW-12	5/6/2014	3638426	739110	12	Direct Push Grab	*None*
YPG-162-NW-2	5/6/2014	3638431	739113	2	Direct Push Grab	*None*
YPG-162-NW-12	5/6/2014	3638431	739113	12	Direct Push Grab	*None*
YPG-162-CP-2	5/6/2014	3638431	739121	2	Direct Push Grab	*None*
YPG-162-CP-12	5/6/2014	3638431	739121	12	Direct Push Grab	*None*
YPG-162-CP-2A (Dup)	5/7/2014	3638431	739121	2	Direct Push Grab	*None*
YPG-162-CP-12A (Dup)	5/7/2014	3638431	739121	12	Direct Push Grab	*None*

Sample Identification	Date	Northing	Easting	Sample depth (ft.)	Sample Method	Note
YPG-162-NE-2	5/7/2014	3638434	739131	2	Direct Push Grab	*None*
YPG-162-NE-12	5/7/2014	3638434	739131	10	Direct Push Grab	Refusal
YPG-162-SE-2	5/7/2014	3638430	739132	2	Direct Push Grab	*None*
YPG-162-SE-12	5/7/2014	3638430	739132	12	Direct Push Grab	*None*

SI-2.8.4 Analytical Results

Analyses performed for this site were Metals (6010B and 7470A), BTEX list (8260B) and SVOCs (8270C). Table SI-2.8b is a summary of COPCs detected in analyses of soil samples collected at YPG-162/AOC 7. Other COPCs analyzed for this site were not detected. Details regarding all the Analytical Results for samples collected at YPG-162/AOC 7 are provided in Appendix C.

Table SI-2.8b: Summary of COPCs Detected YPG-162/AOC 7

Contaminant of Potential Concern	Highest Level Detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Arsenic	**19**	10	290
Barium	770	170,000	12,000
Cadmium	0.56	510	29
Chromium	19	*4500 **	590
Lead	11	800	290
Selenium	5.0	5,100	290

* 1997 non-residential SRL. Chromium, total was removed from the SRL contaminant list published by ADEQ in 2007 (A.A. C. Title 18, Chapter 7, Appendix A.

SI-2.8.5 Conclusions/Recommendations

The site designated as YPG162/AOC 7 is a semi natural depression that functions as a collection point for storm water run-off. No plumbing features noted during the site investigation. Arsenic was detected at 19 mg/kg, which is above the NR-SRL (10 mg/kg) but below the GPL (290 mg/kg). All other detected COPCs were well below the NR-SRL and GPL action levels. During recent sampling of drinking water wells located near AOC 7, Arsenic was detected at .0075 mg/L, which is well below the Primary drinking water standard. Groundwater sampling is not warranted based on analytical results from soil sampling. No further action is recommended for this SWMU.

SI-2.9 YPG-177 (SWMU 33)

SI-2.9.1 Background

At the time of the initial RFI (USEPA, 1999) SWMU 33 was combined as a single SWMU that included YPG-156 and YPG-177. Also during the 1999 investigation SWMU 33 was inaccurately described as being located at Castle Dome Heliport; however, this SWMU is actually located at Castle Dome Annex in the central Cibola Region of YPG, which is approximately 3.25 miles northwest of CDH. The RFI and subsequent RFA erroneously described SWMU 33 as reverse osmosis water treatment plant brine lagoon[s], one soil lined (YPG-156) and one cement lined (YPG-177).

YPG-177 is a concrete containment basin with a polymer liner installed between the concrete and soil. The basin is located at the CDA in the central Cibola Region of Yuma Proving Ground and has no connection or relationship to the evaporation pond (YPG-156) located immediately to the northwest. This containment basin is designed to collect flow from an oil water separator connected to a wash rack within the fenced compound around building 6021. This compound is used intermittently for military units that train at USAGYPG. The containment basin is approximate 100 ft. x 100 ft., and 6 ft. deep.

Soils in this area are classified as Cristobal-Gunsight (SCS [NRCS], 1991). This soil complex is generally formed from mixed fan alluvium and ranges from extremely gravelly silt loam to extremely cobbly sandy loam. This class of soil is typically well drained with very slow to moderate permeability and medium runoff potential.

The exact depth to groundwater at the site is unknown; however, groundwater in this region is documented as being in excess of 600 ft. (YPG data: Well M).

SI-2.9.2 Site Work Plan

The RFI identified the primary COPCs at this SWMU as metals and unknown and recommended monitoring groundwater. Due to depth to groundwater, the fact that the polymer liner is still intact, and the shallowness of bedrock in this area, groundwater sampling or monitoring is not warranted at this time.

Based on actual use of the basin for containment and evaporation of overflow from oil water separator connected to the wash rack at Bldg. 6021, analytical methods for samples collected at this site are RCRA metals (6010B and 7470A), Volatile Organic Compounds (8280B), and Semi-volatile Organic Compounds (8270C).

North Wind proposed to collect subsurface soil samples at the site to determine if any of the COPCs for this site are present in the soil. This basin contains an inspection port in the center of the pad and this location will be used to collect samples. Figure SI-2.9 shows the location of the SWMU and each sample point.

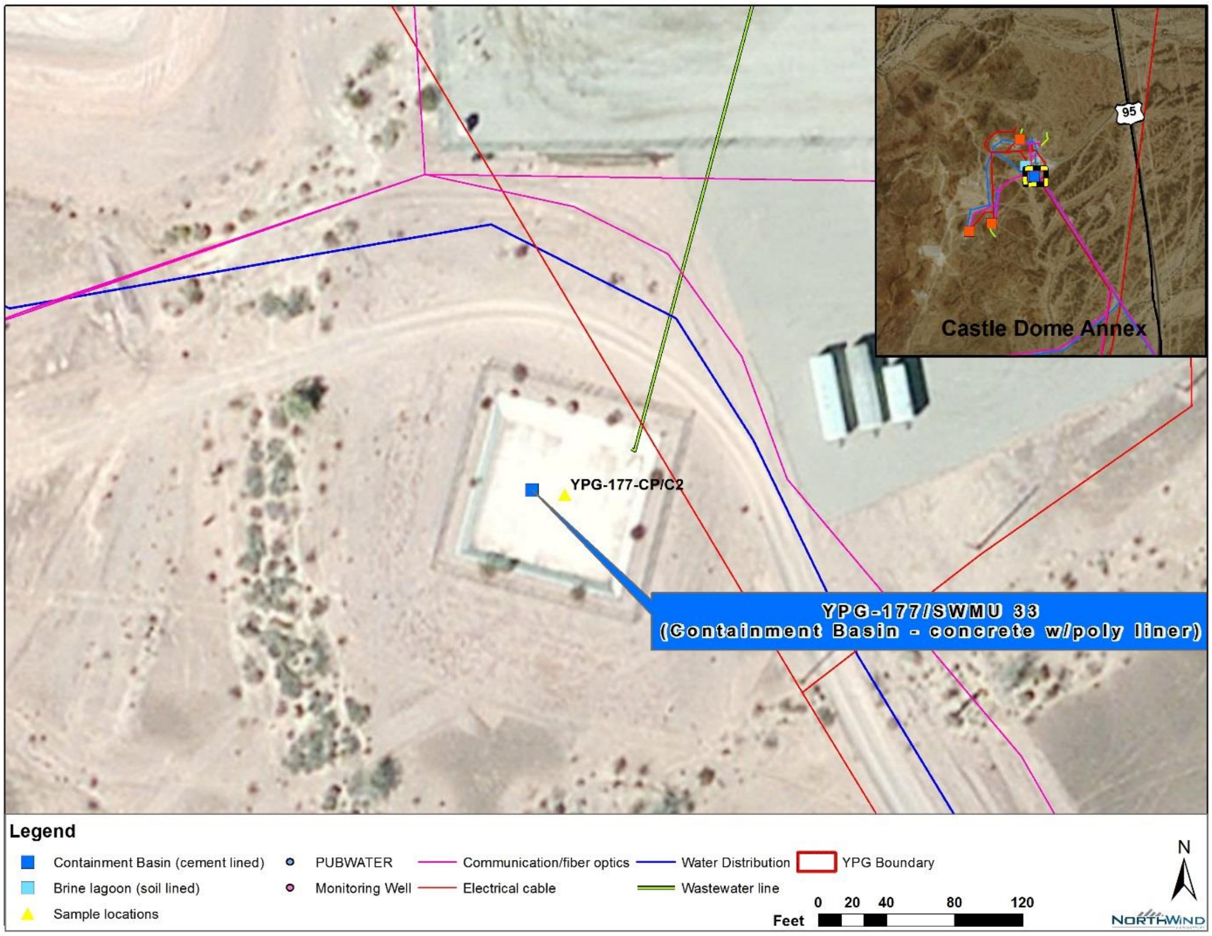

Figure SI-2.9: YPG-177/SWMU 33 and Sample locations

SI-2.9.2 Sampling Summary

North Wind collected samples on May 12, 2014 from the inspection port located in the center of the containment basin. A hand auger and split spoon sample core was used to avoid irreparable damage to the polymer liner. Minimal material was available from the inspection port; therefore, the extracted soil was composited for analysis. North Wind collected a second sample on April 9, 2015 for analysis of total RCRA metals. The sample was again taken from the inspection port using a hand auger and split spoon sample core. Table SI-2.9a provides details for each sample collected at YPG-132/ SWMU 78.

Samples were preserved on ice and shipped to an Arizona certified laboratory (Test America – Phoenix) the same day as sample collection.

Table SI-2.9a: YPG-177/SWMU 33 Sample Locations and Details

Sample Identification	Date	Northing	Easting	Sample depth (bgs)	Sample Method	Comment
YPG-177-CP2	5/12/2014	3656590	752555	0.5 – 18 in.	Hand Auger Composite	*1st Sample set*
YPG-177-CPS	5/12/2014	3656590	752555	0.5 – 18 in.	Hand Auger Composite	*1st Sample set*
YPG-177-C2	4/9/2015	3656590	752555	2 ft.	Hand Auger Grab	*2nd Sample set*

SI-2.9.4 Analytical Results

Analyses performed for this site were RCRA metals (6010B and 7470A) and volatile organic compounds (8260B). Table SI-2.9b provides a summary of the COPCs detected in the soil samples collected at YPG-177. Lab analysis for all other COPCs analyzed for this site were reported as not detected (See Appendix C).

Table SI-2.9b: Summary of COPCs Detected at YPG-177/SWMU 33

Contaminant of Potential Concern	Highest Level detected (mg/kg)	NR-SRL (mg/kg)	AZ GPL (mg/kg)
Barium	82	170000	12000
Chromium	6.4	*4500 (a)*	590

(a) Listed in 1997 NR-SRLs; removed from 2007 NR- SRL list.

(b) 1997 non-residential SRL, Nitrate and Nitrite were removed from the SRL contaminant list published by ADEQ in 2007 (A.A. C. Title 18, Chapter 7, Appendix A).

SI-2.9.5 Conclusions/Recommendations

The SWMU designated as YPG-177/SWMU 33 is currently an inactive containment basin connected to an OWS that serves building 6021unit. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on depth to groundwater in this area and analytical results from soil sampling. No further action is recommended for this SWMU.

SI-3 Field Changes and Corrective Actions

The North Wind project manager was required to modify generic site procedures to accommodate site-specific needs or unforeseeable events. The predominant change to the sampling plan was refusal prior to attaining the 12 ft. sample depth. Due to the type and compaction of soil or shallowness of bedrock, it was not possible to reach the 12 ft. maximum sample depth at several sample points. North Wind collected samples at the point of refusal for each of these sample points, as indicated in summary tables provide in Section SI-2.

SI-4 Quality Assurance/Quality Control (QA/QC)

SI-4.1 Field Instrument Calibration and Preventive Maintenance

No sample meters or equipment that required calibration or maintenance were needed or used during this site investigation.

SI-4.2 QA/QC Sample Collection

The soil sampling effort included collection of field duplicate samples and a matrix spike/matrix spike duplicate (MS/MSD) sample to assess the quality of the data resulting from the field sampling program. Field duplicate samples were collected at a frequency of 1 duplicate per 20 investigative samples and one MS/MSD was collected for laboratory use.

Field duplicate samples were collected at selected locations during soil sampling using sample collection procedures identical to those used for the investigative samples. Duplicates were collected by filling two sets of sample jars/bottles from the same sample location and depth. Duplicate samples were analyzed for the same parameters as the investigative sample.

SI-4.3 Laboratory Quality Control

The contract laboratory (Test America) performed analysis using established and strict QA/QC protocols and analysis procedures in accordance with their QA/QC manual. The laboratory processed the collected samples as soon as possible upon receipt. Extraction and analyses of samples was completed within the sample holding times specified for each analysis method used.

SI-4.3.1 Laboratory QC Samples

Test America prepared and analyzed QC samples for each sample batch to determine and document the required laboratory performance. Laboratory QC samples analyzed as part of the QA/QC process included laboratory/ method blanks, laboratory duplicates, and laboratory spikes.

SI-4.3.2 Data Management

Test America provided Analytical Results to North Wind in digital formats. Each report provided by Test America included: narrative summaries of the analyses that detailed any data limitations, data qualifiers, tables summarizing the analytical results, QA/QC results, and all original field and sample custody documentation. Test America also provided Analytical Results for collected samples in a database format.

SI-4.4 Data Verification and Validation

North Wind reviewed the data package received from Test America for completeness, QA/QC processes, and procedures implemented during analysis. North Wind also conducted Quality Level 1 desk review of Test America prior to project implementation.

Data verification was performed using field logs, chain-of-custodies, and applicable analysis methods, (found in SW-846). Sample identification numbers were verified against chain-of-custodies and laboratory reports to ensure data was recorded against the correct samples. Laboratory results and procedures were verified against the applicable analysis methods to determine if holding times, extraction methods, etc., were met.

North Wind reviewed all laboratory reports and data to evaluate the accuracy and validity of the analysis results provided. Specific areas reviewed included: sample results, units, dilution factors, sample numbers, analysis methods, sample extraction, analysis times, and data qualifiers for any anomalies noted on the laboratory reports. No deficiencies effecting the validity and quality of the data were noted.

SI-5 Conclusions

All COPCs, except Arsenic, were reported as “not detected” or were well below the established Arizona NR-SRL (and Residential SRL); see Appendix A for a summary of analytical results.

Two sites indicated elevated levels of arsenic in the soil YPG-156/SWMU 33 and YPG-162/AOC 7.

YPG-156/SWMU 33
Seven of the samples collected at YPG-156 (polymer lined evaporation pond used to collect brine discharge from a reverse osmosis system previously used for water treatment at CDA) exceeded established NR-SRLs for Arsenic, but were below the AZ GPL for Arsenic. Samples that exceeded the NR-SRLs for arsenic at this location were collected at 2 to 5 feet (bgs) (YPG-156-SW2, YPG-156-SE2, YPG-156-SE5, YPG-156-NE2, YPG-156-NW2, YPG-156-NW3, and, YPG-156-C2).

YPG-162/AOC 7
Four samples taken at AOC 7/YPG-162, a natural depression that accumulates storm water runoff, exceeded established NR-SRLs for Arsenic, but were below the AZ GPL. All of the samples that exceeded the Arsenic NR-SRL were collected at 10 to 12 feet (bgs) (YPG-162-SW-12, YPG-162-NW-12, YPG-162-CP-12A, and YPG-162-NE-12).

The elevated arsenic found at these locations and depths is not unusual; Arsenic is widely distributed in the earth’s crust, which contains about 3.4 milligrams per kilogram (mg/kg). It is mostly found in nature as minerals, and in its elemental form only to a small extent. Typical arsenic concentrations for uncontaminated soils range from 1 to 40 mg/kg (ATSDR 2007). The average arsenic concentration in Arizona soil is about 10 mg/kg (ADHS 2011) and is commonly found in soils and groundwater at USAGYPG above the established NR-SRL and primary drinking water standard.

Recently, USAGYPG conducted groundwater monitoring of two drinking water production wells (Well W and Well Z) located approximately 0.5 miles north of YPG-162/AOC 7 (Figure SI-5). These wells serve the MAA public water system, which is in the design stage for upgrade/replacement. The raw source water was collected and analyzed for an extensive list of parameters, including arsenic to provide current analytical data as part of the design process. Arsenic was detected for Well W at 0.0075 mg/L and for Well Z at 0.0050 mg/L), which is well below the primary standard for drinking water.

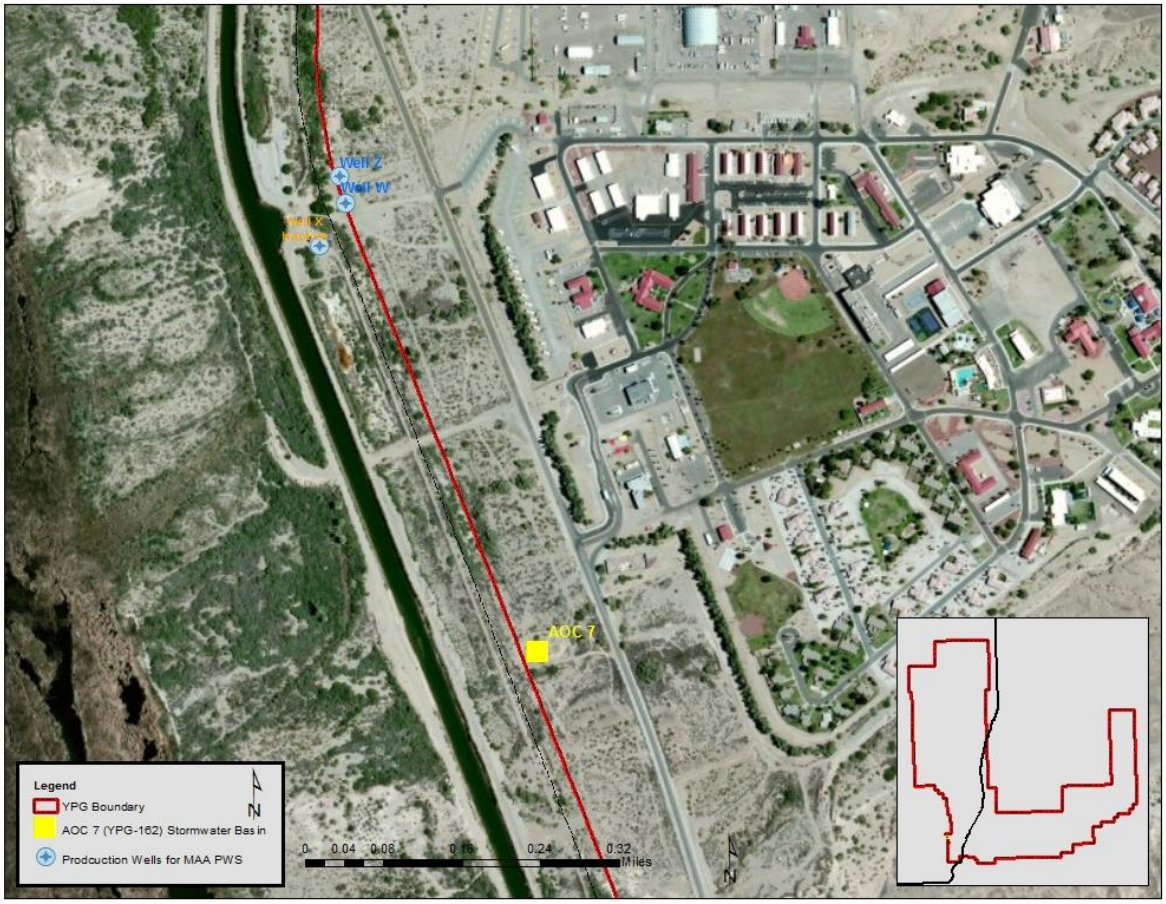

Figure SI-5: Drinking water wells in the vicinity of AOC 7/YPG-162

SI-6 Recommendations

Table SI-6 provides a list of recommendation and associated justification for each of the SWMUs that were sampled or researched. The recommendations are based on analytical results for the current soil sampling effort and other information obtained during records and data research for this project.

Table SI-6: Conclusions and Recommendations for Each SWMU

ADEQ/YPG ID#s	CONCLUSION	RECOMMENDATION
YPG-44/SWMU 52	**Not Sampled** - Clean Closure was granted by ADEQ on June 19, 2006 (ADEQ 2006). See Appendix A	No Further Action
YPG-110/SWMU 5	Inactive unit. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling.	No Further Action
YPG-113/SWMU 64	Inactive septic system. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling.	No Further Action
YPG-121/SWMU 70	Active septic system. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling.	No Further Action

ADEQ/YPG ID#s	CONCLUSION	RECOMMENDATION
YPG-123/SWMU 65	**Not Sampled** - Inactive site. Septic removed when the KFR fire station was constructed at this site. No as-built drawings were found for the old septic system. Numerous utilities (potable water, electric, fiber optics) traverse and surround the recorded location.	No Further Action
YPG-129/SWMU 75	Septic tank removed and replaced. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on depth to groundwater in this area and analytical results from soil sampling.	No Further Action
YPG-130/SWMU 76	Active septic system, replacement in process. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on analytical results from soil sampling.	No Further Action
YPG-132/SWMU 78	Active septic system. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on depth to groundwater in this area and analytical results from soil sampling.	No Further Action
YPG-156/SWMU 33	Inactive unit. Arsenic was detected at 22 mg/kg, which is above the NR-SRL (10 mg/kg) but below the AZ-GPL (290 mg/kg). All other detected COPCs were well below the NR-SRL and AZ-GPL action levels. Soil and groundwater in this geographic region are known to have naturally occurring levels of arsenic above residential and non-residential soil remediation levels. Drinking water at CDA is provided from the KFR water treatment plant, which includes treatment for arsenic. Groundwater sampling is not warranted based on depth to groundwater in this area.	No Further Action
YPG-162/AOC 7	Storm water retention basin. No plumbing features noted. Arsenic was detected at 19 mg/kg, which is above the NR-SRL (10 mg/kg) but below the GPL (290 mg/kg). All other detected COPCs were well below the NR-SRL and GPL action levels. During recent sampling of drinking water wells near AOC Arsenic was detected at .0075 mg/L, which is well below the Primary drinking water standard. Groundwater sampling is not warranted based on analytical results from soil sampling.	No Further Action
YPG-177/SWMU 33	Inactive unit. All detected COPCs were well below the NR-SRL and GPL action levels. Groundwater sampling is not warranted based on depth to groundwater in this area and analytical results from soil sampling.	No Further Action

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APPENDIX A

Decision to Grant Clean Closure (SWMU 52/YPG-44)

Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Stephen A. Owens
Director

Decision to Grant Clean Closure No. # P-105294

June 19, 2006

Mr. Charles E. Botdorf
US Army Garrison Yuma
301 C Street IMSW-YMA-PWE
Yuma, Arizona 85365

Re: Decision to Grant Clean Closure P-105294 for US Army Garrison Yuma

Inventory Number:	P-105294	LTF ID:	40299
USAS Number:	504992-03	Place ID:	17936

Dear Mr. Botdorf:

The Arizona Department of Environmental Quality (ADEQ) has made a final decision to approve the Aquifer Protection Permit Partial Clean Closure, located at US Army Garrison Yuma, KOFA Ammunition Deflagration Test Facility pursuant to Arizona Revised Statutes § 49-252. The executive summary and the signed clean closure approval are enclosed for your records. Please contact me at (602) 771-4668 if you have any questions regarding this decision.

Sincerely,

Bill Kopp, Hydrologist, R.G.
Groundwater Section
Water Quality Division

By Certified Mail
Enclosures (2)

cc: Eric Wilson, Manager, Technical Support Unit, ADEQ
Lynne Dekarske, Administrative Assistant III, Groundwater Section, ADEQ

MU 0057

Northern Regional Office
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Printed on recycled paper

Regulatory Status:

An APP No. 105294 was issued by ADEQ for the KOFA Ammunition Deflagration Site on April 19, 2004. A report for partial closure of the facility was submitted to ADEQ on November 17, 2005. Based on the closure investigation, the past releases at the north and south test pits have been adequately assessed and the test pits qualify for clean closure pursuant to Arizona Revised Statutes (A.R.S.) §49-252.

Closure Investigation:

The partial closure of the KOFA Ammunition Deflagration Site began on June 6, 2005, by excavating contaminated soils to a depth of 18 inches below ground surface (bgs) at the North and South Pits. Visual soil staining and strong petroleum odors were noted within the excavations. The excavations were deepened to approximately 10 feet bgs in the South Pit and 10.9 feet bgs in the North Pit. A strong petroleum odor was noted again at the bottom of both excavations. Soil samples were collected at 5 feet bgs and at 10.9 feet bgs in the North Pit and at 10 feet in the South Pit. The samples were analyzed for metals, BTEX, PAHs and explosives with all results, with the exception of arsenic, below the respective Non-Residential Soil Remediation Level (SRL). Arsenic concentrations in the three samples ranged between 6.9 and 19.5 mg/kg.

On June 28, 2005, a revision for the Partial Closure Plan was submitted to ADEQ. The revision was approved by ADEQ and the field work conducted on September 7 and 8, 2005. Four soil borings were drilled at each test pit with one boring in the center of the pit and three borings spaced along a 20-foot radius of each test pit. Each boring was drilled to a depth of 40 feet bgs, with samples collected at 10-foot intervals. Surface samples were also collected at locations along an 80-foot radius of each test pit. Each sample was analyzed for BTEX, PAHs, explosives and metals. With the exception of arsenic, all samples were below the Non-Residential SRL. The mean value of arsenic for the 50 soil samples collected was 9.94 mg/kg, with a range of values between 2.8 and 17.4 mg/kg.

Because some of the soil samples collected in the test pit area exceed the Non-Residential SRL for arsenic, a study of naturally occurring background concentrations of arsenic was compiled. Included in the study was a 1991 report by Earth Technology Corporation titled *Evaluation of Background Metal Concentrations in Arizona Soils*. The study evaluated separate data sets complied by the USGS and ADEQ. Background arsenic concentrations in the USGS data set ranged from 1.4 mg/kg to 97 mg/kg with a mean concentration of 9.8 mg/kg. The ADEQ data set showed arsenic concentrations ranging from 3.1 mg/kg to 24 mg/kg with a mean concentration of 9.4 mg/kg. The mean concentrations reported in the study are nearly identical to those reported in soil samples collected from the North and South Pit areas. Therefore, the arsenic concentration reported in test pit areas appear to be due to natural background concentration in the native soils.

Compliance with Aquifer Water Quality Standards:

The depth to groundwater at the KOFA Ammunitions Deflagration Test Facility is approximately 544 feet bgs. Although arsenic concentrations in the native soils beneath the test

Page 2 of 3

Regulatory Status:

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On June 28, 2005, a revision for the Partial Closure Plan was submitted to ADEQ. The revision was approved by ADEQ and the field work conducted on September 7 and 8, 2005. Four soil borings were drilled at each test pit with one boring in the center of the pit and three borings spaced along a 20-foot radius of each test pit. Each boring was drilled to a depth of 40 feet bgs, with samples collected at 10-foot intervals. Surface samples were also collected at locations along an 80-foot radius of each test pit. Each sample was analyzed for BTEX, PAHs, explosives and metals. With the exception of arsenic, all samples were below the Non-Residential SRL. The mean value of arsenic for the 50 soil samples collected was 9.94 mg/kg, with a range of values between 2.8 and 17.4 mg/kg.

Because some of the soil samples collected in the test pit area exceed the Non-Residential SRL for arsenic, a study of naturally occurring background concentrations of arsenic was compiled. Included in the study was a 1991 report by Earth Technology Corporation titled *Evaluation of Background Metal Concentrations in Arizona Soils*. The study evaluated separate data sets complied by the USGS and ADEQ. Background arsenic concentrations in the USGS data set ranged from 1.4 mg/kg to 97 mg/kg with a mean concentration of 9.8 mg/kg. The ADEQ data set showed arsenic concentrations ranging from 3.1 mg/kg to 24 mg/kg with a mean concentration of 9.4 mg/kg. The mean concentrations reported in the study are nearly identical to those reported in soil samples collected from the North and South Pit areas. Therefore, the arsenic concentration reported in test pit areas appear to be due to natural background concentration in the native soils.

Compliance with Aquifer Water Quality Standards:

The depth to groundwater at the KOFA Ammunitions Deflagration Test Facility is approximately 544 feet bgs. Although arsenic concentrations in the native soils beneath the test pits exceed the Non-Residential SRL, the levels are well below the Arizona Groundwater Protection Level (GPL) for arsenic of 290 mg/kg. All other parameters in the soils were less than their respective Non-Residential SRL and GPL. There is no reasonable probability that the soils in the North and South Test Pits will further discharge to the aquifer or cause an exceedance of an aquifer water quality standards at a point of compliance. There is no routine groundwater monitoring required by this permit.

Point of Compliance:

None

Final Closure:

No post-closure monitoring or maintenance is required for the past releases at the North and South Test Pits at the KOFA Ammunitions Deflagration Test Facility.

APPENDIX B

FIELD SAMPLING PLAN

FIELD SAMPLING PLAN

1.0 Sampling Approach

North Wind Resource Consulting proposes to use a truck mounted direct push drill rig (GeoProbe®) to collected soil samples at each targeted SWMU. Samples will be collected at 2 feet below ground surface (bgs) and at 12 feet bgs, unless refusal occurs, in which case NWRC will collect a soil at the deepest point achieved prior at refusal. Surface samples will be collected at two locations (SWMU 75, YPG-129 and (SWMU 76, YPG-130) due to rugged terrain and shallowness of bedrock that is known to occur in those locations.

NWRC selected site-specific sample locations based on facility drawings, aerial photographs, and site surveys. In the event utilities are identified in the selected locations during the Dig Permit process, NWRC will make adjustments, as needed.

1.1 Sampling Equipment

NCore 2-inch diameter by 4-foot long acetate liner will be used for all soil samples collected with the GeoProbe rig. Hand augers and other equipment used will be used for site not accessible by the GeoProbe and decontaminated between each sample collected. The sampling approach and details for each site are provided below.

2.0 Analytical Methods

The standard analytical methods used were in accordance with SW-846. Methods applicable to the SWMU sampling event are detailed in Table 2-1. TestAmerica provided sample containers, chain-of-custodies, and coolers to NWRC for the requested method. Each sample cooler sent by TestAmerica included a completed *Bottle Kit Request Form*, instructions and guidance on container management and shipping.

Table 2-1: Summary of Analytical Methods for the SWMU samples collected.

Analysis	Method	Preservative	Max Hold Time	Sample Container
Semivolatile Organic Compounds - Soil	8270C_AZ	Cool to 4ºC	14-days	8-oz clear jars
Volatile Organic Compounds	8260_AZ BTEX List	Cool to 4ºC	14-days	4-oz clear jars
Anions (Nitrate, Nitrite)	9056 ORGFM_48Hr	Cool to 4ºC	28-days	4-oz clear jars
RCRA Metals	6010B	Cool to 4ºC	6-months	8-oz clear jars
RCRA Metals/Mercury	6010B/7470A	Cool to 4ºC	28-days	8-oz clear jars
Total Coliform	9221	Cool to 4ºC	24-hrs	Clear Plastic Jar (provided by Agri Trend Laboratory)

3.0 Sampling Procedures

The following procedures applied to the collection of soils:

3.1 Surface Sampling Method:

1. Wore personal protective equipment as specified in the Health and Safety Plan. Samplers donned new sampling gloves prior to sampling at each location.
2. A trowel was used to break up surface soil.
3. Obtained a sample from the loosened soil using a decontaminated scoop/trowel by scooping surface soil from 3 to 4 inches below ground surface.
4. Soil was screened into a dedicated disposable, aluminum tin.
5. The trowel and screen were decontaminated using Liquinox between each sample and rinsed using deionized water.
6. Soil was screened into a dedicated disposable, aluminum tin.
7. Soil was transferred directly from the dedicated aluminum pan into the sample containers.
8. Repeated steps 2 through 6 for each surface sample collected
9. Sample containers were labeled in accordance with section 3.0.
10. Each sample was recorded on a chain-of-custody form.
11. Samples were placed in coolers with polyethylene cushioning and chilled with ice in plastic bags.
12. Sample containers were packaged and shipped in accordance with section 4.0.

3.2 Geo Probe Sampling Method:

1. Wore personal protective equipment as specified in the Health and Safety Plan. Samplers donned new sampling gloves prior to collecting each sample at all locations.
2. Drill site was selected and drill vehicle was positioned and leveled.
3. An uncontaminated 2 3/8 in. x 4 ft. outer drill rod section was loaded with a 4 ft. clear vinyl acetate sampling tube.
4. The rod and sample tube were drilled to a depth of 4 feet (or refusal).
5. The sample tube was removed from the outer rod and capped with vinyl tape. The sample tube was split to expose the soil material for sampling.
6. Soil was screened into a dedicated disposable, aluminum tin.
7. Soil was transferred directly from the dedicated aluminum pan into the sample containers provided by the contracted laboratory.
8. The screen was decontaminated using Liquinox between each sample and rinsed using deionized water. A new aluminum pan was used for each sample.
9. A new sampling tube was inserted into the outer rod. An inner rod was attached to the top of the tube and an additional 4 ft. section of outer tube was attached to the outer tube.
10. The outer rod and sample tube were drilled to depth of 8 ft. (or Refusal)
11. Repeated steps 5 through 8
12. A new sampling tube was inserted into the outer rod. Two inner rods were attached to the top of the tube and the tube was lowered into the outer rod. An additional 4 ft. section of outer tube was attached to the outer tube.
13. The outer rod and sample tube were drilled to depth of 12 ft. (or Refusal).
14. Repeated steps 5 through 8.
15. The outer rods were extracted from the ground.

16. The inner and outer rods were decontaminated using were decontaminated using Liquinox and rinsed using deionized water.
13. Sample containers were labeled in accordance with section 3.0.
14. Each sample was recorded on a chain-of-custody form.
17. Samples were placed in coolers with polyethylene cushioning and chilled with ice in plastic bags.
18. Sample containers were package and shipped in accordance with section 4.0.

3.2 Decontamination

Disposable aluminum tins were used and decontaminated between each sample location. A metal spoon was used, as needed, to transfer soil material into sample containers and was decontaminated between each use as follows:

1. Equipment thoroughly cleaned in a low-suds detergent solution (Liquinox and de-ionized water).
2. Equipment was rinsed with distilled water by submerging and/or spraying; and
3. Allowed to air-dry or dried with new (unused) paper towel.

4.0 Sample Management

4.1 Identification System

Each sample collected was assigned an alphanumeric code that identified the sample site, location, and depth where soil was collected. A label using the appropriate descriptive alphanumeric code, date and time collected, sampler name, and analytical method was prepared using permanent ink and placed on each sample container.

4.2 Sample Packaging and Shipping

To ensure that samples arrived at the laboratory without breakage and with the chain-of-custody intact, the following packaging procedures were followed:

- The field sampler was personally responsible for the care and custody of the samples until they were transferred to another individual or properly dispatched to the laboratory.
- All samples were placed in appropriate sample containers (see Table 3-2) and labeled with unique sample numbers and sample locations (See Section 3.0).
- Custody seals were signed by the sample collector and attached to each sample container.
- Each sample was recorded on a chain-of-custody form.
- Samples were cushioned inside the shipping coolers using bubble wrap.
- The samples were packaged with sealed plastic bags of ice to maintain the temperature at 4°C (± 2 degrees).
- The project manager reviewed all field activities to determine whether proper custody procedures were followed during the field work.
- The Chain of custody was taped to the inside lid of each cooler and custody seals placed on outside of cooler.
- Coolers were shipped within 24 hours of collection to the designated laboratory (Test America in Phoenix, AZ) via express ground carrier.

4.3 Sample Documentation

Required paperwork for laboratory samples included chain-of-custody forms and chain-of-custody seals to properly document the collection of samples. Each sample was recorded on a chain-of-custody form, provided by Test America. The requested analytical methods were hand written on the form and the appropriate methods were marked for specific samples. If an error was made on the chain-of-custody form, the sampler crossed it out with a single line, initialed and dated the mark out.

All paperwork accompanying the samples to the laboratory was sealed in a plastic bag that was taped to the inside of the cooler lid. Copies of the chain-of-custody documentation were made and retained for in-house files.

APPENDIX C

ANALYTICAL LABORATORY REPORTS

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-110-NE-2 5/7/2014	YPG-110-NE-12 5/7/2014	YPG-110-NW-2 5/7/2014	YPG-110-NW-12 5/7/2014	YPG-110-SE-2 5/8/2014	YPG-110-SE-12 5/8/2014
METALS (ICP/CVAA); 6010B & 7470A									
Arsenic	10	290	mg/Kg	ND	ND	ND	ND	ND	ND
Barium	170000	12000	mg/Kg	**73**	**57**	**93**	**190**	**95**	**48**
Cadmium	510	29	mg/Kg	ND	ND	ND	ND	ND	ND
Chromium	4500 **	590	mg/Kg	**7.1**	**3.4**	**7.6**	**3.3**	**5.3**	**4**
Lead	800	290	mg/Kg	**23**	ND	**87**	ND	ND	ND
Mercury	310	12	mg/Kg	ND	ND	ND	ND	ND	ND
Selenium	5100	290	mg/Kg	ND	ND	ND	ND	ND	ND
Silver	5100	NE	mg/Kg	ND	ND	ND	ND	ND (L5)	ND (L5)
VOCs (GC/MS) - 8260B									
Benzene	1400	710	ug/Kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	400000	280	ug/Kg	ND	ND	ND	ND	ND	ND
Toluene	650000	400000	ug/Kg	ND (M1)	ND	ND	ND	ND	ND
m,p-Xylenes	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
o-Xylene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Xylenes, Total	420000	2200000	ug/Kg	ND	ND	ND	ND	ND	ND
SVOCs (GC/MS)- 8270C									
1,2,4-Trichlorobenzene	220000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine(as Azobenzene)	160000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	600000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	79000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	62000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	62000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	12000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	12000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	1200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	1200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	620000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	110000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2-Chlorophenol	240000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	240000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2-Methylphenol	31000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2-Nitroaniline	1800000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	38000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
3-Methylphenol + 4-Methylphenol	34100000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
3-Nitroaniline	180000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-110-NE-2 5/7/2014	YPG-110-NE-12 5/7/2014	YPG-110-NW-2 5/7/2014	YPG-110-NW-12 5/7/2014	YPG-110-SE-2 5/8/2014	YPG-110-SE-12 5/8/2014
4-Bromophenyl phenyl ether	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
4-Chloroaniline	2500000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
4-Nitroaniline	820000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Acenaphthene	29000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Acenaphthylene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Aniline	3000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Anthracene	240000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzidine	7.5	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzo[a]anthracene	21000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzo[a]pyrene	2100	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzo[b]fluoranthene	21000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzo[g,h,i]perylene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzo[k]fluoranthene	210000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzoic acid	1000000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzyl alcohol	180000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
bis (2-chloroisopropyl) ether	790000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	5800	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	1200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	120000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Chrysene	2000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	2100	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Dibenzofuran	140000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Diethyl phthalate	49000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	100000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	62000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	25000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Fluoranthene	22000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Fluorene	26000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	11000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	180000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	3700000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Hexachloroethane	6200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Indeno[1,2,3-cd]pyrene	21000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Isophorone	18000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Naphthalene	190000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Nitrobenzene	100000	NE	ug/Kg	ND	ND	ND	ND	ND	ND

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-110-NE-2 5/7/2014	YPG-110-NE-12 5/7/2014	YPG-110-NW-2 5/7/2014	YPG-110-NW-12 5/7/2014	YPG-110-SE-2 5/8/2014	YPG-110-SE-12 5/8/2014
N-Nitrosodi-n-propylamine	2500	NE	ug/Kg	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	3500000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
N-Nitrosomethylethylamine	340	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Pentachlorophenol	90000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Phenanthrene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Phenol	180000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Pyrene	29000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Pyridine	15000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Benzene	1400	710	ug/Kg	ND	ND	ND	ND	ND	ND
Ethylbenzene	400000	280	ug/Kg	ND	ND	ND	ND	ND	ND
Toluene	650000	400000	ug/Kg	ND (M1)	ND	ND	ND	ND	ND
m,p-Xylenes	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
o-Xylene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND
Xylenes, Total	420000	2200000	ug/Kg	ND	ND	ND	ND	ND	ND

** = 1997 Non-residential SRL, Total Chromium was removed from the SRL contaminant list published by ADEQ in 2007.

ND = Not Detected

NE = Not Established

L5 = The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.

M1 = Matrix spike recovery was high, the associated blank spike recovery was acceptable.

Analyte	AZ NR-SRL (mg/Kg)	AZ GPL (mg/Kg)	Units	YPG-113-NW2 5/8/2014	YPG-113-NW2 5/8/2014	YPG-113-NW12 5/8/2014	YPG-113-NE2 5/8/2014	YPG-113-NE12 5/8/2014
METALS (ICP/CVAA); 6010B & 7470A								
Arsenic	10	290	mg/Kg	-	ND	ND	ND	ND
Barium	170000	12000	mg/Kg	-	**98**	**160**	**250**	**210**
Cadmium	510	29	mg/Kg	-	ND	ND	ND	ND
Chromium	4500 **	590	mg/Kg	-	**6.4**	**3.8**	**6.7**	**4.4**
Lead	800	290	mg/Kg	-	ND	ND	**5.8**	ND
Mercury	310	12	mg/Kg	-	ND	ND	ND	ND
Selenium	5100	290	mg/Kg	-	ND	ND	ND	ND
Silver	5100	NE	mg/Kg	-	ND	ND	ND	ND
COLIFORM (9221F)								
Total Coliform	-	-	MPN/g	<3	-	-	-	-

** = 1997 Non-residential SRL, Total Chromium was removed from the SRL contaminant list published by ADEQ in 2007.

Analyte	AZ NR-SRL (mg/Kg)	AZ GPL (mg/Kg)	Units	YPG 121-E 5/14/2014	YPG 121-W 5/14/2014	YPG 121-W2 4/13/2015	YPG 121-E2 4/13/2015	YPG 121-E3 4/13/2015
METALS (ICP/CVAA); 6010B & 7470A								
Arsenic	10	290	mg/Kg	-	-	**8.1**	**9.4**	**9.3**
Barium	170000	12000	mg/Kg	-	-	**160**	**200**	**160**
Cadmium	510	29	mg/Kg	-	-	ND	ND	ND
Chromium	4500 **	590	mg/Kg	-	-	**14**	**15**	**15**
Lead	800	290	mg/Kg	-	-	**9.7**	**20**	**9.4**
Mercury	310	12	mg/Kg	-	-	ND	ND	ND
Selenium	5100	290	mg/Kg	-	-	ND	ND	ND
Silver	5100	NE	mg/Kg	-	-	ND	ND	ND
SOLUBLE ANIONS (9056)								
Nitrate as N	1000000 **	NE	mg/Kg	**680**	**240**	-	-	-
Nitrate Nitrite as N	NE	NE	mg/Kg	**680**	**240**	-	-	-
Nitrite as N	68000 **	NE	mg/Kg	ND	ND	-	-	-

** = 1997 Non-residential SRLs, Nitrate, Nitrite, and Total Chromium were removed from the SRL contaminant list published by ADEQ in 2007.

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-129-S-1 5/12/2014	YPG-129 5/12/2014	YPG-129-S1 4/8/2015
METALS (ICP/CVAA); 6010B & 7470A						
Arsenic	10	290	mg/Kg	-	-	**5.3**
Barium	170000	12000	mg/Kg	-	-	ND
Cadmium	510	29	mg/Kg	-	-	ND
Chromium	4500 **	590	mg/Kg	-	-	ND
Lead	800	290	mg/Kg	-	-	ND
Mercury	310	12	mg/Kg	-	-	ND
Selenium	5100	290	mg/Kg	-	-	ND
Silver	5100	NE	mg/Kg	-	-	
SOLUBLE ANIONS (9056)						
Nitrate as N	1000000 **	NE	mg/Kg	-	ND	-
Nitrate Nitrite as N	NE	NE	mg/Kg	-	ND	-
Nitrite as N	68000 **	NE	mg/Kg	-	ND	-
COLIFORM (9221F)						
Total Coliform	-	-	MPN/g	4	-	-

** = 1997 Non-residential SRLs, Nitrate, Nitrite, and Total Chromium were removed from the SRL contaminant list published by ADEQ in 2007.

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-130-N-1-1 5/12/2014	YPG-130-N-1-2 5/12/2014	YPG-130-N-1-3 5/12/2014	YPG-130-S1 4/8/2015
METALS (ICP/CVAA); 6010B & 7470A							
Arsenic	10	290	mg/Kg	-	-	-	6.4
Barium	170000	12000	mg/Kg	-	-	-	130
Cadmium	510	29	mg/Kg	-	-	-	ND
Chromium	4500 **	590	mg/Kg	-	-	-	8.3
Lead	800	290	mg/Kg	-	-	-	10
Mercury	310	12	mg/Kg	-	-	-	ND
Selenium	5100	290	mg/Kg	-	-	-	ND
Silver	5100	NE	mg/Kg	-	-	-	ND
SOLUBLE ANIONS (9056)							
Nitrate as N	1000000 **	NE	mg/Kg	11	10	7.9	-
Nitrate Nitrite as N	NE	NE	mg/Kg	11	10	7.9	-
Nitrite as N	68000 **	NE	mg/Kg	ND	ND	ND	-

** = 1997 Non-residential SRLs, Nitrate, Nitrite, and Total Chromium were removed from the SRL contaminant list published by ADEQ in 2007.

Analyte	AZ NR-SRL	AZ GPL	Units	YPG 132-S 5/14/2014	YPG 132-N 5/14/2014	YPG 132-2A 4/8/2015	YPG 132-2B 4/8/2015
METALS (ICP/CVAA); 6010B & 7470A							
Arsenic	10	290	mg/Kg	-	-	ND	**9.1**
Barium	170000	12000	mg/Kg	-	-	**200**	ND
Cadmium	510	29	mg/Kg	-	-	ND	ND
Chromium	4500 **	590	mg/Kg	-	-	**13**	**12**
Lead	800	290	mg/Kg	-	-	ND	ND
Mercury	310	12	mg/Kg	-	-	ND	ND
Selenium	5100	290	mg/Kg	-	-	ND	ND
Silver	5100	NE	mg/Kg	-	-	ND	ND
SOLUBLE ANIONS (9056)							
Nitrate as N	1000000 **	NE	mg/Kg	**430**	**210**	-	-
Nitrate Nitrite as N	NE	NE	mg/Kg	**430**	**210**	-	-
Nitrite as N	68000 **	NE	mg/Kg	ND	ND	-	-

** = 1997 Non-residential SRLs, Nitrate, Nitrite, and Total Chromium were removed from the SRL contaminant list published by ADEQ in 2007.

Analyte	AZ NR-SRL	AZ GPL	Units	YP9 156-SW2 4/8/2015	YP9 156-SW4 4/9/2015	YP9 156-SE2 4/9/2015	YP9 156-SE5 4/9/2015	YPG 156-NE2 4/9/2015	YPG 156-NE5 4/9/2015	YPG 156-NW2 4/9/2015	YPG 156-NW3 4/9/2015	YPG 156-C2 4/9/2015
METALS (ICP/CVAA); 6010B & 7470A												
Arsenic	10	290	mg/Kg	**11**	**5.8**	**22**	**11**	**13**	**5**	**17**	**14**	**20**
Barium	170000	12000	mg/Kg	**120**	**870**	**2200**	**170**	**140**	**270**	**170**	**130**	**290**
Cadmium	510	29	mg/Kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	4500 **	590	mg/Kg	**18**	**11**	**13**	**10**	**12**	**13**	**14**	**12**	**11**
Lead	800	290	mg/Kg	**7.3**	**5.3**	ND	ND	**5.7**	ND	**5.7**	**5.4**	ND
Mercury	310	12	mg/Kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	5100	290	mg/Kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	5100	NE	mg/Kg	ND	ND	ND	ND	ND	ND	ND	ND	ND

** = 1997 Non-residential SRL, Total Chromium was removed from the SRL contaminant list published by ADEQ in 2007.

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-162-SW-2 5/6/2014	YPG-162-SW-12 5/6/2014	YPG-162-NW-2 5/6/2014	YPG-162-NW-12 5/6/2014	YPG-162-CP-2 5/6/2014	YPG-162-CP-12 5/7/2014	YPG-162-NE-2 5/7/2014
METALS (ICP/CVAA); 6010B & 7470A										
Arsenic	10	290	mg/Kg	**5.9**	19	ND	15	**7.6**	15	ND
Barium	170000	12000	mg/Kg	**110**	**70**	**65**	**250**	**98**	**770**	**98**
Cadmium	510	29	mg/Kg	ND	**0.56**	ND	ND	ND	ND	ND
Chromium	4500 **	590	mg/Kg	**11**	**16**	**7**	**18**	**12**	**18**	**11**
Lead	800	290	mg/Kg	**7.9**	**8.6**	**5.2**	**11**	**5**	**8.2**	**9.3**
Mercury	310	12	mg/Kg	ND	ND	ND	ND	ND	ND	ND
Selenium	5100	290	mg/Kg	ND	ND	ND	ND	ND	ND	ND
Silver	5100	NE	mg/Kg	ND	ND	ND	ND	ND	ND	ND
VOCs (GC/MS) - 8260B										
Benzene	1400	710	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	400000	280	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Toluene	650000	400000	ug/Kg	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
o-Xylene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	420000	2200000	ug/Kg	ND	ND	ND	ND	ND	ND	ND
SVOCs (GC/MS)- 8270C										
1,2,4-Trichlorobenzene	220000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	600000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine(as Azobenzene)	160000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	600000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	79000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	62000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	62000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	12000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	12000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	1200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	1200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	620000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	110000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	240000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	240000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	31000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	1800000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	38000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol + 4-Methylphenol	34100000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	180000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	2500000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	820000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	29000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-162-SW-2 5/6/2014	YPG-162-SW-12 5/6/2014	YPG-162-NW-2 5/6/2014	YPG-162-NW-12 5/6/2014	YPG-162-CP-2 5/6/2014	YPG-162-CP-12 5/7/2014	YPG-162-NE-2 5/7/2014
Aniline	3000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Anthracene	240000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzidine	7.5	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzo[a]anthracene	21000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzo[a]pyrene	2100	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzo[b]fluoranthene	21000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzo[g,h,i]perylene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzo[k]fluoranthene	210000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	1000000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Benzyl alcohol	180000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
bis (2-chloroisopropyl) ether	790000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	5800	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	1200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	120000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Chrysene	2000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	2100	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	140000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	49000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	100000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	62000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	25000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	22000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Fluorene	26000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	11000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	180000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	3700000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	6200000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Indeno[1,2,3-cd]pyrene	21000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Isophorone	18000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Naphthalene	190000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	100000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodimethylamine	2500	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodi-n-propylamine	3500000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	340	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	90000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	NE	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Phenol	180000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Pyrene	29000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND
Pyridine	15000000	NE	ug/Kg	ND	ND	ND	ND	ND	ND	ND

** = 1997 Non-residential SRL, Total Chromium was removed from the SRL contaminant list published by ADEQ in 2007.

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-162-NE-12 5/7/2014	YPG-162-SE-2 5/7/2014	YPG-162-SE-12 5/7/2014
METALS (ICP/CVAA); 6010B & 7470A						
Arsenic	10	290	mg/Kg	**13**	**4.8**	ND
Barium	170000	12000	mg/Kg	**38**	**97**	**38**
Cadmium	510	29	mg/Kg	ND	ND	ND
Chromium	4500 **	590	mg/Kg	**18**	**7**	**19**
Lead	800	290	mg/Kg	**9.2**	**4.9**	ND
Mercury	310	12	mg/Kg	ND	ND	ND
Selenium	5100	290	mg/Kg	**5**	ND	ND
Silver	5100	NE	mg/Kg	ND	ND	ND
VOCs (GC/MS) - 8260B						
Benzene	1400	710	ug/Kg	ND	ND	ND
Ethylbenzene	400000	280	ug/Kg	ND	ND	ND
Toluene	650000	400000	ug/Kg	ND	ND	ND
m,p-Xylenes	NE	NE	ug/Kg	ND	ND	ND
o-Xylene	NE	NE	ug/Kg	ND	ND	ND
Xylenes, Total	420000	2200000	ug/Kg	ND	ND	ND
SVOCs (GC/MS)- 8270C						
1,2,4-Trichlorobenzene	220000	NE	ug/Kg	ND	ND	ND
1,2-Dichlorobenzene	600000	NE	ug/Kg	ND	ND	ND
1,2-Diphenylhydrazine(as Azobenzene)	160000	NE	ug/Kg	ND	ND	ND
1,3-Dichlorobenzene	600000	NE	ug/Kg	ND	ND	ND
1,4-Dichlorobenzene	79000	NE	ug/Kg	ND	ND	ND
2,4,5-Trichlorophenol	62000000	NE	ug/Kg	ND	ND	ND
2,4,6-Trichlorophenol	62000	NE	ug/Kg	ND	ND	ND
2,4-Dichlorophenol	12000000	NE	ug/Kg	ND	ND	ND
2,4-Dimethylphenol	12000000	NE	ug/Kg	ND	ND	ND
2,4-Dinitrophenol	1200000	NE	ug/Kg	ND	ND	ND
2,4-Dinitrotoluene	1200000	NE	ug/Kg	ND	ND	ND
2,6-Dinitrotoluene	620000	NE	ug/Kg	ND	ND	ND
2-Chloronaphthalene	110000	NE	ug/Kg	ND	ND	ND
2-Chlorophenol	240000	NE	ug/Kg	ND	ND	ND
2-Methylnaphthalene	240000	NE	ug/Kg	ND	ND	ND
2-Methylphenol	31000000	NE	ug/Kg	ND	ND	ND
2-Nitroaniline	1800000	NE	ug/Kg	ND	ND	ND
2-Nitrophenol	NE	NE	ug/Kg	ND	ND	ND
3,3'-Dichlorobenzidine	38000	NE	ug/Kg	ND	ND	ND
3-Methylphenol + 4-Methylphenol	34100000	NE	ug/Kg	ND	ND	ND
3-Nitroaniline	180000	NE	ug/Kg	ND	ND	ND
4,6-Dinitro-2-methylphenol	NE	NE	ug/Kg	ND	ND	ND
4-Bromophenyl phenyl ether	NE	NE	ug/Kg	ND	ND	ND
4-Chloro-3-methylphenol	NE	NE	ug/Kg	ND	ND	ND
4-Chloroaniline	2500000	NE	ug/Kg	ND	ND	ND
4-Chlorophenyl phenyl ether	NE	NE	ug/Kg	ND	ND	ND
4-Nitroaniline	820000	NE	ug/Kg	ND	ND	ND
4-Nitrophenol	NE	NE	ug/Kg	ND	ND	ND
Acenaphthene	29000000	NE	ug/Kg	ND	ND	ND
Acenaphthylene	NE	NE	ug/Kg	ND	ND	ND

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-162-NE-12 5/7/2014	YPG-162-SE-2 5/7/2014	YPG-162-SE-12 5/7/2014
Aniline	3000000	NE	ug/Kg	ND	ND	ND
Anthracene	240000000	NE	ug/Kg	ND	ND	ND
Benzidine	7.5	NE	ug/Kg	ND	ND	ND
Benzo[a]anthracene	21000	NE	ug/Kg	ND	ND	ND
Benzo[a]pyrene	2100	NE	ug/Kg	ND	ND	ND
Benzo[b]fluoranthene	21000	NE	ug/Kg	ND	ND	ND
Benzo[g,h,i]perylene	NE	NE	ug/Kg	ND	ND	ND
Benzo[k]fluoranthene	210000	NE	ug/Kg	ND	ND	ND
Benzoic acid	1000000000	NE	ug/Kg	ND	ND	ND
Benzyl alcohol	180000000	NE	ug/Kg	ND	ND	ND
bis (2-chloroisopropyl) ether	790000	NE	ug/Kg	ND	ND	ND
Bis(2-chloroethoxy)methane	NE	NE	ug/Kg	ND	ND	ND
Bis(2-chloroethyl)ether	5800	NE	ug/Kg	ND	ND	ND
Bis(2-ethylhexyl) phthalate	1200000	NE	ug/Kg	ND	ND	ND
Butyl benzyl phthalate	120000000	NE	ug/Kg	ND	ND	ND
Chrysene	2000000	NE	ug/Kg	ND	ND	ND
Dibenz(a,h)anthracene	2100	NE	ug/Kg	ND	ND	ND
Dibenzofuran	140000	NE	ug/Kg	ND	ND	ND
Diethyl phthalate	49000000	NE	ug/Kg	ND	ND	ND
Dimethyl phthalate	100000000	NE	ug/Kg	ND	ND	ND
Di-n-butyl phthalate	62000000	NE	ug/Kg	ND	ND	ND
Di-n-octyl phthalate	25000000	NE	ug/Kg	ND	ND	ND
Fluoranthene	22000000	NE	ug/Kg	ND	ND	ND
Fluorene	26000000	NE	ug/Kg	ND	ND	ND
Hexachlorobenzene	11000	NE	ug/Kg	ND	ND	ND
Hexachlorobutadiene	180000	NE	ug/Kg	ND	ND	ND
Hexachlorocyclopentadiene	3700000	NE	ug/Kg	ND	ND	ND
Hexachloroethane	6200000	NE	ug/Kg	ND	ND	ND
Indeno[1,2,3-cd]pyrene	21000	NE	ug/Kg	ND	ND	ND
Isophorone	18000000	NE	ug/Kg	ND	ND	ND
Naphthalene	190000	NE	ug/Kg	ND	ND	ND
Nitrobenzene	100000	NE	ug/Kg	ND	ND	ND
N-Nitrosodimethylamine	2500	NE	ug/Kg	ND	ND	ND
N-Nitrosodi-n-propylamine	3500000	NE	ug/Kg	ND	ND	ND
N-Nitrosodiphenylamine	340	NE	ug/Kg	ND	ND	ND
Pentachlorophenol	90000	NE	ug/Kg	ND	ND	ND
Phenanthrene	NE	NE	ug/Kg	ND	ND	ND
Phenol	180000000	NE	ug/Kg	ND	ND	ND
Pyrene	29000000	NE	ug/Kg	ND	ND	ND
Pyridine	15000000	NE	ug/Kg	ND	ND	ND

** = 1997 Non-residential SRL, Total Chromium was removed from the SRL contaminant lis

Analyte	AZ NR-SRL	AZ GPL	Units	YPG-177-CPS 5/12/2014	YPG-177-CP2 5/12/2014	YPG-177-C2 4/9/2015
METALS (ICP/CVAA); 6010B & 7470A						
Arsenic	10	290	mg/Kg	-	-	ND
Barium	170000	12000	mg/Kg	-	-	**82**
Cadmium	510	29	mg/Kg	-	-	ND
Chromium	4500 **	590	mg/Kg	-	-	**6.4**
Lead	800	290	mg/Kg	-	-	ND
Mercury	310	12	mg/Kg	-	-	ND
Selenium	5100	290	mg/Kg	-	-	ND
Silver	5100	NE	mg/Kg	-	-	ND
VOCs (GC/MS) - 8260B						
Benzene	1400	710	ug/Kg	ND	ND	-
Ethylbenzene	400000	280	ug/Kg	ND	ND	-
Toluene	650000	400000	ug/Kg	ND	ND	-
m,p-Xylenes	NE	NE	ug/Kg	ND	ND	-
o-Xylene	NE	NE	ug/Kg	ND	ND	-
Xylenes, Total	420000	2200000	ug/Kg	ND	ND	-

** = 1997 Non-residential SRLs, Nitrate, Nitrite, and Total Chromium were removed from the SRL contaminant list published by ADEQ in 2007.

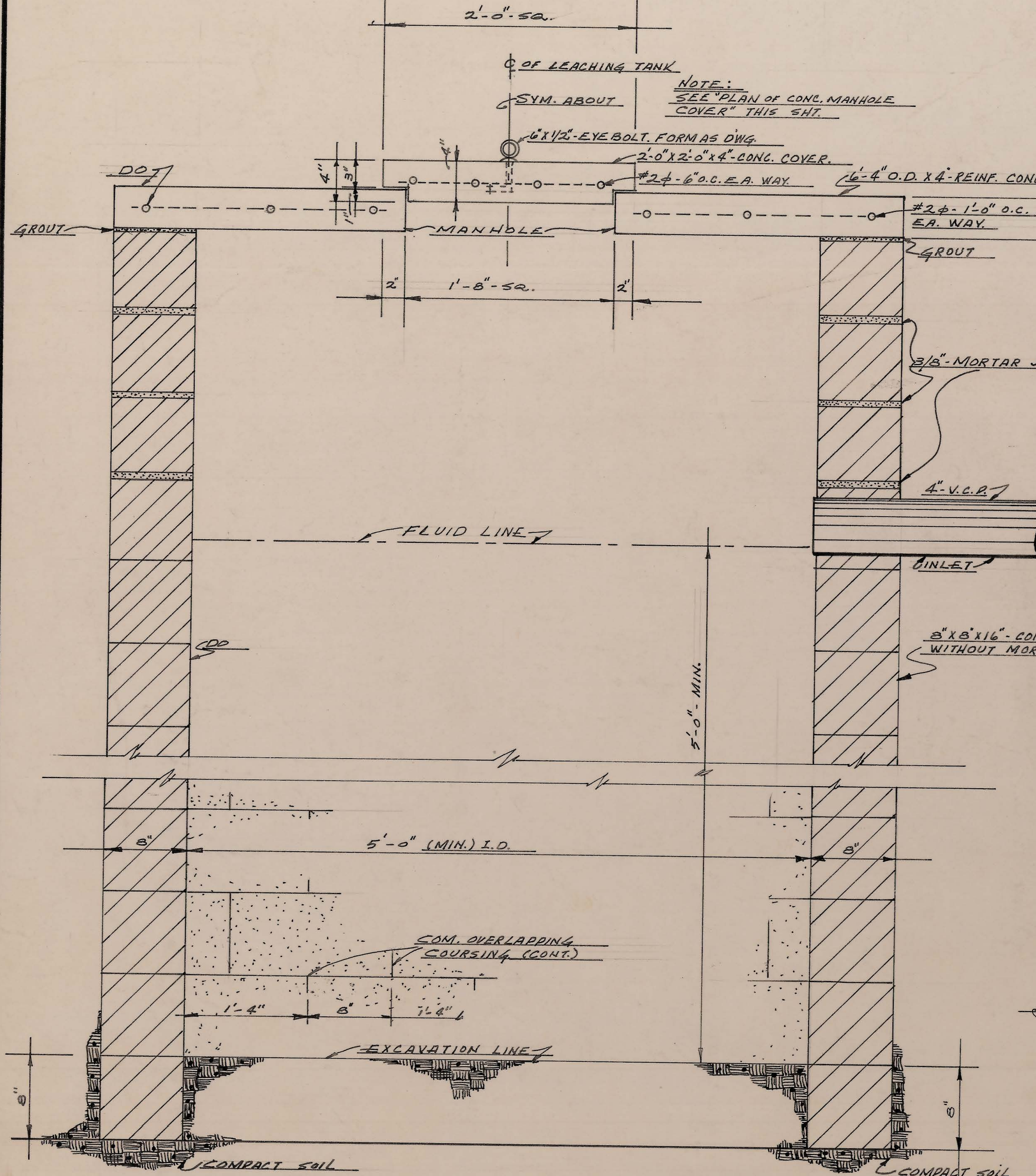
APPENDIX D

HISTORICAL DRAWINGS/AS-BUILTS

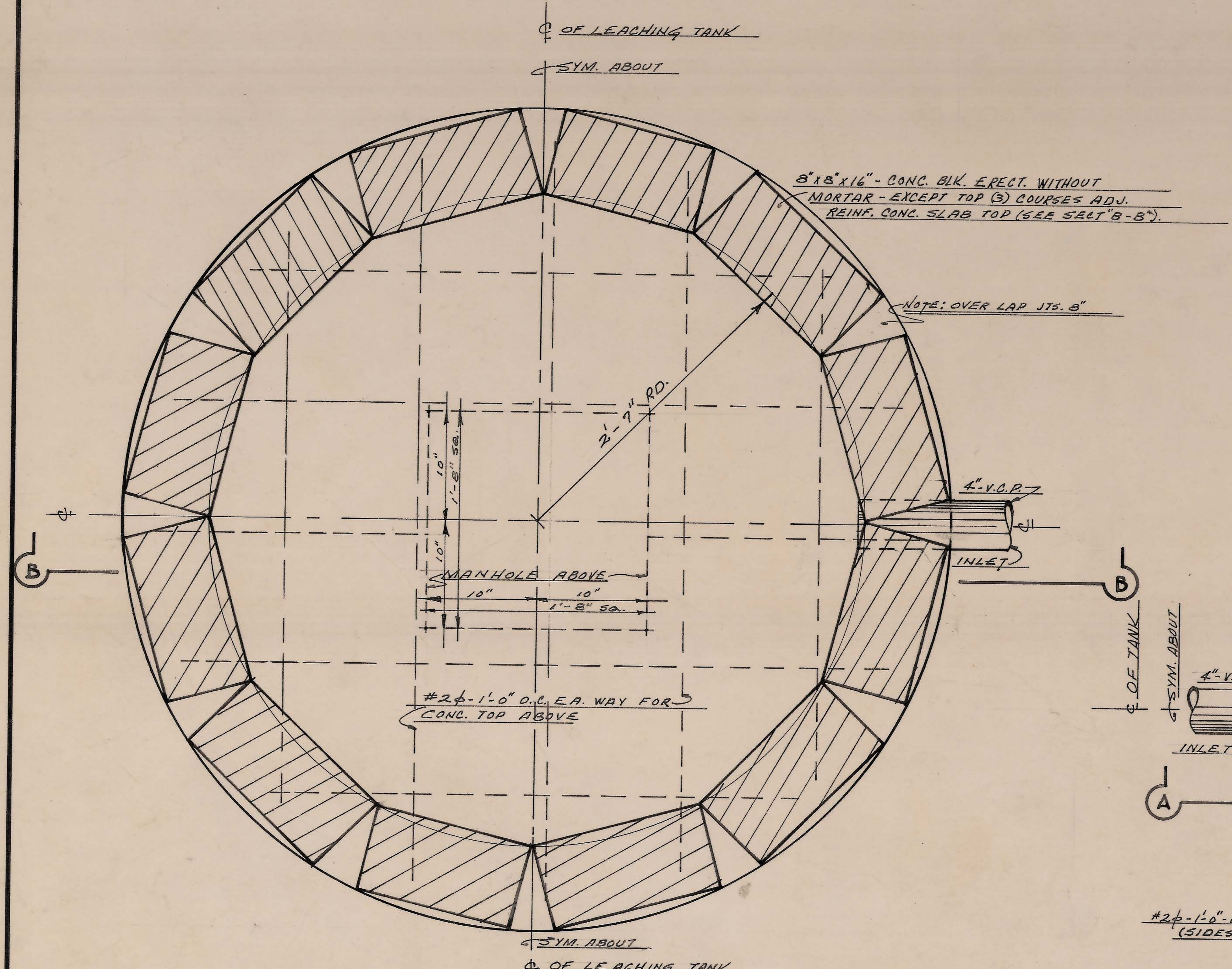
PLUMBING FIXTURE SCHEDULE.

LAVATORY. . .				WATER CLOSET.				PAPER-HOLDER.			REMARKS.
FIG.	OUTFIT	SIZE	FIN.	FIG.	OUTFIT	VALVE	SIPHON	FED. SPEC.	TYPE	MTG.	SEE SPEC.
10.16	VL 18 G.	18"x15"	WHITE	10.06	V W-16	FLUSH	JET	WW-P-541b	433	WALL	" "
MIRROR		16"x20"									WALL HUNG, OVER LAV.

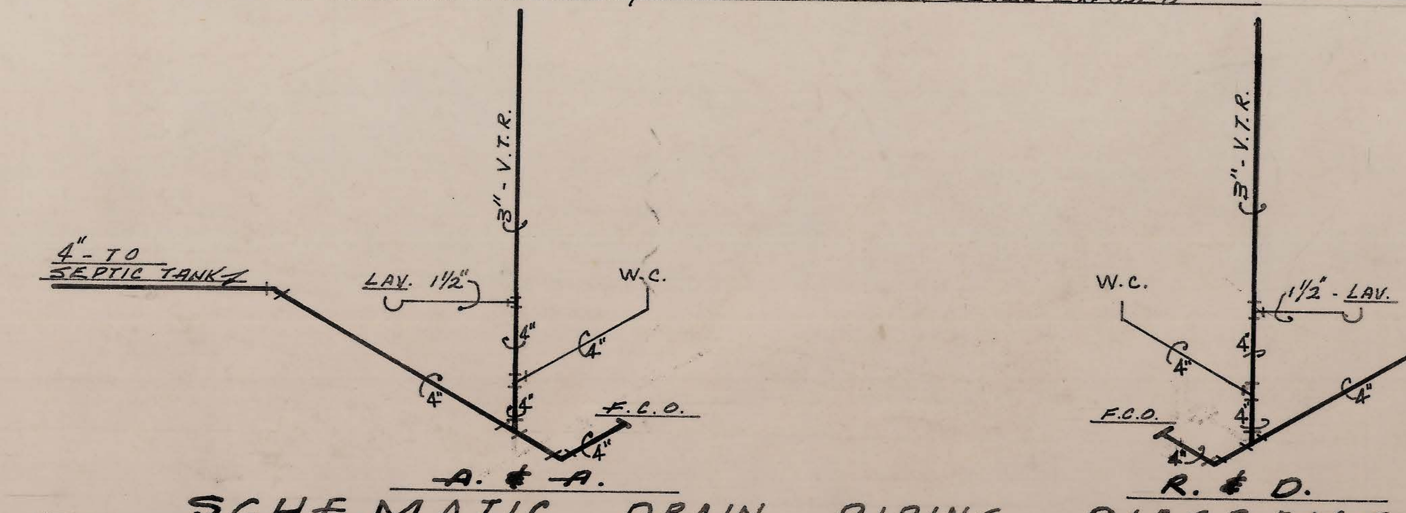
NOTE: ALL WATER & DRAIN PIPING TO BE ABOVE FLOOR LEVEL EXPOSED.



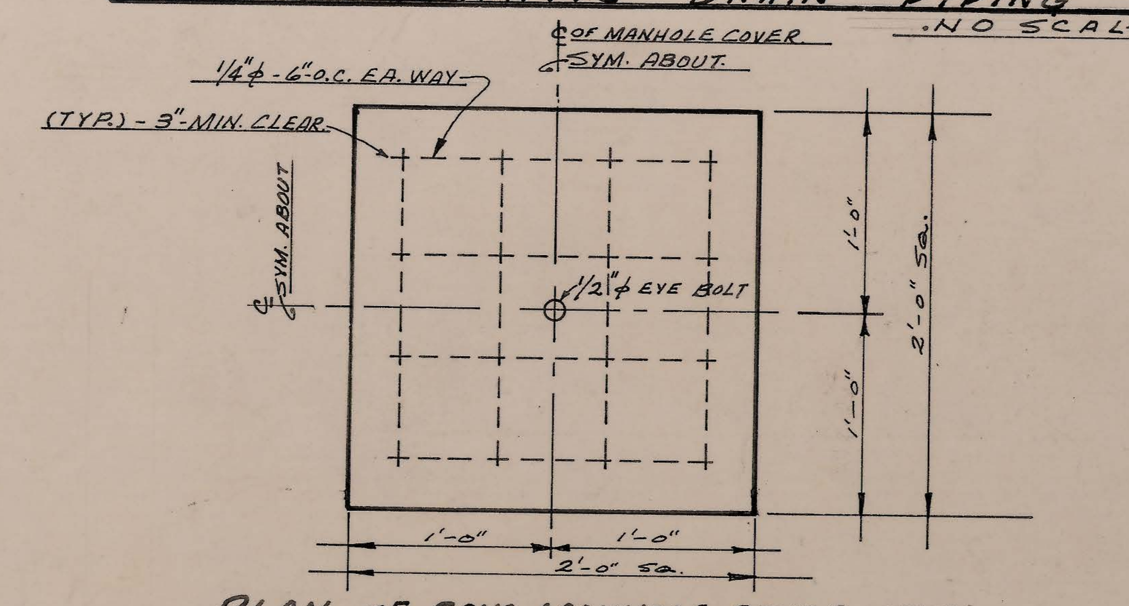
LEACHING TANK SECTION B - B
SCALE 1 1/2" = 1'-0"



PLAN OF LEACHING TANK.
SCALE 1 1/2" = 1'-0"



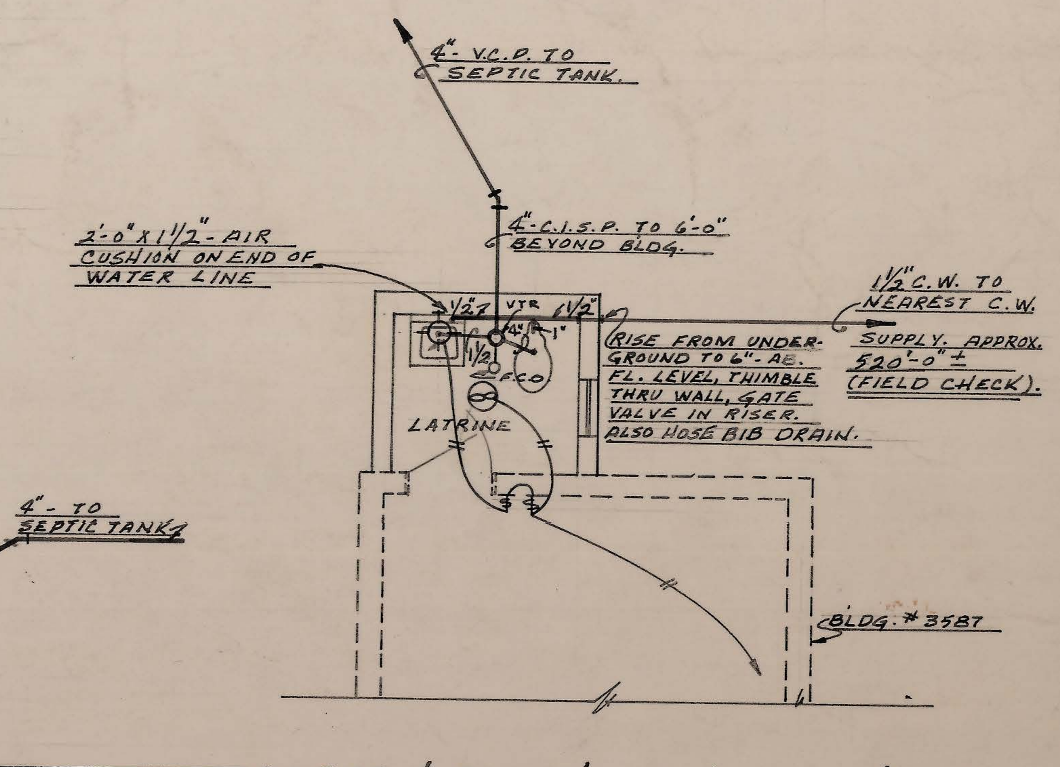
SCHEMATIC DRAIN PIPING DIAGRAMS
NO SCALE.



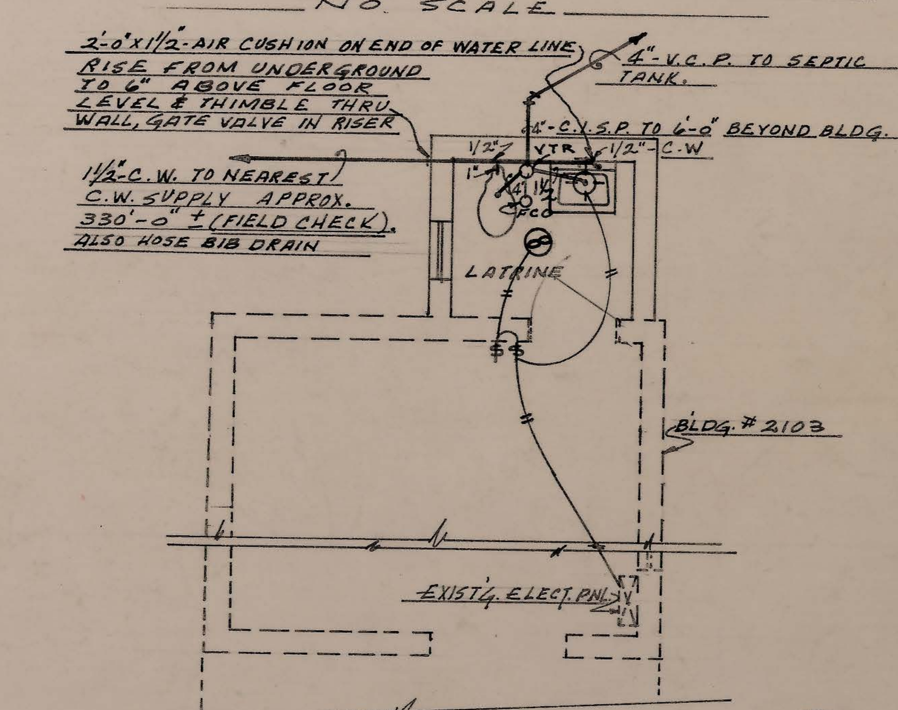
PLAN OF CONC. MANHOLE COVER. (TYP.)
SCALE 1 1/2" = 1'-0"

ELECT. NOTES.

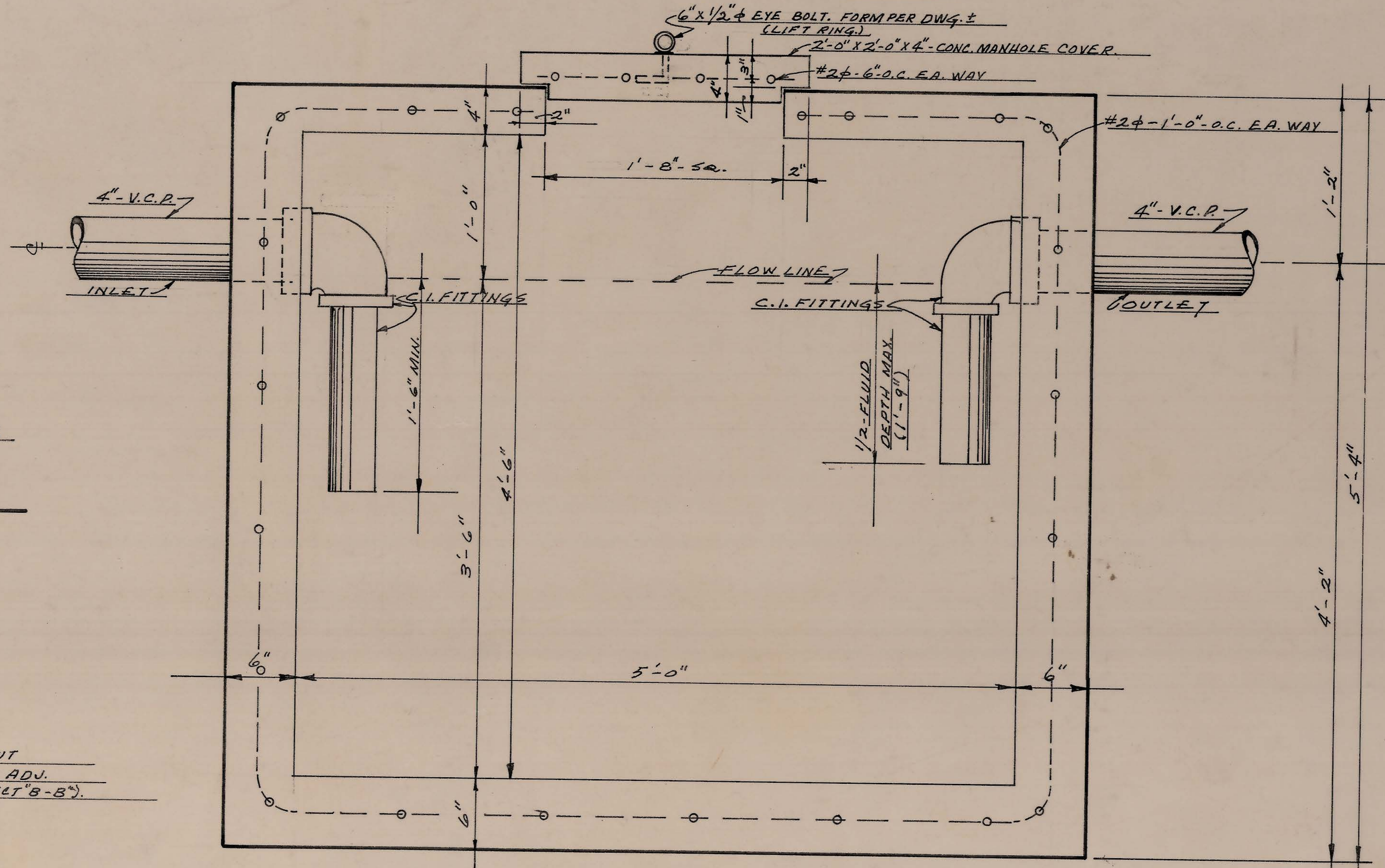
1. LIGHT FIXTURE - TYPE R-2, SHEET 26.
2. EXHAUST FAN - CEILING TYPE W/ AUTOMATIC DAMPER, VENT THRU ROOF, FLASH (LEAD FLASHG. SEE SPEC.), PROVIDE CAP. CAPACITY 80 C.F.M.
3. CIRCUIT NEW WIRING IN LATRINE ADDITION TO SPARE IN EXIST'G. ELECT. PANEL, INSTALL 15 AMP. BREAKER IN SPARE.
4. RUN ALL ELECT. WIRING EXPOSED.



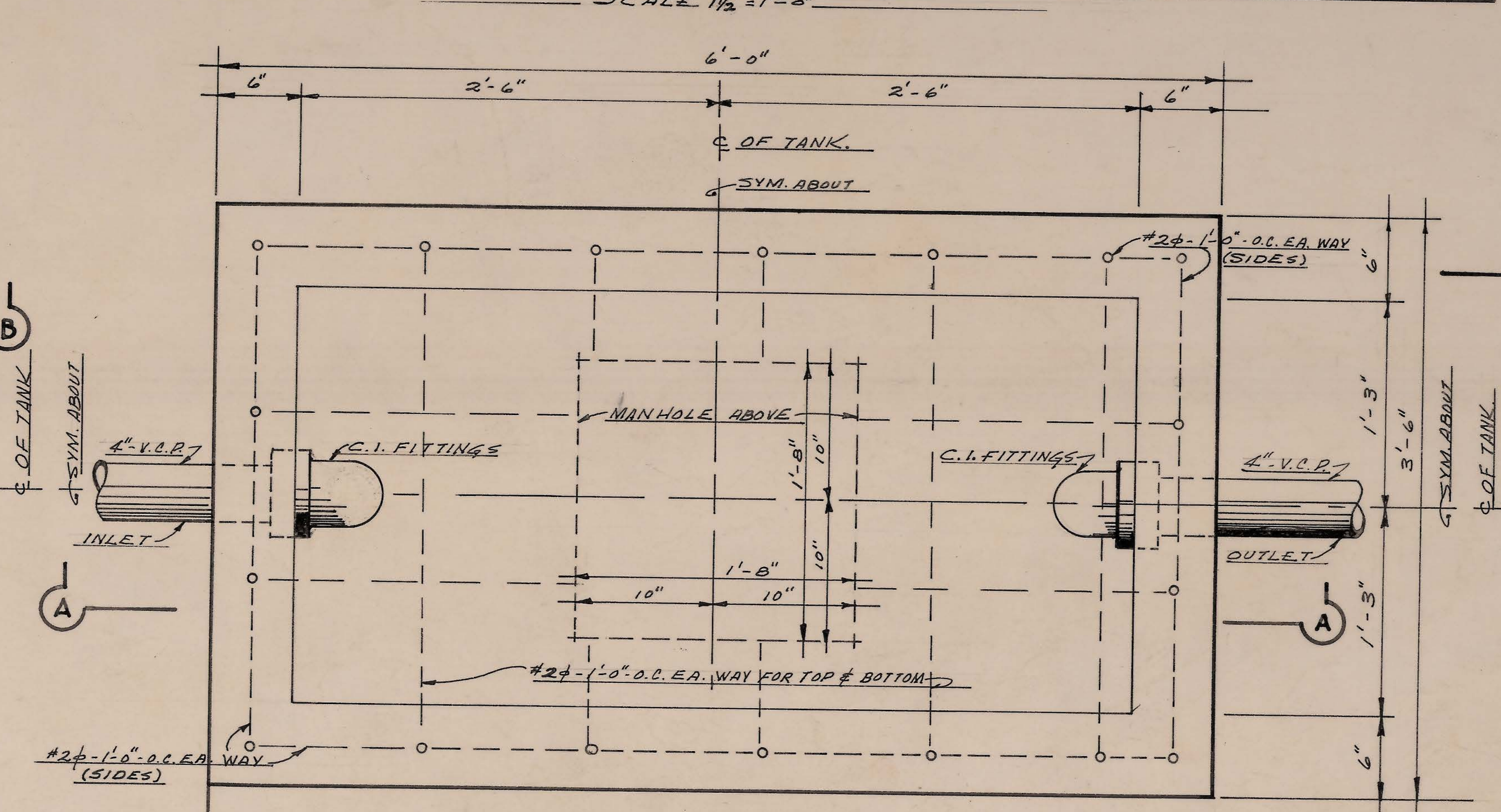
ELECT. & PLUMB'G. A & A BLD'G.
NO SCALE



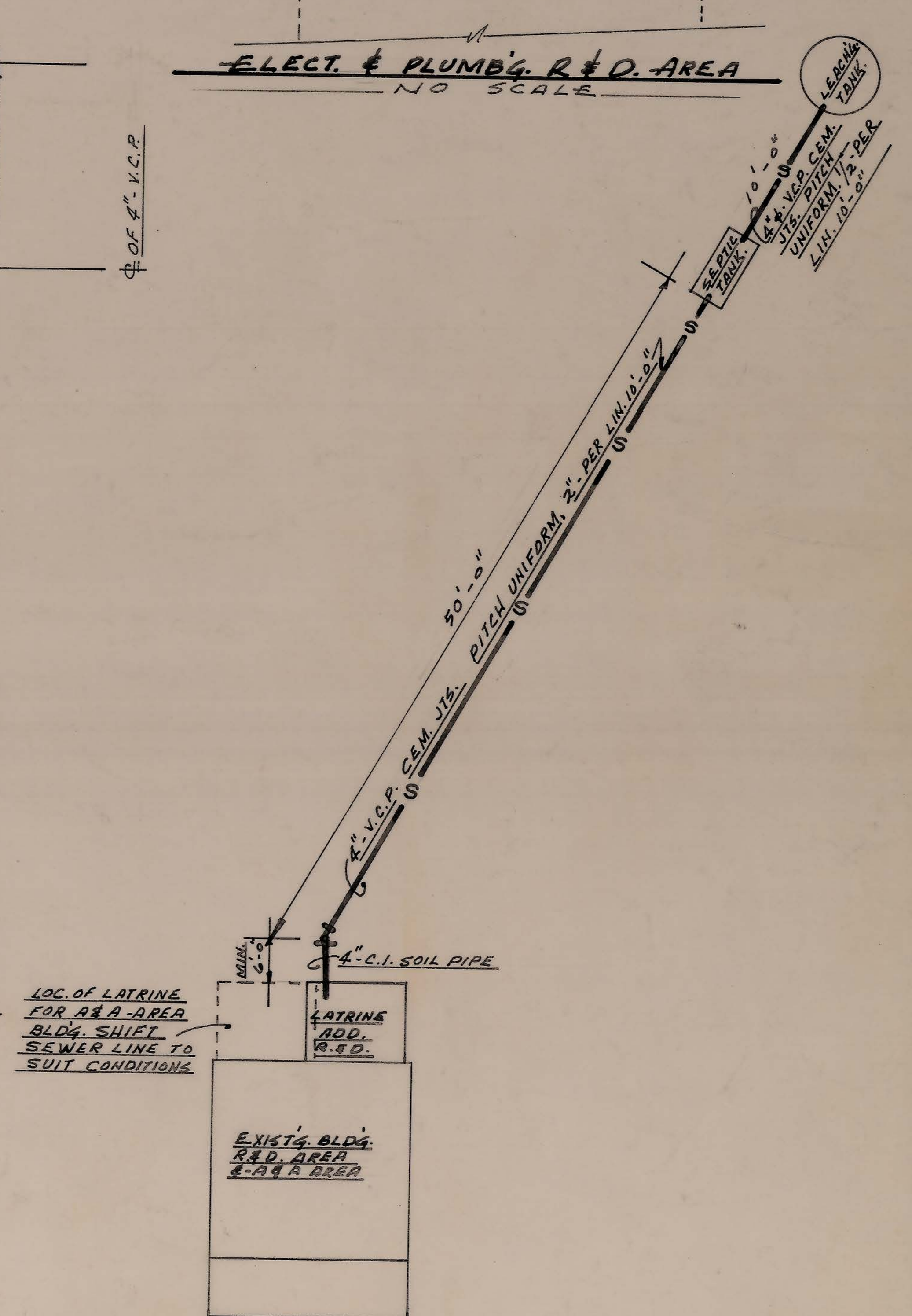
ELECT. & PLUMB'G. R & D AREA
NO SCALE



SEPTIC TANK SECTION A - A
SCALE 1 1/2" = 1'-0"



PLAN OF SEPTIC TANK
SCALE 1 1/2" = 1'-0"



TYP. SEWER - DRAIN - SEPTIC & LEACHING TANK PLAN
NO SCALE

REVISION	DATE	DESCRIPTION	BY
A	7/23/64	AS BUILT	GWP

OFFICE OF THE POST ENGINEER
YUMA TEST STATION
YUMA, ARIZONA

LATRINE ADDITIONS
TO
A. & A. — R. & D. SENTRY BUILDINGS
MECHANICAL PLANS & DETAILS

SUBMITTED Donald F. Rogers
DONALD F. ROGERS LT. COL. CE POST ENGINEER
APPROVED Harry T. Baker
HARRY T. BAKER COL. ARTY. COMMANDING

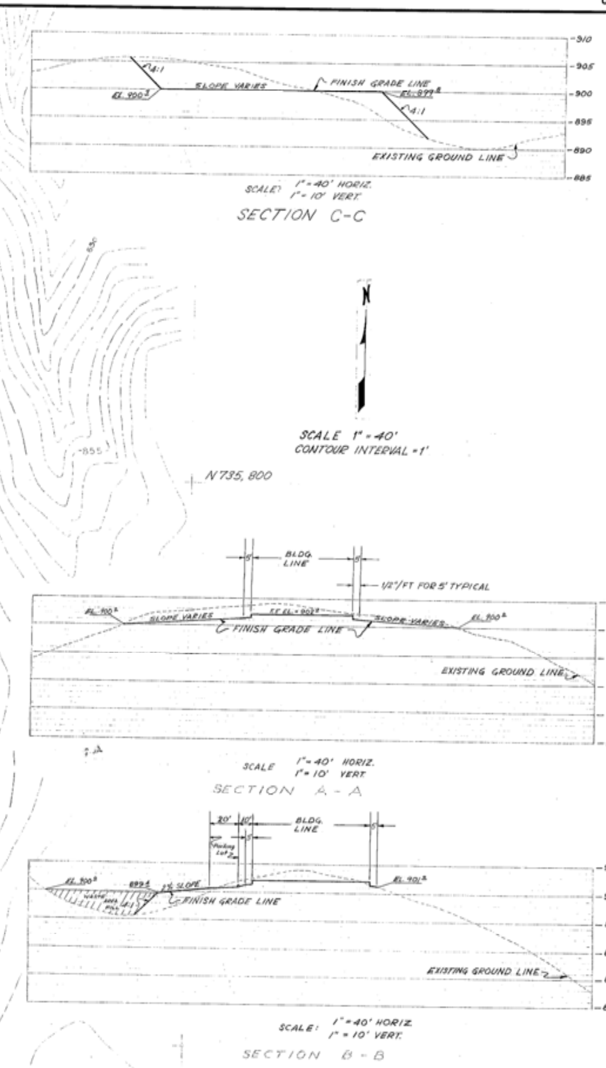
DRAWN BY	TRACED BY	CHECKED BY	FILE NO.
D.H.			2103-1-2

DATE AUG. 8 1961 SCALE AS NOTED SHEET 2 OF 2

2103 & 3587

2103, 3587-1-2

CORPS OF ENGINEERS



NOTES:
1. FOR SEPTIC TANK DETAILS SEE D.O. SERIES 1544/113.
2. TOPOGRAPHY TAKEN FROM PLANE TABLE SHEET Nº Y4-77.
3. WASTE AREA FILL TO BE COMPACTED IN 18 INCH LIFTS MAXIMUM, SEE SPECIFICATIONS.
4. FOR LOCATION SEE D.O. SERIES 1544/108

RECORD DRAWING - AS BUILT
CONT. No. 7004 REV. A DATE 10 Jan 63 BY No Change
CONT. No. ____ REV. ____ DATE ____ BY ____
CONT. No. ____ REV. ____ DATE ____ BY ____

REVISION	DATE	DESCRIPTION
A	12-28-59	CHANGED ALIGNMENT & SIZE - SEWER OUTFALL PIPE
A	12-10-59	ADDED: SPECIAL SHEET NO. 68 BY ADDENDUM NO. 2 DATED 12-9-59

Blanton & Cole, Architects & Engineers, Tucson, Arizona

CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DISTRICT ENGINEER
LOS ANGELES, CALIFORNIA

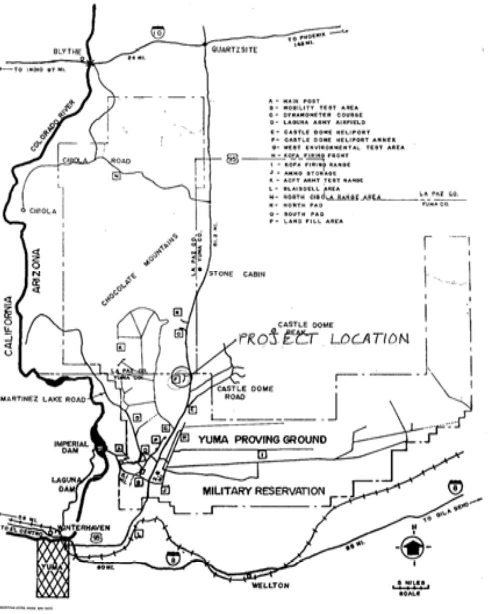
DRAWN BY: F. H.
TRACED BY:
CHECKED BY: R.C.R.
SUBMITTED BY: B.C. Randall
FOR THE ARCHITECT ENGINEER
APPROVAL RECOMMENDED: [signature] CHIEF OF BRANCH
APPROVED: [signature] CHIEF, ENGINEERING DIVISION

U.S. ARMY ELECTRONIC PROVING GROUND
FORT HUACHUCA, ARIZONA
6003 DRONE TEST FACILITY (YUMA)
CONTROL AREA
OPERATIONS & ADMINISTRATION BLDG
PLOT, GRADING & UTILITY PLAN

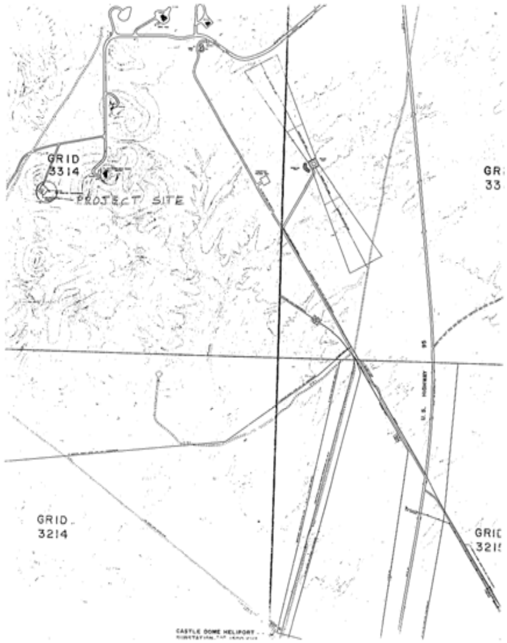
PREPARED UNDER THE DIRECTION OF
C.T. NEWTON, COL. C.E. DISTRICT ENGINEER

DRAWING NO. 16-01-01
SHEET 4 OF

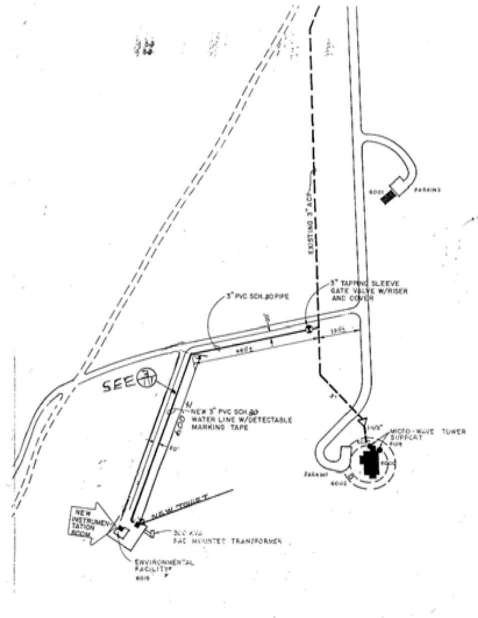
SCALE: AS NOTED
SPECIFICATIONS NO. OCI-6
D. O. SERIES 1544/106 REV. "A"
SPECIAL SHEET NO. 68 A



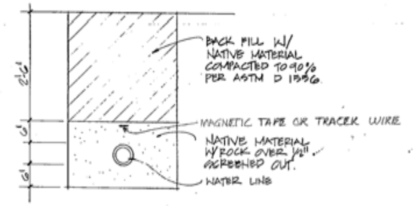
VICINITY PLAN



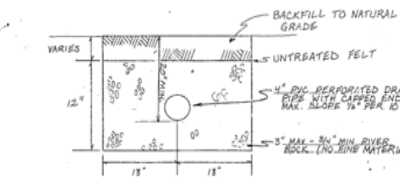
LOCATION PLAN



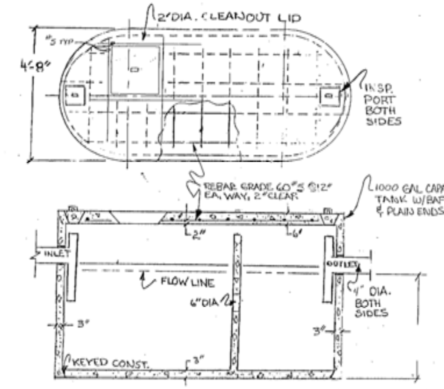
GENERAL SITEPLAN



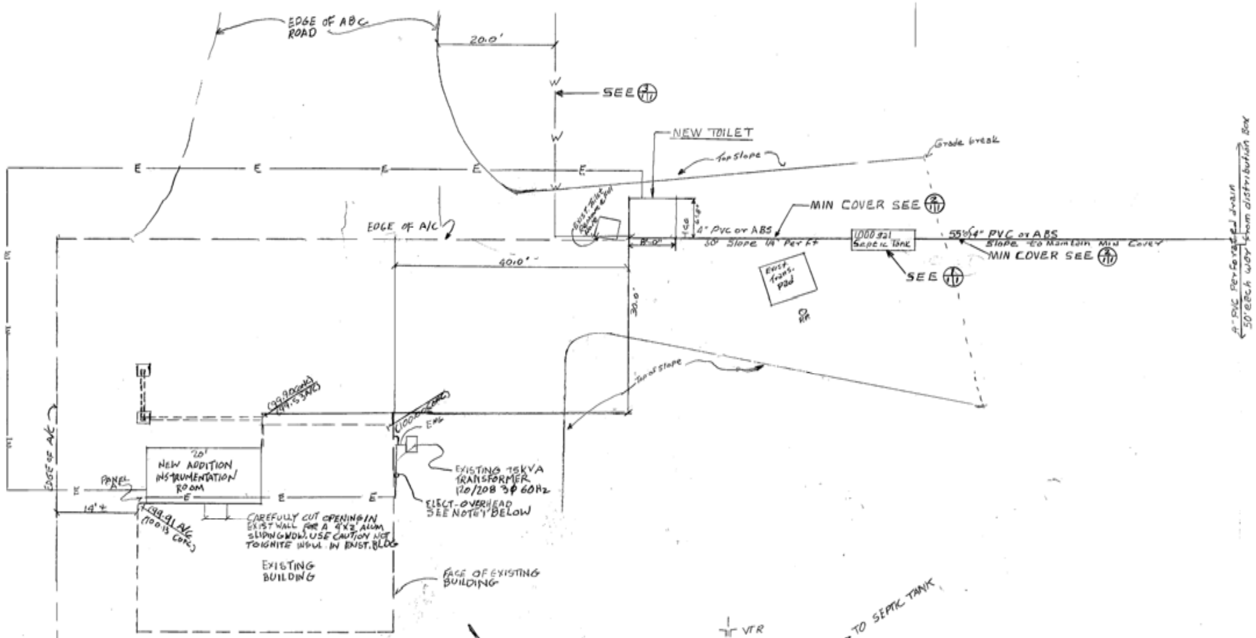
TRENCH DETAIL 3/1



2/1 DRAIN FIELD N.T.S.

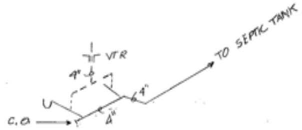


1/1 PRECAST CONC SEPTIC TANK 1000 GAL N.T.S.



NOTE:
1 FEED FROM EXISTING 75KVA TRANSFORMER TO GUTTER MOUNTED ON EXISTING WALL. THEN UP TO EAVE HEIGHT OVER THE ROOF DOWN TO ROOF OF NEW ADDITION ALONG NEW ROOF TO NEW PANEL A. A TOTAL RUN OF 85'. SEE SHEET 3 FOR ELECTRICAL SCHEMATIC.

SITE PLAN AND DEMOLITION PLAN
SCALE 1"=10'



ISOMETRIC WASTE PIPING
N.T.S.

PLUMBING NOTES:

1. Cleanouts: ANSI A112.36.2; provide threaded bronze or thermoplastic cleanout plugs.

2. Floor Cleanouts: Provide cast-iron floor cleanout with (anchor) flange, polished bronze or nickel bronze rim and acoriated floor plate with CO cast in the plate. Secure floor plate with countersunk screws for installation flush with finished floor.

3. Cleanouts Exterior to Building: Provide cast-iron cleanouts and countersunk plugs. Provide 24- by 24- by 4-inch thick concrete slab with top 1.0 inch above grade with cleanout located in center of slab. Provide cast-iron cleanout box with cover.

4. Products:

   a. Plastic Pipe, Fittings, and Solvent Cement:

      1. Polyvinyl Chloride (PVC) System: ASTM D 2665
      2. Acrylonitrile-Butadiene-Styrene (ABS) System ASTM D 2661, single extrusion pipe.

REVISION	DATE	DESCRIPTION

DIRECTORATE OF FACILITIES ENGIN

U.S. ARMY YUMA PROVING GROUND,

ADDITION TO ENVIRONMENTAL FACILITY BUILDING 6015

GENERAL SITE PLAN, LOCATION SITE AND DEMOLITION PLAN

C. EP&SD | DESIGNED | C. ENMD | DRAWN TTC | C. BG & U | CHECKED | SAFETY | SECURITY | APPROVED | FACILITIES ENGR.

DATE 3/15/85 | SCALE AS SHOWN | SHEET 1 | FILE NO.

ATTACHMENT 4

REVISED PERMIT SECTIONS

FACILITY DESCRIPTION

1.1 GENERAL DESCRIPTION

1.1.1 Introduction

This RCRA Permit has been prepared for the Open Burning / Open Detonation (OB/OD) Treatment facility operated at the U.S. Army Garrison Yuma Proving Ground. It is based on the 2003 RCRA Part B Permit Application submitted by U.S. Army Garrison Yuma Proving Ground in 2003 (YPG, 2003), and the revised RCRA Part A and B Permit Application submitted in 2004 (YPG, 2004c).

This permit is for a continued operation of the OB/OD treatment facility, currently operating under interim status since 1982.

1.1.2 Base and Facility Location

The U.S. Army Garrison Yuma Proving Ground base installation is approximately 40 km (25 miles) from the downtown area of Yuma. Bordered on the west by California, the installation is approximately 288 km (180 miles) from San Diego, California, and approximately 200 km (125 miles) from Phoenix, Arizona (See Permit Attachment 1A, Figure A-1).

The OB and OD units are located within a fenced, secured and remote area on the active Kofa firing range, which in on the U.S. Army Garrison Yuma Proving Ground property. The location of the OB/OD area based on the Public Land Survey System (PLSS) is Sections 30 and 31 of Township 5 South , Range 19 West, Gila and Salt River Base and Meridian.

The latitude/longitude coordinates in NAD-27 CONUS are (ADEQ 2003a; and ADEQ 2004a):

	Degrees	Minutes	Seconds	Direction
Latitude	32	57	12 to 22	North,
Longitude	114	15	40 to 51	West.

1 Any reference to 40 CFR 260 et seq. in this permit also implies reference to the adopting A.A.C. R18-8-260 et seq. citation. For example, 40 CFR 264 refers to A.A.C. R18-8-264.A (40 CFR 264). In general, the A.A.C. citation will not be referenced in this permit unless it amends or modifies some part of the 40 CFR citation.

1.1.3 Owner and Operator

The following identifies the OB/OD HW treatment facility and provides information on the owner and operator:

Identification of the Facility

Name: EPA I.D. No.: Address: Telephone:	U.S. Army Garrison Yuma Proving Ground Kofa HW OB/OD Facility AZ5213820991 [2] U.S. Army Garrison Yuma Proving Ground 301 C. Street Yuma, Arizona 85365-9498 Director, Environmental Sciences (928) 328-2754

Name and Address of Installation

Name: Address: Telephone:	U.S. Army Garrison Yuma Proving Ground U.S. Army Garrison Yuma Proving Ground 301 C. Street Yuma, Arizona 85365-9498 Director, Environmental Sciences (928) 328-2754

Identification of Owner and Operator of Installation

Name: Address: Telephone:	U.S. Army U.S. Army Garrison Yuma Proving Ground 301 C. Street Yuma, Arizona 85365-9498 Garrison Manager Garrison Manager (928) 328-3468

Previous ownership of the land was the public, administered by the U.S. Dept. of the Interior. The land was withdrawn from the public domain and the installation created on May 26, 1952. Operations at the TSDF facility commenced on or about the 1971-1974 time frame. (YPG 2004c, Appendix C).

1.1.4 Objective and Scope

The objective of this permit is to present all pertinent information required by Arizona Administrative Code (A.A.C.) Title 18, Chapter 8, Article 2 (which adopts and modifies 40 CFR 270) for a operating permit under the Arizona Hazardous Waste Management Act (AHWMA). The standards associated with the Permit contained in 40 CFR Part 264 have been considered and addressed, as appropriate.

This permit has been prepared in accordance the United States Environmental Protection Agency (EPA) and the United States Army Environmental Hygiene Agency (AEHA) permit writer's guidance (EPA 1983 and AEHA 1987).

The U.S. Army Garrison Yuma Proving Ground voluntarily conducted a public meeting in regards to operating an OB/OD treatment facility at the U.S. Army Garrison Yuma Proving Ground (YPG 2004c, Submittal 1). All comments received at this pre-application public meeting were considered and appropriately addressed in this permit.

In advance of issuance of this permit, the U.S. Army Garrison Yuma Proving Ground also completed a "Checklist for Technical Review of the Permit Application for Subpart X Units" (YPG 2004c, Appendix P). This ensures all applicable federal regulations are addressed in this permit.

The OB/OD Treatment Facility Final Closure Plan (Permit Attachment 14) is part of this permit. The closure plan explains in detail the proposed sampling and analysis procedures and sets guidelines for remediation and closure.

There are no plans to close the site in the near future. Partial closure activities, if implemented, will occur in strict compliance with the requirements of 40 CFR 264 Subpart G (including 40 CFR 264.112(b) and 40 CFR 264.111), and applicable guidance documents available through the U.S. Environmental Protection Agency (EPA) and the ADEQ. The guidance documents that will be used include the RCRA Guidance Manual for Subpart G Closure and Post Closure Care Standards (EPA, 1987).

Final closure activities, when implemented, will include equipment decontamination, decommissioning and disposal, site characterization, remediation and restoration. Impacts are anticipated to be limited to the near-surface soil environment. Post-closure activities, including monitoring and maintenance, are not anticipated.

The following subsections provide a general description of the U.S. Army Garrison Yuma Proving Ground OB/OD facility. The following description is intended to acquaint the permit reviewer with an overview of the facility. Additional details can be found in subsequent sections of this permit.

1.2 APPLICABILITY

The U.S. Army Garrison Yuma Proving Ground is a 21st-century research and development facility focused on testing military equipment that includes weapons systems. While conducting test programs, the U.S. Army Garrison Yuma Proving Ground produces, stores, and uses significant quantities of munitions and explosives. Each year, quantities of these materials must be treated as wastes. These wastes include out-of-date explosives and propellants, items in storage or manufacture that have failed quality assurance (QA) tests, munitions items, and any unsafe munitions items, components, or explosives.

OB/OD is a means to demilitarizing many explosive items, decontaminating explosives from large metal objects, and reducing most combustibles to a smaller volume. OB/OD is the safest method currently available for the effective destruction, decontamination, and treatment of explosives and explosive wastes conducted at the OB/OD Treatment Facility.

The OB/OD facility has been in operation since approximately 1971. The OB/OD treatment facility consists of an open burning and open detonation area for disposal of waste propellants, explosives, and pyrotechnic (PEP) as follows. This is an open-air facility.

The OB area consists of two concrete burn pads, each with three burn pans (a total of six OB units). Note that as of April 2014, ~~September 2004, there is only one operational burn pad; the other one is undergoing closure. T~~two new burn pads became operational, replacing the original burn pads which were closed in accordance with RCRA regulations, designated as inactive and requested to be removed from the permit. ~~will be constructed. After this permit becomes effective, and when the two proposed burn pads are constructed and become operational, the existing operational pad shall be designated inactive and closed in accordance with RCRA regulations~~.

The OD area consists of three locations; two of the locations containing two adjacent trenches for open detonation of waste ordnance and the third location existing as a single pit (a total of five OD units).

Post-treatment wastes and other process wastes will be temporarily accumulated in a satellite accumulation area (SAA) at the OB/OD facility adjacent to the safety bunker. Upon sufficient accumulation, the waste will be transferred off the OB/OD site to a less-than-90-day waste accumulation area (HAZMART facility located on the U.S. Army Garrison Yuma Proving Ground base at Yuma Test Center) pending characterization and shipment off the U.S. Army Garrison Yuma Proving Ground to a permitted Treatment Storage and Disposal Facility (TDSF) for further treatment and/or ultimate disposal. The U.S. Army Garrison Yuma Proving Ground generates a number of waste streams from the core operations of the installation, which are all managed under the Large Quantity Generator requirements. Satellite and less-than-90-day accumulation areas do not require a RCRA permit and will be managed according to generator requirements of A.A.C. R18-8-262.G and 40 CFR 262.34. Therefore, this permit does not discuss these areas in detail, and includes this information in a general way for clarification of material process and handling.

1.3. TOPOGRAHY AND PHYSIOGRAPHY

1.3.1. Topography

As part of the vast Basin and Range Physiographic Province of North America, the installation's topography and elevation varies from approximately 153 feet (46 meters) to 2,800 feet (853 meters). The most obvious features at the U.S. Army Garrison Yuma Proving Ground are isolated fault-block mountain ranges rising abruptly from relatively flat debris-filled basins. Mountain ranges at the U.S. Army Garrison Yuma Proving Ground consist of several types of consolidated rock that varies from hard, dense crystalline rocks, such as gneiss, schist, and granite, to volcanic rocks such as flows, tuffs, basalt, and ande ite. These ranges have slow infiltration rates with high runoff potential, the availability of precipitation being the determining factor. Composed of alluvium derived from the surrounding mountain ranges, broad flat basins or plains with dendritic drainage patterns interrupt the mountain ranges. Along the western edge of the U.S. Army Garrison Yuma Proving Ground is the Colorado River floodplain; the Middle Mountains Plain and Castle Dome Plain comprise the remaining level areas of the installation (see Permit Attachment 1A, Figure A-6) (YPG 2004c, Submittal 4 and YPG 2001).

The United States Geological Survey (USGS) Map of Reference for the OB/OD site is Middle Mountain South. The topography of the entire installation is depicted on the following USGS 7.5-Minute Quadrangle maps for the following areas:

Cementosa Wash	North Trigo Peaks
Cibola SE	Palomas Mountains NW
Cunningham Mountain	Palomas Mountains SW
Dome	Picacho
Dome Rock Mountains SW	Red Bluff Mountain East
Hidden Valley	Red Bluff Mountain NW
Imperial Reservoir	Red Bluff Mountain West
Kofa	Red Hill
Laguna Dam	Red Hill NE
Mesquite Jim Well	Red Hill SW
Middle Mountains North	Roll
Middle Mountains South	Salton Tanks
Mohave Peak	Trigo Pass
Mule Wash	Tweed Mine
North of Roll	

1.3.2. Surface Waters & 100-Year Flood Plain

No perennial lakes or streams occur within the U.S. Army Garrison Yuma Proving Ground . Any surface water exists only for brief periods during and after intense rainfall events that produce flash flooding and ponding in low areas.

The U.S. Army Garrison Yuma Proving Ground is bordered on the west by the Colorado River. The Imperial Dam and Reservoir on the Colorado River are located about two miles northwest of the U.S. Army Garrison Yuma Proving Ground gate at the Main Administrative Area. This reservoir supplies water for the Gila Main Canal and the All American Canal. The Gila River borders the U.S. Army Garrison Yuma Proving Ground on the south; it is dry except after intense rainfall (USATHAMA 1980).

The Middle Mountain Plain drainage separates the McAllister and Indian Wash drainages from the Castle Dome Wash drainage. The McAllister and Indian Washes are the primary ephemeral stream channels that drain surface runoff to the Colorado River. These washes flow only during intense rainfall.

In the Kofa Firing Range (see Permit Attachment 1A, Figure A-11), the primary ephemeral stream channel is Castle Dome Wash and its tributaries. Castle Dome Wash drains to the Gila River, located to the south of the U.S. Army Garrison Yuma Proving Ground . One tributary, originating at Doc Carter Spring located about 12 miles northwest of the OB/OD site in the Castle Dome Mountains of the Kofa National Wildlife Refuge, serves as an ephemeral water source for a wash directly adjacent to the OB/OD site.

The OB/OD site is located in an alluvial fan within the Castle Dome Plains. The plains were formed as a result of deposition of sediments washed down from the Castle Dome Mountains to the northeast. This forms a wide, shallow, and braided drainage pattern. It is common in alluvial fans such as this for storm flows to concentrate in different washes from year to year due to the effects of sedimentation (YPG 2004c, Submittal 6).

Surface hydrology at the OB/OD Treatment Facility consists of desert washes, which conduct precipitation overflow through the area from localized rain flow events and those of the surrounding watershed. The OB/OD Treatment Facility is located within the Castle Dome Plain at about 780 feet above mean sea level (msl) (YPG 2004c, Submittal 6-1); the surrounding watershed influences surface hydrology drainage patterns. The drainage patterns on this portion of the plain are generally shallow and ill defined because drainage must traverse hard desert pavement in this area.

The watershed upstream of the OB/OD site is approximately 44 square kilometers (17 square miles) (YPG 2004c, Submittal 6-1). Castle Dome wash has a maximum elevation of about 2400 feet at its head, a minimum elevation of 160 feet at its junction with the Gila River, and is about 29 miles long (YPG 2004c, Submittal 4). The flow is to the southwest towards the Gila River at an overall average ground slope of about 77 feet per mile. The watershed area above the OB/OD site (approximately 12 miles long) has slopes ranging from 39 to 284 feet per mile (YPG 2004c, Submittal 4), whereas below the OB/OD site (the longest flow path about 20 miles long), the average gradient is 30-40 feet per mile.

Detailed surface hydrology information for the facility is contained in Geohydrologic Study of the Yuma Proving Ground with Particular Reference to the Open Burning/Open Detonation Facility at Yuma County, Arizona (YPG 2004c, Submittal 4). Based on the evaluation in the Initial Drainage Report (Premier Eng. Corp., 2001) and the Final Drainage Report (YPG 2004c, Submittal 6-1), the OB/OD site is in a 100-year floodplain and flood protection for the OB/OD area is required (see Section 1.4.2, “Flood Plain Protection Berm”).

A national Federal Insurance Rate Map (FIRM) identifying the 100-year floodplain boundary has not been prepared for the U.S. Army Garrison Yuma Proving Ground ; however, a floodplain evaluation is included in the Surface Water Hydrological Data Detailed Report (YPG 2004c, Submittal 6). Like other arid regions, the U.S. Army Garrison Yuma Proving Ground base is subject to flash flooding following heavy precipitation.

1.3.3. Land Uses

Formal testing activities began at the U.S. Army Garrison Proving Ground in 1942. During World War II, General Patton used the U.S. Army Garrison Proving Ground installation for troop and weapons training and exercise maneuvers. In 1951, the area was established as the Yuma Test Station for research, development, testing, and evaluation of artillery, tank armaments, and munitions. In 1963, Yuma Test Station became Yuma Proving Ground (YPG). In October 2003, the YPG facility was renamed the U.S. Army Garrison Yuma Proving Ground. Munitions testing has intensified at the U.S. Army Garrison Yuma Proving Ground during wartime, and continues at a reduced pace during peacetime (YPG 1992; and YPG 2001).

The U.S. Army Garrison Yuma Proving Ground is a multipurpose complex that plans, conducts, evaluates, and reports the results of developmental and operational tests for major materiel categories. The primary mission at the U.S. Army Garrison Yuma Proving Ground is testing and evaluation as directed by the Army Test and Evaluation Command (ATEC) and Developmental Test Command (DTC). In addition, activities at the installation include reviewing plans; monitoring developmental testing conducted by developers, producers, and contractors; as well as providing technical support, guidance, and services to Federal agencies and other branches for the military. Typical projects conducted at the U.S. Army Garrison Yuma Proving Ground include but are not limited to munitions and weapons testing, automotive and combat systems testing, natural environment testing, aviation systems testing, and military personnel training operations (YPG 2001).

Permit Attachment 1A, Figure A-2 shows land use surrounding the U.S. Army Garrison Yuma Proving Ground. The land base of the U.S. Army Garrison Yuma Proving Ground is dedicated to military testing. Consequently, most land is reserved for firing ranges, impact areas, mobility test courses, and drop zones. These types of activities require large open areas with associated safety and buffer zones.

The U.S. Army Garrison Yuma Proving Ground is subdivided into three areas: the Cibola, Laguna, and Kofa Regions (see Permit Attachment 1A, Figure A-11).

The Cibola Region is in the northwest portion of the U.S. Army Garrison Yuma Proving Ground and covers approximately 1,775 square kilometers (438,195 acres). This sparsely populated region is primarily utilized for aviation test activities.

The Laguna Region in the southwest portion covers approximately 280 square kilometers (68,720 acres). Most of the administrative areas and the vehicle mobility courses are in this region. The four cantonment areas in the Laguna Region are Main Administrative Area, Yuma Test Center, Laguna Army Airfield, and Kofa Firing Range.

East of the Laguna Region is the Kofa Region, which encompasses approximately 1,340 square kilometers (331,259 acres) of the southern and eastern portions of the U.S. Army Garrison Yuma Proving Ground. The Kofa OB/OD facility is located in this region. The majority of firing missions also occur here (YPG 2001).

Other structures close to the OB/OD facility include the Castle Dome Heliport, approximately 2.5 kilometers (1.5 miles) northeast, the Main Administrative Area (MAA) of the Laguna Region 19 kilometers (12 miles) southwest, and the Kofa Firing Range (KFR) complex 16 kilometers (10 miles) to the south. With few exceptions, real estate under the control of the U.S. Army Garrison Yuma Proving Ground has the potential for military use.

Hunting is permitted within designated areas. The U.S. Army Garrison Yuma Proving Ground installation is officially closed to any other civilian use of the range. Hunters may enter and camp on the U.S. Army Garrison Yuma Proving Ground during designated hunting seasons if they possess valid Arizona Game and Fish Department (AGFD) and U.S. Army Garrison Yuma Proving Ground hunting licenses. There are no formal recreation areas in proximity to the facility.

Most of the land immediately surrounding the installation is sparsely populated and publicly owned, and the majority is managed by other Federal agencies. To the west, the Cibola and Imperial National Wildlife Refuges protect wetland and waterfowl habitat along the Colorado River. The Martinez Lake Recreation Area, Imperial Reservoir Recreation Area, and Mittry State Wildlife Area stretch from north to south between the western arm of the installation and the Colorado River. Kofa National Wildlife Refuge (KNWR), which protects the desert bighorn sheep habitat of the Castle Dome Mountains, occupies the area between the arms of the installation’s U-shape. The Kofa Region is bordered to the west by the Laguna Region and to the north by the KNWR. The eastern and southern boundaries of this U.S. Army Garrison Yuma Proving Ground region border Bureau of Land Management (BLM), State, and some privately owned lands primarily used for agriculture (YPG 2001). Some privately owned land south of the installation in the Gila River Valley is used primarily for irrigated agriculture (YPG 2001).

Permit Attachment 1A, Figure A-3 shows the active area of the OB/OD Treatment facility and the immediate surrounding areas.

The Kofa and Castle Dome mountains to the northeast of the OB/OD facility, and Muggins Mountains to the south of the OB/OD area, offer opportunities for camping, hiking, and small game hunting. Nearby BLM and wilderness areas and neighboring wildlife refuges in the Cibola, Kofa, and Imperial areas provide numerous places for picnicking, camping, and hiking.

1.3.4. Meteorological Information

The U.S. Army Garrison Yuma Proving Ground is located in the Sonoran Desert, a low-elevation hot arid desert. Clear skies, low relative humidity, light winds, slight rainfall, and wide daily temperature variations characterize the installations typical climate (YPG 2004c, Submittal 6-3).

According to meteorological records, average daily temperatures range from 27°C (80°F) to more than 38°C (100°F) during summer months , and from 4.3°C (40°F) to 19°C (65°F) during winter months. The all-time record high temperature is 51°C (124°F), which occurred on July 28, 1995 (YPG 2004c, Submittal 6-3). The all-time record low temperature is -8.4°C (23°F), which occurred January 8, 1971.

Clear skies, low relative humidity, low precipitation rates [1.6 to 9.4 centimeters (0.64 to 3.7 inches) annually], and a wide range of daily temperatures characterize the installation's climatic conditions. Based on data from 1948 to 1990, the average annual precipitation is about 3.51 inches. The maximum annual precipitation recorded from 1954 to 1992 was 7.55 inches in 1958 (YPG 2004c, Submittal 3). The heaviest 1-day rainfall of record was 3.02 inches in October 1972 (YPG 2004c, Submittal 6-3). Additional information concerning expected 2-year and 100-year 24-hour precipitation events can be found in the Final Drainage Report, YPG OB/OD Facility (YPG 2004c, Submittal 6-3).

Humidity varies greatly throughout the year. Low-humidity conditions are expected during early summer when extreme values are below 10 percent. High-humidity conditions with sustained readings of 90 percent or greater can occur any time of year, typically during winter and early spring.

Based on data from 1935 to 1980, the pan evaporation rate averages 107 in. per year. This results in a net loss of 103.5 in. per year when compared with annual precipitation. (YPG 2004c, Submittal 4).

Surface wind speeds are generally light throughout the year; however, there is a diurnal cycle to the installation's wind speed (YPG 2004c, Submittal 3). From sunset to sunrise, a nocturnal inversion develops and the winds are generally light, averaging 1 to 2 knots (equal to 1.15-to-2.30 miles per hour (mph), or 1.85-to-3.70 kilometers per hour (km/hr)), often coming from a northeasterly direction in the early morning hours. After sunrise wind, speeds gradually increase until the inversion breaks. By the time of inversion breakup, these winds have reached the speed that will be maintained throughout the day.

During September through February, surface wind speeds average approximately 3.2 knots (6 km/hr or 3.7 mph). From March through August, average wind speed is approximately 3.8 to 4.9 knots (7-to-9 km/hr or 4.4-to-5.6 mph). The windiest time of the year is generally in the spring and summer. From March through September, there are normally more than 10 days each month with wind gusts over 20 knots (37 km/hr or 23 mph). The two highest wind gusts recorded at the U.S. Army Garrison Yuma Proving Ground were 62 knots (114 km/hr or 71 mph) in March 1970 (Cochran, 1991), and 60 knots (111 km/hr or 69 mph) in August 1990 (YPG 2004c, Submittal 3). This does not include a probable microburst wind speed of 63 knots (117 km/hr or 73 mph) recorded on September 1991 (YPG 2004c, Submittal 3).

From late autumn to early spring (November through February), prevailing surface winds are from the north to northwest (YPG 2004c, Submittal 6-3). As temperatures warm, winds shift and are from the west southwest or from the south; during the summer moisture influx associated with the southwestern monsoon, winds shift back toward the southeast.

A summary of climatic conditions at the U.S. Army Garrison Yuma Proving Ground is included in Yuma Proving Ground: A Climatology 1954-1992 (YPG 2004c, Submittal 3).

1.3.5. Geologic Characterization

The descriptions of local geology are taken from Remedial Investigation Report for Selected Sites at Yuma Proving Ground, Arizona (Davies et. al. 2004).

Wide, gently sloping plains formed by late Tertiary and Quaternary age basin-fill deposits characterize the geology of the U.S. Army Garrison Yuma Proving Ground. Sharply rising mountains break the continuity of these deposits. The mountain ranges consist mainly of Cretaceous-Quaternary age intrusive and volcanic rocks. Sedimentary deposits of Triassic-Jurassic age make up a portion of the mountains in the western and central portions of the U.S. Army Garrison Yuma Proving Ground. The sedimentary rocks are locally metamorphosed to schists and gneiss. Together these formations form the lateral and underlying boundaries of the alluvial basins. The basin-fill deposits are generally sandy, with variable fine-grained (silts and clays) to coarse-grained (gravel and cobbles) lenses. These deposits can exceed a thickness of 1,300 ft.

The basins at the U.S. Army Garrison Yuma Proving Ground were formed during the middle to late Miocene epoch basin-and-range structural disturbance. Movement along high-angle normal faults down-dropped relative to the mountains, producing a series of generally north-northwest trending basins. These basins subsequently subsided. This subsidence was a gradual process accompanied by deposition of locally derived sediment in internally drained basins. The closed drainage system produced a gradual change from coarse-grained sediment near the mountains to fine-grained near the basin centers. The basins within the areas of interest at the U.S. Army Garrison Yuma Proving Ground are currently not enclosed and drain to the Colorado and Gila Rivers.

1.3.6. Soil Description

Nine different soil descriptions are associated with the U.S. Army Garrison Yuma Proving Ground: (1) Riverbend family-Carrizo family complex; (2) Cristobal family- Gunsight family complex; (3) Chuckawalla family-Gunsight family complex; (4) Gunsight family-Chuckawalla family complex; (5) Superstition family-Rositas family complex; (6) Carsitas family-Chuckawalla family complex; (7) Tucson family-Tremant family-Antho family complex; (8)

Gilman family-Harqua family-Glenbar family complex; and (9) Lithic and Typic Torriorthents soils (YPG 2004c, Submittal 6-3).

Of these nine, the following hypothermic arid general soil associations occur near the U.S. Army Garrison Yuma Proving Ground OB/OD site: Gilman-Vint-Brios, Harqua-Perryville-Gunsight, Coolidge-Wellton-Antho, and Lomitas-Rock Outcrop (YPG 2004c, Submittal 4: and YPG 2004c, Submittal 6-4).

Gilman-Vint-Brios soils are found along the southwestern and western portion of the U.S. Army Garrison Yuma and are mainly sandy loam and fine sand and are found only on the floodplains of the Colorado and Gila Rivers.

The Harqua-Perryville-Gunsight soils are the most prevalent of all the soil types at the U.S. Army Garrison Yuma Proving Ground and consist of deep (extends to more than 60 inches in depth), gravelly moderately fine- and medium-textured soils high in lime, and very gravelly calcareous soils on old alluvial fans. The soil is derived from volcanic, calcareous, granitic, and sedimentary sources. The ground surface in these plains commonly exhibit “desert pavement” thin layer of varnished gravel). The OB/OD site is located in a Harqua-Perryville-Gunsight soil area.

The Gunsight-Rillito soils are found only in the far northern portion of the U.S. Army Garrison Yuma Proving Ground.

Coolidge-Wellton-Antho soils, which are found in the southwestern corner of the U.S. Army Garrison Yuma Proving Ground, are medium- to coarse-textured soils formed from source rocks similar to those that are the sources of the Harqua-Perryville-Gunsight soils, but they have more sand than gravel.

The Lomitas-Rock outcrop is the source of soil found in the Harqua-Perryville-Gunsight areas and the Coolidge-Wellton-Antho areas. The watershed that contributes to washes adjacent to the OB/OD site contain this outcrop. The Lomitas rock is composed of volcanic rocks (such as andesite, rhyolite, and related tuffs) and some basalts.

Boring logs recorded for three soil borings drilled at the Open Burn / Open Detonation site (see Permit Attachment 1B (Soils Investigation) show that silty sand (USCS soil classification SM) predominate in the upper fifty feet of the subsurface. Thin zones of gravel (USCS soil classification GP-GM) were observed mixed with the silty sand at depths ranging from the surface to fifteen feet below ground surface.

Because of the type of surface soil at the U.S. Army Garrison Yuma Proving Ground (gravelly black “desert pavement” surfaces), the temperature of soil one-inch or less from the ground surface often exceeds 160 F during the summer months of July and August (YPG 2004c, Submittal 6-3).

1.3.7. Groundwater Hydrology

Groundwater is present in two systems beneath the U.S. Army Garrison Yuma Proving Ground. The Deep groundwater is found in consolidated volcanic rock (at depths typically greater than 500 feet) and in deep sediment. In the distant past, water entered the closed basins and formed salty lakes. With time, the lakes evaporated and developed layers of evaporates (salts). Infiltration of salty water produced highly mineralized water deep within the basin. This water has been primarily recharged by water from the Colorado and Gila Rivers. Infiltration of precipitation and ponded surface water adds very small amounts of additional recharge to this deep groundwater. Because this water is very deep and highly mineralized, it is not considered to be a primary drinking water source. However, there is one production well (Well M) screened in the deep water-bearing fractured bedrock. This well is located at the Castle Dome Heliport and Annex and produces about 4 million gallons annually of potable water (YPG, 2004c, Part 2, RTC 99, 101, and 102).

The shallow groundwater occurs within the alluvial and floodplain deposits at the U.S. Army Garrison Yuma Proving Ground. The groundwater exists as an unconfined aquifer and contains several production wells that are used for drinking water. As of 2004, the wells produced approximately 320 million gallons of water annually. Of these wells, Wells G and H screened in the alluvium deposits and Wells X and Y screened in the floodplain deposits will be discussed further below.

A hydrogeologic study of the U.S. Army Garrison Yuma Proving Ground was conducted in 1987 (YPG 2004c, Submittal 4). At that time, 13 production wells were located within the U.S. Army Garrison Yuma Proving Ground. The top of the groundwater aquifer ranged in elevation from approximately 200 feet above MSL at the Castle Dome Heliport to 155 feet above MSL in the southwestern portion of the U.S. Army Garrison Yuma Proving Ground. The depth to groundwater ranged from 30 feet below ground surface (bgs) in well X to greater than 600 feet bgs in well M. Water levels in these wells did not substantially change over a 1-year period in 1987. The groundwater gradient is about 4-5 feet per mile upgradient of the major pumping wells, and less than about 4 feet per mile near the rivers. Near the rivers, the groundwater elevation becomes shallower, and it may be within 10 feet of the surface in floodplain deposits.

Three parameters are frequently used to characterize a groundwater aquifer: transmissivity, hydraulic conductivity, and storativity.

Transmissivity is an indication of how well an aquifer can transmit water. It is the rate of flow through a vertical strip of the aquifer that has a width of 1 foot under a unit hydraulic gradient (one foot/foot). Transmissivity values derived from specific capacity data range from 19,000 to 83,300 gallons/day/foot (gpd/ft) for the alluvium, 9,600 gpd/ft for the consolidated rock (Well M), and averaged 130,800 gpd/ft for the floodplain deposits (Wells X and Y). A pump test on one alluvium well (Well G) indicated a transmissivity 200 percent larger than its empirically derived value.

Saturated hydraulic conductivity is a function of the porous media and the fluid (in this case, groundwater) with units of distance/time. Horizontal hydraulic conductivity values ranged from

83 to 902 gpd/ft^2 (11.1 to 121 feet/day) for the alluvial wells, with an average value of about 500 gpd/ft^2 (67 feet/day). The horizontal saturated hydraulic conductivity was about 56 gpd/ft^2 (7.5 feet/day) for consolidated rock and about 1,245 gpd/ft^2 (166 feet/day) for the floodplain deposits.

The storage coefficient of the aquifer is an indication of the aquifer's ability to yield or store water. Reasonable values for the storage coefficient range from 10 to 15 percent for alluvium, 1 to 5 percent for consolidated rock with no fractures, and 20 to 30 percent for floodplain deposits.

The rate of groundwater movement can be determined by combining data on the hydraulic gradient in the aquifer with its hydraulic conductivity and effective porosity. For the alluvium, using the above horizontal hydraulic conductivity (69 feet/day), a maximum horizontal hydraulic gradient of 5 feet per mile, and a low average porosity of 12.5 percent, the average rate of groundwater movement is about 0.55 ft/day (200 ft/year). This is an average flow rate across the areas that have been investigated or are under investigation at the U.S. Army Garrison Yuma Proving Ground. Local heterogeneity within the surficial aquifer can result in a range of flow direction and velocity at specific locations on the U.S. Army Garrison Yuma Proving Ground installation.

Saturated vertical hydraulic conductivity tests were performed on samples collected from 0 to 35 feet below ground surface from soil borings drilled in the OD pits at the Open Burn / Open Detonation site (YPG 2004c, Submittal 12). Saturated vertical hydraulic conductivity values were also obtained from infiltration tests in undisturbed soil in the same area (YPG 2004c, Submittal 12). Results showed:

	Field Infiltration Tests	Infiltration & Soil Sample Tests	Lab Soil Sample Tests
Minimum:	0.00356 feet/day	0.000214 feet/day	0.000214 feet/day
Average:	0.0953 feet/day (3.36E-05 cm/sec)	1.17 feet/day (4.12E-04 cm/sec)	2.46 feet/day (8.67E-04 cm/sec)
Maximum:	0.306 feet/day	12.1 feet/day	12.1 feet/day

The average value is what is expected from sandy soils with silt.

Porosity was also analyzed for during the above hydraulic conductivity tests (YPG 2004c, Submittal 12). Porosity in the samples ranges from 24 to 47 percent, within the expected range for silty-sand well-graded materials.

1.3.7.1 Estimate of net recharge rate

The referenced geohydrologic report (Entech 1987) estimates aquifer characteristics based on historical pump test data from Well M at Castle Dome Heliport [2.5 kilometers (8,160 feet or 1.54 miles) hydraulically upgradient of the OB/OD site screened in the deep groundwater] and Well H [about 8 kilometers (5 miles) downgradient of the OB/OD site screened in the shallow groundwater].

A pump test of Well M conducted in February 1970 indicated that Well M is capable of yielding more than 1.3 cubic meters (350 gallons) per minute. After pumping was stopped, the well recovered to its static water level in 10 to 12 minutes, indicating good recharge potential. This well is completed in volcanic flows and tuffs.

The well yield from downgradient Well H was 1.9 cubic meters (500 gallons) per minute with 4.9 meters (16 feet) of drawdown in the alluvial deposits.

Based on well log data from Well M, there do not appear to be any perched groundwater horizons in the vadose zone beneath the OB/OD facility. The lithologic log also indicates fine-grained silts and clays in the alluvial deposits.

Water balance information was collected and determined for the U.S. Army Garrison Yuma Proving Ground (YPG 2004c, Submittal 4, Table 17). Precipitation and infiltration from surface water runoff are related to average pan evaporation and evapotranspiration. Results for each month of the year indicate a water deficiency ranging from 5.26 centimeters (2.07 inches) in January to a maximum of 26.4 centimeters (10.4 inches) in July.

1.3.7.2 Description of uppermost aquifer

Based on well log data from Well M, located approximately 2.5 kilometers (1.5 miles) northwest of the site, there are no perched groundwater zones in the alluvial deposits beneath the site. Well M is 1000 feet deep and penetrates the younger alluvium from 0 to 180 feet bgs, the older alluvium from 180 to 210 feet bgs, and the underlying consolidated volcanic rocks from 210 to 1000 feet bgs. (YPG 2004c, Submittal 4).

1.3.8. Seismicity

The seismic requirements of 40 CFR 270.14(b)(11)(i,ii) and 40 CFR 264.18(a) do not apply to existing facilities such as the OB/OD Treatment Facility. However, precautions are still necessary to ensure seismic events will not cause a release or otherwise cause some operation of the OB/OD facility to threaten human health and the environment. Therefore, the following seismic data is provided to better describe the setting.

The geology of the U.S. Army Garrison Yuma Proving Ground is marked by a combination of steeply faulted margins, extensive intrarange faulting and jointing, and severe mechanical weathering (Entech Engineers, Inc. 1987). Two principal fault zones occur close to the U.S. Army Garrison Yuma Proving Ground : Sheep Mountain Fault Zone and Lost Trigo Fault Zone. Both are in the Sonoran Fault Zone. Sheep Mountain Fault Zone is in Yuma County southwest of Welton, about 35 miles from the U.S. Army Garrison Yuma Proving Ground . This fault zone is about 5 miles long, with its longest segment about two miles long. The age of the fault is unknown but believed to be modern (late Pliocene [5 to 2 million years ago] to the present). Lost Trigo Fault Zone is of early Pleistocene age (2 million to 10,000 years ago), is located about four miles south of Cibola, and is about 6 miles long. The other two nearest fault zones occur in the Salton Periphery Zone. Cargo Muchacho Fault Zone is about 6 miles northwest of Yuma, is about 1 mile long, and is of late Pleistocene age. Algodones Fault Zone is in the southwestern corner of Arizona, is about 7 miles long and is Pleistocene to present in age.

A study performed for the Arizona Department of Transportation in 1992 (ADOT, 1992) located the U.S. Army Garrison Yuma Proving Ground base in a nearly stable seismic block between more active regions to the northeast and southwest . This zone has very little seismic activity because the basin-and-range faulting has been inactive for several million years. Earthquakes in the area are infrequent and of relatively low magnitude. Although a few faults are located in the Sonoran Fault Zone, the San Andreas-San Jacinto Fault System of southern California and fault zones in Mexico contribute to the probability of an earthquake. Within the Sonoran Fault Zone, the average rate of repetition is one event in every 25,000 years. The estimated maximum credible earthquake for the zone is a magnitude 6.5 event. The return period for an earthquake of this magnitude is very long. Permit Attachment 1A, Figure A-4 is the Arizona Department of Transportation (ADOT) fault map (ADOT, 1992). There are no known or reported faults within the general area of the facility, and 40 CFR 264 and 270 seismic standards are not applicable to an interim status facility.

Additional information concerning other seismic standards applicable to the facility is contained in Permit Attachment 1B “Soils Investigation”.

1.4. OB/OD FACILITY RELATED STRUCTURES

Design of the OB/OD Units are discussed in Permit Attachment 2 “Design of Miscellaneous Units”. The following is a discussion of OB/OD related structures at the facility.

1.4.1. Safety Bunker (Operational Shield)

An Operational Shield (safety bunker) constructed of reinforced concrete (designed as the U.S. Army Garrison Yuma Proving Ground Building 778F) is the only building at the site, approximately 750 meters (2,460 feet) west-northwest of the OB/OD treatment units.

Ordnance Recovery Technician (ORT) personnel occupy this building during OB and OD treatment. A small intermodal storage container holding supplies and equipment is near the bunker. See the inspection schedule (Permit Attachment 11A) for a description of the supplies and equipment. There is also a work table and a grounding rod at this location.

No explosives are stored (40 CFR 264) in this area. However, hazardous waste may be accumulated in this area in accordance with HW generator accumulation standards (40 CFR 262.34). In the unlikely case that untreated reactive or ignitable residue is present in the containerized waste and the area designation is a less than 90-day generator accumulation point, the area is greater than 50 feet from the OB/OD facility fence line (see Figure 2-1) and would meet 40 CFR 262.34(a) and 40 CFR 265.176.

It should be noted that the engineering design of the safety bunker (Permit Attachment 1D) refers to it as an operational shield. It may also be referred to in those design documents as the safety bunker or bunker. Additionally included in Permit Attachment 1D is the approved explosives safety submission for the operational shield.

Based on maximum allowed weight of waste munitions burned (2,000 pounds per pan and 4,000 pounds per day) or detonated (1,000 pounds per day), the safety bunker has an adequate protective distance from the OB/OD units defined as 1,730 feet (40 CFR 265.382).

The bunker is on higher ground and would not be subject to washout resulting from a 100-year flood. Further, the area has positive drainage away from the bunker preventing standing water. (YPG 2004c, 1st NOD, Part 4, RTC 6(2) and 47).

1.4.2. Flood Plain Protection Berm

As described in Section 1.3.2 (Surface Water Hydrology & Potential Flooding), like other arid regions, the U.S. Army Garrison Yuma Proving Ground base is subject to flash flooding following heavy precipitation; details on the structures to prevent run-on to, and runoff from, the treatment units are included in Permit Attachment 1D (100-Year Flood Protection Berm Design). As shown in the attachment, this berm only encompasses the OB and OD units and on-site SWMU's, and does not encompass the safety bunker, fenceline or roads to the facility.

A minimum buffer distance between these units and the 100-year floodplain diversion berm is required because OB/OD activities typically eject OE, residue, and ash out from the units. Based on maximum allowed weight of munitions burned (2,000 pounds per pan and 4,000 pounds per day) or detonated (1,000 pounds per day), the protective distance to the property of others is 1,730 feet (40 CFR 265.382). However, the purpose of the berm is to contain most chemical residue and not for protection of other property from scrap metal, the design includes only a minimum of 80-feet between these units and the diversion berm.

Installation of the berm will result in a small diversion (approximately 5 feet) of one channel of a braided ephemeral wash. Because the distance is minimal, the channel will naturally redirect itself around the berm. The U.S. Army Corps of Engineers determined that the diversion would be minor enough that a Clean Water Act section 404 permit will not be necessary. Because only a few small trees (many of which are dead) will be removed from an area where larger trees are present, wildlife habitat will not be affected.

1.4.3. Solid Waste Management Units

The U.S. Army Garrison Yuma Proving Ground has prepared a document to meet the requirements for description of all SWMUs on the facility as required by 40 CFR 270.14(d). The document (YPG 2004c, Appendix K) includes all SWMUs within the property of the hazardous waste management facility as defined in 40 CFR 270.2. This property is the entire base installation.

The U.S. Army Garrison Yuma Proving Ground report has used the results of several surveys to develop the required information on the SWMUs. Additionally, the U.S. Army Garrison Yuma

Proving Ground has conducted a thorough review of all documentation and an analysis of ongoing activities and compiled a list of existing or potential releases of hazardous waste and/or hazardous constituents. Several of the SWMUs are being remediated under the authority of the ADEQ. All actions required are detailed on the descriptions for each individual unit.

It should also be noted that some of the many SWMU's listed are located at the OB/OD Site. These SWMU's include the units closed in 2014 ~~undergoing closure~~ (OBOG area, Trash Pit, Old OB Pad) as well as the HW OB/OD units described in this permit.

1.4.4 Roads and Traffic Patterns

U.S. Highway 95 is the principal access route to the U.S. Army Garrison Yuma Proving Ground base (Permit Attachment 1A, Figure A-5). This north/south two-lane, paved road bisects the KNWR and the U.S. Army Garrison Yuma Proving Ground . Within the U.S. Army Garrison Yuma Proving Ground installation, vehicle access consists of 291 km (181 miles) of paved roads, 1,316 km (818 miles) of improved roads (gravel/graded), and numerous unimproved roads (dirt only). The majority of paved roads are in the Laguna Region (Main Administrative Area, Yuma Test Center (YTC), and Laguna Army Airfield). Roads in the Cibola Region and Kofa Firing Range (Kofa Region) are mostly gravel and unimproved. The main roadways and well-traveled secondary roads are maintained. This maintenance includes grading, watering, and repair of storm-damaged roads. Access roads to the site are graded.

The OB/OD Treatment Facility is off-limits to the public. The nearest "public" road is Castle Dome road into KNWR (slightly east of U.S. Highway 95). This presents the closest point of public access as approximately 2380 meters (7809 feet) from the facility's active area. This road is regulated by the U.S. Army Garrison Yuma Proving Ground Range Control. Control of the on-base roads to the OB/OD site is described in Permit Attachment 8 (Security Provisions).

Speed signs are not posted on the OB/OD Treatment Facility. All vehicles entering the U.S. Army Garrison Yuma Proving Ground base are notified by sign that speed limits are 25 mph, unless otherwise posted. (YPG 2004c, RTC 17(2)). For the main base road to the OB/OD site, there are no vehicle height clearance requirements to be concerned with (there are no overhead electric lines or bridge overpasses).

Waste PEP is transported directly from the point of origin [storage bunkers (igloos), ammunition loading plants, and gun positions] to the OB/OD Treatment Facility for treatment. Waste ash is collected in a 55-gallon drum and transported from the OB/OD Treatment Facility to a less-than-90-day waste accumulation area on the U.S. Army Garrison Yuma Proving Ground installation when the drum is full. (The drum is considered full when it is 75% full.) The waste transport vehicle crosses perpendicularly Highway 95 (on U.S. Army Garrison Yuma Proving Ground owned paths) and only once. The transport is on contiguous property (see definition of "Facility" in 40 CFR 260.10) and only one EPA I.D. number for the base is required. No other transfer or pickup stations are associated with the OB/OD Treatment Facility. Permit Attachment 1A, Figure A-5 is a map showing road classifications and routes for transport of the waste materials.

On-site traffic patterns (including MHE overnight parking areas and load/unload areas) are shown in Permit Attachment 1A, Figure A-3. For example, the "1000-Foot Perimeter Site Plan" shows parking overnight areas for the forklift, large earthmover, and magnet trailer. The "Detail Map" shows the roads traffic must follow as well as the general load/unload area at the OB pads. For OD Pits 2 and 3, no vehicle is allowed to come within 20 feet outside of the OD Pit and the load/unload parking area is at the OD pit entrance. (YPG 2004c, NOD RTC 19 and 21). Load and unload is performed in accordance with Permit Section 6.2 (Unloading and Loading Operations).

No more than 20 to 25 vehicles per day travel the main military access road 1646 meters (5400 feet) west of the facility.

The U.S. Army Garrison Yuma Proving Ground has the following specifications for required road surface composition and load bearing capacity at the OB/OD facility. The OB/OD Treatment Facility road is Class E and the road is described as primary gravel (G-4) with a street width of 20 feet. Further classification as Category III is based on observations that the traffic is 85 percent light pickups, 14 percent two-axle trucks, and 1 percent three- to five-axle trucks. The larger trucks would include a trailer transporting heavy equipment such as an excavator or a water truck. All vehicles requiring access to the site, including the U.S. Army Garrison Yuma Proving Ground fire fighting vehicles, are all-terrain. Vehicles with waste do not cross arroyos that contain flowing water. Muddy terrain is not a problem. (YPG 2004c, NOD RTC 18).

Vehicle waste weight can vary but does not exceed treatment limits established in Permit Attachment 2 (Design of Miscellaneous Units) and Permit Attachment 6 (OB/OD Operations) [4,000 pounds (NEW of propellants) per day for OB, and 1,000 pounds (NEW of explosives) per day for OD]. Based on the road specifications above, the road to the OB/OD site can accommodate this load as well as the weight of the U.S. Army Garrison Yuma Proving Ground fire fighting vehicles. An average of fewer than three vehicles enter the facility per day.

Besides the above vehicle and pedestrian (load/unload) traffic patterns, there is also the Castle Dome Heliport nearby as well as training missions involving manned and unmanned air planes. Range control will ensure that air patterns in the proximity of the OB/OD facility will not occur during applicable OB/OD operations at the site. See Permit Attachment 6 (OB/OD and Related Operations). (YPG 2004c, RTC 22).

1.4.5. Fences, Gates, and Warning Devices

A description of the security devices at the site is contained in Permit Attachment 8 (Security Provisions).

1.5. VEGETATION AND WILDLIFE

Refer to Section 7.7 of the permit "Biological and Cultural Resource Considerations" for information on vegetation and wildlife near and at the U.S. Army Garrison Yuma Proving Ground Kofa Firing Range (KFR) Hazardous Waste OB/OD site.

Section 6 of the Firing Range Report No. 39-EJ-5812-98 (Conceptual Site Model for the Environmental Risk Assessment at YPG) discusses sensitive floral and wildlife species in the area.

MISCELLANEOUS UNITS

The OB/OD facility is regulated as a miscellaneous unit as described in 40 CFR 26 Subpart X (264.600 to 264.603). Additional information on regulations applicable to miscellaneous units may be found in 40 CFR 270.23.

2.1 SITE MAKEUP

The fenced-in area of the OB/OD site is about 0.94 miles by 0.95 miles, or 572 acres (see Figure 2-1). This is considered the active area of the site (as defined in 40 CFR 260.10) because the distance from the OD pits and OB pads to the fence (except for the south fence which is less) is equal or greater than the protective distance to the property of others as defined in 40 CFR 265.382 (1,730 feet). The area of the site containing the OB pads and the OD pits is about 0.154 square kilometers (38.2 acres) and is sparsely vegetated. At present, there are ~~8~~ 6 operational units: three pans (placed on 1 concrete pad) and five pits. The pits and pads at the site cover about 2.2 acres.

2.1.1 OB Pads

The OB units consist of the ~~operational~~ South Pad ~~(to be closed after construction of the other two pads, 46 feet by 80 feet), a proposed South Pad,~~ and ~~a proposed~~ the North Pad (both 80 feet by 100 feet). There will be no more than two pads in operation at anytime. Rain that falls on the ~~new~~ pads is directed from a pad sump to an adjacent storm water retention basin via double-walled underground piping. ~~The existing south pad has no such feature; it contains only a pad that drains to a pad sump to collect the stormwater.~~

~~Design details of the Proposed OB Pads are given in Permit Section 2.2.2 (Open Burning in a Containment Device), Permit Attachment 2B (New North and South OB Pads Design) and Permit Attachment 2C (New OB Pads Design Drawings). The construction of the future OB pads (with stormwater retention basins and adjoining underground double-walled piping) will be~~ was ~~done under the supervision of an independent Arizona registered PE. After construction is~~ was ~~complete, the P.E.(s) will submit~~ted ~~a certified, sealed report stating the OB pad has been~~ was ~~constructed in accordance with the application's standards, with any deviations noted.~~

2.1.2 OB Pans

~~Each pad (existing and new) has three pans. Each pan is approximately 5.5 meters (18 feet) long by 1.8 meters (6 feet) wide. Design of the OB pans to be used on the new OB pads is given in Permit Section 2.2.2 (Open Burning in a Containment Device) and in Permit Attachment 2D (URS Open Burn Pan Design).~~

~~The pans on the proposed OB Pads will be similar to the existing OB Pads except that firebrick is used instead of refractory ceramic material.~~

2.1.3 Open Detonation Units

~~The OD units consist of three open excavated soil areas for open detonation of waste ordnance.~~

~~Two of these trenched areas are approximately 50 feet wide and 15 feet deep. They have a berm of dirt dividing them into two pits (total of four pits) where the majority of the OD operations occur.~~

~~The third trench, which currently is an undefined excavation, is used for surface/near surface treatment of items containing sub-munitions. If these items are detonated below surface, there is a chance of losing some of them in the soils causing a potential safety concern.~~

Ordnance items are placed in the pit bottoms, covered with soil (ordnance containing submunitions generally are not covered), and detonated. Highly trained ORT personnel perform all work in strict accordance with standard operating procedures (see Permit Attachment 6 (OB/OD Operations).

Following treatment by OD ORT personnel inspect the area to recover any scrap metal fragments and PEP residues resulting from detonation (see Section 2.1.4 (Waste Accumulation Area)). The ORT personnel are trained to extract all post-detonation scrap and PEP residues, and ensure that there is no risk of accidental explosion in the subsequent detonation because of fragments from the previous detonation. Any craters that develop in the pits are restored using onsite heavy equipment.

2.1.4 Hazardous Waste Accumulation Area(s)

The OB/OD management unit has a satellite accumulation area that is located adjacent to the safety bunker. The accumulation area is located greater than 50 feet from the facility fence line. No waste explosives or ignitable oxidizers [EPA Hazardous Waste Codes D001 or D003] are accumulated (40 CFR 262.34) at this area. Further, no hazardous waste of any kind is stored at the OB/OD Treatment Facility.

All waste explosives are destroyed by OB/OD except for minor residuals. Minor residuals include OB ash residue and flash reducer (see Section 2.2.2.5), munitions scrap, and explosives filler (see Section 2.2.3.3), and metal or chemical residue (see Section 2.2.3.4). YPG has certified that ORTs have the training and skills to remove all residuals from the OD areas and OB pads.

Waste ash is a byproduct of burning various propellants. Waste ash (potentially EPA Hazardous Waste) is accumulated in a 55-gallon drum and temporarily held at an area directly next to the safety bunker at the OB/OD Treatment Facility subsequent transport to the HAZMART less than 90-day waste accumulation site. The safety bunker is approximately 730 meters (2400 feet) from the burn pads and trenches.

Metal and non-metallic scrap (e.g., plastics) is managed differently. As described in the Waste Analysis Plan (Permit Attachment 3), any scrap will first be visually inspected by a qualified person to determine if it exhibits hazardous waste characteristics of ignitability (D001) or reactivity (D003). If it is ignitable or reactive hazardous waste, it will be re-treated or managed as hazardous waste. If it is not ignitable or reactive hazardous waste, it will be moved to a tarped location on-site (a designated SWMU or AOC) for sorting and characterization for the hazardous waste characteristic of toxicity (40 CFR 261.24). If the waste does not exhibit the toxicity characteristic, it may be sent to a solid waste recycler or landfill. If the waste does exhibit the toxicity characteristic, it must be managed as hazardous waste (it cannot be sent to a solid waste recycler or landfill). Both the visual inspection and the characterization must be documented as described in the WAP.

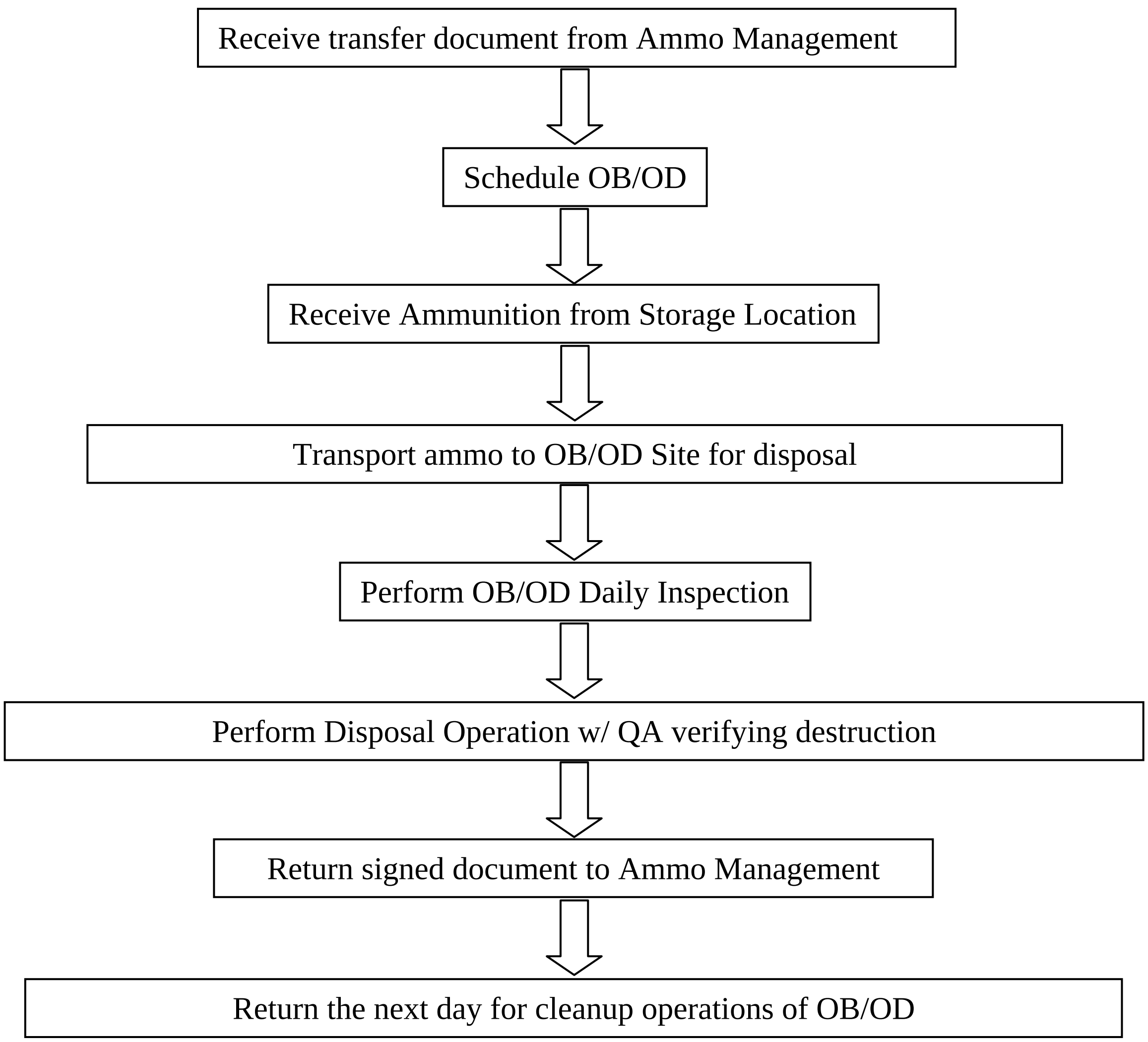
Figure 2-1

Figure 2-2

2.2 PROCESS INFROMATION

The flow diagram illustrates the sequence of the general process.

AMMO RECOVERY FLOW FOR OB/OD OPERATION



2.2.1 OB on Ground Surface

~~Historical OB activities (1974-1986) occurred on a designated burn area on the ground (see Figure 2-2). Surficial soils in this area were sampled in 1983 (YPG 2004c, Submittal 2). Twenty samples [from 15 to 46 centimeters (6 to 18 inches) in depth] were collected at the former burning pad location. The results documented elevated levels of lead and low levels of 2,4-dinitrotoluene. Because of this sampling effort and in response to stricter environmental requirements, all OB activities are now conducted in steel ceramic refractory-lined burn pans located on concrete pads. Since the summer of 1987, no OB activities have occurred directly on the ground. The U.S. Army Garrison Yuma Proving Ground is not permitting operations for direct burning/intentional placement of materials on the ground.~~

2.2.2 OB in Containment Device

~~The following sections describe the OB treatment operations.~~

2.2.2.1 Appropriateness of Treatment Methods

OB is a common technique the military utilizes to thermally treat unserviceable waste propellants. The HW OB Treatment Facility at the U.S. Army Garrison Yuma Proving Ground installation is particularly well suited for this purpose. Through many years of OB/OD at numerous installations across the United States, this method has been demonstrated to be highly effective in thermally treating energetic materials.

Treatment operations are conducted in strict accordance with military safety standards and the Standard Operating Procedures (SOPs) for Operations (see Permit Attachment 6 (OB/OD Operations)). ORTs are highly trained by the military in the safe handling and destruction of waste military munitions (see Permit Attachment 13 (Training Plan)).

The facility is in a remote location on the Kofa Firing Range (KFR). The active treatment area and improvements cover approximately 0.154 square kilometers (38.2 acres) within the much larger fenced buffer area.

2.2.2.2 Containment Device Description

~~There are no P.E. sealed drawings or details of the existing south pad (YPG 2004c, RTC Part 1, 65) or of the existing OB pans. The existing burn pans are of almost the same construction as the new burn pans except that firebrick is installed in the pans instead of the refractory ceramics. An aluminum cover is used to keep rainfall out of the pans.~~

~~The existing pad is 6-inch thick concrete, reinforced by rebar, and underlain by a minimum 40 mil HDPE liner. There are no seams in the liner of the existing south pad (YPG 2004c, RTC Part 2, 53). The liner is one piece. The concrete pad slopes down from its perimeter to the central part of the pad where a grated sump exists. The perimeter is not curbed. The rainfall capacity of the pad will contain some precipitation, but it will not contain a 25-year 24-hour rainfall event (3.28 inches). There are expansion joints. The joints and pad are sealed by~~

~~chemical resistant waterproof coating. The plan-view area of the OB pad is estimated to contain a majority (but not all) of the splatter from the burn pans.~~

Permit Attachment 2D (URS Open Burn Pan Design) contains descriptions and construction drawings on ~~new~~ burn pads. The layers of pan and pad from ash to subsurface that protect the ground surface from contamination are sequenced as follows:

LAYER OF PROTECTION	LOCATION
castable ceramic refractory (Firecrete 125)	(inside pan),
ceramic fiber board liner (V-19 Block Insulation)	(inside pan),
Steel	(pan frame and support legs),
refractory material (Kaocrete 249C & then Kaowool Paper)	(pad surface),
sealant (RTV627 Waterproof sealant, & SS4155 Primer)	(pad),
concrete (nylon-reinforced; #4 steel rebar; & PVC Pipe)	(pad),
Sand	(pad),
native fill	(pad),
Sand	(pad),
liner (40 mil HDPE)	(pad),
Sand	(pad),
virgin soil.	(pad),

An exception to the above is that one pan is about 18 inches from the pad sump. The sump is concrete, has a PVC pipe for exit stormwater flow to the retention basin, and a galvanized steel pipe to check for leaks through the concrete to the underlying sand/fill/sand material. The sump has no refractory material on its surface, but has waterproof sealant.

The ~~new~~ burn pans are of a steel welded construction, lined with refractory. The refractory is a monolithic pour with ceramic fiberboard used in the pour to form the expansion joints. The pan is tested watertight prior to the refractory installation. (YPG 2004c, RTC 47).

Burn pans are elevated on an integral steel base above the concrete pads. The ~~new~~ pads are designed to retain all precipitation (up to 4.20 inches which is a 100-year, 24 hour storm event) and direct it to the associated retention basin. Procedures for addressing accumulated precipitation are contained in Section 2.2.2.8 (Handling of Accumulated Precipitation in OB Pads and Basin). For loading and unloading safety, a curb is not used on the pad perimeter. It is flush with the ground surface. The pad slopes inward from the perimeter. In addition, the soil area surrounding the pad is graded for positive drainage away from the pad, preventing run on of storm water.

The double-wall containment piping has an annular spacing between the inner 6-inch nominal diameter pipe and the outer 10-inch nominal diameter pipe. The schedule 80 PVC inner pipe is supported inside the outer pipe by a polypropylene slide on brackets positioned with adhesive and centralizers. The annular space also allows for drainage.

The ~~new~~ pad design incorporates a floating point design to allow for some ground vibration due to OD activities. The design is similar to the ~~existing~~ former south pad which ~~has shown~~ showed no vibration damage in its 8 plus years of operation. (YPG 2004c, Part 1, RTC 64)

2.2.2.3 OB Pad and Basin Leak Detection Provisions

Liquids are not treated; therefore, leak detection is not incorporated in the design. There are provisions for leak detection designed into the pad and retention basins as described in the following paragraph. However, the U.S. Army Garrison Yuma Proving Ground only plans to monitor these two points after storm events, on a frequency specified in Permit Attachment 11 (Inspection Plan).

The leak detection system is designed as a vertical pipe, with watertight cap in each sump. The pipe extends underneath the concrete into the sand layer above the HDPE liner. The hydraulic conductivity of the sand layer above the liner shall be greater than or equal to 1E-2 cm/sec., and the sand will be approved so that localized clogging by finer materials will not occur (YPG 2004c, RTC Part 2, 54). There is 6" of vertical space in the sand between the liner and the bottom of the 4-inch monitoring pipe slotted screen. Although this will require a lot of fluid prior to detection, this thickness is required to protect the liner from damage from the pipe (YPG 2004c, RTC Part 2, 55). The interstitial space will be inspected routinely for liquids resulting from leaks from the pad above. At all times, the fluid level must be kept below 1 foot above the liner. (YPG 2004c, Part 4, RTC 8(4))

To inspect the monitoring pipe in the basin, the water level in the sump must be less than the top of the monitoring pipe. If water is in the basin, the water level is too high. This demonstrates that the cap must always be completely closed and watertight. On the other hand, the water level is the OB pad sump should never higher than the top of that pipe.

The double-walled underground piping connecting the ~~new~~ pad and ~~new~~ basin has a leak detection system to monitor for leaks from the primary inner pipe. Therefore, hydrostatic leak tests of both the inner and the outer piping are outlined at a frequency given in Permit Attachment 11 (Inspection Plan).

2.2.2.4 OB Pan Precipitation Cover

The six burn pans are each fitted with a seamless aluminum lid. The pan lid remains closed when open burning is not being conducted in that pan. When burning is conducted, the cover is removed from the heat source completely and therefore will not be subject to potential thermal buckling that was present in earlier designs involving hinged covers (YPG 2004c, RTC 46).

Because the lid is 1-inch larger in horizontal dimensions than the pan, most rain landing on the lid will trickle off the lid and land on the pad. However, because the lid is not sloped, residual moisture may exist on top of the lid before evaporated (YPG 2004c, RTC 45).

Each lid on the ~~new~~ pans ~~have an addition device; that is, it~~ is held in place with four wind tie downs (metal chains) where one end is connected to the lid and the other end is connected to the pan (not the pad). Each of the four tie downs is located at different locations along the lid.

There are neoprene mats on the aluminum cover to protect from damage to the pans upon placement and to ensure watertight fit upon placement. Neoprene is compatible with nitrates (Perry's ChE HB, 50th Ed., and pages 23-16 to 23-33).

2.2.2.5 Control of Releases of Ashes and Residues during OB

Ash residue is contained in the burn pans after treatment. Following an SOP-mandated minimum 24-hour cool-down period, ash residue is removed from the pans and transferred to the satellite accumulation area adjacent to the safety bunker.

The pads are also cleaned of any visible ash or flash reducer that might result from open burning. As shown and described in Section 2.1, ~~a new~~ the north burn pad and ~~a new~~the south burn pad ~~are planned. These pads~~ are larger and ~~will better~~ are designed to contain the incidental ash from being spread to the ground during operations. The horizontal dimensions of the ~~new~~ OB pads were based on an analysis of the required pad size performed by Jason Associates Corporation (YPG 2004c, Submittal 5). The verification of the sizing was done by taking soil samples and analyzing for COPC's. Based on the study, the pans must be centered on the pad with a minimum of 30 feet pad space surrounding the outside perimeter of the pans available to catch almost all of the splatter (YPG 2004c, RTC 49).

2.2.2.6 Methods to Control Deterioration of OB Pads and Pans

Corrosion is a primary source of deterioration of the pad and pan materials. Corrosion is minimized as follows:

Pan and Pad Refractory. The compatibility of the refractory materials (mostly silica and alumina which are effectively inert solids) against PEP is not documented. The most likely PEP were evaluated and no incompatibilities noted. A literature search revealed that other DoD facilities plan to use the refractory and have also noted no incompatibilities. The U.S. Army Garrison Yuma Proving Ground will test sample coupons of the refractory material against all PEP's. Secondary waste (residues ash, etc.) is effectively inert and should be compatible with the refractory material. (YPG 2004c, 1st NOD, Part 1, RTC 59). It is anticipated that the refractory will have a minimum service life of 5 years. Data gained from other facilities using refractory liners indicate the service life will be much greater than 5 years based on actual operation. (YPG 2004c, 1st NOD, Part 4, RTC 11(2))

Pan and Pan Supports. The pans and pan support legs are not constructed with zinc-coated (galvanized) steel. Rather, the pan elements are welded and welds would represent a break in the zinc layer. However, even without corrosion protection, the structural integrity of the pans will be maintained for sufficient life. The I-beams are of sufficient cross-section that support strength will be maintained even with the presence of surface rust. Also, the pans are elevated, have a lid to keep out rainwater, and are located in one of the most arid regions of the United

States. Furthermore, the pan attachments (e.g., grounding lugs, lid anchor, etc.) are made of rust resistant stainless steel. (YPG 2004c, RTC 43).

Concrete/Soil - Harqua gravelly clay loam which is highly corrosive to concrete may likely exist at the site (YPG 2004c, Submittal 6). However, there will be minimal impact to the concrete from the soil since the concrete is separated from the soils by over excavation and placement of a sand layer and a liner (YPG 2004c, 1st NOD, Part 1, RTC 60). However, wind blown dirt may land on the pad and basin. Additionally, the basin is designed to collect runoff from the soil between the pad and basin. Therefore, some sediment will enter the basin. The chemically resistant sealant in the pad sump and in the basin should prevent excessive concrete deterioration.

PVC Pipe - The potentially corrosive soils should not impact the PVC piping (YPG 2004c, RTC 60(3)). PVC piping is incompatible with solvents, phthalates, and ammonia, but is compatible with nitrate salts typical of propellants, ammonium dichromate and chloride, and aluminum. (www.corzancpvc.com).

PVC Pipe/Sump Interface - Epoxy resins (at pipe/concrete interface) are compatible with sodium nitrates (Perry's ChE HB, 50th Ed., page 23-16 to 23-33).

Pans are elevated above the concrete pads. The interior pan bottoms are lined with ceramic refractory material. The pans and pads are visually inspected for integrity prior to each use;

Damaged pans that exhibit excessive deterioration are replaced (The old OB steel pans are sent to a solid waste metal recycler pursuant to the procedures described in Permit Attachment 3 (Waste Analysis Plan).);

Damaged pads that exhibit minor deterioration are repaired (All waste generated is subject to Permit Attachment 3 (WAP); and

Damaged pads that exhibit major deterioration are repaired or replaced under the supervision of an independent Arizona–registered P.E. pursuant to Permit Attachment 3 (WAP).

2.2.2.7 Prevention of Accumulation of Precipitation in OB Pans

The pans are covered with metal covers when not in use to prevent the accumulation of rainwater into the pans. Treatment activities are not conducted during inclement weather. During all months of the year, evaporation exceeds precipitation, often dramatically.

2.2.2.8 Handling of Precipitation Accumulated in OB Pads and Basin

Management of precipitation on the OB pads and in the ~~new~~ OB retention basin is described in Section 3.2.5 (WAP- Frequency of Analysis) and summarized in Section 6.7 (OB/OD Operations - Other Waste Management Activities). The following is a summary of the key points.

~~The existing south pad is only capable of retaining 2,477 gallons (equivalent to a storm event of 1.08 inches), and therefore will be removed from service upon construction and certification of the new pads (YPG 2004c, 1st NOD Part 4, RTC 18). When the existing south OB pad reaches a preset level of rain accumulated on the pad (see Section 3.2.5 (WAP- Frequency of Analysis)), the accumulated rainwater will be characterized and removed.~~

As noted in Section 2.1, an improved storm water collection and retention basin is ~~planned~~ included for the ~~new~~ north and ~~new~~ south pads capable of retaining the 100-year, 24-hour (4.20 inch) rain event plus a nominal freeboard and an extra allowance. This storm event equates to roughly 15.5 inches of water that will accumulate in the 2 foot deep basin. The width of the concrete (5 feet) surrounding the basin perimeter, is flush with the ground and could contribute an additional 1.5 inches water from three sides for this storm event. Therefore, the retention basins are designed to contain a nominal rain event filling the basin (see Section 3.2.5 (WAP- Frequency of Analysis)), as indicated by gauging stripe on basin wall without requiring a removal action, and still have 4-inches of freeboard. This will prevent removal except for larger rain events, maximizing operational readiness.

It should be noted that the U.S. EPA has classified evaporation of non-HW wastewater containing explosive residue in a pit as a H.W. surface impoundment when the evaporation resulted in residue characterized as hazardous waste. However, ADEQ does not consider the OB retention basins at the U.S. Army Garrison Yuma Proving Ground base a hazardous waste (HW) surface impoundment since only de minimis HW may exist in the rainwater and only small amounts of rainwater will infrequently exist in the basin (similar to standing rainwater in the OD pits after a rain event). This is because ‘visible’ OB ash on the OB pad is cleaned up within 24-hours after the burn event (similar to standing rainwater in the OD pits) and significant standing rainwater in the basin will be removed within 24 hours. Further, the basin sump standpipe will be checked after it rains on a frequency required in Permit Attachment 11 (Inspection Plan). In the unlikely event the sediment residue accumulated in the basin is characterized as hazardous waste (e.g., D008 lead), the U.S. Army Garrison Yuma Proving Ground will notify ADEQ and ADEQ may require reclassification of the basin.

If ADEQ allowed larger amounts of rainwater to remain in the basin, wildlife would be attracted to the area, vector control may be a problem, and protective clothing would be required to check the standpipe for leakages. ADEQ has decided this is not a problem for the roughly 7,000 gallons (60’ x 60‘ x 3”) of potentially contaminated standing rainwater that could exist in the basin, basin sump, and underground pipe.

There ~~will be~~is no run-on onto the ~~new~~pad or retention basin that ~~may~~ requires additional basin capacity. The pads and retention basins are contoured into native grade with positive drainage (greater than 0.75 foot relief). It is expected that with construction of the 100-year floodplain diversion berm, that no localized sheet flow or puddles will run onto the pads and basins. (YPG 2004c, 1st NOD Part 1, RTC 58). If a problem develops during operation of the ~~new~~pad and basin where significant unaccounted rainfall enters the basin due to localized flooding within the interior area of the berm, then regrading the adjacent soil or other option will be included within 60 days by Permittee-initiated permit modification.

2.2.2.9 Controls to Prevent Wind Dispersion of Ash and Other Residue

Following each treatment event, the cover is replaced after pans are cooled to near ambient. When the Lead ORT deems it safe, the pans and pads are cleaned of all residues. This includes wind blown dirt which may have been deposited onto the OB pad and retention basin prior to the burn event. The cover(s) are placed back onto the OB pan(s). The cover (pan lid) is approximately 170 pounds and has a flush tight fit affixed over the pan with tie downs on the exterior. The residues are bagged in plastic bags, the closed bags placed in a DOT-approved container on a truck, and transferred to the satellite accumulation area adjacent to the safety bunker. Residue bags are then taken out of the container on the truck and containerized in a 55-gallon drum at the satellite accumulation area (NOD, Part 4, Comment 34). It should be noted that the container (drum or bag) the waste is transported in must be declared 'RCRA Empty' (40 CFR 261.7) prior to reuse, recycle or disposal. The container on the truck as well as the 55-gallon drum must be appropriately labeled in accordance with 40 CFR 262 when in use.

Ash removal from the pans does not occur during periods of high winds when dispersion could occur.

2.2.2.10 Ash and Residue Management

When the Lead ORT deems it safe, the pans and pads are cleaned of all residues. If a vacuum is utilized during the cleaning process, it must be declared 'RCRA Empty' prior to reuse. If the vacuum containing residues is to be transported to the satellite accumulation area, it must be appropriately labeled and not leak residues; else the vacuum or bagged residue must be placed in a labeled non-leaking container on the truck prior to transport to the bunker SAA. The residues are transferred to the satellite accumulation area adjacent to the safety bunker. Residues are bagged in plastic bags and containerized in a 55-gallon steel drum. The container on the truck as well as the DOT-approved 55-gallon drum must be appropriately marked (or labeled) in accordance with 40 CFR 262.34(c) when in use. (NOD, Part 4, Comment 34)

Prior to the drum filling or annually, whichever is first, ORT personnel will characterize the drum for disposal. Once characterized, and if determined to be HW, the drum will be transported to an installation less-than-90-day HW generator accumulation area. The U.S. Army Garrison Yuma Proving Ground Hazardous Materials Pharmacy (HAZMART) arranges with the Defense Reutilization and Marketing Office (DRMO) in San Diego, California, for proper disposal at a permitted hazardous waste facility. If the ash and residue is characterized and determined not to be HW, it will be transported and disposed of at a permitted solid waste facility.

2.2.2.11 Copies of OB Operational SOPs

A copy of the SOP for Operations is included in Permit Attachment 6 (OB/OD Operations).

2.2.2.12 Thermal Expansion and Heat Effects

The maximum temperature during open burning of waste PEP (the ‘burst’ temperature) is in the range of 3000 F to 4940 F, with 4500 F used in design calculations. (YPG 2004c, Submittal 5-3d; and YPG 2004c, Submittal 11). The materials of construction of the OB pan and the nearby OB pad must be able to accommodate this extremely hot temperature. First, the surface of adjacent materials (including the pad and sump surface) must be able to withstand the burst temperature. Second, the materials underneath the pan refractory surface must be able to accommodate the transfer of heat in it. Finally, transfer and dissipation of heat caused expansion and contraction of the materials of construction which may lead to cracking of the materials if the expansion joints between different materials is not large enough.

Consultants for the U.S. Army Garrison Yuma Proving Ground performed calculations and modeling of the heat transfer within the pan and pads. Table 2-1 below shows the expected maximum temperature of each of the construction materials. The allowed maximum temperature of each material is above the expected modeled maximum temperature for each material.

Table 2-1 also includes the coefficient of thermal expansion for each material. This coefficient multiplied by its expected maximum temperature can give the required sizing for expansion joints between the different materials. The U.S. Army Garrison Yuma Proving Ground has determined the expansion joints in the pan and in the pad are adequate.

TABLE 2-1. HEAT CONDITIONS OF OPEN BURN UNIT MATERIALS

Construction Material	Modeled Peak Temperature	Max. Allowed Temperature	Thermal Expansion Coefficient
OPEN BURN PAN			
Castable Firecrete 125 refractory concrete	4500 F (top [A]) 919 F (bottom [A])	2600 F	
Kaowool M-board expansion joint material	4500 F (top)		
Ceramic fiberboard expansion joint	4500 F (top)		
Fiberboard liner Vermiculite V-19 Block Insulation	919 F (top)	1900 F	
Galvanized Steel (pan, supports, channels, etc.) (Specify which high strength, low alloy steels)	890 F (bottom)		
316 Stainless Steel (Lugs, Nuts, etc.)			
OPEN BURN PAD AREA IN CONTACT WITH PAN			
4" Kaocrete 249C (High lime concrete)	4500 F (burst) 890 F (top) 327 F (bottom)		
1/8" Kaowool Paper	327 F	2300 F	
RTV627 Water Sealant	327 F		
SS4155 Primer	327 F		
Concrete	327 F (top) 107 F (bottom)		
with Nylon (e.g., nylon reinforced concrete)			
with #4 Rebar			
Kaowool M Board (fiber board expansion joint material in concrete)	327 F (top)	2300 F	
OPEN BURN PAD SUMP AREA			
Zinc-coated carbon steel grate (Neenah)	4500 F (burst)		
PVC Schedule 80 Double-Walled Pipe	4500 F (burst)	140 F (60 C)	
Epoxy expandable dry Pack (for pipe/concrete interface in sump)	4500 F (burst)		
Galvanized Steel (Monitoring Pipe, Slotted Screen, & Cap)	4500 F (burst)		
Chemical Resistant/Waterproof Sealant on top Sump concrete	4500 F (burst)		
Sump Concrete	4500 F (burst)		

Notes:

A. All “top” and “bottom” temperatures are those determined by modeling transfer of heat within materials. ‘Burst” temperatures are those due to instantaneous exposure. (YPG 2004c, Submittal 5-3d)

B. The URS Air Modeling report gives a max. temp. of 1922 to 3000 K (3000 to 4940 F) (YPG 2004c, Submittal 11).

C. Other references: 1 (YPG 2004c Application), 2 (Perry’s Chem Eng HB), 3 (Pocket HB p320)

2.2.3 Open Detonation

2.2.3.1 Appropriateness of treatment technology

Open detonation is commonly used by the military to treat unserviceable ordnance items. It is a proven and effective treatment method. The OD treatment area at the U.S. Army Garrison Yuma Proving Ground base is particularly well suited for this purpose.

Treatment operations are conducted in strict accordance with military safety standards and the SOP for operations (see Permit Attachment 6 (OB/OD Operations)). ORTs are highly trained in the safe handling and destruction of waste military munitions (see Permit Attachment 13 (Training Plan)).

2.2.3.2 Description of OD unit

The OD trenches at the U.S. Army Garrison Yuma Proving Ground installation are simply dug trenches, not engineered structures. The trenches are graphically presented in Permit Attachment 2F (OD Pit Drawings). These drawings were generated from the 2002 topographic mapping data. Based on historic information (YPG 2004c, NOD RTC 67), the pit size shown will change only slightly in size getting wider at the base due to explosive activity. The U.S. Army Garrison Yuma Proving Ground will maintain the pit size by adding fill but not removing soil. The side slopes of the OD pits will not be steeper than 1.5H: 1V (or 33.7 degrees) to comply with the 29 CFR 1926.652(b)(1)(i) construction safety standard for excavations (YPG 2004c, NOD RTC 69).

A layer of low permeability materials exists beneath the trenches. The soils have low permeability because they have been repeatedly compacted by historic explosive activity. This compacted region combined with the annual rainfall amounts form a dense calcified layer mitigating the potential for migration. However, explosions on the above or any naturally-occurring caliche layer would destroy the cement and result in an increase in the potential for vertical migration of fluids (RIHU05,032).

2.2.3.3 Inspection, Monitoring, and Maintenance Plan

The OD trenches are inspected in association with each treatment event. Treatment area grounds are inspected to recover any DMM or munitions scrap resulting from OD operations and to ensure that no live munitions escape detonation. YPG has certified that it ORT technician have been trained to detect and remove all live munitions present after detonation. Each OD operation throws out small amounts of soil from the trench. The trenches are maintained on an as-needed basis. Soils are sourced from one of two locations: the original borrow pile from the trench excavations and adjacent soils that were thrown out. In some cases, it has been noted that small pieces of explosives filler materials may not be consumed in the operation. In these situations, small pieces of materials may be spread around the site. The site will be inspected and maintained for this situation in accordance with Permit Attachment 11 (Inspection Plan). Any craters formed are restored using ORT equipment.

2.2.3.4 Ash and residue management

Visible ash is not generated through the OD process. Some residues may be present and the area is inspected for residues, either metal or chemical. The visible residues are removed as a part of the operations. See Permit Section 6.6.2 (Post–OD Range Maintenance) for management of OD-generated scrap residue that may or may not be contaminated with OE.

Additionally, soil sampling of the OD pits and surrounding soils is required every 5 years of operation to determine if non-visible residue exists that are in concentrations that pose a significant risk to human health and the environment.

Also, during closure of these OD units, sampling of soils in the trenches is addressed in the OB/OD Closure Plan (Permit Attachment 15).

2.2.3.5 Run-on and runoff management

In general, run-on and runoff issues are relatively minor.

Late summer and winter thunderstorms occasionally generate enough runoff to generate flow through area washes and sheet flow across the site. As stated in Section 1.4.2 (Flood Plain Protection Berm), installation of berms surrounding the OD site will prevent 100-year flood of the OD pits. That section describes the design of these engineered storm water and flood control devices based on a recent surface hydrologic analysis (YPG 2004c, Submittal 6).

Therefore, the trenches are only influenced by the local area (area inside the berms) during storm events. An analysis of the surface area-influencing run-on into the pits and pit volume was completed, using conservative estimates (Permit Attachments 2G and 2H). The volume of rainfall run-on into the pit from the local area plus the rainfall onto the pit was determined not to exceed the volume of the pit in the worst-case 100-year 24-hour storm event. Therefore, no run-off from the pit to the outside area can occur.

However, it is possible a large amount of rain water could accumulate within the pit. To prevent the potential de minimis chemical contamination from seeping deeper into soil where excavation would be impracticable (there is no contingent HW landfill closure provision in this permit), the area surrounding the pits will either be elevated to prevent run-on (similar to the soil surrounding the OB pads) or the standing rainwater will be characterized and removed from the OD pits. To accomplish the latter, the trench base should be shaped equivalent or similar to the OB pad design (slight slope to a sump) in order to pump out the water. Based on response from the U.S. Army Garrison Yuma Proving Ground (YPG 2004c, RTC 67(2)), the U.S. Army Garrison Yuma Proving Ground will choose the former option.

WASTE ANALYSIS PLAN

This section is the Waste Analysis Plan (WAP) for the HW Open Burning/Open Detonation (OB/OD) Facility. It describes how to conduct a waste analysis both on the primary waste to be received and treated at the OB/OD facility, and on the secondary waste generated at the OB/OD facility. It also describes the chemical and physical characteristics of the explosives and propellant items that will be treated in the OB/OD Treatment Facility, and describes waste characterization and disposition requirements for post-treatment waste. The information presented is based on process knowledge, military specifications, and/or chemical and physical analyses.

3.1 WASTE CHARACTERIZATION [A.A.C. R18-8-264.A (40 CFR 264.13(a), 264.602, 268.17 (c))]

3.1.1 Characterization of Primary Waste Stream

As part of its military mission, the U.S. Army Garrison Yuma Proving Ground may be required to thermally treat any munition in the U.S. inventory that is located at the U.S. Army Garrison Yuma Proving Ground, plus foreign and civilian munitions brought to the U.S. Army Garrison Yuma Proving Ground for testing or training and later declared a hazardous waste. The U.S. Army Garrison Yuma Proving Ground will not accept waste materials from off-site for OB/OD treatment. The Army considers PEP materials and munitions to be wastes when the munitions meet the definition of waste per 40 CFR 266.202. An example of the criteria taken into account for waste determinations, includes, but is not limited to:

A. An item no longer meets appropriate military standards (e.g., exceeded shelf life, excessive rust on an item, etc.)

B. An item has been declared surplus and cannot or has not been sold or recycled

C. An item has been declared unsafe for storage or transport off the installation (e.g., munitions which have undergone drop tests, shaking tests, or have been thermally challenged)

D. An item is unexploded ordnance from testing or training (including munitions which did not release properly from aircraft) which are determined by range clearance personnel to be stable enough to safely remove from the point of impact and transport to the OB/OD for treatment

PEP wastes must be characterized prior to transfer to the OB/OD facility using DoD protocols and applicable forms (e.g., DA Form 4508 – Ammunition Transfer Record, DA Form 2407 – Maintenance Request, DD 1348-1 -- Single Line Item Release/Receipt Document, or YT Form 24 – Propellant Burn Control Register). An example of each form is located in Permit

Attachment 3A (Waste Analysis Plan (WAP) Forms). Forms other than the four above may be used if they contain the same required information.

Each form will be sequentially completed through a few offices. As described in Permit Section 8.1 (Recordkeeping and Reporting -- Hazardous Waste Received), the completed form will be stored in the Operating Record. For safety reasons, waste characterization data for PEP wastes is obtained using acceptable knowledge (AK) information. The type of AK information that can be used to characterize waste munitions may be obtained from many sources including (i) historical data or user knowledge; (ii) Munitions specifications; (iii) U.S. Army Technical Manual (TM), 43 Series & 60 Series; (iv) Army Ammunition Data Sheets; and (v) Munitions Items Disposition Action System (MIDAS) database.

The U.S. Army Garrison Yuma Proving Ground is also required to verify compatibility of the waste stream with other wastes, materials of construction, and personnel protective equipment as described in Permit Section 3.2.6 (Additional Requirements for Ignitable, Reactive, or Incompatible Wastes).

The U.S. Army Garrison Yuma Proving Ground is required to specify with detail the chemical properties of the waste streams treated at the OB/OD site. The process used to develop the chemical description of the waste streams is described in Permit Attachment 4 (Constituents of Potential Concern). WAP Table 3-1 presents the munition characterization information developed in the above attachment. Also shown in Table 3-1 are the various action levels associated with the PEP materials and munitions that will be used to determine waste disposition actions.

Permit Attachment 4 (Constituents of Potential Concern) contains a master list of compounds developed through a literature review and a review of the MIDAS sheets from munitions treated at the U.S. Army Garrison Yuma Proving Ground during the period 2000-2003. The U.S. Army Garrison Yuma Proving Ground will allow the OB/OD treatment of such munitions if the user will certify that all of the munition constituents appear on the master list (refer to Permit Attachment 6A Form 6A.3 (Acceptability for Treatment Certification). If definitive information is not known or cannot be discovered about a particular munition, or an item is truly an unknown munition, it will not be treated at the OB/OD Facility unless the treatment is considered an emergency treatment. Any emergency treatment will be conducted in accordance with the facility's RCRA Contingency Plan (Permit Attachment 10), or in accordance with an emergency permit (see 40 CFR 270.61).

3.1.2 Characterization of Secondary Waste Streams

Other waste addressed by this plan consists of secondary waste streams. That is, waste streams generated as a result of the primary OB/OD treatment actions. This includes the ash and scrap metal produced directly from the treatment of PEP. The solid waste also includes, but is not limited to, soils, equipment, structures, PPE, decontamination residuals, and accumulated precipitation that might be generated within the OB/OD Treatment Facility under normal conditions. These materials may be generated as a result of OB/OD operations, periodic maintenance, monitoring actions, contact of HW with media, and/or closure activities. The type of secondary waste streams that may be generated as a result of OB/OD actions is very broad and speculative in nature at this time; however, any solid waste generated as a result of, or in support of, OB/OD will be subject to the criteria outlined within this WAP.

All secondary waste generated at the OB/OD area must go through an evaluation by the ORTs prior to leaving the area. The overall characterization process for the U.S. Army Garrison Yuma Proving Ground OB/OD secondary waste streams are described in subsequent paragraphs.

Secondary wastes undergo a hazardous waste determination (HWD) prior to or upon generation by trained the U.S. Army Garrison Yuma Proving Ground personnel. The HWD for certain secondary waste streams {see Section 3.2.2.2 (Parameters and Rationale - Secondary Wastes)} initially involve AK evaluation. If AK is not sufficient to complete the HWD [including where applicable land disposal restrictions (LDRs) the waste is subjected to testing. Other secondary waste streams {see Section 3.2.2.2 (Parameters and Rationale - Secondary Wastes)} will be subject to visual inspection or sampling and analyses.

If a solid waste has not undergone a HWD or if known or suspected changes to a previously generated waste stream have occurred, waste generators are responsible for providing the initial notification to the U.S. Army Garrison Yuma Proving Ground characterization personnel that a solid waste has been generated. Generators of solid waste are responsible for providing basic information pertaining to the waste stream composition and how the waste was generated to the U.S. Army Garrison Yuma Proving Ground characterization personnel. After the information about a solid waste stream has been received, the U.S. Army Garrison Yuma Proving Ground characterization personnel review prior HWDs within the facility's operating record to evaluate if a new HWD needs to be completed. If applicable, a new HWD is completed and is placed into the facility's operating record.

Secondary waste streams that have previously been characterized and are of the same composition will be managed in accordance with past characterization determinations (e.g., PPE routinely generated). Note: Secondary wastes that are routinely generated may be managed by generators of the waste if a HWD has already been completed on the waste stream and there is no need to involve the U.S. Army Garrison Yuma Proving Ground characterization personnel. As previously noted, where known or suspected changes in a waste stream composition has occurred or is suspected, a new HWD is instigated as outlined above.

3.2 GENERAL WASTE ANALYSIS PLAN REQUIREMENTS [A.A.C. R18-8-264.A (40 CFR 264.13(b))]

This WAP establishes processes for characterization and management of wastes generated by OB/OD treatment activities. The WAP will be kept with the OB/OD Treatment Facility operating record. Modifications to the WAP must be approved by the Arizona Department of Environmental Quality (ADEQ) as permit modifications. Examples of such modifications are:

A. Changes are made to test methods that affect the overall quality of the analyses, as described in the Federal Register (60 FR 3091, January 13, 1995).

B. Waste streams or routine process operations are changed or modified, thus requiring a change in the parameters to be tested

C. Regulations affecting the WAP are changed

D. The permit is modified or reissued.

When the WAP is desired to be revised, a request for permit modification with signatory certification is required to be submitted to the ADEQ pursuant to 40 CFR 270.11 and 40 CFR 270.42. Certain class 1 modification requests can be submitted to ADEQ seven days after the change goes into effect, and do not require ADEQ approval.

3.2.1 Waste Analysis Plan Objectives

The primary purpose of obtaining waste information through sampling and analysis or other means is to ensure that wastes are properly characterized in compliance with the Arizona Hazardous Waste Management Act (AzHWMA) requirements for general waste analysis [Arizona Administrative Code (A.A.C.) R18-8-264.A which adopts Title 40 of the Code of Federal Regulations, Section 264.13 (40 CFR 264.13)]. A secondary objective is to meet the requirements in A.A.C. R18-8-268.A (40 CFR 268.9) concerning special requirements for characteristic wastes. The objectives of the WAP are to:

A. Ensure safe handling, treatment, and disposition of all wastes prior to treatment and as secondary wastes

B. Establish uniform primary and secondary waste characterization procedures

C. Ensure treatment residues and process related wastes are properly characterized for final disposition off the site

3.2.2 Parameters and Rationale [A.A.C. R18-8-264.A (40 CFR 264.13(b)(1))]

3.2.2.1 Wastes Undergoing OB/OD Treatment

The composition of military munitions is well known. Munitions destined for treatment will be characterized using AK and will have hazardous constituents verified with the list of COPCs (Permit Attachment 4) prior to conducting OB/OD treatment activities.

Army documents and other generator knowledge documentation, such as available MIDAS information, will be maintained in the operating record for each waste treated. All wastes to be treated at the OB/OD Treatment Facility will be assigned, at a minimum, the EPA hazardous waste number for reactivity (D003) based on generator knowledge [40 CFR 261.10(a)(2)(ii)] and the requirements for reactivity [40 CFR 261.23(a)(6-8)]. All wastes will be handled, at a minimum, as reactive hazardous wastes. Other EPA hazardous waste numbers, such as D001 (oxidizer ignitability), D008 (TCLP lead), and D030 (2,4-DNT), may also apply. TCLP codes may apply to whole munitions, and the waste munitions do not need to be crushed and characterized to make this determination; rather generator knowledge can be used (see U.S. EPA H.W. Permits Compendium Document No. 9442.1991(16)). This approach minimizes handling of the material and reduces the possibility of unanticipated explosion or detonation of the wastes.

All potentially applicable EPA waste codes allowed to be treated at the facility and additional waste restrictions are contained in 'Permitted and Prohibited Hazardous Wastes' in Permit Part III.B (HW Open Burn Treatment Units) and Permit Part IV.B (HW Open Detonation Treatment Units).

Ejected PEP is not expected from a properly conducted open detonation. Ejected PEP is more likely from an open burning process. In either case the crew will search the area for ejected PEP after it is safe to do so as directed by the ORT. The ejected PEP will be collected and treated again (as applicable), in accordance with the RCRA Contingency Plan (Permit Attachment 10). The ORT is trained to locate ejected PEP and treat it. This plan contains procedures for dealing with both incidental releases and releases that are deemed a threat to human health and the environment. Alternatively, any emergency treatment may be conducted pursuant to an emergency permit.

3.2.2.2 Secondary Wastes

Secondary wastes found on-site can exhibit the same EPA hazardous waste codes as allowed for the primary wastes as given above, or additional waste codes. However, no secondary wastes that contain D001 or D003 waste codes may leave the site; rather, these secondary wastes will be re-treated on-site.

These secondary wastes include, but are not limited to (i) ash from OB activities involving PEP; (ii) storm water accumulated in burn pans, retention basins, OB pad or basin sumps, and/or in the OD pits (this rainwater may contain treatment residuals and is therefore considered a waste); (iii) disposable or spent personnel protective equipment (PPE); (iv) equipment and structures that have to be replaced or generated at the time facility closure; (v) soils for proper management during actions such as equipment structure repair, contingency plan implementation, or facility closure; (vi) debris from OD actions; (vii) maintenance waste; and (ix) sampling waste.

The overall characterization approach for secondary wastes associated with OB/OD treatment activities is outlined in Section 3.1.2 (Characterization of Secondary Wastes). As explained in that section, certain secondary wastes may be subject to AK determinations only, whereas other secondary wastes require visual inspection and/or sampling and analyses. Use of an AK determination as a HWD alone is acceptable only for secondary waste streams that have previously been characterized (a HWD has already been completed) and the newly generated waste streams are of the same composition. Such situations include, but are not limited to:

A. Precipitation accumulated after an earlier precipitation event that was sampled and analyzed, and no OB event occurred in the interval between the two precipitation events would not require sampling and analysis.

B. Ash that was previously analyzed from a specific propellant and shown for all possible future cases not to be hazardous does not have can be sampled and analyzed again.

C. If the secondary waste stream is known not to contain a specific constituent or parameter (e.g., nitrates or pH) because that constituent or parameter was not in any waste munition or propellant destroyed in the OB or OD unit, then AK can be used in lieu of analysis for that constituent or parameter.

However, this does not include, nor is it limited to, the following situations:

A. Precipitation with sediment in basin would require sampling and analysis prior to removal of the water from the basin.

B. Ash from a different propellant that could be hazardous based on past sampling and analysis does need to be sampled for all future ash generations of that propellant.

C. Debris (scrap metal) will require a visual inspection for explosive residue and other hazardous constituents. This is the detail required in a waste analysis plan. Using the term “acceptable knowledge” without detail is not acceptable.

Regardless of type of HWD performed (AK determination, visual inspection, or analysis), each shall address certain parameters for the secondary waste stream. Table 3-2 lists analytical parameters selected for the secondary waste streams. These parameters were based on the general profile of wastes acceptable for treatment at the facility (Table 3 1). These parameters take into account the hazardous waste characteristics (waste codes) and any underlying hazardous constituents of the explosives to be treated.

Waste streams that require testing undergo parameter selection by trained personnel. Secondary waste streams undergo a HWD upon generation and include, where applicable, selection of test parameters to complete the characterization process. The application of acceptable knowledge (AK) is used to select appropriate test parameters and includes evaluation of parameters associated with COPCs found in Table 3-1, and 40 CFR 262.11, and 40 CFR 268 requirements. Parameters associated with HWD, LDRs and COPCs are selected from Table 3-2. All HWD and supporting assessments/records will be documented and placed in the facility’s operating record.

3.2.3 Test Methods [AAC R18-8-264.A (40 CFR 264.13(b)(2))

3.2.3.1 <u>Waste Undergoing OB/OD Treatment</u>

Waste PEP materials (the primary waste stream) taken to the OB/OD Treatment Facility for treatment will not undergo testing. Acceptance for treatment is based on process knowledge.

It should be noted that the container (drum or bag) the waste is transported in must be declared ‘RCRA Empty’ (40 CFR 261.7) prior to reuse, recycle or disposal. Such containers can include propellant cans, lead-lined propellant bags, and shipping boxes or wooden crates.

3.2.3.2 Secondary Wastes

Table 3-3 lists the test methods that will be used for characterizing OB/OD Treatment Facility secondary wastes. These test methods quantify the parameters of interest specified in Table 3-2.

The analytical methods specified for waste characterization of the secondary wastes are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 (EPA 1986, as amended), Annual Book of ASTM Standards, American Society for Testing and Materials, or other U.S. Environmental Protection Agency (EPA)-recognized methods.

RCRA waste characterization analyses and other compliance testing (as defined by A.R.S. §36-495.1) will be performed for those parameters at an ADHS-certified laboratory [Arizona Revised Statues (ARS) Title 36, Chapter 4.3, Article 1, Section 36-495.01] unless no ADHS-certified laboratory exists for that parameter analysis. In such case, an EPA-approved laboratory may be used until a laboratory becomes ADHS-certified for that parameter. However, the Permittee shall request the laboratory apply for ADHS certification for that parameter in a timely manner, if the cost for licensing for that parameter (and the resulting increase in analytical cost) is not unreasonable compared to other ADHS-certified parameter methods.

All secondary waste will undergo a HWD and be assessed for LDRs as applicable. Management of secondary waste will be based on the results of the HWD and appropriate management options. All HWDs will be documented and placed in the facility's operating record.

3.2.3.2.1 OB Ash

Upon reaching the criteria for a required analysis in Section 3.2.5 (Frequency of Analysis), solid treatment residues will be sampled and analyzed for parameters (see Table 3-2 and Table 3-3) as appropriate to characterize the treatment residues for final disposition off the site at an approved hazardous waste TSDF or as solid waste.

As explained in Section 3.2.2.2 (Parameters and Rationale - Secondary Wastes), OB ash treatment residues will undergo a HWD using AK or testing. Where AK is insufficient to characterize the ash (including applicable LDRs associated with the treated waste) testing will be employed. Where OB ash treatment residues do not fail for TCLP and are deemed no longer hazardous, the ash will, at a minimum, be subject to applicable LDRs associated with the treated munitions (e.g., LDRs apply at the point of generation and if no switch in treatability group occurs, the LDRs associated with the original waste will be carried through to treatment residues). Prior to disposal all LDR treatment standards will be met.

3.2.3.2.2 Accumulated Precipitation

Liquids resulting from storm water accumulation will undergo a HWD and if determined to be hazardous will be subject to LDRs. Those liquids that have less than 10% total organic carbon (TOC) and total suspended solids (TSS) are deemed to be within the non-waste water treatability group and if non-hazardous will be managed as a non-hazardous waste exempt from LDRs based on legitimate switching of LDR treatability groups (i.e., legitimate switching of treatability groups under the LDR program results in a new point of generation for purposes of LDR assessment).

Significant amounts of liquids resulting from storm water accumulation in the OD or OB containment (see Section 3.2.5, "Frequency of Analyses") will be sampled in the containment (Section 3.2.4 (Sampling Methods)) if pans are needed for operation and if sufficient capacity is available, the storm water will remain within the containment pending analytical results. The accumulated precipitation is anticipated to be non-hazardous so no special precautions are to be taken. The samples will be processed under normal analytical turn-around time and this sampling, analyses, evaluation, and removal time is sufficient to allow removal of the accumulated rainwater between storm events (YPG 2004c, NOD Part 2, RTC 22(2)). The liquid will be analyzed for parameters shown in Table 3-2 using the test methods specified in Table 3-3.

Following receipt of analysis, if the accumulated water meets or is above RCRA-defined levels, the water will be immediately containerized using a portable pump and disposed of as hazardous waste (subject to LDR requirements) through the U.S. Army Garrison Yuma Proving Ground HAZMART to a permitted TSDF.

If the accumulated storm water is below RCRA levels, it will be considered for use in dust suppression or other activities in accordance with other applicable rules and regulations. For example, surface water quality standards, Arizona NPDES standards, groundwater protection standards, and other Clean Water Act standards may apply. If the results are determined to be below surface water quality standards (see A.A.C. R18-11-101 et seq.), the water will be pumped from the sump beneath the grate and discharged using a portable pump ~~approximately 20 feet to the west of the pad~~. If the water is greater than these other regulatory requirements, it will be pumped into 55-gallon drums or other bulk containers and disposed of according to standard protocols through the U.S. Army Garrison Yuma Proving Ground HAZMART facility.

All removals of accumulated water from the OB pans, pads, retention basins, or OD pits will be documented in a running log located in the operating record with sample results, volume removed, and disposition recorded.

3.2.3.2.3 Equipment, Structures, and Soils

Equipment, structures, and soils that require replacement/removal and are destined for disposal will be sampled and analyzed if AK is insufficient to characterize the waste (i.e., perform a HWD). As explained in Section 3.2.2.2 (Parameters and Rationale – Secondary Wastes), use of AK in lieu of sampling and analyses is acceptable only for secondary waste streams that have previously been characterized (a HWD has already been completed) and the waste streams are of the same composition.

Equipment, structures, and soils will be sampled and analyzed on an "as needed" basis. For example, if a MHE needs maintenance and must leave the site, appropriate samples will be taken to ensure decontamination. As another example, refractory in the OB burn pans might undergo damage and would need to be replaced.

Because equipment, structures, and soils are not recurring wastes, they will normally be sampledunder a sampling and analysis plan (SAP) prepared at the time the information is needed, which will be submitted to ADEQ for approval. In the case of simple actions, particularly for soils (see definition in Permit Attachment 3B (Simple Action Report)), sampling may be performed under this WAP and analyzed only for the constituents of concern. For example, if nitrocellulose is spilled on soil, only nitrocellulose needs to be sampled for, to verify cleanup.

Following receipt of analysis data, decisions will be made on the proper management of equipment and structures to be removed from the site or on soil that might be removed from the site or left in place. For simple actions, a "simple-action" report (Permit Attachment 3B) will be completed and placed in the operating record with a copy of the report sent to ADEQ.

3.2.3.2.4 Metal Scrap from OD Actions

Metal scrap from OD actions includes, but is not limited to, metal casings, propellant charge cans, and other recyclable materials that fall into the category of scrap metal (such as the OB pans). Even though this scrap metal exceeds 60 mm in size, this material does not meet the RCRA definition of debris because it is not intended to be land disposed. [A.A.C. R18-8-268.A (40 CFR 268.2(c,g,h)), and -270.A (40 CFR 270.13(n), & 270.14(b)(2))]

Scrap from OD actions undergoes a characteristic HWD (e.g., D001, D003, D008, D030, etc.) and includes a visual examination for ignitability (D001) and reactivity (D003). The ORT is trained by U.S. Army Garrison Yuma Proving Ground to determine if there is any hazardous waste residue associated with the scrap. If AK is not sufficient to complete the HWD, testing will be conducted (in addition to the visual examination). All visual inspection will be conducted by qualified personnel and the results of the visual inspection and the AK will be documented and placed into the facility's operating record. See Permit Attachment 6A Form 6A.2 (Scrap Inspection and Declaration).

Scrap metal destined for recycling will meet the applicable acceptance criteria associated with the receiving facility. The U.S. Army Garrison Yuma Proving Ground will identify and use a solid waste scrap metal recycler prepared to accept scrap with residue constituents at non-HW concentrations (40 CFR 261.2(e)). In the event the scrap metal still contains non-reactive HW (e.g., D008, etc.), then the scrap must be sent to a HW-permitted scrap metal recycler or facility (40 CFR 261.6(a)(3)(ii)). Sham metal recycling is not allowed. (YPG 2004c: NOD Part 2 RTC 21 and Part 4 RTC 37(6)).

3.2.3.2.5 Other Secondary Waste Streams

Other secondary waste streams include, but are not limited to, maintenance wastes, spent brooms and rags, and non-debris wastes. These secondary waste streams will undergo a HWD using AK. As explained in Section 3.2.2.2 (Parameters and Rationale – Secondary Wastes), use of AK in lieu of sampling and analyses is acceptable only for secondary waste streams that have previously been characterized (a HWD has already been completed) and the waste streams now generated are of the same composition as those previously characterized. If AK is not sufficient to complete the characterization process, testing will be conducted. Secondary waste found to be hazardous and destined for disposal will be managed as a hazardous waste and be subject to all applicable LDRs. Secondary waste that are not hazardous will be managed as non-hazardous waste and managed accordingly (e.g., recycled if applicable, disposed in a solid waste landfill).

3.2.4 Sampling Methods [AAC R18-8-264.A (40 CFR 264.13(b)(3))]

This section addresses general and specific sampling methods for primary and secondary waste streams in order to gather a representative sample for analysis by one of the analytical methods required in Section 3.2.3 (Test Methods). When these sampling methods should be used to enable a proper HWD is discussed in Section 3.2.5 (Frequency of Analysis).

3.2.4.1 General Sampling Methods and Sample Requirements

The primary waste stream (PEP materials) accepted at the OB/OD Treatment Facility will not be subjected to sampling. AK will be used to characterize the primary waste streams prior to treatment. Secondary waste streams will undergo sampling and analysis as appropriate at the time of generation. Table 3-4 lists the type of equipment and sampling methods, where appropriate, that will be used to obtain a representative sample of each secondary waste stream. Closure generated waste streams will be sampled in accordance with the sampling and analysis protocols outlined within the applicable RCRA closure plan (Permit Attachment 14).

Methods used to obtain a representative sample from each secondary waste stream generally will be consistent with the sampling approaches and protocols described in Chapter Nine of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 (EPA 1986, as amended). For each secondary waste stream sampled, a sufficient number of representative samples will be collected at each sampling event to adequately characterize the waste stream or, as appropriate, to achieve some other objective set for the sampling action.

In the case of ash and accumulated precipitation, one representative sample per waste stream at each sampling event will normally be adequate. For example, if bottom sediment (ash residue or wind-blown dirt) exists with the accumulated precipitation, one sample will be collected from the sediment and one sample will be collected from the water.

For equipment, structures, or soils subject to simple-action activities, the number of samples shall be as specified in Permit Attachment 3B (Simple Action Report).

For equipment, structures, or soil that could be contaminated by HW or HW residues and are to be removed, and the removal is not considered a simple action as defined in Permit Attachment 3B (Simple Action Report), then a SAP shall be submitted as a permit modification to ADEQ for pre-approval.

The Quality Assurance Project Plan (QAPP) (Permit Attachment 14) describes the waste sampling and analysis QA and quality control (QC) protocols that will be followed.

The appropriate sampling technique and container is selected based on knowledge of the waste material matrix (solid or liquid) and the specific analytes of interest.

Minimum sample requirements for liquid samples and for solid samples are provided in Table 3-5 and Table 3-6, respectively. Sample container selection is critical to sample quality. Considering waste compatibility, durability, volume required for analysis, and analytical sensitivities, the containers listed in Table 3-5 and Table 3-6 are recommended for sampling efforts as applicable.

3.2.4.2 Basic Sampling Protocols

Basic sampling protocols to be followed are described below:

A. Obtain samples using the equipment and methods described in Table 3-4. For RCRA analyses, sample containers will be supplied by the contract laboratory and will contain preservatives as appropriate for the analyte of interest. When appropriate, collect samples using a disposable sampler.

B. Label all sample containers.

C. Properly clean and decontaminate exterior of sample containers and the sampling hardware, if necessary. Properly dispose of waste.

D. Custody-seal sample containers, place containers in a leak-tight polyethylene bag, and place samples in a durable ice-filled cooler or comparable receptacle for transport to the laboratory.

E. The sample containers may be wrapped in blister wrap or other protective material prior to placement in the cooler or comparable receptacle, if necessary.

F. Complete the chain-of-custody and request-for-analysis forms. Retain a copy for the facility operating record.

G. Review all paperwork and enclose the forms in a leak-tight polyethylene bag taped to the underside of the cooler lid or other comparable receptacle. Seal the cooler or comparable receptacle and mark in accordance with U.S. Department of Transportation (DOT) requirements as applicable. Transport samples to an Arizona-certified analytical laboratory for analysis.

As applicable, all sample containers will be labeled with at least the following information:

A. A unique alphanumeric identifier

B. Sample location

C. Date and time of collection

D. Sample collector's name

E. Preservatives used

F. Analyses requested

Immediately after collection, filled sample containers will be placed on ice, if necessary, in durable coolers or comparable receptacles for transport to the laboratory. Blue ice can be used in conjunction with other methods (regular ice) to maintain samples at the appropriate temperature as long as it is not the sole cooling medium. If samples are to be shipped off the site for analysis, coolers or comparable receptacles will be closed tightly, sealed with tape, and custody-sealed. Samples will then be transported to offsite laboratories via courier. All sample collection, preparation, packaging, transportation, and analysis will conform to the requirements of SW-846 (EPA 1986, as amended).

The samples will be collected and transported to the laboratory for testing in accordance with A.A.C. R18-8-261.A (40 CFR 261.4(d)).

3.2.4.3 <u>Sample Control</u>

Sample control procedures are designed to ensure that each sample will be accounted for at all times. The primary objectives of the sample control procedures are as follows:

- Each sample collected for analysis will be uniquely identified.
- Important and necessary sample constituents will be preserved (for example, refrigerated or capped).
- Samples will be protected from loss, damage, or tampering.
- Any alteration of samples during collection or shipping (for example, preservation or breakage) will be documented.
- A record of sample custody and integrity will be established that will be legally defensible.
- The correct samples will be analyzed and will be traceable to the applicable data records (for example, chain-of-custody, field records, request for analysis, or laboratory ledgers).

Sample collectors will maintain permanent records of sampling activities. The sample record typically will include the following: purpose of sampling, date and time of collection, sample number, sampling location, sampling methodology, container description, waste description, description of process originating the waste, number and volume of samples, field observations, field measurements, destination and transporter, and signature of collector. This data will be on locally produced forms and will be submitted for inclusion in the operating record.

A chain-of-custody record will accompany samples at all times. The U.S. Army Garrison Yuma Proving Ground personnel collecting samples will be responsible for initiating and following chain-of-custody procedures and initiating sample custody records in the field at the time samples are collected. A chain-of-custody record form will document sample collection activities, including the sampling site, sample identification, number of samples, and date and time of collection. The form will also document the chain-of-custody, including names of responsible individuals and dates and times of custody transfers.

Transportation of samples will be performed in accordance with DOT, EPA, and Army requirements. Hazardous waste samples will be properly packaged, marked, and labeled. Shipping papers will be prepared as required by DOT regulations, EPA requirements, and Army regulations and guidelines.

Equipment used to sample waste materials will be disposable or designed for easy decontamination. Contaminated disposable equipment will be managed as hazardous waste, as appropriate, pursuant to Section 3.2.8 (Management of Process Related Wastes). Cleanable (non-disposable) equipment will be thoroughly decontaminated pursuant to Section 3.2.4.4.3 (Sampling Equipment Decontamination), or managed as either a solid waste or a hazardous waste based on a HWD.

3.2.4.4 <u>Specific Sampling Procedures</u>

Specific sampling procedures are presented here for recurring secondary waste streams. That is, procedures used for sampling of ash and accumulated precipitation are presented in this section of the WAP. Sampling procedures that may be implemented for collection of other samples (e.g., from soils or treatment equipment) are presented in Permit Attachment 3C (Sampling Procedures for Structures, Equipment, and Soil).

3.2.4.4.1. Ash Sampling

Samples will be collected from drums of waste ash when any of the events listed in Section 3.2.5 (Frequency of Analyses) occur.

A drum of waste treatment residue/ash will contain material
from multiple OB actions, each individually bagged from the operation, described as follows:

Note: Though some propellants are incompatible (e.g., DNT and nitrates), there is no reason to expect that ash resulting from the thermal treatment of such propellants would be incompatible. DNT and strong oxidizers are often both components of the manufactured military designed PEP with no incompatibility issues noted. In their pure form they are incompatible but this is not the case. Further, any unburned PEP in the ash would have been identified and treated before the operations proceed to dispose of the ash. In the history of this site, no cases of incompatibility of ash have been documented. (YPG 2004c, 1st NOD Part 2 RTC 18 and Part 4 RTC 43).

After each treatment action, residues are swept up and put into bags that are then placed in the active satellite accumulation drum located next to the safety bunker. The bag must first be placed in a small container (or another bag) and appropriately labeled prior to transfer from the OB/OD site to the safety bunker. Once at the safety bunker, the inner bag can be transferred from the small container to the 55-gallon drum. Similar actions are required for the ash if a vacuum instead of a broom is used to collect the ash.

Re-usable equipment that have not been emptied or decontaminated, such as vacuums, brooms and dust pans, must be managed in a manner that is protective of human health and the environment prior to being managed as a waste. Once the ash is removed from the small container, bag, or vacuum, the container, bag, or vacuum must be declared "RCRA empty" (40 CFR 261.7) (since these are considered containers or inner liners), or be managed as containing hazardous waste.

Additionally, the broom and dust pan must be decontaminated pursuant to Section 3.2.4.4.3 (Sampling Equipment Decontamination), or managed as containing hazardous waste until disposal pursuant to Section 3.2.8 (Management of Process Related Wastes).

It is assumed that the residue within any single bag is well mixed because of the manner in which it is collected.

When the drum is ready for sampling, a composite sample of the waste will be taken. This will be done by weighing each bag of residue in the drum and removing a mass-based portion from each bag for the composite. It is estimated this can be done by removing 50 grams per kilogram of residue mass. In this manner, a 10-kilogram bag of residue would contribute 500 grams to the sample while a 2-kilogram bag would contribute only 100 grams to the sample. After proportionate amounts of each bag have been collected, the collection is mixed well and the composite sample is taken from this mixture. Using this sampling design, the analytical results are not unduly swayed by a single bag containing a small amount of residue. The suggested value of 50 grams of sample from each kilogram of residue is an estimate. The value is not important as long as whatever value selected is used uniformly for all the residue bags in the drum to obtain the amount of residue required for the sample. Experience of the sampling team will be used to determine the actual amount of sample to be removed from each residue bag based on the amount of waste in the drum. Any excess collected material is returned to the drum (not to individual residue bags). The following equipment is required for waste ash sampling:

Sample containers, coolers, and ice
Sample collection logs, chain-of-custody forms, sample numbers, labels, custody seals, leak-tight polyethylene bags
Chemical-compatible gloves
Safety glasses
Plastic sheeting
Work surface for sample preparation and documentation
Scale (weight)
Equipment decontamination station unless equipment is disposable

Waterproof ink pen
Container for mixing composite sample
Hand trowel or scoop

Step-by-Step Process:

A. Cover work surface with plastic sheeting. Arrange sample containers, custody seals, chain-of-custody forms, zip-lock bags, and sample collection logbook on work surface. Prepare decontamination area and/or disposal container. Ready sampling equipment, including weight scale. Spread plastic sheeting next to drum. Don safety glasses.

B. Open the drum. Don gloves.

C. Remove the bags from the drum and place on the plastic sheeting. Working with one bag at a time, weigh the bag and record the weight. Using the trowel or scoop, remove and weigh~~t~~ an amount of ash from the bag equal to 50 grams for each kilogram of the bag's weight. (For example, if the bag weighs 4.5 kilograms, extract $4.5 \times 50 = 225$ grams of ash from the bag). Place the extracted ash in the sample-mixing container. Return the bag to the drum after the sample has been removed. Repeat the process until all bags have been sampled.

NOTE: Since the waste ash from multiple OB actions is expected to be compatible, it may be mixed with no chemical reactions expected. However, care should be taken.

NOTE: The sample removal rate (i.e., 50 grams per kilogram in bag) can be varied based on the experience of the sample collection team as long as the same rate is applied to each bag in the drum. If insufficient sample is collected for the composite, then the process must be repeated by collecting additional sample material from each bag. Accordingly, it is to sampling team's benefit to collect sufficient sample material the first time.

D. Gently stir the contents of the composite sample to avoid release of the material. Stir until the contents are thoroughly mixed. Close and secure drum cover.

E. Don clean gloves prior to filling sample containers. Using the trowel or scoop, carefully remove a portion of the waste material from the mixing container. Place the material into the sample container, adding sufficient material to fill the container. Secure the lid to the sample container and apply the completed custody seal. Each sample will be given a unique sample identification number. Label the container, including date and time of sample collection. Place each sample container into a leak-tight polyethylene bag and close the bag securely. Place the sample on ice in a cooler. Complete the chain-of-custody information for the sample. Record the details of sample collection in the logbook.

F. Decontaminate any non-disposable equipment and collect rinsate sample(s) pursuant to Section 3.2.4.4.3 (Sampling Equipment Decontamination), or manage the equipment as containing hazardous waste.

Collect and containerize any disposable sampling equipment and other waste, and manage based on an applicable hazardous waste determination (HWD).

3.2.4.4.2. Accumulated Precipitation Sampling

Samples will be collected of precipitation accumulating in the burn pad sumps in the event there are sufficient quantities to remove and sample. If precipitation accumulates beyond a set nominal amount (see Section 3.2.5, "Frequency of Analyses"), a sample will be collected to facilitate proper management of the wastewater when it is removed (and to determine the most appropriate way to remove the liquid).

NOTE: If 3-inches of rainwater exists in the 60'x 60' OB retention basin, this equates to one sample per 6,735 gallons of water not accounting for sump and underground pipe. If bottom sediment (ash residue or wind-blown dirt) exists with the accumulated precipitation, one sample will be collected from the sediment and at least one sample will be collected from the water.

Samples will be collected individually from each sump that has accumulated sufficient water using a long-handled dipper or similar device. An alternate means of collecting the sample might be necessary if there is any apparent phase separation in the water. Any solid or sediment residues that reach the burn pad sumps will be swept up and managed with the burn residues.

It is assumed that the water in the containment area will be homogeneous and a grab sample will be adequate for characterization. If the water appears to be stratified, this sampling procedure will be modified (A permit modification will be submitted to ADEQ.).

The following equipment is required for storm water sampling:

Sample containers, coolers, tape, and ice
Sample collection logs, chain-of-custody forms, sample numbers, labels, custody seals, leak-tight polyethylene bags, pH strips
Disposable dipper or comparable disposable surface water sampling device
Chemical-compatible gloves
Safety glasses
Disposable toweling
Plastic sheeting
Work surface for sample preparation and documentation
Equipment decontamination station, if reusable equipment is utilized
Waterproof ink pen

Step-by-Step Process:

A. Cover work surface with plastic sheeting. Arrange sample containers, custody seals, chain-of-custody forms, leak-tight polyethylene bags, and sample collection logbook on work surface. Prepare decontamination area and/or disposal container. Determine sample locations and document on map of containment. Don safety glasses.

B. Place a sheet of plastic on the ground next to the containment and place the sample containers on the plastic sheeting. Ready the sample containers and ensure that it/they will not tip or fall during filling.

C. Don gloves.

D. Gently and slowly lower the sample device into the water. Dip approximately half the depth and bring the dipper back to the sample container(s). Transfer the sample into the sample container(s) with as little loss as possible. Fill the container slowly to prevent a sudden overflow of the liquid. Continue this process until the sample container(s) is/are filled. If it is necessary to break off during the sample collection procedure, remove gloves and place them in the waste container. Don clean gloves prior to continuation of sample collection.

E. For the cyanide sample container, check sample pH according to method and adjust if necessary.

F. Close the sample container, decontaminate the container exterior if necessary (see Section 3.2.4.4.3 (Sampling Equipment Decontamination)), and take the sample to the work surface for documentation.

G. Place the disposable sampler and any other waste material used in the sampling procedure into the waste container and close the container and manage based on an applicable hazardous waste determination (HWD).

H. Apply the completed custody seal to the sample container. Each sample will be given a unique sample identification number as specified in Section 3.2.4.2 (Sampling and Analytical Procedures). Label the container, including date and time of sample collection. Place each sample container into a leak-tight polyethylene bag and close the bag securely. Place the sample on ice within a cooler. Complete the chain-of-custody information for the sample. Record the details of sample collection in the logbook.

I. Decontaminate any non-disposable equipment and collect rinsate sample(s) pursuant to Section 3.2.4.4.3 (Sampling Equipment Decontamination), or manage the equipment based on an applicable hazardous waste determination (HWD).

3.2.4.4.3. Sampling Equipment Decontamination

The following equipment is required for decontamination of non-disposable plastic, steel, or relatively impervious items (MHE, vacuum, broom, bags) that are to be reused at the HW OB/OD site or decontamination of non-disposable sampling equipment.

NOTE: For equipment that is to be removed from the OB/OD site (excluding sampling equipment), the stricter decontamination and sampling procedures in Section 3.2.4.1 (Analysis of Treatment Residues) will be followed.

Clean buckets, brushes, spray bottles, laboratory grade detergent
Site water
Deionized water
Flat working surface
Personal protective equipment (PPE)

Step-by-Step Process:

A. Using appropriately sized and shaped brushes, scrub each area of each item with a laboratory-grade detergent.

NOTE: The stainless-steel spoons/scoops, stainless-steel bowls, and dipper are to be decontaminated after each sample collection or manage either as a solid waste or a hazardous waste based on an applicable hazardous waste determination (HWD).

B. Thoroughly rinse each area of each item with site water.

C. Thoroughly rinse each area of each item with deionized water.

D. Allow each item to air dry.

E. Collect the decon water for storage, characterization, and disposal.

F. Allow equipment to air dry prior to removing from site.

At a minimum, a rinsate sample will be taken to verify cleanable equipment are decontaminated. One rinsate sample for every ten (solid or liquid) samples obtained by the cleanable equipment; and one rinsate sample for every 100 s.f. of the equipment at the completion of sampling activities.

At completion of the decontamination activities, the spent decontamination/rinsate solution will be containerized and labeled and managed as either a solid waste or a hazardous waste based on an applicable HWD.

3.2.5 Frequency of Analysis [AAC R18-8-264.A (40 CFR 264.13(b)(4))]

As described in Section 3.2.2.2 (Parameters and Rationale – Secondary Wastes), HWDs may include either AK, visual inspection, or sampling and analysis. The frequency with which the initial analysis (HWD) of the waste will be reviewed or repeated to ensure it is accurate and up to date for both primary and secondary waste streams are generally described as follows:

A. When there is a known or suspected change in the waste stream that could affect the characteristics of a particular waste stream;

B. If AK is insufficient to characterize the waste; or

C. When new regulations are promulgated which result in additional RCRA characterization requirements.

In addition, specific requirements for review of the waste streams are as follows:

3.2.5.1 Primary Waste Munitions

A HWD will be performed on each waste munition received for treatment using AK. The AK relies on up-to-date military specifications and documents for the type of munition destroyed. If any of the general criteria above are met, the OB/OD treatment personnel shall ensure accurate up-to-date documents that meet those criteria have been provided prior to treatment of the waste munition.

3.2.5.2 Secondary Waste Ash

An initial HWD (AK) shall consider ash a hazardous waste upon generation. It remains a hazardous waste unless another HWD determines otherwise. At a minimum, an initial or other HWD is performed on the OB ash when any of the following events occur.

A. Ash is collected from the burn pad prior to placing the ash in the drum; or

NOTE: If the new waste stream and the prior containerized waste stream(s) are potentially incompatible, the waste streams must be placed in separate drum which are separated from each other.

B. The waste drum is ready to be sent to the installation's HAZMART (HW generator accumulation area) when the drum is full (The drum is considered full when it is 75% full of waste), or the waste has accumulated in the drum for a year.

C. Drums of ash are sampled at one of the following locations: the safety bunker HW satellite accumulation area or at the U.S. Army Garrison Yuma Proving Ground HAZMART less-than-90-day HW accumulation area. At a minimum, samples will be collected from drums of waste ash when any of the general criteria above (Section 3.2.5 (Frequency of Analysis)) are met.

3.2.5.3 Secondary Waste Accumulated Storm Water

Storm water samples will be collected when sufficient water has accumulated in the pits, pads, sumps, and/or retention basins defined in Permit Attachment 6 (Operations – Types of Waste Management Activities) and Permit Attachment 11 (Inspections) as:

A. Any amount of liquid on the ~~current~~pad or on the ~~future~~ retention basin that will overflow for a predicted upcoming weather event. The water removal from these locations will be timed so that such overflow will not occur.

B. Any amount of liquid in the OD Pits that will overflow for a predicted upcoming weather event or be in such quantity as to infiltrate to groundwater. The water removal from these pits will be timed so that such overflow or infiltration will not occur.

3.2.5.4 OB Structure Secondary Waste Streams

OB structures will be sampled per Section 3.2.4 (Sampling Methods) and analyzed per Section 3.2.3 (Test Methods) on an "as needed" basis as follows:

A. Burn pans, grates, and other metal parts will be visually inspected according to Section 3.2.5.6 (Scrap Metal Secondary Wastes).

B. All other structural waste streams (e.g., refractory, pad concrete, liners, PVC pipe) require sampling since each waste is uniquely generated (a prior HWD would not be applicable).

3.2.5.5 Soil Secondary Waste Streams

Whenever soil at the OB/OD facility is excavated (except for soil in the OD pit, soil ejected from the pits, and clean soil brought in and stockpiled to cover munitions to be detonated, fill craters, or level the pit interior), including, but not limited to, soil that is to be disposed, it is subject to a HWD. The HWD shall either include visual inspection or sampling at a frequency as follows:

A OD Soils - All soil within 10 lateral feet of an OD pit perimeter and less than 20 feet below the bottom of the pit base shall undergo sampling. All soil greater than 10 lateral feet but less than 120 lateral feet of an OD pit perimeter, and from 0 to 3 feet bgs shall undergo sampling. All soil within these lateral limits but deeper than the above depths shall be sampled dependant on the analytical results of the soils above it. All soil within these lateral limits that are not sampled and all soil outside these lateral limits out to the protective area fence line shall, at a minimum, undergo visual inspection for stains, discolorization, foreign objects, and other suspect contamination.

B. OB Soils - All soil within 120 lateral feet of an OB pan perimeter, and from 0 to 3 feet bgs shall undergo sampling. All soil within these lateral limits but deeper than the above depths shall be sampled dependant on the analytical results of the soils above it. All soil within these lateral limits that are not sampled and all soil outside these lateral limits out to the protective area fence line shall, at a minimum, undergo visual inspection for stains, discolorization, foreign objects, and other suspect contamination.

3.2.5.6 Scrap Metal Secondary Waste Streams

Whenever scrap metal from the OB/OD area has been generated, all scrap metal wastes that are to be recycled are to be 100% visually inspected to be free of explosives. In addition, all scrap metal is to undergo a HWD for other hazardous wastes, HW constituents, and HW decomposition products.

3.2.5.7 Other Secondary Waste Streams

Other secondary waste streams include wastes generated related to:

A. the OB/OD processes (see Section 3.2.8 (Management of Process-Related Wastes)). Such waste include but are not limited to, general refuse, disposable sampling equipment, disposable PPE, and spent decontamination water; and

B. maintenance activities on the OB/OD units and nearby areas (see Section 3.2.9 (Management of OB/OD Maintenance Wastes)). Such wastes include but are not limited to, replaced burn pans and other metal parts, refractory, concrete, liners, and non-metallic parts.

Each of these wastes requires an initial HWD upon generation and final HWD prior to transport off the U.S. Army Garrison Yuma Proving Ground property. The sampling frequency for these wastes are as follows:

C. General refuse which has not contacted hazardous waste does not need to be sampled.

D. Structural related waste will be sampled according to Section 3.2.5.4 (OB Structural Secondary Waste).

E. Metal parts will be visually inspected according to Section 3.2.5.6 (Scrap Metal Secondary Wastes).

F. All other waste streams (e.g., spent decontamination solution, disposable equipment, contaminated general refuse) require sampling since each waste is uniquely generated (a prior HWDwould not be applicable).

3.2.5.8 Secondary Waste Contaminating Dedicated Equipment

Any equipment or structures that are deemed dedicated items (e.g., OB pad ash vacuum, brooms, MHE, OB pan refractory, fire brick, etc.) and undergo frequent reuse does require decontamination immediately after usage. This is because the item could contain hazardous waste which is subject to RCRA regulation. However, the following are acceptable alternatives to immediate decontamination:

A. Decontamination can occur once every 90 days if the item is managed in a container subject to 40 CFR 262.34(a) regulations until usage. When the item is required to be used it is taken out of the container and double bagged and transported to the area of work in order to perform its required function.

B. Decontamination can occur once a year if the item is managed in a container subject to 40 CFR 262.34(c) regulations until usage. When the item is required to be used it is taken out of the container and double bagged and transported to the area of work in order to perform its required function.

C. The entire MHE (including tires) potentially in contact with the hazardous waste must be swept off or vacuumed prior to moving it to the on-site parking area. This action must be done at the top of the OD pit ramp or on the OB pad. The location of the on-site MHE parking area must be documented by GPS and appropriately staked or marked to ensure continued parking at this location and for sampling the area at closure.

D. No dedicated equipment may be taken off-site without first being decontaminated and sampled to verify cleanliness.

3.2.6 Additional Requirements for Ignitable, Reactive, or Incompatible Wastes [AAC R18-8-264.A (40 CFR 264.13(b)(6))]

As stated above, the waste characterization information on the explosives and propellant items that will be treated in the OB/OD facility is well documented. However, compatibility and reactivity problems arise when compounds are mixed changing their overall properties, such as evolving toxic gases within close proximity to the mixture, or reducing the flash point of the mixture to levels near ambient (above 160 F at the desert floor), The mix could also diminish the effectiveness of treatment. The effect of any new chemicals and mixtures of chemicals must be known. Therefore, the waste characterization information must be used to verify compatibility with the waste.

Compatibility between different chemicals and compounds will be verified through testing (e.g., small-scale lab burn test, a coupon test, etc.) or by using credible published documents or literature, such as Irvin Sax's "Properties of Dangerous Materials", NIOSH Pocket Guide to Chemical Hazards, and NFPA Standard 491M "Manual of Hazardous Chemical Reactions", and the NOAA >Chemical Reactivity Worksheet (http://response.restoration.noaa.gov/chemaids/react/about.html), etc. A minimum of three references should be used to verify compatibility.

The explosives and propellant items will be treated in ways documented to be compatible with other propellants, explosives, and pyrotechnics, as governed by Army doctrine and regulations. For example, DNT is a known incompatible with nitrates and other strong oxidizers and appropriate precautions must be taken (see Section 3.2.4.4.1 (Ash Sampling)). (ADEQ 2004, NOD Part 2, Comment 11)

Compatibility evaluations have been completed on most secondary waste streams and have been determined not to be a concern.

Compatibility between equipment and waste streams is also not a problem. The OB/OD process equipment and waste containers are specifically designed to handle these items as described in this permit. No compatibility issues exist with the equipment or any of the proposed waste streams. However, coupons of refractory are currently being tested (See Permit Part I.H

(Schedule of Compliance). Also, fuels (petroleum and hydrocarbons) are incompatible with oxidizers (e.g., nitrates, perchlorates, etc.).

The containers of recurring secondary wastes are segregated for different waste streams and are sampled for constituents of concern prior to release from the OB/OD Treatment Facility. This action will prevent the improper handling of reactive or incompatible waste streams.

Any secondary wastes with visually observed propellant or black powder will be included in the next scheduled burning operation or if applicable, will be treated in place in accordance with the procedures in the RCRA contingency plan (Permit Attachment 10). These wastes do not need to be sampled, and can be containerized (in a satellite accumulation drum next to the OB pan) until the next treatment.

Any secondary wastes with visually observed explosives will be included in the next scheduled detonation operation. These wastes do not need to be sampled, and can be containerized (in a satellite accumulation drum in the OD pit) until the next treatment.

Any secondary wastes with no visually observed PEP, but with analytical results indicating an ignitable oxidizer (D001) or reactivity (D003) hazard, will be treated in the next scheduled OB/OD operation (see Permit Attachment 6 (OB/OD Operations) for applicable waste holding time limits) or will be dispositioned off-site as a hazardous waste.

Any secondary wastes with a TC (40 CFR 261.24) hazard (see Permit Section 3.2.2 (Parameters and Rationale) for allowed waste codes), but no visually observed PEP and no analytical results indicating ignitable oxidizers (D001) or reactivity (D003) hazards, will be dispositioned off-site as a hazardous waste.

Permit Attachment 6.4 (Prevention of Unintentional Reaction of Ignitable, Reactive, and Incompatible Waste) shall be followed.

3.2.7 Sampling and Analysis QA/QC Procedures

Permit Attachment 14 (QAPP) presents the quality assurance/quality control (QA/QC) requirements for sampling and analysis that will be followed to ensure waste sampling and analysis objectives are met and that all data obtained are technically sound, statistically valid, and properly documented.

Samples for RCRA and explosives analysis will be shipped off the site to an Arizona-certified laboratory.

3.2.8 Management of Process Related Wastes

Management of OB ash, accumulated precipitation, equipment, structures, soil, and scrap was discussed in Section 3.2.3.2 (Secondary Wastes). The following paragraphs discuss management of process-related wastes. Management of OB/OD maintenance wastes is discussed in Section 3.2.9.

OB/OD sampling activities will generate a variety of process related wastes, including general refuse (i.e., ordinary trash), contaminated disposable sampling equipment, disposable clothing and other personal protective equipment (PPE), cleanup materials (paper towels, plastic sheets, etc.), and decontamination water. These wastes, with the exception of general refuse, may potentially contain target contaminants above regulatory levels. These materials will be drummed, and disposed of as hazardous waste if analytical results determine the waste to be hazardous as described below.

Until analytical results are received, the drummed waste will be labeled "Hazardous Waste – Analysis Pending" (or equivalent), and will be kept either near the sampling site, transported to the safety bunker, or transported to the HAZMART. In the event the drummed waste is kept near the sampling site, the new SWMU shall be documented, 40 CFR 262.34 standards shall be followed, and no OB/OD operations will occur until the waste is removed.

General refuse, which includes all general facility trash that is non-hazardous at the point of generation and not subject to LDRs can be managed in on-site dumpsters in accordance with normal the U.S. Army Garrison Yuma Proving Ground procedures.

Spent decontamination and rinsate water will be placed in U.S. Department of Transportation (DOT)-approved drums. The DOT-approved drums will be properly sealed and labeled (including type of waste, date generated, and location). In order to prevent leakage of the containerized liquids, the drums will be filled up to 95 percent of their capacity, allowing for at least a 5 percent air space at the top of the drum. A HWD will be performed and the spent decontamination solution/rinsate water will managed accordingly.

Final determination of whether the potentially contaminated process related materials are hazardous wastes will be made based on analytical results from the ash or water, or other material being sampled.

3.2.9 Management of OB/OD Maintenance Wastes

Refractory, the burn pans, concrete, etc. are expected to require periodic disposition due to routine maintenance, repair, or replacement.

The burn pans and other metal parts will be inspected and certified for disposition as metal scrap according to Section 3.2.3 (Test Methods), or if necessary, such items will be sampled to support a hazardous waste determination.

The refractory, concrete, and other non-metallic materials will be characterized using the sampling and analytical methods specified for ash (see Section 3.2.3 (Test Methods) and Section 3.2.4 (Sampling Methods)) or they will be sampled through other means.

Equipment (such as MHE or the OB pad ash vacuum) that could be contaminated, is to be reused, and that requires maintenance (or temporary storage) off the OB/OD site, will be managed pursuant to Section 3.2.5.8 (Wastes contaminating Dedicated Equipment).

3.3 WASTE ANALYSIS REQUIREMENTS PERTAINING TO LAND DISPOSAL RESTRICTIONS [AAC R18-8-264.A (40 CFR 264.13(c), 268.7)]

The regulations which enforce the Hazardous and Solid Waste Amendments of RCRA (adopted by the Arizona Hazardous Waste Management Act) prohibit land disposal of certain types of wastes that are subject to AzHWMA/RCRA and establish concentration limits and treatment standards for restricted wastes prior to land disposal. Where applicable, all OB/OD wastes will be managed in accordance with land disposal restriction (LDR) requirements. Information presented in this section describes how the wastes that are subject to LDRs will be characterized and managed. All LDR determinations will be placed into the facility's operating log (see Permit Attachment 15 (Recordkeeping and Reporting)).

OB/OD operations treat the ignitable and reactive nature of the PEP associated with the EPA Hazardous Waste Numbers D001 and D003. The ash, water, and other secondary waste streams might require treatment to achieve the treatment standards for toxicity characteristic (TC) metals (primarily lead, D008), TC organics, and any identified underlying hazardous constituents (UHCs) associated with the PEP prior to land disposal. These waste streams might be sent off the site for treatment at an approved hazardous waste TSDF in order to achieve LDR requirements prior to land disposal.

The U.S. Army Garrison Yuma Proving Ground will provide written notification and/or certification as applicable with each shipment of waste to the receiving TSDF according to the requirements of A.A.C. R18-8-268.A (40 CFR 268.7) as required. Wastes accompanied by a LDR certification that all LDR treatment standards associated with the waste have been met may be disposed of as nonregulated waste under the requirements found in A.A.C. R18-8-268.A (40 CFR 268.9), subsequent to the required documentation and notification.

Copies of all notices, certifications, demonstrations, and other documentation produced to support the determination for restricted wastes treated on the site, or treated, stored, or disposed off of the site at an approved hazardous waste TSDF will be retained in the OB/OD operating record by the U.S. Army Garrison Yuma Proving Ground until closure pursuant to A.A.C. R18-8-264.A (40 CFR 264.73(b)(3,12)).

3.3.1 Waste Characterization

The waste characterization requirements that will be followed for the wastes subject to LDRs are the same as those described in Section 3.2 (General WAP Requirements). The information provided by this characterization will allow for determination of LDR applicability and compliance with LDR treatment standards, concentration limits, and/or notification and certification requirements.

Wastes ejecting or deposited onto the ground surface as a result of OB/OD does not constitute land disposal and is not subject to LDR until it is removed from the ground surface (or at closure). Once removed from the ground surface (time of generation) or at closure, the following requirements apply:

A. Excluding scrap metal generated from the treatment of waste munitions, treatment residuals including soil removed from pits/trenches that are within the same treatability group (e.g, ash) that is generated from munitions destruction are subject to applicable LDR requirements. Treatment residuals (e.g., ash) will undergo a HWD and be assessed for applicable UHCs and associated universal treatment standards (UTS) at the time of generation. Applicable UHC will include at a minimum, those reasonably expected UHCs originally associated with the treated munitions regardless of whether the ash fails TCLP.

B. Scrap metal generated from munitions treatment will undergo a visual examination for explosive residues and undergo a HWD prior to recycling as scrap metal (see Section 3.2.4.1.4 (Scrap Metal from OD Action)).

C. Waste designated as a new point of generation for purposes of LDR (i.e., switch in treatability group) and waste not generated from the treatment of munitions (e.g., soil not within pit areas, rainwater, sludge generated from the management of rainwater, equipment, structures, PPE, etc.), will undergo a HWD and if hazardous will be subject to applicable LDR treatment standards.

Treatability groups will be determined according to Section 3.3.2 (LDR – Sampling and Analytical Parameters).

Testing to comply with the LDRs including the identification of reasonably expected UHCs will be based on the applicable treatability group and treatment standard associated with the applicable COPC. Totals analysis will be used unless otherwise specified in 40 CFR 268.40, 40 CFR 268.48, or 40 CFR 268.49 (as applicable).

Debris waste destined for disposal (e.g., equipment, structures, PPE) will meet the applicable definition of debris waste as noted in 40 CFR 268. Debris waste managed under the alternative treatment standards outlined in 40 CFR 268.45 will meet the applicable performance standards associated with the applicable debris type per this regulatory section. Hazardous debris waste not managed under the alternative treatment standards expressed in 40 CFR 268.45 will be characterized to determine LDR applicability according to Section 3.3.2 (LDR – Sampling and Analytical Parameters).

Generator storage (accumulation) of OB/OD restricted wastes will be in accordance with the prohibitions of storage of restricted wastes, A.A.C. R18-8-268.A (40 CFR 268.50). All wastes associated with the OB/OD facility will be accumulated in accordance with the requirements of A.A.C. R18-8-262.A (40 CFR 262.34) until characterization is completed.

3.3.2 Sampling and Analytical Procedures

The characterization (visual inspection, sampling, and analytical test) methods that will be followed for wastes subject to LDRs are the same as those described in Section 3.2.3 (Test

Methods) and Section 3.2.4 (Sampling Methods). Parameters for characterization determinations are selected from Table 3-2.

3.3.3 Frequency of Analysis

The frequency of analysis requirements that will be followed for wastes subject to LDRs are the same as those described in Section 3.2.5 (Frequency of Analysis).

3.4 ADDITIONAL REQUIREMENTS FOR TREATMENT FACILITIES

The following paragraphs describe the additional sampling, analysis, and documentation requirements for wastes treated in the OB/OD Facility. Once waste has undergone treatment, the treatment residuals will be containerized, labeled, and stored in waste accumulation areas (either a satellite accumulation point area [40 CFR 261.34(c)] or a less-than-90-day area as appropriate) pending shipment off the site to a permitted TSDF. The residuals will be characterized as described in Section 3.4.1 (Analysis of Treatment Residues), and all required LDR notifications and certifications will be prepared by the U.S. Army Garrison Yuma Proving Ground personnel and forwarded with the waste shipment to the offsite TSDF or other facility as allowed by the regulations. All records and results of waste analyses and waste determinations will be recorded as they become available and will be maintained in the operating record until closure of the facility.

3.4.1 Analysis of Treatment Residues

Analyses of treatment residues are used to characterize the residual wastes for waste determination and LDR requirements. Characterization of treatment residuals is described in Section 3.2.2 (Parameters and Rationale).

3.4.2 Sampling and Analytical Procedures

Sampling and analysis will be conducted on the treatment residuals as described in Section 3.2.3 (Test Methods) and Section 3.2.4 (Sampling Methods).

3.4.3 Frequency of Analysis

Section 3.2.5 (Frequency of Analysis) lists the frequency of characterizing treatment residuals.

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ATTACHMENTS

OB AND OD OPERATIONS

6.1. PREPARATION FOR OB/OD OPERATIONS

The operation of the OB/OD area is governed by strict adherence to Army Regulations (ARs), which assist in establishing local SOPs. Prior to commencing an OB/OD activity and throughout the day, one of the U.S. Army Garrison Yuma Proving Ground meteorological stations is contacted to evaluate conditions to determine whether conditions are conducive to safe and environmentally responsible operations. The determination for conducting OB/OD operations is based on meteorological factors, including no chance of precipitation or electrical storms, wind speeds of greater than 3 miles per hour (mph) and less than 15 mph, visibility greater than 1 mile (i.e., no dust storms), cloud cover less than 80%, and ceiling estimated greater than 2000 feet. Additionally, inversion conditions also cancel OB/OD operations. If any one of these parameters falls below the established criteria, OB/OD activities will be cancelled until conditions change and sometimes for the day. If in the opinion of the onsite ORT, meteorological conditions are unsafe, the ORT can cease operations at anytime. Typically, meteorological factors do not inhibit the ability to perform OB/OD at the U.S. Army Garrison Yuma Proving Ground. In addition, the following restrictions are applied to the operation of the OB/OD area:

- Compliance with Federal, State, and local environmental restrictions is mandatory.
- All entry and egress of the area is coordinated with Range Control (see Permit Attachment 8 (Security Provisions)).
- A Barricade is placed and warning device(s) are activated (at a minimum, a red warning flags shall be flown but also flashing lights may be activated) at locations specified in Permit Section 8.2.3 (Barricades and Red Warning Devices) as soon as the ORT personnel access the site with a pending OB/OD operation, and they remain until the facility is verified clear.
- Firing approval is granted through Range Control. Range control will ensure there is no air traffic within the proximity of the OB/OD facility during applicable operations.
- Maximum accumulation of waste residue is limited to a single 55-gallon drum, which is removed when 75 percent full (see Permit Section 3.2.5 (Frequency of Analyses)).
- Inspections prior to OB/OD activities are completed (see Permit Attachment 11 (Inspection Plan)).

Furthermore, the Permittee is allowed to burn and detonate YEAR ROUND, only during the following periods:

- Start igniting no earlier than one hour after sunrise; and

- Fire must be extinguished two hours before sunset.

Burns and detonations will be conducted when:

- Atmospheric conditions or local circumstances do not make fires hazardous;

- There is no air stagnation advisory in effect in the area of burn or detonation; and

- Wind conditions which prevent dispersion of smoke into populated areas, do not cause a visibility impairment on traveled roads or airports to the extent that a safety hazard results, do not create a public nuisance, and do not cause uncontrollable spreading of fire.

Burns and detonations will not be conducted during periods when smoke can be expected to accumulate to the extent that it will significantly impair visibility. Such a visibility impairment can be anticipated during periods of heavy regional haze and/or calm wind conditions.

6.2. LOADING & UNLOADING

The Summary Treatment Form (Permit Attachment 6A, Form 6A.1) documents the treatment weather conditions, location, and amounts. A form documenting the acceptability for treatment (Permit Attachment 6A, Form 6A.3) will be used to verify acceptance of waste for treatment. See Permit Section 8.1 (Records & Reports - Hazardous Waste Received) for disposition of the completed forms.

All vehicles must be driven on the OB/OD facility roads described in Permit Section 1.4.4 (Roads and Traffic Patterns) and no vehicles are allowed within 20 feet outside of the sidewalls of OD Pits 2 and 3 to prevent accidental sidewall collapse. The parking area for load and unload of waste is at the pit entrance or at the OB pad (YPG 2004c, NOD RTC 19 and 21).

Containers of waste explosives are unloaded at the specified OB/OD area according to the type of treatment required and in accordance with the approved SOP (see Permit Attachment 6C (Operation SOP)). Explosive materials are unloaded by hand or forklift as appropriate. It should be noted that the container (drum or bag) the waste is transported in must be declared 'RCRA Empty' prior to reuse, recycle or disposal (40 CFR 261.7). Material Handling Equipment (MHE) may be used in instances where waste explosives are transferred to the site in containers too large for human handling. (The SOP requires that munitions transported by vehicle to or within the OB/OD Treatment Facility be secured on the transport vehicle and that the transportation be done in accordance with applicable DOT requirements.) Personnel operating MHE are fully trained in the handling of explosive materials and possess valid military operators' licenses (see Permit Attachment 13 (Training Plan)). Loading and unloading operations using forklift MHE shall include the following safety provisions (YPG 2004c, NOD Part 4, RTC 30):

1. Always travel with forks in lowered position.
2. Do not travel with load in raised position.
3. Do not raise or lower forks while moving.

4. Avoid sharp turns.
5. Do not exceed forklift capacity.
6. Forklift will not travel 6 inches near OB pad sump or over sump grate.

Waste explosives are placed directly on the ground in preparation for OD operations or in the burning pan(s) for OB operations. The construction of the detonation pits and burn pads/pans minimizes trip and fall hazards. There are no stairs or obstructions to impede loading/unloading. The OB pads do not have any curbs, thus eliminating any trip or spill hazard.

The unloading operations are from a truck parked at the pit entrance or at the OB pad, and the items for treatment are carried by hand or forklift into the treatment device, normally a few feet. This path is cleared and maintained in accordance with the SOPs and the pre-operational inspection procedures (Permit Attachment 11 (Inspection Plan). In this manner, the unloading operations are maintained shortest path and avoid potential problems of PEP spillage, vibratory shock, droppage impact, and holes in the ground (YPG 2004c, NOD Part 4, RTC 29).

The truck is withdrawn prior to unpackaging any items, thus exposing explosives.

6.3. OB/OD OPERATIONS

OB/OD operations are conducted in strict accordance with Department of Defense (DoD) Explosives Safety Board (DDESB), U.S. Army, and the U.S. Army Garrison Yuma Proving Ground safety standards and procedures. Waste munitions are accepted for treatment in accordance with Permit Attachment 3 (Waste Analyses Plan). After receipt, the SOPs in Permit Attachment 6B (Demilitarization SOP), and in Permit Attachment 6D (Operations SOP) govern treatment operations. The SOPs incorporate applicable DoD and Army environmental safety and health requirements.

SOPs for the OB/OD Treatment Facility and best management practices limit the potential for human exposure, as well as limit access to the facility. All OB/OD activities are conducted in strict accordance with the SOP’s.

The SOP’s will be reviewed and updated on a regular basis for safety and other measures, as directed by ARs. However, this update will typically require a Class I modification in accordance with 40 CFR 270.42.

6.3.1. OB Operations

Propellant, black powder or other energetic materials are poured or placed into burn pans on concrete pads. An electric or non-electric firing system is placed in the pan to ignite the contents. Following a cool-down period, the Lead ORT will determine if it is safe to enter the area. As soon as possible after this determination (no later than 72 hours after this determination, and prior to the next OB event), the burn pans and pads are inspected and then cleared of ash and other splatter materials.

Propellant is placed in pans to a depth no greater than 3 inches (for loose propellants) or one layer (for composite or cast propellants) and the black powder is placed in separate pans in a thin uniform layer not to exceed 50 pounds. Time fuses or electric squibs (initiators) are attached. Fuzes and initiating propellant charges are strategically placed with the PEP to maximize the combustion process and reduce ejecta. The material is ignited. A burn pan is used only once in a day and, following the OB action (when the Lead ORT determines it is safe), burn pads/pans are cleaned (scraped and vacuumed) and the lids are closed. If a vacuum is utilized during the cleaning process, it must be declared a 'RCRA Empty' container prior to reuse (40 CFR 261.7). Burn residue is bagged, sealed, and put in the hazardous waste barrel at the satellite accumulation site.

The following requirements are applicable to the OB operation through ARs or SOPs or a combination of both.

- Loose propellant depth in burn pan is not to exceed 3 inches. Bulk propellant will be placed in a single layer. It will not be mixed with black powder.

NOTE: With the above propellant depth limits, there is approximately ~~6.5 inches of freeboard in the current OB pan and~~ 9 inches of freeboard in the ~~new as-designed~~ OB pan (This freeboard will vary some with the type of cast propellant to be destroyed). Limiting the propellant to these depths minimizes the potential for propellant to be blown out of the pan prior to propellant ignition. (YPG 2004c, NOD Part 4, RTC 23)

- Black powder is not to exceed 50 pounds per burn. It will not be mixed with propellant.

NOTE: Fifty pounds of black powder spread over the OB pans results in a very small layer of powder. The treatment of black powder has more than 11 inches of freeboard. (YPG 2004c, NOD Part 4, RTC 23)

- OB operations are to be conducted from the hours of one-half hour after sunrise to one-half hour before sunset.

NOTE: OB/OD-related operations (paperwork, munition accounting, preparation, etc.) may be conducted at locations not at the OB/OD treatment site during times (e.g., darkness) outside the above hours if allowed by operations SOP or other base approved documents. (YPG 2004c, NOD Part 1, RTC 2)

- All burns shall be conducted in burn pans.

- Burn pans shall only be used once in a day, after a sufficient cooldown period and wait time has elapsed, as determined by the Lead ORT.

- Consideration of whether OB operation shall be undertaken shall be made if the pan is wet. Wet propellant or a thin layer of black powder may be hard to ignite and/or burn completely if the PEP is moist to very wet; thus, inhibiting the effectiveness of OB treatment (YPG 2004c, NOD Part 4, RTC 31).

NOTE: No PEP hazardous waste that reacts with water (see 40 CFR 261.23(a)(2-4)) will be treated in the OB units.

6.3.2. OD Operations

The detonation pit is prepared by using equipment to establish a hole for placement of the items. The items to be detonated are placed in open trenches to be destroyed. An electric or non-electric firing system is placed in the demolition area to ignite the charge. The material to be detonated is covered with a minimum of 24 inches of soil prior to detonation (items without sub-munitions). After a proper detonation activity and after an appropriate safe wait time (as determined by the Lead ORT), the trenches are inspected and the area cleared of fragments. These activities plus the manner and amount in which the donor charge is placed facilitates complete detonation.

Munitions (projectiles, fuzes, other confined explosives, etc,) are carefully and strategically placed on their sides or in a position to expose the largest surface area to the initiating explosives in excavated pits, donor (initiator) charges are prepared and placed, and the assemblage is covered with soil and then remotely detonated with electric or non-electric initiation to render the energetic material non-reactive. Items with submunitions are treated in a similar manner, with the exception that they are not covered.

The OD unit consists of three open trenched areas for open detonation of waste ordnance. Two trenched areas are approximately 9 meters (30 feet) wide and 4.5 meters (15 feet) deep. The third trenched area is not a defined excavation. The following requirements are applicable to the OD operation through ARs or SOPs or a combination of both.

- Projectiles without submunitions shall be covered with dirt to eliminate the scattering of fragments.

- Projectiles with submunitions (such as M692, M731, M718, M741, M483, M509, and M864) will not be covered with dirt.

- OD operations are conducted between the hours of one-half hour after sunrise and one-half hour before sunset.

NOTE: OB/OD-related operations (paperwork, munition accounting, preparation, etc.) may be conducted at locations not at the OB/OD treatment site during times (e.g., darkness) outside the above hours if allowed by operations SOP or other base approved documents. (YPG 2004c, RTC 2)

- Consideration of whether OD operation shall be undertaken shall be made if the pit is wet or moist. Munitions covered by wet soil may be hard to ignite and/or destroy completely if it is moist to very wet; thus, inhibiting the effectiveness of OD treatment (YPG 2004c, NOD Part 4, RTC 31).

6.4. PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE

6.4.1 General Requirements for I/R/I Waste

Precautions shall be taken to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must be separated and protected from sources of ignition or reaction including but not limited to (40 CFR 264.17(a)):

- open flames,
- smoking,
- cutting,
- welding,
- hot surfaces,
- frictional heat,
- static sparks,
- electrical sparks,
- spontaneous ignition, and
- radiant heat.

When dealing with ignitable, reactive, and incompatible (I/R/I) waste, personnel shall take appropriate measures to prevent reactions that (40 CFR 264.17(b)):

- generate extreme heat,
- generate extreme pressure,
- generate uncontrolled fire,
- generate uncontrolled explosions,
- generate violent reactions,
- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment,
- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion,
- damage the structural integrity of the device or facility, or
- through similar means threaten human health or the environment.

6.4.2 Procedures to Prevent Accidental Ignition or Reaction

The means to prevent accidental ignition or reaction of wastes are provided through strict adherence to:

- Safety procedures implemented through the approved SOP's:
- Permit Attachment 6B (Demilitarization SOP),
- Permit Attachment 6C (Range Clearance SOP), and
- Permit Attachment 6D (Operations SOP).
- Other HW permit requirements such as those listed in the following sections.
- DoD/Army safety directives.
- DOD policy; and
- U.S. Army Explosives Safety Program 385-64 (Permit Attachment 6E) which sets explosive safety standards for handling, treating, and accumulating I/R/I waste.

6.4.3 Additional Procedures for I/R/I Waste

The following precautions will be in place to ensure that ignition of combustible materials or reaction of wastes does not occur. The safety procedures include but are not limited to the following:

6.4.3.1 General

All waste streams present in the OB/OD Treatment Facility will be contained and managed in such a way as to prevent any action that could promote an uncontrolled chemical reaction, fire, or explosion.

No waste is accumulated at the site until after OB/OD treatment. Treatment removes the reactive or explosive nature of the waste. This does not include OB/OD residue or debris that contains PEP, and must be temporarily accumulated in the OB/OD unit to be treated during the next OB/OD event.

6.4.3.2 Ignition Sources

- The entire OB/OD Treatment Facility (including buffer zone) is designated as a nonsmoking area. "No Smoking" signs are posted at the site entrance and are conspicuously displayed inside and outside the buffer zone.

- No personal ignition sources (lighters, matches, etc.) will be allowed within the entire OB/OD Treatment Facility (including buffer zone).

- No work-related ignition sources shall be allowed within the entire OB/OD Treatment Facility unless specifically authorized by the Lead ORT through implementation of DoD policy or SOP. One example is use of a flame torch to burn off PEP residue found on the ground surface after an OB/OD event. The work procedure shall designate the area the source shall be used.

- Open flame, cutting, and welding will not be allowed in the OB/OD Treatment Facility unless a repair is required, in which case the equipment will be secured and open flame sources will be isolated from other equipment and wastes.

- Prohibition of spark-producing equipment and tools near explosive materials unless specifically authorized by the Lead ORT through implementation of DoD policy or SOP

- Material handling equipment (e.g., bulldozers, forklifts, etc.) used on or near the waste munitions and residues shall meet the requirements of the U.S. Army Garrison Yuma Proving Ground SOPs.

- Motor vehicles used to transport waste munitions shall meet the requirements of the U.S. Army Garrison Yuma SOPs.

NOTE: Neither the MHE or the transport vehicles used at the site are required to have their bottoms steel reinforced or have explosion–proof motors; however, they do meet DOT regulations for transporting hazardous waste. (YPG 2004c 1st NOD Part 1, RTC 17(3)).

- Grounding cables shall be used on the OB pans to prevent static sparks.

- Grounding rod shall be touched (or other method of grounding as allowed by SOP) and shall be used at the Safety bunker work table to prevent static sparks when working with PEP or removing the shunt (YPG 2004c, 1st NOD Part 4, RTC 2(3)).

- Grounding straps in conjunction with an earth ground (or other method of grounding as allowed by SOP) shall be used to prevent static sparks when disassembling rockets (YPG 2004c, 1st NOD Part 4, RTC 2(3)).

- No propellant, explosive, or pyrotechnic (PEP) to be treated shall have a flash point or lower explosion limit that exceeds 90% of the maximum possible hottest temperature of the ground, steel pans, refractory liner, pad concrete, or other structure or working tool that is in contact or near the PEP waste.

NOTE: For example, Permit Section 1.3.6 (Soil Description) states that the black desert gravel often exceeds 160 F in the summer months. Triacetin flashes at 280 F and tetracene explodes at 320 F. This is acceptable. (ADEQ 2004, 1st NOD Part 2, Comment 11)

- Unlike in an ammunitions plant, for this OB activity there is no DoD requirement for the electrical conductivity between the person (special PPE) and the pad floor. (YPG 2004c, 1st NOD Part 1, RTC 57(1))

- Unlike in an ammunitions assembly plant or similar work scenario, there is no requirement for electrical motors, generators, or wiring on the vacuum, MHE, and other equipment to be explosion-proof rated or contained in an NEMA Type 9 enclosure. (YPG 2004c, 1st NOD Part 4, RTC 1(4))

- If any OB and/or OD operations will occur at the same time at the site, both PEP-related operations shall be performed in accordance with approved SOP and DoD policy in such a manner as to avoid accidental ignition of PEP at the other location.

6.4.3.3 Incompatibility

- Incompatible materials shall not be treated at the same locations unless the OB or OD unit has been properly decontaminated. For example, DNT is incompatible with nitrates and black powder is not to be mixed with any other propellant.

- All construction materials comprising the OB/OD Treatment Facility are compatible with the wastes to be stored or treated.

- All wastes will be compatible with the hazardous waste containers (including bags) that will hold the waste prior to shipment offsite to an approved TSDF.

- All wastes shall be compatible with the working tools (e.g., vacuum, broom, fire extinguisher foam, etc.) used on or near the wastes.

- Only new or cleaned U.S. Department of Transportation (DOT)-approved containers will be used to store OB/OD Treatment Facility process waste. If the past use of the container is unknown a liner will be used to contain the waste, this precludes any possible residues even in a clean drum. This will prevent any incompatibility of wastes. In addition, only one waste stream is generated from the process.

6.4.3.4 Inspections

- Supervisors perform inspections of hand tools and mechanical devices to ensure that they have not become unsafe for use.

- Inspections are performed periodically and prior-to-use or while-in-use to ensure the above precautions and procedures are safe, in place, and are followed (see Permit Attachment 11 (Inspections)).

6.4.3.5 Training

- All ORTs are trained to strict ammunition safety standards, in accordance with Permit Attachment 13 (Training Plan).

6.4.4 Compliance Documentation

The above procedures and precautions, when followed, document partial compliance with the regulatory standards regarding ignitable, reactive, and incompatible waste. This includes documentation of inspections necessary to maintain compliance. When field work is necessary that requires ignition sources (open flames, welding, etc.) or other device which might cause accidental ignition or reaction of ignitable, reactive, or incompatible waste, compliance with 40 CFR 264.17(c) shall be documented.

The U.S. Army Explosives Safety Program 385-64 (Permit Attachment 6E) sets explosive safety standards for handling, treating, and accumulating ignitable or reactive waste (No incompatible wastes shall be mixed at this site.). Compliance with the above-referenced standards is reviewed by the Army Explosives Safety Council and coordinated through the DDESB. DoD procedures for the transport, handling, treating, and accumulating PEP wastes and residues are of sufficient detail to prevent problems with ignitable, reactive, and incompatible wastes. These procedures have sufficient history to show compliance with the requirements. The U.S. Army Garrison Yuma Proving Ground Safety Office has documented a history of over 10 years of operations at the OB/OD Treatment Facility with no reportable injuries or emergencies.

6.5. EFFECTIVENESS OF TREATMENT

The objective of each OB or OD event is to thoroughly treat the reactive and ignitable components of a waste munitions item or group of items. Maximum effectiveness is achieved by ORT personnel following SOPs (see Permit Section 6.3 (OB/OD Operations) above), which incorporate many decades of DoD OB/OD experience, testing and refinement, and engineered approaches selected for their ability to achieve the maximum practical treatment effectiveness. The skill and competence by ORT personnel in treating waste munitions ensure that maximum practical treatment effectiveness is achieved.

OB/OD treatment effectiveness can be determined only by a combination of visual observation and sampling of residual media (e.g., ash from OB), rather than technical performance standards (e.g., destruction and removal efficiency, such as for an incinerator).

- Due to the highly energetic and short-duration nature of OB/OD events (particularly OD), actual emissions from OB/OD can be estimated only by applying emission factors derived from credible scientific investigations. There are no stacks to monitor or sophisticated mass/chemical balances to calculate emissions from controlled treatment processes.

- It is not cost effective and prudent to place an air particulate monitoring station at each of the four sides of the site and periodically analyze a particulate sample it collected.

- It is not cost effective or prudent to require sampling the soil in and around the unit after each OB/OD event. However, soil in and around the OD units be sampled every five years (see Permit Attachment 11 (Inspection Plan) and at closure (see Permit Attachment 14 (Closure Plan) to determine potential hazards to human health and the environment.

- The ash tested from the OB treatment had no appreciable explosives content, and for secondary explosives, would require > 10% explosives to be considered reactive. Reactivity of primary explosives is determined on a case-by-case basis.

- Due to the inevitable deposition of hazardous constituents in the pits and around the OB and OD treatment units, the area has been designated as a SWMU and will be subject to site investigation, characterization and, as necessary, remediation of contaminated soils under the RCRA Corrective Action Program and during closure.

Because the OB and OD phenomena differ, with each having attendant issues, a separate discussion of each are provided below.

6.5.1 Open Burning

Engineered approaches are used to maximize the effectiveness of each OB event by optimizing combustion and minimizing ejecta (in the case of OB, the expulsion of splatter from the conflagration or deflagration). Fuzes and initiating propellant charges are strategically placed with the PEP to maximize the combustion process and reduce ejecta. Optimum combustion minimizes emissions, improves the chances that ash residues will be non-hazardous, and results in less deposition of hazardous constituents on surrounding soils of the OB unit.

By definition, this treatment technology results in atmospheric releases; these are addressed in a document, which cites an extensive effort at Dugway Proving Ground (Bang Box Study) to characterize emissions by burning propellant in a contained enclosure and deriving emission factors that can be applied to OB permitting (YPG 2004c, Submittal 11, Section 4). The atmospheric releases do contain hazardous constituents (gaseous and particulate), with most of the particulate settling on the ground at the treatment unit (and small remaining quantities settling at other locations downwind) and gaseous constituents dispersed into the atmosphere.

In the course of treatment, the volume of PEP is reduced dramatically. For example, in 2000 about 51,030 kilograms (112,500 pounds) of PEP were treated by OB, resulting in about 495 kilograms (1,091 pounds) of ash, for an average reduction factor of > 99%. The resulting ash residue, free of un-reacted energetic material, is subsequently characterized (see Permit Attachment 3 (WAP) to determine if hazardous waste (due to the possible presence of heavy metals such as lead, or TC organics, etc.), and managed in accordance with characterization results.

During the OB process, small quantities of incomplete burned splatter can be ejected from the conflagration onto the concrete burn pads on which the burn pans are placed. Through several decades of experience at the U.S. Army Garrison Yuma Proving Ground, the OB treatment process has been demonstrated to be clearly effective in rendering treated PEP as non-hazardous for reactivity or oxidizer ignitability, though ash residues (about two orders of magnitude less in weight, and five or more orders of magnitude less by volume, than the original treated PEP) might be subsequently characterized as hazardous for toxicity. Refer to Permit Attachment 3 (Waste Analysis Plan) for detailed information.

6.5.2 Open Detonation

Engineered approaches are used to maximize the effectiveness of each OD event by optimizing combustion and minimizing ejecta [in the case of OD, defined as the expulsion of Munitions Constituents (MC), Discarded Military Munitions (DMM) and Munitions Scrap from the event]. These engineered approaches include soil placement of a specified thickness atop the assemblage, the geometry of energetic materials placement based on individual characteristics, as well as the strategic placement and attachment of initiating charges, and the timing of initiation (in some cases, multiple charges might be timed to fire within milliseconds of each other to enhance the detonation process). Soil placement dampens the explosive forces by absorbing energy, thereby reducing the velocity (and carrying distance) of shrapnel (metal pieces of munitions casings, etc). Typically, the explosive pressure lifts the soil covering off the ground and disperses much of it in the air.

Optimized combustion increases treatment effectiveness, reduces emissions, and imparts fewer explosive constituents to OD soils. By minimizing ejecta from each event, maximum practical effectiveness is served because most of the munitions are detonated and minimal MC, DMM, and munitions scrap is expelled from the event. Minimizing MC, DMM, and munitions scrap reduces the safety-intensive removal actions required after each event. While the munitions, initiator placement geometry, and the firing timing seek to eliminate ejecta, from a practical standpoint this cannot always be avoided. At the end of the appropriate wait time, the demolition area is searched and cleared of munitions scrap (primarily metals but does include some energetic residue) remaining from the detonation(s). These materials are treated and managed in accordance with Permit Section 6.5 (Range Maintenance Activities) and Permit Attachment 3 (Waste Analyses Plan).

By definition, OD results in atmospheric releases; these are addressed in a document, which cites an extensive effort at Dugway Proving Ground to characterize emissions by detonating explosives in a contained enclosure and deriving emission factors that can be applied to OD permitting (YPG 2004c, Submittal 11, Section 4). That effort determined that nearly all the carbon in the explosive mixtures was converted to carbon dioxide (CO_2) during the combustion process. However, the atmospheric releases from OD do contain hazardous constituents (gaseous and particulate); most of the particulate settles on the ground at the treatment unit and gaseous constituents disperse into the atmosphere.

In the course of each treatment event, the volume of explosives [expressed as net explosive weight (NEW)—the gross weight of the munitions minus all non-explosive components such as shell casings] is typically reduced either significantly or completely [with the former being cases with ejecta called a dirty detonation.] However, in some unusual cases, the munitions may only detonate partially, or a munition may not detonate as part of the assemblage – also called a dirty detonation]. Any ejected MC / DMM / munitions scrap that does not detonate is recovered using rigorous safety precautions and disposed of during a subsequent OD event. The ORT is trained to identify, recover and detonate unexploded ordnance.

6.6. RANGE MAINTENANCE ACTIVITIES

6.6.1 Post-OB Range Maintenance

Upon clear evidence that an OB event was successfully executed, reentry can occur as soon as particulates and emissions have dispersed (as determined visibly) to verify results. After the Lead ORT determines it safe, the burn pans may be cleaned and used for a subsequent event the next day. This daily restriction also applies to pans not used but on the same pad.

When it is safe pursuant to the SOPs to inspect and clean-up the OB area, the area shall be inspected pursuant to the inspection plan (Permit Attachment 11). Any incidental releases or releases requiring implementation of the contingency plan will be managed pursuant to the contingency plan (Permit Attachment 10) and documented according to the recordkeeping and record retention procedures (Permit Attachment 15). Provisions for cleanup inside the units (OB pans) and its secondary containment (OB pad, and if applicable the OB retention basin) shall be performed according to ash and residue management procedures (Permit Section 2.2.2.10) and the waste analysis plan (Permit Attachment 3).

The following requirements apply for OB-related OE items (See Permit Condition III.E.8):

- Identify and flag all OE items that are unable to be safely moved as dangerous items. Safely treat (flash) the flagged dangerous items. Inspect the area to ensure complete treatment. For OE items outside the OB pad and retention basin, stake the location after the complete destruction of the dangerous item. See Permit Attachment 12 (Contingency Plan) and Permit Attachment 15 (Recordkeeping and Reporting) for sampling and documentation requirements.

- For OE items outside the OB pad and retention basin that can be safely moved, stake the location in the field notes to be submitted to the Operating Record. The items are moved to an OB pan for subsequent flashing. See Permit Attachment 12 (Contingency Plan) and Permit Attachment 15 (Recordkeeping and Reporting) for related sampling and documentation requirements.

- Collect all visual OE residues that can be safely moved, consolidating these items in a container to be treated in the next OB operation to occur on the next day. The container shall be appropriately labeled and managed according to 40 CFR 262.34 provisions until the contents are destroyed. If the propellant grain cannot be (immediately) destroyed the same day, the hazardous waste propellant shall be removed from the site (see Operation number 6, item J.2.b of SOP YP-0000-K-002 in Permit Attachment 6B).

6.6.2 Post-OD Range Maintenance

For military munitions that do not have self-destruct (SD) mines, SD fuzes, or antidisturbance devices, the following SOP requirements apply:

- In the event of misfire, reentry will not occur any sooner than 30 minutes after the misfire.

- Upon clear evidence that an OD event was successfully executed, reentry to the area can occur as soon as particulates and emissions have dispersed (as determined visibly),

- When personnel have left the OD area after completion of operations, the facility, he shall notify Range Control the operations are complete.

For military munitions that do have self-destruct (SD) mines, SD fuzes, or antidisturbance devices, the following SOP requirements apply:

- In the event of misfire, reentry will not occur any sooner than 30 minutes after the misfire.

- Upon clear evidence that an OD event was successfully executed, reentry to the area by ORT personnel shall not occur before the SD time plus 4 hours (no less than 18 hours). When reentry is allowed, the particulates and emissions must also be dispersed (as determined visibly),

- When demolition operations are completed, the barricades shall be removed only after the SD plus the four hour wait time has elapsed, and the ORT will advise Range Control that the Demolition Site is Off limits to all personnel until further notice.

After every operation, the ORTs will conduct an inspection of the impacted area in accordance with the requirements in Permit Attachment 11 (Inspection Plan). It will include a sweep of the area (minimum of a 200-foot radius surrounding the OD pit) with the following general sequence of events.

- Identify and flag all HE items that are unable to be safely moved as dangerous items.

- Safely treat the flagged dangerous items. Inspect the area to ensure complete treatment. Mark the location in the field notes to be submitted to the Operating Record. See Permit Attachment 12 (Contingency Plan) and Permit Attachment 16 (Recordkeeping and Reporting). This area will be sampled during the next sampling event.

- Identify and collect all visual HE residues that can be safely moved, consolidating these items in a container to be treated in the next OD operation to occur on the same day.

- Collect and dispose of non HE related items including but not limited to inert metal parts, plastics, wood, trash, etc. Place the materials on a plastic liner or plywood. Prior to disposition, all debris will be inspected and declared by an ORT to ensure that all items are free and clear of explosive residue. For a copy of the inspection form, see Permit Attachment 6A, Form 6A.2 (Scrap Inspection and Declaration form) and for waste characterization, see Permit Attachment 3 (Waste Analysis Plan).

- For safety and to reduce the potential migration of HE residues, a 25-meter (82 feet) radius will be flashed around the pits removing potentially accumulated non-observed energetic materials. This will be conducted at a minimum annually (circa June) if that pit has been used during the previous year, or more frequently at the discretion of the senior ORT. If ash is generated from the flaming operations, it will be collected and treated similar to the ash residues from the OB operations. The flashing can be conducted using appropriate fuel and oxidizer to cause the temperature of the item to exceed auto-ignition or decomposition temperature of the PEP waste usually by a handheld flame device or if it is a larger area, a vehicle mounted flame device.

- Periodically a large magnet is pulled over the grounds to gather MC / DMM / munitions scrap not immediately visible. The magnet is turned off and the metallic debris is dropped onto a cover. The ORT then visually inspects and thereby sorts the items segregating them into separate piles: one that is turned into the metal recycling yard and one that is retreated to remove the explosive residues. The ORT uses the Scrap Inspection and Declaration form (Permit Attachment 6A, Form 6A.2) to document the item is clean. The items that do not pass inspection will be retreated

6.7. OTHER WASTE MANAGEMENT ACTIVITIES

6.7.1 Storm Water Collected from ~~Current~~ the OB Pad Retention Basin

A sample will be collected from the retention basins when storm water reaches a height in the OB retention basin defined in Permit Section 3.2.5 (WAP – Frequency of Analyses).~~A sample will be collected from the current South pad when storm water reaches a height on the OB pad defined in Permit Section 3.2.5 (WAP – Frequency of Analyses).~~ The sampling and analyses of the storm water will include those methods listed in Permit Section 3.2.3 (WAP - Test Methods) and Permit Section 3.2.4 (Sampling Methods). Based on the results of the analysis, the stormwater will be managed appropriately in accordance with Permit Section 3.2.3.

6.7.2 ~~Storm Water Collected from Future OB Pad Retention Basin~~

~~A sample will be collected from the retention basins when storm water reaches a height in the OB retention basin defined in Permit Section 3.2.5 (WAP – Frequency of Analyses). The sampling and analyses of the storm water will include those methods listed in Permit Section 3.2.3 (WAP - Test Methods) and Permit Section 3.2.4 (Sampling Methods). Based on the results of the analysis, the stormwater will be managed appropriately in accordance with Permit Section 3.2.3.~~

6C. SOP NO. YP-0000-K-028 “SURFACE RANGE CLEARANCE”

6D. SOP NO. YP-YTRO-P-1000 “RANGE OPERATIONS”

6E. U.S. ARMY AMMUNITIONS & EXPLOSIVES SAFETY PROGRAM

EQUIPMENT PROVISIONS

This attachment describes the internal and external communication system (section 9.1), OB/OD operational equipment (section 9.2), personnel protective equipment for routine operations (section 9.3), emergency equipment (section 9.4), required aisle space for equipment (section 9.5), protection from run-on, run-off, and groundwater protection (section 9.6), and impact of equipment and power failure at the OB/OD Treatment Facility (section 9.7).

9.1. COMMUNICATIONS

9.1.1. Internal Communications

ORT personnel communicate between vehicles, with offsite supervisory personnel, and with Range Control via two-way radio and/or cellular phones in their vehicles. Environmental Sciences Division inspection personnel carry cellular phones when on the site, allowing communication with offsite personnel and Range Control. Radio equipment will also be made available when personnel are required to use respiratory protection equipment, and the “two-man rule” will be invoked to ensure personnel safety when working on contaminated or “hot” equipment.

Non-routine operating conditions, including spills and releases, will be conveyed verbally to workers using the internal communication system described above.

9.1.2. External Communications

The radio is the primary mechanism used to summon emergency assistance from the U.S. Army Garrison Yuma Proving Ground security, Fire Department, and other emergency response teams. Telephones (wireless and wired) may also be available to summon external assistance in an emergency. Range Operations Control coordinates emergency assistance, which is accessible on the U.S. Army Garrison Yuma Proving Ground radio net or the telephone at 328-5111. Range Operations Control, responsible for directing all traffic on the Firing Range, has a “crash” phone that opens the line to all emergency services for subsequent notification to the U.S. Army Garrison Yuma Proving Ground Fire Services and the EC. Range Operations Control is fully staffed during normal duty hours and whenever any location on the Kofa Range is operationally active (“hot”). When Range Operations Control is closed, the Police Desk serves as the back up until Range Operations Control becomes operational. Both Range Operations Control and the Police Desk have emergency services “crash” phone combined with telephone capabilities and can make contact with external (outside the U.S. Army Garrison Yuma Proving Ground) groups or services as needed. All personnel who work in the OB/OD Treatment Facility will be required to be in direct visual or voice contact with persons who have immediate access to a radio or a telephone. A wired telephone is located at about 100 feet east of the intersection of the Firing Front Road and the OB/OD facility road.

9.2. OB/OD OPERATIONAL EQUIPMENT

Required equipment for specific OB/OD-related activities is specified in the Operational SOPs (see Permit Attachment 6 (Operations)) and is listed in Table 9-1 (Equipment and Supplies for Routine Operations).

9.3. PERSONNEL PROTECTIVE EQUIPMENT

In accordance with 40 CFR 270.14(b)(8)(v), this section describes the PPE required for use by OB/OD Treatment Facility personnel during facility operations and by visitors at the facility. OB/OD Treatment Facility personnel will be required to wear appropriate PPE during facility operations. All visitors must wear the minimum PPE prescribed by the ORT at all times.

The selection and use of PPE during OB/OD Treatment Facility operations and emergency response operations is based on the U.S. Department of the Army, U.S. EPA, and Occupational Safety and Health Administration (OSHA) health and safety requirements. It is also based on a site-specific evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the location, specific conditions, duration of the activity, the actual or potential hazards identified, and the actual hazards identified through monitoring. Where hazards have not been fully evaluated, the highest level of protection required for the potential hazard will be specified until the evaluation is complete. The evaluation shall be performed by a certified industrial hygienist and shall consider such risks as dermal exposure and inhalation of potential toxic gases generated due to the combustion or detonation. If necessary, the hygienist or qualified specialist shall request test data (see Permit Section 3.2.6 (WAP - Additional Requirements for Ignitable, Reactive, or Incompatible Waste).

OB/OD treatment activities are carried out in accordance with the approved SOP which specifies required PPE (see Permit Attachment 6 (OB/OD and Related Operations)). This PPE can include safety glasses, fire retardant coveralls, etc. as indicated in Table 9-1 (Equipment and Supplies for Routine Operations) and shall be consistent with the ASTM and NFPA guidance in Table 9-2 (Personnel Protective Equipment).

The PPE selected for OB/OD Treatment Facility operations includes OSHA Level C to OSHA Level D. In general, level D PPE (i.e. safety glasses, closed toe shoes or ASTM F2413-05 approved steel-toe safety shoes [task dependent], gloves, and sunscreen) is the only PPE used. Level D PPE is suitable for most operations. However, at a minimum, protective clothing shall include long pants, shirts (short or long sleeves), and closed toe shoes. Level C might be required for cleanup operations periodically.

Personnel protective measures to be used during the cleaning, bagging, and containerization of ash residue are also specified in the approved SOP. These measures can include respiratory protection. The details of the respiratory protection program are maintained by the ORT contractor.

Other operations have PPE specified in the procedures, such as sampling waste ash. Each sampling event will be required to have a Sampling and Analysis Plan (SAP) which will specify the required PPE. (YPG 2004c, NOD Part 4, RTC 15(2)).

Infrequent or unusual operations will have specific procedures developed.

All procedures will address the details of the PPE requirements in the procedure or a separate health and safety plan, if required. For example, Niton or PVA gloves and a full- or half-face respirator might be specified.

9.4. EMERGENCY EQUIPMENT

Permit Attachment 10 (Contingency Plan) (specifically, Section 10.9) describes the emergency equipment available to respond to emergencies at the Kofa OB/OD Treatment Facility. In general, equipment for explosive emergencies will depend greatly on the type of emergency.

The U.S. Army Garrison Yuma Proving Ground maintains adequate supplies of emergency equipment in the Ammunition Recovery Branch complex. This equipment will be transported to the scene if an explosive emergency occurs. The basis for this action is that, in the event of an explosive materials emergency, the site would be evacuated.

In the case of process wastes or other emergencies not involving explosion hazards, equipment for spill control, personal protection, decontamination, monitoring and surveying, and fire control will be available at the safety bunker to respond to emergencies.

Further information concerning emergency equipment and supplies available to be transported to the OB/OD Facility during an potential or actual emergency is given in the above attachment.

9.5. REQUIRED AISLE SPACE FOR EQUIPMENT

The OB/OD Treatment Facility is a large open area with few obstructions that would hinder access by personnel, fire protection equipment, or spill control equipment.

The perimeter gate is wide enough to allow the largest vehicle required during an emergency to enter the OB/OD Treatment facility. Once inside the perimeter fence and associated gates, roadways and paths provide access to each of the burn pads and detonation pits/trenches as well as to the safety bunker and waste accumulation area. If the limited equipment in the facility [e.g., ORT vehicles, forklift, or earthmover] ever temporarily blocked access roadways, there would be little problem in moving around the obstacle through the relatively flat natural terrain.

The waste accumulation area (safety bunker area) is small and holds only a small number of containers. The area is always maintained in a clean and uncluttered condition with a minimum of three (3) feet of aisle space to support easy access for personnel performing routine inspections as well as access to response equipment.

The ~~new~~ OB pans (with refractory lining) are designed as such to have eight (8) feet of clearance between pans on the pads. ~~Historically, without refractory lining in the pan (including the pan sides), 6 feet of spacing between pans was required to avoid thermal damage to other pans.~~ This aisle space ~~also~~ accommodates unobstructed movements of personnel and fire protection, spill control, or decontamination equipment to this area. (YPG 2004c, RTC 23, 49).

The OB pan lids are removed to a location outside of the heat from the Open burning operation, and will not inhibit aisle space. The sump and sump grate is located 18 inches from the nearest OB pan and is over 15 feet from the next nearest pan (see Sheet 5 in Permit Attachment 2C (OB Pad Design)).

There are no concrete berms surrounding, or special ramps onto and off of, the ~~existing and proposed new~~ OB concrete pads. Rather, there is a slight soil elevation increase to the pad, and then a slight elevation decrease from the pad perimeter to the pad center where the sump is located. Therefore, there are no restricting aisle widths to the pad.

The concrete stormwater retention basin~~s~~ has a steeper decent from the basin perimeter down to the floor of the retention basin. However, again there is no special on or off ramp with restrictive aisle width.

OD pit 2E, Pit 2W, Pit 3N, and Pit 3S have an approximate thirty (30) foot wide excavated soil load/unload ramp that decreases from ground surface down to approximately 15 feet deep where the detonations are conducted at the base of the pits. This width is ample to support access during emergencies even wi~~d~~th an unmovable vehicle of fifteen feet width. The very shallow Pit 1 does not have a defined load/unload ramp; rather the base is accessible from all sides.

9.6. PROTECTION FROM RUN-ON, RUN-OFF, & GW PROTECTION

This section specifies fixed equipment or structures necessary to minimize run-on into the OB/OD units (section 9.6.1), to minimize (if not eliminate) run-off from the units onto adjacent soil (section 9.6.2), and to protect groundwater from any potential migration of ejecta contamination infiltrating through the soil (section 9.6.3).

9.6.1. Run-On Protection

Run-on to OB/OD Treatment Facility operations will be prevented by the following:

A. The engineering design of the flood control measures and containment structures installed as shown in Permit Attachment 1C (100-Year Flood Plain Protection Berm).

B. OB operations are conducted in elevated burning pans.

C. Run-on prevention requirements do not apply directly to the concrete safety bunker because the waste management actions for which the OB/OD Treatment Facility is permitted do not occur at that location. (The bunker is approximately 731 meters (2,400 feet) northwest of the OB and OD treatment units.) There is a well-defined wash to the west of the safety bunker and the immediate area of the bunker is approximately 1.75 feet higher than the top of the wash's nearest side wall. Based on the topography of the area surrounding the bunker, there should be no significant potential for run-on to damage items or hinder the limited activities that occur at the safety bunker. Therefore, contaminated run-off resulting from any run-on is not possible.

9.6.2. Run-Off Protection

Runoff from OB/OD Treatment Facility operations will be prevented by the following:

A. For the ~~new~~ OB Pad design, Occasional runoff from the concrete pads to the retention basins does not affect the burning pans.

B. The OB/OD Treatment Facility will not accept liquid wastes.

C. The burn pads are equipped with sumps to catch releases of any loose materials or precipitation. These sumps are checked as part of the operational inspections. The accumulated materials are removed upon discovery as noted in the SOP (see Permit Attachment 6 (OB/OD and Related Operations)). An exceptionally high evaporation rate allows accumulated water to evaporate rapidly during most months of the year. The SOP allows a nominal amount of precipitation to accumulate in sumps without removal.

D. OB operations are not conducted in adverse weather conditions and the burning pans are kept covered with precipitation covers when not in use. The precipitation covers have a wind tie down to prevent being blown off.

E. The ~~new~~ OB pads are constructed to contain runoff in retention basins. Historical analysis of accumulated storm water indicates the water is not contaminated. However, all water will be sampled prior to release in accordance with Permit Attachment 3 (Waste Analysis Plan).

F. The OD pit volumes are large enough to contain any reasonable precipitation and sheet flow into it (resulting from the immediate adjacent areas within the flood plain protection berm surrounding the upper and side portion of the site).

G. Runoff prevention requirements do not apply directly to the concrete safety bunker because the waste management actions for which the OB/OD Treatment Facility is permitted do not occur at that location.

9.6.3. Groundwater Protection

Groundwater contours for the site were developed from this published information and are shown on the map in Permit Attachment 1A (Facility Description – Figure A3 Drawing 002). The potential Groundwater contamination issues are addressed in Permit Attachment 7 (Environmental Impact from Operations). The following is a brief outline of groundwater protection measures.

A. Removal of ash as soon as practical after OB operations

B. Removal of scrap metal and searches for undetonated PEP as soon as practical after OD operations

C. Use of precipitation covers on burn pans

D. Use of burn pads and retention basins to control runoff

E. Based on data previously presented by ENTECH, Inc. (YPG 2004c, Submittal 4), Well M is 2.5 kilometers (8160 feet) upgradient at Castle Dome Heliport and Wells J and H are approximately 9 kilometers (5.5 miles) downgradient from the site. The depth to groundwater at Well M is approximately 195 meters (635 feet) below grade. The recorded depth to groundwater at Well J is about 100 meters (330 feet) below grade. Based on these recorded depths, an estimated depth of groundwater beneath the site of 177 meters (580 feet) was interpolated.

The infiltration study and the Baseline Soils Investigation Study performed by USAG, Yuma has demonstrated that potentially-contaminated water could percolate from the pit surfaces to the groundwater table. Permittee shall submit a Groundwater Monitoring Plan for assessing contamination caused by the OB/OD facility.

9.7. EQUIPMENT & POWER FAILURE

There are minimal risks to OB/OD operations from either equipment failures or power outages. Any problems with equipment utilized during treatment are handled in accordance with the approved SOP (see Permit Attachment 6 (OB/OD and Related Operations)). The majority of burns and detonations are ignited using non-electric devices. A loss of electrical power to the U.S. Army Garrison Yuma Proving Ground base would have no impact on operations at the OB/OD facility.

9.7.1. Power Supply Failure

No power is supplied to the OB/OD Treatment Facility. Most treatment operations are initiated by non-electric devices and are not power-dependent. However, for the few treatment operations that do require battery powered electrical devices and wiring, the SOPs (Permit Attachment 6) include procedures including use of backup blasting machines in the event of a misfire.

When explosive operations are in progress, the access road to the facility is barricaded and a red flag or red flashing light signaling hazardous operations is activated at the roadway. The red flashing light is solar powered and the manually operated flag provides redundancy should the light lose power.

Portable generators supply the power required for cleanup operations with a vacuum cleaner or electromagnet. Spare generators are easily obtained at the U.S. Army Garrison Yuma Proving Ground from the equipment pool, and will not require restriction of operations.

9.7.2. Waste-Handling Equipment Failure

The waste-handling equipment used at the OB/OD Treatment Facility will be inspected periodically for deterioration and malfunctions. Preventive maintenance will be conducted to ensure peak operating performance. If operations require any piece of equipment (MHE or earthmoving) and it fails, operations will cease until repairs or replacement can be completed. Failure of equipment would not endanger operations and would not result in the release of waste. Equipment inspections are described in Permit Attachment 10 (Inspection Plan).

In addition, all personnel who operate waste-handling equipment will be trained and qualified to use the appropriate equipment (see Permit Attachment 12 (Training Plan)).

Should equipment fail such that it is in the way of OB/OD operations, OB/OD actions will be halted, and the site will remain manned if explosives are present until the equipment is repaired or otherwise removed. When the obstruction is cleared, actions will be resumed.

With the maintenance and heavy equipment capabilities within the U.S. Army Garrison Yuma Proving Ground, repair or removal of obstructing equipment would normally be expected to occur within hours of the request for assistance.

If for any reason, OB/OD actions cannot be performed on the day waste explosives are taken to the site, remaining explosive material will be repacked in containers, labeled as hazardous waste, as appropriate, and transported in accordance with SOPs to the designated storage magazine. The return of waste munitions and/or propellant to the magazine will be reported to the Regional Director by the Environmental Coordinator and managed in accordance with 40 CFR 266.205.

9.7.3. Communications Equipment Failure

As noted earlier in this section, OB/OD Treatment Facility operators normally have immediate access to both radio and telephone, but radio is the primary mechanism for emergency external communications. If, for some reason, the site phone is inoperable at the time of a planned OB/OD operation, the Lead ORT may proceed with operations as long as radio communication capabilities have been verified.

9.7.4. Determination of Meteorological Conditions

By SOP, OB/OD activities will only be performed under acceptable weather conditions. OB/OD Treatment Facility operators obtain weather information by calling the U.S. Army Garrison Yuma Proving Ground Meteorological Team or by connecting to the U.S. Army Garrison Yuma Proving Ground intranet weather web site maintained by the U.S. Army Garrison Yuma Proving Ground Meteorological Team. If acceptable weather conditions cannot be established, including conditions where information is unavailable due to equipment failure or power outages, OB/OD actions will not be performed.

9.7.5. Off-Site Emergency Equipment

The contingency plan (Permit Attachment 10) requires certain emergency equipment maintained by the U.S. Army Garrison Yuma Proving Ground organizations not normally affiliated with the OB/OD treatment site (e.g., fire engines maintained by the U.S. Army Garrison Yuma Proving

Ground Fire Dept.) to be available in case there is an emergency at the OB/OD facility that requires use of the equipment. In the event that these equipment (Tables 10A-9, 10A-10, and 10A-11) become unavailable for use, the responsible organization should notify Range Control so that a determination of applicable range operations affected could be made.

CLOSURE PLAN

14.1. INTRODUCTION

This Closure Plan has been prepared for the Open Burning/Open Detonation (OB/OD) Treatment Facility in accordance with State and Federal regulations promulgated under the Resource Conservation and Recovery Act (RCRA). The OB/OD Treatment Facility is in the Kofa Region of the U.S. Army Garrison Yuma Proving Ground military installation (See Permit Attachment 14A, Figures A-1 and A-3). The objective of this Closure Plan is to present an initial closure strategy for the OB and OD units within the OB/OD facility.

The OB/OD Treatment Facility consists of two operational concrete pads, each with three burn pans, where OB occurs and five pits for OD of waste military munitions. Closure of these units will be conducted according to the requirements of the Arizona Administrative Code (A.A.C.) R18-8-264.A, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities" [Title 40 of the Code of Federal Regulations (CFR) Part 264] and the A.A.C. R18-7-201 et seq., "Soil Remediation Rule."

In accordance with to the requirements of A.A.C. R18-8-264.A (40 CFR 264.112), this Closure Plan presents:

- A description of how each hazardous waste management unit at the OB/OD Treatment Facility will be closed
- An estimate of the maximum inventory of hazardous waste on the site at any time over the active life of the facility and the manner in which hazardous waste remaining at the site at the time of closure will be managed
- A detailed description of the manner in which hazardous waste residues and contaminated components, equipment, structures, and soil will be removed or decontaminated, and the methods that will be employed to verify closure performance standards are met
- A description of other activities necessary during closure, such as run-on and runoff control
- A schedule for closure of the OB/OD hazardous waste management units

When the closure plan is implemented, the purpose will be to return the area back to military range standards (non-residential standards). Any contaminated equipment or structures will be treated on the site. Contaminated soil will be delineated, excavated, and disposed of in accordance with all applicable Federal and State requirements. The proposed closure strategy would achieve closure of the OB/OD units by removing pads and structures or decontaminating them to achieve standards set or referenced in the Closure Plan and removing contaminated soils, as necessary, to reach non-residential Soil Remediation Levels (SRL) established by the State of Arizona (A.A.C., Title 18, Chapter 7, Article 2) for hazardous chemicals. Soil with chemical levels below the Groundwater Protection Levels (GPL) and non-residential SRLs will not be subject to treatment or removal because the Arizona Department of Environmental Quality (ADEQ) has determined that these are protective of human health and the environment.

This Closure Plan describes the methods to be used and the general actions to be undertaken to achieve closure of the OB/OD Treatment Facility. It does not present specific numbers and locations for samples to be taken in order to determine where and how much soil, if any, will be removed to meet performance standards. Nor does it describe specific samples that will be collected in order to verify that performance standards have been met. The ultimate design of final closure will take into consideration operating records, results of periodic characterization, partial closure activities, and any other characterization activities. When the ADEQ is notified that the U.S. Army Garrison Yuma Proving Ground intends to close any or all of the OB/OD treatment units, a revised Closure Plan (partial or final) will be provided at least 180 days before closure is planned to begin. Information contained in the revised plan will provide detail (including procedures, locations, and quality assurance actions) on characterization and verification sampling that will be performed to support closure activities. The proposed revision will be handled as a request for a major Closure Plan modification to the permit, which requires public notice and approval, and the (proposed) revision will be submitted to ADEQ at least six months prior to the planned start of final closure to allow time for adequate processing.

Prior to acknowledgment of final closure of the OB/OD Treatment Facility by ADEQ, investigation and closure of all solid waste management units (SWMUs) and areas of concern (AOCs) must also be completed. Such areas include, but are not limited to, the hazardous waste satellite accumulation area next to the site safety bunker (40 CFR 262.34(c)) and any other interim (status) or inactive OB/OD units. The investigation and closure of these SWMUs and AOCs are to be handled by documentation separate from this closure plan and may be included in a corrective action plan.

The U.S. Army Garrison Yuma Proving Ground military installation is a~~n~~ RCRA-regulated installation, and the OB/OD Treatment Facility is a grouping of 11 treatment units within the installation [EPA ID No. AZ5213820991]. This consists of five OD pits and six OB pans (see Permit Attachment 14A (Closure Plan Figures)). The closure actions described in this plan are considered either a partial closure (for specific equipment or units) or complete closure (for the entire facility). For example, when the U.S. Army Garrison Yuma Proving Ground closes the existing south OB pad (after construction of the new OB pads), that will be considered a partial closure (and a partial closure plan will be submitted to ADEQ at least 180 days before closure is planned to begin). That plan will be submitted pursuant to A.A.C. R18-8-264.A (40 CFR 264) regulations. Another example of a partial closure will be the existing north OB pad which is no longer being used and is not being permitted. Again, a partial closure plan (pursuant to interim status regulations) will be submitted to ADEQ at least 180 days before closure is planned to begin. Although the area of the OB/OD Treatment Facility has been used for OB/OD activities since the mid-1970s, it has been operating under interim status in accordance with A.A.C. R18-8-265A (40 CFR 265) since the U.S. Army Garrison Yuma Proving Ground filed a Part A Permit Application in 1984.

14.2. FACILITY DESCRIPTION

The U.S. Army Garrison Yuma Proving Ground installation is located in La Paz and Yuma Counties in the southwest section of the State of Arizona, adjacent to the Colorado River and north of the international border with Mexico. The U.S. Army Garrison Yuma Proving Ground base covers about 3,380 square kilometers (835,000 acres or 1,300 square miles) of federally controlled land that is roughly "U" shaped and is about 37 kilometers (23 miles) northeast of the city of Yuma, Arizona, at its closest boundary. U.S. Army Garrison Yuma Proving Ground is a modern research and development facility focused on the testing of military equipment, much of which includes weapons systems. In conducting these test programs, U.S. Army Garrison Yuma Proving Ground produces, stores, and uses significant quantities of munitions and explosives. Each year, quantities of these materials must be treated as wastes. These wastes include explosives and propellants, items in storage or manufacture that have failed quality assurance tests, munitions items, and any unsafe munitions items, components, or explosives. The OB/OD Treatment Facility at U.S. Army Garrison Yuma Proving Ground is an area designated for the treatment of waste munitions and explosives. The remainder of this section provides additional detail on the OB/OD Treatment Facility and its operations.

14.2.1 Configuration

The OB/OD Treatment Facility is on the Kofa Firing Range of the U.S. Army Garrison Yuma Proving Ground installation, approximately 16 kilometers (10 miles) north of the Kofa Firing Range complex. The site is a square fenced area measuring approximately 1,500 meters by 1,500 meters (4,921 feet by 4,921 feet) or 572 acres. This is considered the active area of the site (as defined in 40 CFR 260.10) because the distance from the OD pits and OB pads to the fence (except for the south fence which is less) is equal or greater than the protective distance to the property of others defined in 40 CFR 265.382 (1,730 feet).

The near-active treatment area, which includes burn pads/pans and demolition trenches, covers an area of approximately 14 acres in the central portion of the site. This enclosed 14-acre active area is roughly centered within a safety buffer zone that is basically devoid of vegetation.

The remainder of the facility is a safety buffer that is not used in the treatment of waste munitions. However, as explained above, shrapnel, scrap, OE, or other residue could impact this area as a result of OB/OD activities. Primary access to the site is via an access road through the west perimeter fence. A safety bunker (operational shield) is located alongside the access road, just inside the perimeter fence.

The OB/OD units included in the AzHWMA/RCRA permit and addressed by this Closure Plan consist of 11 units including two concrete pads, each with three pans, used for OB (6 units) and three open trenches (two with two cells or pits each, one for surface detonation) used for OD (5 units). ~~At the time of initial permit issuance, there is only one OB pad operational (existing south pad). Eventually, the existing OB pad will be replaced by two new OB pads – a new south OB pad and a new north OB pad.~~ At no time there will be no more than two pads in operation.

~~The existing south OB pad is composed of concrete, underlain by a HDPE liner. The pad does not have berms but is sloped down towards the interior of the pad where a sump is located. On the pad are three OB pans. The design of the pans are the same as (and will be transferred to one of) the new OB pads when they are constructed.~~

The two ~~new~~ concrete pads are designated the North and South Pads. They do not have curbs, but each is sloped to an interior storm water collection sump that is piped to an adjacent retention basin. Permit Attachment 2 (Miscellaneous Units) contains descriptions and containment device drawings (pads, burn pans). The burn pans are of a steel welded construction, lined with refractory. The layers of protection from ash to subsurface are sequenced as follows: castable refractory, fiber board liner, steel pan, castable refractory, sealant, concrete, sand, liner and virgin soil. Burn pans are elevated on an integral steel base above the concrete pads. The pads and pans are used to treat excess propellant and ammunition-related materials by burning. Propellant and powder are carefully loaded into the burn pans; the material is ignited and left to burn completely. The concrete pad is insulated from excessive heat by the pan refractory lining, air space, and refractory top surface. Ash generated from the burn, potentially designated as Hazardous Waste is collected from the pans and pads after each burn for disposal/treatment as hazardous waste.

The OD units consist of three pits (two with two cells each, one for surface detonation) for OD of waste ordnance. The two of the three open pits are each approximately 9 meters (30 feet) wide, 4 meters (13 feet) deep, and 91 meters (300 feet) long. Material to be detonated is placed in the pits and generally covered by a minimum of 61 centimeters (24 inches) of soil prior to detonation. The items containing submunitions are treated in Pit #1, during a surface operation and are not covered with soil. The pits are inspected and cleared of scrap metal fragments after each action.

No waste explosives or munitions are stored at the OB/OD Treatment Facility. The satellite accumulation area associated with the OB/OD Treatment Facility, located at the safety bunker approximately 730 meters (2400 feet) from the active treatment area, is maintained for the accumulation of treatment residues, specifically the ash from OB activities. The ash, a dry product of burning propellants, is collected after each OB activity for placement in a 55-gallon drum, which is held temporarily outside the safety bunker for later transport to the U.S. Army Garrison Yuma Proving Ground less-than-90-day waste accumulation location. Operation of a hazardous waste satellite accumulation area does not require a RCRA permit and, accordingly, the management of this specific satellite accumulation area is not addressed in this Closure Plan.

14.2.2 Operations

Propellants, explosives, and pyrotechnics (PEP) are thermally or explosively treated at the OB/OD Treatment Facility. These operations are carried out in strict accordance with YPG Standard Operating Procedure (SOP) No. YP-0000-K-002, “Demilitarization by Detonation and Open Burn” (Permit Attachment 6B). In addition, the site is operated in accordance with Permit Attachment 6 (OB/OD and Related Operations)).

Consistent with the referenced SOP, no more waste explosives or propellant are taken to the site than the amount authorized in the AzHWMA/RCRA Permit. For OB actions this is no more than 4,000 pounds per day, and for OD actions this is no more than 1,000 pounds per day.

During OB, bulk waste black powder and propellants (open or bagged), and other energetic materials are poured into burn pans on concrete pads and ignited. The following requirements are applicable to the OB operation through ARs or SOPs or a combination of both:

A. Loose propellant depth in burn pan is not to exceed 3 inches. It will not be mixed with black powder.

B. OB operations are not to be conducted between the hours of one-half hour before sunset and one-half hour after sunrise.

C. All burns shall be conducted in burn pans.

D. Burn pans shall only be used once in a 24-hour period.

E. Black powder is not to exceed 50 pounds per burn. It will not be mixed with propellant.

F. No PEP that is water reactive will be placed in a wet or moist pan.

The OD management unit is a large cleared area consisting of three open trenches. Two of the trenches are excavated approximately 9 meters (30 feet) wide and 4 meters (13 feet) deep. The following requirements are applicable to the OD operation through ARs or SOPs or a combination of both:

A. Projectiles without submunitions shall be covered with dirt to eliminate the scattering of fragments.

B. Projectiles with submunitions (such as M692, M731, M718, M741, M483, M509, and M864) will not be covered with dirt.

C. OD operations are not to be conducted between the hours of one-half hour after sunrise and one-half hour before sunset.

D. The Summary Treatment Form (Permit Attachment 6A, Form 6A.1) documents the treatment weather conditions, location, and amounts.

14.2.3 History

PEP materials have been managed/treated in the area of the current OB/OD Treatment Facility since the mid-1970s, prior to the implementation of hazardous waste regulations under RCRA. Original OB operations were conducted on the ground, which was typical for most OB sites of that period. That unit is not included in this closure plan. OD was conducted in pits that are still utilized today. (YPG 2004c, Submittal 2).

Treatment units addressed in this Closure Plan include the North and South Pads used for OB (6 pan units total) and the three areas used for OD (5 pit units). As indicated, the OD pits have been in operation since the area's use of OB/OD treatment began.

As described in Section 14.1 (Introduction), independent actions to characterize potential contamination remaining at these inactive sites were in the planning stages at the time this Closure Plan was prepared.

14.2.4 Waste Characteristics & Maximum Inventory

14.2.4.1. Waste Characteristics

As previously described, the facility treats hazardous waste through OB/OD operations. Waste munitions are not stored at the site. The only other hazardous waste found at the facility is the waste ash and splatter materials left on the pads that are byproducts of OB actions. The waste materials are potentially designated as potentially Hazardous Waste and are accumulated in a 55-gallon drum that is held temporarily within the OB/OD Treatment Facility at a satellite accumulation point adjacent to the safety bunker. The container is marked as "HAZARDOUS WASTE-ASH" when placed into service. When the drum is approximately 75 % full, this waste is moved to the U.S. Army Garrison Yuma Proving Ground less-than-90-day storage area.

The maximum reasonable amount of waste munitions treated during 30 years (1986 to 2016) could approach 907,180 kilograms (2 million pounds) of EPA Hazardous Waste Code D001/D003 explosives and 6,350 kilograms (14,000 pounds) of D008 waste ash.

The potential compounds treated at the OB/OD site could be present at the time of closure in the form of treatment residues not picked up with ash and debris. These constituents are listed in the WAP (Permit Attachment 3) and master COPC list (Permit Attachment 4) as contaminants of potential concern (COPCs) for closure actions.

14.2.4.2. Maximum Inventory

Waste PEP (EPA Hazardous Waste Numbers D001/D003) is not stored at the OB/OD Treatment Facility site. If small quantities of waste PEP that has already undergone OB/OD are recovered and determined to still contain explosive residues, it will either be treated there on the spot or moved to the treatment unit and treated (per the contingency plan – Permit Attachment 10). The Ordnance Recovery Technicians (ORTs) are the only qualified personnel authorized to determine if hazardous residue remains, and the item requires further treatment. As indicated in Section 14.2.2 (Operations), no more waste than the daily amount authorized is taken to the site for treatment. The maximum permissible inventory amounts to no more than 4,000 pounds per day for OB actions and no more than 1,000 pounds (net explosive weight – NEW) per day for OD actions.

Residues of the treatment processes will be at the facility, but in limited quantities. Ash from OB is collected from pads and pans following each burn, then bagged and placed into a 55-gallon drum at the satellite accumulation site adjacent to the safety bunker. Under the satellite accumulation rules of A.A.C. R18-8-262.A [40 CFR 262.34(c)], this drum (or drums) must be removed from the site within 3 days of becoming full. On this basis, the maximum inventory of ash expected to be present at the OB/OD Treatment Facility is the amount that a 55-gallon drum can hold.

Scrap metal residues, visually verified to contain no residual energetic materials (otherwise it would be treated again until treatment is successful), are collected following each OD action. In addition, the scrap is verified to contain no other hazardous waste residue (e.g., lead, etc.) prior to its transport for metal recycling or other permitted disposal.

Each OB pad is designed to retain precipitation falling on its surface or that of the associated retention basin. Because of the hot, desert environment, significant accumulations of precipitation are infrequent at the OB/OD Treatment Facility. As a result, no attempt will be made to develop estimates of how much accumulated precipitation could be present during closure. However, it is recognized that precipitation falling and accumulating on the OB structures prior to completion of closure decontamination or removal action is also subject to the closure actions and performance standards set by the Closure Plan.

The only other hazardous wastes potentially present at the OB/OD Treatment Facility are the potential treatment residues not removed during normal cleanup operations. Any hazardous constituent contamination remaining in the burn pans, on the burn pads, or in surrounding soils is subject to the closure actions and performance standards set forth in the following sections of this Closure Plan. This includes any materials in the gap between the pad and liner.

14.3. REGULATORY REVIEW

Closure of the OB/OD Treatment Facility will be conducted in compliance with Federal regulations as adopted and modified by A.A.C. R18-8-264.A. The closure will also be conducted in compliance with other Federal and State regulatory programs that address secondary aspects of closure, such as programs for worker protection and hazardous materials transportation. Table 14-1 summarizes these regulations. In addition to the regulations listed, all permit requirements (e.g., security, inspections, training on evacuation procedures) will remain in force until the permitted facility is acknowledged as closed.

14.4. FACILITY SETTING

14.4.1 Physiography

The OB/OD Treatment Facility is in Sections 30 and 31, Township 5 South, Range 19 West, Gila and Salt River Meridian (G&SRM), and Yuma County, Arizona. The facility is centered approximately at latitude North 32 degrees, 57 minutes, 20 seconds and longitude West 114 degrees, 15 minutes, 49 seconds. The facility occurs within the mapping limits of the 7.5-minute U.S. Geological Survey (USGS) Quadrangle, Middle Mountains South, Arizona-Yuma Co. The OB/OD Treatment Facility is located on U.S. Army Garrison Yuma Proving Ground installation, which is approximately 39 kilometers (24 miles) northeast of the City of Yuma. The U.S. Army Garrison Yuma Proving Ground is approximately 3,370 square kilometers (300 square miles) in area. The OB/OD Treatment Facility is in the southwest portion of the U.S. Army Garrison Yuma Proving Ground site. Its fenced area consists of approximately 2.3 square kilometers (570 acres), of which the active portion is about 0.06 square kilometer (14 acres).

The U.S. Army Garrison Yuma Proving Ground installation and the OB/OD Treatment Facility are in the Sonoran Desert Section of the Basin and Range Physiographic Province. The Sonoran Desert is characterized by generally elongated, low rugged mountains trending north-northwest, separated by extensive desert plains and river valleys. Although the relief of the mountains is relatively low, the combination of steeply faulted margins, jointing, and weathering has produced rugged topography with slopes sometimes exceeding 40 percent. The desert plains are relatively flat with land surface gradients commonly less than 50 to 100 feet per mile in the Kofa Firing Range.

The OB/OD Treatment Facility is on the desert floor of the Castle Dome Plain at an elevation of approximately 230 meters (750 feet) above mean sea level (msl). Castle Dome Plain slopes southwestward at 45 to 100 feet per mile. Dark brown desert pavement is well developed on the surfaces between the present washes.

14.4.2 Climatology

The southwestern region of Arizona where the U.S. Army Garrison Yuma Proving Ground (installation) is located is an extremely arid environment. The annual precipitation rate is 9 centimeters (3.57) inches (YPG 2001b). The precipitation sequence is bimodal. The majority of rain events occur in late winter months, late summer, and early fall. Winter rains are widespread, of long duration, and of low intensity, whereas late summer rains are localized, high-intensity events. The mean temperatures range from greater than 90°F in July to 35.8°F in January. The potential evapotranspiration rate is reported to be from 1 to 2.1 meters (3.3 to 7.1 feet) per year.

14.4.3 Land Use

Population in the area near the OB/OD Treatment Facility is sparse. Surrounding property is utilized for U.S. Army Garrison Yuma Proving Ground activities. No residential areas are within 1.6 kilometers (1 mile) of the OB/OD Treatment Facility. The nearest public road is castle dome mine road into KNWR (slightly east of U.S. Highway 95). The closest point of public access is approximately 2380 meters (7809 feet) from the facility’s active area. Use of the area within the 7800-foot radius requires a range clearance for passage. The nearest U.S. Army Garrison Yuma Proving Ground boundary is also the boundary to the Kofa National Wildlife Refuge, which lies in the center of the “U” formed by U.S. Army Garrison Yuma Proving Ground property.

14.4.4 Geology

The descriptions of local geology are taken from Remedial Investigation Report for selected sites at Yuma Proving Ground, Arizona (Davies et. al. 2004).

Wide, gently sloping plains formed by late Tertiary and Quaternary age basin-fill deposits characterize the geology of the U.S. Army Garrison Yuma Proving Ground military base. Sharply rising mountains break the continuity of these deposits. The mountain ranges consist mainly of Cretaceous-Quaternary age intrusive and volcanic rocks. Sedimentary deposits of Triassic-Jurassic age make up a portion of the mountains in the western and central portions of the U.S. Army Garrison Yuma Proving Ground base. The sedimentary rocks are locally metamorphosed to schists and gneiss. Together these formations form the lateral and underlying boundaries of the alluvial basins. The basin-fill deposits are generally sandy, with variable fine-grained (silts and clays) to coarse-grained (gravel and cobbles) lenses. These deposits can exceed a thickness of 1,300 ft.

The basins at the U.S. Army Garrison Yuma Proving Ground base were formed during the middle to late Miocene epoch basin-and-range structural disturbance. Movement along high-angle normal faults down-dropped relative to the mountains, producing a series of generally north-northwest trending basins. These basins subsequently subsided. This subsidence was a gradual process accompanied by deposition of locally derived sediment in internally drained basins. The closed drainage system produced a gradual change from coarse-grained sediment near the mountains to fine-grained near the basin centers. The basins within the areas of interest at the U.S. Army Garrison Yuma Proving Ground base are currently not enclosed and drain to the Colorado and Gila Rivers.

14.4.5 Soil Description

Five general soil associations occur at the U.S. Army Garrison Yuma Proving Ground installation: Gilman-Vint-Brios, Marqua-Perryville-Gunsight, Gunsight-Rillito, Coolidge-Wellton-Antho, and Lomita-Rock Outcrop. Gilman-Vint-Brios soils are found along the southwestern and western portion of the U.S. Army Garrison Yuma Proving Ground base and are mainly sandy loam and find and are found only on the floodplains of the Colorado and Gila Rivers. The Marqua-Perryville-Gunsight soils are the most prevalent of all the soil types at the U.S. Army Garrison Yuma Proving Ground base and consist of moderately fine- and medium-textured soils from volcanic, granitic, and sedimentary sources. The Gunsight-Rillito soils are found only in the far northern portion of the U.S. Army Garrison Yuma Proving Ground. Coolidge-Wellton-Antho soils, which are found in the southwestern corner of U.S. Army Garrison Yuma Proving Ground, are medium- to coarse-textured soils formed from source rocks similar to those that are the sources of the Marqua-Perryville-Gunsight soils (Cochran 1991).

Boring logs recorded for three soil borings drilled at the Open Burn / Open Detonation site show that silty sand (USCS soil classification SM) mixed with some gravel predominate in the upper fifty feet of the subsurface. Thin zones of gravel mixed with silt and sand (USCS soil classification GP-GM) were observed at depths ranging from the surface to fifteen feet below ground surface.

14.4.6 Facility Surface Hydrology

Surface hydrology at the OB/OD Treatment Facility consists of desert washes, which conduct precipitation overflow through the area from localized rain flow events and those of the surrounding watershed. The Treatment Facility is located within the Castle Dome Plain; the surrounding watershed influences surface hydrology drainage patterns. The drainage patterns on this portion of the plain are generally shallow and ill defined because drainage must traverse hard desert pavement in this area. The watershed for this area is approximately 44 square kilometers (17 square miles); flows are southwest toward the Gila River at a gradient of about 5 feet per mile. Detailed surface hydrology information for the facility is contained in Geohydrologic Study of the Yuma Proving Ground with Particular Reference to the Open Burning/Open Detonation Facility at Yuma County, Arizona (YPG 2004c, Submittal 4). Based on the evaluation in the Initial Drainage Report and Final Drainage Report (YPG 2004c, Submittal 6), the OB/OD site is in a 100-year floodplain and flood protection for the OB/OD area is required.

14.4.7 Groundwater

Groundwater is present in two systems beneath U.S. Army Garrison Yuma Proving Ground: deep groundwater is found in consolidated volcanic rock (at depths typically greater than 500 feet) and in deep sediment, and a shallower unconfined aquifer is found in alluvial and floodplain deposits. In the distant past, water entered the closed basins and formed salty lakes. With time, the lakes evaporated and developed layers of evaporates (salts). Infiltration of salty water produced highly mineralized water deep within the basin. This water has been primarily recharged by water from the Colorado and Gila Rivers. Infiltration of precipitation and ponded surface water adds very small amounts of additional recharge to this deep groundwater. Because this water is very deep and highly mineralized, it is not considered to be a primary drinking water source. Therefore, this discussion focuses on the shallow groundwater that occurs within the alluvial and floodplain deposits at U.S. Army Garrison Yuma Proving Ground.

A study of the hydrogeology at the U.S. Army Garrison Yuma Proving Ground installation was conducted in 1987 (YPG 2004c, Submittal 4). At that time, 13 production wells were located within U.S. Army Garrison Yuma Proving Ground. The top of the groundwater aquifer ranged in elevation from approximately 200 feet MSL at the Castle Dome Heliport to 155 feet MSL in the southwestern portion of U.S. Army Garrison Yuma Proving Ground. The depth to groundwater ranged from 30 feet below ground surface (bgs) in well X to greater than 600 feet bgs in well M. Water levels in these wells did not substantially change over a 1-year period in 1987. The groundwater gradient is about 4-5 feet per mile upgradient of the major pumping wells, and less than about 4 feet per mile near the rivers. Near the rivers, the groundwater elevation becomes shallower, and it may be within 10 feet of the surface in floodplain deposits.

Three parameters are frequently used to characterize a groundwater aquifer: transmissivity, hydraulic conductivity, and storativity. Transmissivity is an indication of how well an aquifer can transmit water. It is the rate of flow through a vertical strip of the aquifer that has a width of 1 foot. Hydraulic conductivity is a function of the porous media and the fluid (in this case, groundwater) with units of distance/time. The storage coefficient of the aquifer is an indication of the aquifer’s ability to yield or store water. Transmissivity values for the U.S. Army Garrison Yuma Proving Ground production wells range from 19,000 to 83,300 gallons/day/foot (gpd/ft), 9,600 gpd/ft for the consolidated rock, and averaged 130,800 gpd/ft for the floodplain deposits. Hydraulic conductivity ranged from 83 to 902 gpd/ft2 for the alluvial wells, with an average value of about 500 gpd/ft2. The hydraulic conductivity was about 56 gpd/ft2 for consolidated rock and about 1,245 gpd/ft2 for the floodplain deposits. Reasonable values for the storage coefficient range from 10 to 15 percent for alluvium, 1 to 5 percent for consolidated rock, and 20 to 30 percent for floodplain deposits.

The rate of groundwater movement can be determined by combining data on the hydraulic gradient in the aquifer with its hydraulic conductivity and storativity. For the above values, the average rate of groundwater movement is about 0.55 ft/day (200 ft/year) in the alluvial material. This is an average flow rate across the areas that have been investigated or are under investigation at the U.S. Army Garrison Yuma Proving Ground. Local heterogeneity within the surficial aquifer can result in a range of flow direction and velocity at specific locations on the U.S. Army Garrison Yuma Proving Ground base.

Hydraulic conductivity tests were performed on three samples collected from 40 feet below ground surface from three soil borings drilled at the Open Burn / Open Detonation site. Results showed an average hydraulic conductivity value of 0.01 ft/day (3.7 ft/year) with a range of values from 0.000334 ft/day (0.12 ft/year) to 0.02 ft/day (7.3 ft/year), somewhat less permeable than might be expected from a mostly granular matrix. Porosity in the samples ranges from 18 to 23 percent, within the expected range for a mostly granular soil (YPG 2004c, Submittal 5 and YPG 2004c, Submittal 12).

14.5. CLOSURE PERFORMANCE STANDARDS

14.5.1 Regulatory Performance Standards

The OB/OD Treatment Facility closure will meet the performance standards found in A.A.C. R18-8-264.A (40 CFR 264.111). Those standards indicate that closure must be conducted in a manner that:

- Minimizes the need for future maintenance; and
- Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, surface waters, or the atmosphere.
- Meets the Arizona soil remediation rule and remediation standards prescribed in A.A.C. R18-7-201 et seq. (including those for constituents that due not fit into the second bullet above.)

14.5.2 Closure Methods

Details on the closure method and management and disposition of facility equipment and waste are provided in Section 14.7 (Closure Activities). Methods for meeting the closure standards include:

- Removing hazardous waste inventory and residues from the OB/OD Treatment Facility as discussed in Section 14.7.1 (Hazardous Waste Management).
- Addressing process equipment and structures (i.e., burn pads and pans) as described in Section 14.7.2 by using, individually or in combination, the following approaches:
- Using physical extraction methods to treat surfaces that might have contacted hazardous waste until a condition analogous to a clean debris surface is achieved
- Dismantling and removing for disposal as hazardous waste
- As described in Section 14.7.4 (Areal Surficial Soil Characterization and Removal), removing contaminated soil as needed until it can be verified through sampling and analysis that any remaining hazardous constituents (including those not considered to be hazardous waste constituents and that may not fit into the second performance standard above) meet the Arizona Soil Remediation Rule and remediation standards in A.A.C. R18-7-201 et seq., or otherwise proposed in this document.
- Managing closure-generated waste as described in Section 14.7.6.

14.5.3 Criteria

This section identifies the criteria that will be used to ensure the methods described in Section 14.5.2 (Closure Methods) achieve the performance standards of Section 14.5.1 (Regulatory Performance Standards).

Hazardous waste determinations will be performed on all waste generated during closure using criteria found in the WAP (Permit Attachment 3) and QAPP (Permit Attachment 13). These will be based on sampling results or process knowledge.

Soil left in place will meet performance as in the WAP (Permit Attachment 3) such as non-residential SRLs, GPLs, or TCLP levels.

14.6. COMPOSITE WHEEL SAMPLING PROTOCOL

Surface samples will be collected from the surface and in the base of the trenches using the composite wheel sampling method described below and methods provided in EOP-025a, Surface Soils Sampling (Permit Attachment 3C). The composite wheel method is based numerous research projects completed by the U.S. Army.

The wheel has seven openings used to collect soils from each location for compositing. The opening in the center of the wheel will be used to collect a discrete sample to be analyzed for all constituents presented in the WAP (Permit Attachment 3) except the explosives components (i.e., method 8330, Nitrocellulose, and Nitroguanidine). The soils collected from the remaining six openings will be composited into one sample to be analyzed for energetic constituents. The following describes compositing procedures required for this operation:

1. Place the 122 centimeter-diameter composite template at the sample location, with the north arrow towards magnetic north.

2. Sampling will occur at the depth intervals specified. The sampling procedures are modified as noted below.

A. Collect a discrete sample from the center opening in the wheel and place in sampling containers, as needed for analysis of non-explosive constituents.

B. Collect samples from each of the periphery holes in the sample wheel. The individual sample weights should be +/- 5% of each other to provide a representative sample.

C. Composite six sub-samples into sample containers for transportation and analysis in accordance with WAP (Permit Attachment 3).

Surface samples will be collected in accordance with EOP-025a, Surface Soils Sampling (Permit Attachment 3C). Where a duplicate sample is designated; it will be collected from the mass generated for the original sample. Samples will be collected with clean, decontaminated equipment with field decontamination performed as necessary in accordance with the decontamination method described in EOP-005, Sampling Equipment Decontamination (Permit Attachment 3C), which also describes the method that will be used to collect an equipment blank for this site. The equipment blank should include de-ionized water flushes from each piece of equipment used in a routine sample collection event.

In between surface sampling intervals, the locations will be excavated to the next depth interval for the second surface sample, where applicable. Subsequently, subsurface soil samples will be collected from boreholes using drilling and sampling methods in accordance with EOP-025b, Subsurface Soils Sampling (Permit Attachment 3C). Soil samplers will be used to collect continuous samples to total depth of the boreholes. Exact sample locations will be field determined in the updated Closure Plan.

Where a duplicate sample is designated, it will be collected from a sample of adequate volume to homogenize and divide into two samples. Samples will be collected with disposable equipment or clean, decontaminated equipment with field decontamination performed as necessary in accordance with the decontamination method described in EOP-005, Sampling Equipment Decontamination (Permit Attachment 3C). This EOP also describes the method to be used to collect equipment blanks. The equipment blank will include de-ionized water flushes from each piece of equipment used in a routine sample collection event that comes into direct contact with the sample.

14.7. CLOSURE ACTIVITIES

The following sections describe the closure activities (waste management, dismantling, characterization, decontamination and disposal activities) necessary to close the OB/OD Treatment Facility and meet the performance standards of A.A.C. R18-8-264.A (40 CFR 264.111). The nature of the waste treated at the OB/OD Treatment Facility presents numerous concerns that may affect the manner in which closure actions are accomplished. For example, some of the tools and equipment normally used in the closure actions described in this plan produce sparks, heat, and friction, to which many ordnance and explosives residues are sensitive. There could also be concerns of incompatibility between certain detergent cleaners and PEP residue. The lead ORT onsite will determine required protective measures, if any. As alluded to in the previous sentence, OB/OD operators will take part in closure activities to ensure safety of all participants.

14.7.1 Hazardous Waste Management

Reactive and/or ignitable waste (EPA Hazardous Waste Numbers D003 and D001, respectively) was never stored at the OB/OD Treatment Facility; waste generation practices are such that waste taken to the facility was only in quantities that could be treated during the same day. Accordingly, there should be no untreated waste to remove when closure is started. As a safety precaution, however, OB/OD operator/treatment personnel will provide a final clearance of the facility before closure actions start. At a minimum, this will involve a walk-down of the entire area looking for untreated propellant, explosive devices, or oxidizer (reactive and ignitable) materials. If such materials are found at this time, or at any time during the closure, they will be extracted from the area by qualified personnel, packaged appropriately, then shipped for hazardous waste treatment at an authorized facility that can handle explosive materials. As a last resort, if materials are found that are deemed too hazardous to move, the ORT will treat them in place. Per the Contingency Plan (Permit Attachment 10), locations where ordnance or explosives are removed or destroyed will be appropriately staked, recorded to plus or minus 1 foot by measurement relative to a nearby GPS or land surveyed location, and sampled for cleanup verification according to the same procedures for closure of the permitted OB/OD units. The final clearance walk-down of the facility will also be used to locate and remove, as appropriate, any OB spatter in soils surrounding the pads or any metal debris from OD treatment not cleaned up during final OB/OD operations.

Treatment residues in the form of ash from OB actions are accumulated in small quantities until there is enough (at the most, the volume of a 55-gallon drum) to be moved to a U.S. Army Garrison Yuma Proving Ground less-than-90-day accumulation area. Follow-on closure actions will not be undertaken until all routine procedural actions to remove treatment residues have been performed following the final treatment action. Accumulated treatment residues will also be removed after final treatment residues are collected unless it is decided that closure activities are starting soon (within 90 days, for example), and it would be beneficial to continue accumulating closure-generated waste in the same container.

Treatment debris from OD actions is visually identified and collected after each event. For closure, one more thorough area inspection will be conducted. The area is defined as the total area within the storm water berms plus 300-foot radius from each OD unit. Additionally, a large magnet will be pulled over the area to gather MC, DMM, or munitions scrap not immediately visible. The magnet will be turned off and the metallic debris dropped onto a cover. The ORT then visually inspects and thereby sorts the items segregating them into separate piles: one that is turned into the metal recycling yard and one that requires removal of the explosive residues. After collection and segregation, the remaining HE related items would be consolidated into a plastic bag and treated as the last OD operation. A final visual inspection will be conducted. If additional HE related items are found, they will be collected and treated. The remaining non-HE related items including but not limited to inert metal parts, plastics, wood, trash, etc. would be collected and discarded according to the proper hazardous classification conducted by the ORT. Prior to disposition, all debris will be inspected and certified by an ORT to ensure that all items are free and clear of explosive residue. A final flashing will be conducted within the berm perimeter and then on a case-by-case basis outside of the berms within the 300-foot radius the pits to eliminate accumulated non-observed energetic materials. If ash is generated from the flaming operations, it will be collected and treated similar to the ash residues from the OB operations.

Accumulations of water may be present in the OB pad structures at the start of closure actions or it could accumulate during closure as a result of precipitation. In any case, if the water accumulation occurs prior to decontamination of the applicable equipment and structures (i.e., the equipment and structures contacted by the water), it will be managed as potentially contaminated wastewater. It will be either managed in accordance with normal unit operations (i.e., performing sampling and analysis per the Waste Analysis Plan (Permit Attachment 3) to determine its proper disposition before pumping it) or left in place to be managed as closure-generated waste. The latter option is appropriate if it is envisioned that decontamination of OB structures and equipment may include water washing/flushing, which will result in wash waters accumulating in the same area as the precipitation, and the combined wastewater would then be managed as appropriate. This scenario seems most reasonable when the amount of accumulated precipitation is too small (the expected condition, if any is present) to be managed independently.

14.7.2 Addressing Process Equipment and Structures

There is no process equipment or structures related to the OD operation. The OB pads and pans and their associated components will be either decontaminated to meet clean debris standards or dismantled and disposed of as hazardous waste. As appropriate, a combination of these methods might be used on a single structure or piece of equipment. The proposed closure strategy would achieve clean closure of the OB/OD units by removing pads and structures or decontaminating them to achieve clean debris requirements and removing them, and removing contaminated soils, as necessary, followed by disposal as solid waste.

Decontamination. The OB structures and equipment are potentially contaminated with residues from the treatment of ignitable (D001) and/or reactive (D003) waste. Having already been treated by open burning, the resulting residues should no longer exhibit either of these hazardous characteristics. With respect to the characteristic of reactivity, there should be no significant potential for the residues to contain reactive levels of cyanide. Though ash residues are analyzed for the presence of cyanides (see the Waste Analysis Plan – Permit Attachment 3), this is for the determination of underlying hazardous constituents and not because of any suspicion that there might be reactive levels of this constituent. Residues remaining on the OB structures and equipment may, however, contain toxic constituents from the waste materials originally treated, such as 2,4-DNT, and could cause these items to qualify as hazardous waste.

After years of use, it is anticipated that hazardous constituents could become embedded in the surfaces of the concrete pads exposed to OB actions and in the lining of the burn pans. The favored approach to managing these items is to perform surface decontamination (as opposed to direct management as hazardous waste) in a manner that will achieve a clean debris surface as specified in A.A.C. R18-8-268.A (40 CFR 268.45). The OB/OD Treatment Facility items that might be managed in this manner and the treatment options that could be employed are listed in Table 14-3. Treated pad and pan materials that achieve the required performance standards (also listed in Table 14-3) are no longer considered hazardous waste and will, as appropriate, be recycled as scrap or managed as solid waste. This, of course, would be provided that the materials (soil, liner, and sand) under the pad can still be adequately addressed per the terms of this Closure Plan. Treatment residues generated as a result of any of the decontamination methods shown in Table 14-3 [e.g., used blast media, grindings, wash fluids (and solids they contain)] will be managed as hazardous waste unless determined to be nonhazardous through sampling and analysis.

Concrete structures subject to these closure actions include the precipitation accumulation sumps and retention basins as well as the OB pads themselves. The treatment and performance standards shown in Table 14-3 will be applied only to the concrete surfaces exposed to the OB actions or to runoff that might be contaminated as a result of the OB actions. That is, the top surface of the pad, the top and interior side of the containment berm, and the interior surfaces of any precipitation collection sump and retention basin will all be subject to the treatment and performance standards. Correspondingly, outside edges and the underside of the concrete pad will not be considered potentially contaminated and will not be subjected to decontamination or treatment. It is expected that the affected concrete surfaces will be treated through use of a scarifying/scabbling device that can be passed over potentially affected surfaces of the concrete until a layer of at least 0.6 cm (0.25 inch) has been removed and a clean debris surface obtained. Equipment capable of performing the described scarification/scabbling is commercially available and includes models with dust collection capabilities. Dust generation will be minimized through these means or others to reduce the spread of potential contamination. Physical extraction methods that can be employed on the concrete pads are not limited to scarification/scabbling devices as shown in Table 14-3. However, any other method used must be similarly effective in meeting the performance standard and minimizing the spread of potential contamination.

Under the decontamination approach, the metal burn pans will be treated through abrasive blasting or vibratory finishing. It is expected that either technology will be effective and that wet or dry techniques might be used under either one. The specific method selected at the time of closure is expected to depend on the types of equipment readily available that are best at controlling emissions (dust or overspray) while minimizing waste generation.

Refractory materials inside the burn pads will be removed and managed separately from the metal pans. It is anticipated these materials will be managed as hazardous waste and shipped off the site for eventual treatment/disposal. It is possible the materials could be treated according to methods listed in Table 14-3 as appropriate for the concrete pad. However, in the case of the firebricks, all surfaces (i.e., all sides of the bricks) would be considered contaminated and would have to meet the applicable performance standard.

Other metal components, such as the grating material over the precipitation collection sump and the exposed portion of the steel well pipe in the sump, will be treated in the same manner as the metal burn pans. The underground drain pipe running from the OB pad collection sump to the retention basin, though plastic, is another system component that can be treated in a manner similar to the metal burn pans, as shown in Table 14-3. In this case, however, it is anticipated that a high-pressure water spray is a more likely decontamination approach. As with the concrete surfaces, only the exposed, internal walls of the drain pipe will be subject to decontamination. These items (i.e., the metal grating and the pipes) are components of the concrete pads and, accordingly, it is proposed that these components also undergo the described treatment processes in order to achieve a condition analogous to a clean debris surface and then be removed and disposed as solid waste.

Structures and equipment undergoing successful decontamination (in accordance with the hazardous waste debris rule and the criteria in Table 14-3) will generally be managed as nonhazardous solid waste or scrap metal. The hazardous waste debris rule applies only to hazardous waste that will be disposed of in a solid waste landfill; however, ADEQ will make an allowance to allow this material to be recycled if it meets the solid waste recycler's acceptance criteria for potential remaining constituents in the scrap (e.g., the clean debris surface allows contamination or potential contamination to remain in up to 5% of the debris' surface area).

If decontamination is performed (and structures and equipment are not just removed as hazardous waste), the order of work performed will be in the same direction that precipitation hitting the OB structures and equipment would move. That is, for one OB structure setup, the pans would be done first, then the decontamination efforts would move, in order, to the pads on which the pans rest, the sump in OB pad (including the well pipe in the sump), the drain pipe connecting the OB pad to the retention basin, and, finally, the retention basin. In this manner, any water in the system (from precipitation or from decontamination) would move from clean to dirty areas and would not cause additional contamination or recontamination of a clean area.

Residues generated from treatment of equipment and structures will be collected and managed as closure-generated waste per Section 14.7.6 (Management of Closure Generated Waste). Potentially contaminated components of equipment used in the treatment will be either removed for disposition as closure-generated waste or washed/rinsed to remove potential contamination. As described in Section 14.7.5 (Decontamination of Closure Equipment) for equipment used in soil removal, this includes decontamination, as needed (i.e., if they contact contaminated materials), of heavy equipment and tools (bulldozers, jackhammers, scabblers, etc.) used in either decontaminating or removing the OB structures and equipment. Rinse water generated in this manner will be managed as closure-generated waste.

Management as Waste without Decontamination. Process equipment and structures exposed to OB actions and not undergoing decontamination will be dismantled as necessary and removed from the site for subsequent management as waste. Such materials will be presumed to be hazardous waste based on process knowledge unless it can be determined through sampling and analysis that they do not qualify as hazardous waste. As indicated above, the preferred management method for the burn pads and pans is decontamination followed by management as nonhazardous solid waste or scrap. However, if it is determined at the time of closure that simple removal and management as waste (without decontamination) is the more efficient and cost-effective approach, it will be pursued.

The concrete burn pads permitted for OB operations are underlain with a synthetic liner to provide secondary containment. The interstitial area between the pad and the liner is periodically checked for any accumulation of liquid. If there has never been liquid detected in the interstitial area at the time of closure, neither the liner nor the interstitial bedding material (primarily sand) below the concrete pad will be considered hazardous waste. If there has been evidence of leakage through the pad, the liner will be removed and disposed of as hazardous waste, and the bedding material will be managed in the same manner as surrounding soil (see Section 14.7.4 (Areal Surficial Characterization and Removal).

If the concrete or other debris is not decontaminated and just sampled to determine if it is a hazardous waste, the surface exposed to treatment and potential treatment residues will be sampled to determine what hazardous waste characteristics, if any, apply to the debris.

14.7.3 OD Pit Evaluation and Cleanup

The soils within the three pits require a closer scrutiny: excavation to native, segregation of soil and military munitions, soil pile sampling, pit clearance, pit validation sampling, and finally pending laboratory results proper disposal of the soils and military munition categories.

First, the pits will be excavated to virgin soils and the soils placed onto heavy plastic sheeting. It should be noted that there would no longer be a dividing wall in what is now designated as pits. The side trenches will be approximately 6 inches removed along with the bottom materials. The pile will then be sorted using a shaker screen with tight visual control by an ORT. The pile will be segregated into sifted soil and other materials, which will be further sorted into munitions debris, munitions constituents (MC), and discarded military munitions (DMM). The sifted soil pile will be placed on another heavy plastic sheet and composite sampled for hazardous constituents. If the laboratory results for the pile demonstrate below action levels, the pile will be saved as borrow material pending clean verification of the trenches. If the soil pile results are higher than action levels, the soil will be evaluated under a corrective measures study. After a close inspection by the ORT of the byproduct shaker screen streams, the munitions debris is then discarded as solid waste or recyclable material. The remaining MC and DMM will be consolidated for hazardous waste disposal.

Upon removal of the soils to virgin in the trenches, the surficial soil sampling will be conducted according to the following frequency methodology:

- 1 per 500 square foot of trench bottom surface area
    - 0 to 3 inch interval (surface)

- 1 per 2,250 square foot of trench bottom surface area at 3-foot depth interval

    - 1 biased sample from the low point of each pit at 3-foot depth interval
    - As part of the revision to the Closure Plan prior to closure implementation, U.S. Army Garrison Yuma Proving Ground will evaluate the subsurface sampling requirements.

- 1 per 25 foot of sidewall
    - 0 to 3 inch interval (surface)
- Sample analysis
    - 100% screening15% full suite

Sampling analysis will be conducted in accordance with the WAP (Permit Attachment 3) for the COPCs as initially established in Permit Attachment 4.

In order to ensure that there are no buried military munitions remaining in the trench, a geophysical study will be conducted. The methodology and equipment will be determined as part of the Closure Plan revision. This will allow for use of new technologies that will at a minimum be able to distinguish at depth (from the bottom of the freshly excavated trench) any size or material that could in anyway be perceived as a military munition. Therefore, U.S. Army Garrison Yuma Proving Ground will confirm that each of the three trenches will be clear of military munitions with a probability greater than 85%, prior to backfilling the trench.

Upon verification of clean from the trench sampling and the geophysical study, the trenches will be filled and compacted according to standard U.S. Army Garrison Yuma Proving Ground engineering requirements. The source of the borrow materials will be either the verified 'clean' removed trench soils, verified 'clean' removed berm soils, or from an offsite designated clean borrow source pending sampling results.

14.7.4 Areal Surficial Soil Characterization and Removal

It is anticipated that once the trenches and burn pads and pans have been addressed in accordance with Section 14.7.2 (Addressing Process Equipment and Structures) and Section 14.7.3 (OD Pit Evaluation and Cleanup), closure actions will begin assessing potentially contaminated surficial soils. Closure actions will proceed in this order (i.e., pads, then soil) so that any contamination spread to soils during closure of the pads or trenches and not subsequently cleaned up will be addressed with the soils. (That is, it should be relatively simple to sweep or collect soil from the surface of decontaminated pads as compared to removing pad decontamination residues from clean soils.). The alternate to this process order may be to leave at least one of the OB pads until the end so that it can be used as a location where closure equipment can be decontaminated. The OB pads' design parameters to accommodate and contain precipitation make them an obvious choice as an equipment decontamination location. Under this option, particular care would be required during the pad's eventual decontamination to assure surrounding soils are not contaminated.

When closure activities are started, standard operating procedures associated with the last OB/OD action(s) will have been completed. This includes removal of any spatter from OB actions that might have reached soils surrounding the OB pads and removal of any energetic or metal debris from the trenches and adjacent areas where OD actions took place. In addition, any residues generated during closure of the pads will have been cleaned up to the extent practicable (see discussion of specific closure activities in Section 14.7.2 (Addressing Process Equipment and Structures)). At this point, a decision will be made either to proceed directly to sampling of OD pit soils and soils surrounding the burn pads to characterize any remaining contamination or to perform a soil removal action before soil sampling. Data should be available at the time of closure that provides a characterization of soil contamination associated with inactive OB units at the OB/OD Treatment Facility site and which, it is anticipated, will provide a basis for the decision. This decision should be site-specific based on the nature of treatment activities and how well they match activities represented by the characterization data. In the event no such data is available or, if the data cannot be related to the units undergoing closure, the decision (again site-specific) can be based on the appearance of the soil area and a review of the area's history. For example, if there is no history of significant quantities of material being released to the soil and there are no visible areas of contamination (spatter and loose debris should have been cleaned up as described in Section 14.7.1 (Hazardous Waste Management)), then it might be appropriate to start with a sampling action.

Even if the decision is made to move directly to sampling, the first soil-related action associated with closure will be the close visual inspection of soil areas around the pads and pits. This visual inspection will be accompanied by removal of any soil appearing to contain spatter from OB actions, residue from burn pad/pan decontamination, or debris remaining from OD actions. It is anticipated that this can be done with a shovel or scoop, removing the top layer of soil containing the spatter or residue and placing the soil material or debris in an appropriate container. OB/OD personnel/operators will need to take part in these and other closure activities to ensure the safety of all participants. This inspection will include locations were contingency response actions occurred. These locations will be kept as part of the Operating Record.

Whether a decision is made to do soil removal first or go directly to soil sampling (with only minor cleanup as appropriate), the objective is the same. That is, the objective is to verify, through soil sampling activities, that remaining soils meet non-residential SRLs set in A.A.C. R18-7-201 to –209, or similarly established response levels (if an SRL does not exist for a specific constituent or constituents) as identified in the WAP (Permit Attachment 3). If sampling shows that one or more non-residential SRL has been exceeded, then additional soil removal actions will be undertaken followed by additional verification sampling. It is expected that the decision (removal versus sampling first) will be based on findings from efforts to characterize inactive OB/OD units in the same area. It is anticipated that characterization of inactive units will have been completed some time between preparation of this Closure Plan and implementation of closure actions. U.S. Army Garrison Yuma Proving Ground reserves the right to conduct a Risk Assessment as alternative approach to meeting the SRLs.

As described above, the objective in addressing potentially contaminated soil is to verify that soil remaining at the site meets residential SRL values. Values at or below the performance standard (i.e., the SRL value) will achieve the standard.

Once performance standards are achieved, there should be no restrictions on future use of the land, and the OB/OD Treatment Facility will be considered clean closed. If at any time during this phase of the closure action, it is determined to be infeasible or impractical to reach residential SRL values, then soil contamination levels will be compared to nonresidential SRL values. If these values are achieved and it is deemed impractical to perform additional soil removal, U.S. Army Garrison Yuma Proving Ground will work with ADEQ to develop reasonable administrative land use restrictions sufficient to protect human health in a manner that will be functionally equivalent to the restrictions found in the Declaration of Environmental Use Restriction (DEUR) program. In this case (i.e., the nonresidential SRL values are met, but not the residential values), the OB/OD Treatment Facility will be considered to have achieved closure with land use restrictions, but without the need for any other post-closure care. In the unexpected event that it is determined impractical to achieve either residential or nonresidential SRL values, then a Post-Closure Plan will be developed and submitted to the ADEQ as described in Section 14.9 (Closure Plan Amendments) and Section 14.11 (Post-Closure Activities).

Background levels of any naturally occurring constituents might be considered during actions to address soil contamination. If background soil concentrations meeting the requirements of A.A.C. R18-7-204 are shown to be higher than corresponding residential SRL values (using the 95th-percentile upper confidence limit as described in the same A.A.C. section), those background values will be used in lieu of the residential SRLs.

Universal Treatment Standards (UTS) (where available) set in A.A.C. R18-8-268.A (40 CFR 268.48) might become important in determining the appropriate management and disposition of waste soil removed from the site. They are shown in the WAP (Permit Attachment 3).

14.7.4.1. <u>Soil Characterization</u>

Soil sampling and analysis will be used to determine if soils at the OB/OD Treatment Facility meet the performance standards described in Section ~~O.6.3~~ 14.5.3 (Closure Performance Standards – Criteria) or if soil removal is necessary to meet the standards. Soil characterization activities could be done for multiple OB/OD units at the same time, but design of the sampling scheme will be unit-specific unless there is overlap in soil areas between units. The nature of the OB/OD units, whether they are OB pads or OD trenches, is that the potential for soil contamination should decrease with lateral distance from the site (pad or trench) where the treatment operations have taken place. Unless there have been recorded incidents of releases in a specific area, no portion or quadrant of soil surrounding the units would be more apt to contain contamination than another.

Accordingly, initial soil samples outside each unit will be collected in a “wheel” pattern as preferred by ADEQ. Under this sampling scheme, samples are collected along a 16 radial spoke pattern emanating out from the center of the unit. (That is, the spokes radiate out every 22½ degrees from the center of an imaginary circle.) The first sample along each spoke is at, or near, the edge of the unit and the second sample is at a distance of 7.6 meters (25 feet) further out. Sampling is repeated at 7.6-meter (25-foot) intervals along each spoke to a distance of 22.9 meters (75 feet) out from the unit’s edge. Sampling is then extended, as necessary, along each spoke at 7.6-meter (25-foot) intervals until two consecutive sample locations (on that spoke) show contaminant levels below clean-up standards. As appropriate, biased samples will also be collected from areas of known contamination (such as locations where the Contingency Plan (Permit Attachment 10) operations has been exercised) and with problematic historical data.

< 200-foot area

- 16 radial spoke pattern
    - ➢ 50’ intervals from center of detonation/burn
    - ➢ Depths (0-3” and 12-15”)
    - ➢ Sample analysis
        - ▪ Screening (100%)
        - ▪ Full suite (15%)

> 200-foot area

- 16 radial spoke pattern
    - ➢ 25’ intervals from center of detonation/burn
    - ➢ Depths (0-3” and 12-15”)
    - ➢ Sample analysis
        - ▪ Screening (100%)
        - ▪ Full suite (15%)
    - ➢ Below cleanup for 2 consecutive locations

The nature of the OB/OD treatment actions is such that any soil contamination would be expected to be surficial in nature, with the exception of the OD trenches, where soil has been moved and mixed due to covering most PEP items with a minimum of 61 centimeters (24 inches) of soil before OD actions. Other than inside the OD trenches, the potential for soil contamination is the result of settling of detonation dust and spatter and debris falling on surrounding soil surfaces. Accordingly, if analytical results from a soil sample show the performance standards are met, those results will not only be considered representative of the soil layer from which the sample was taken, but also will indicate that underlying soils meet the performance standard. Using this rationale, initial soil sampling (other than inside OD pits) can be limited to surface soils [no more than 15 centimeters (6 inches) in depth], or they can include both surface soils and soils at depth in discrete intervals. If only surface soils are sampled and the analytical results indicate contaminant levels in excess of performance standards, then samples at greater depths will have to be collected (before or after soil removal). The decision as to whether soil samples are limited to the surface layer will be based on information gathered from characterization of inactive OB/OD sites (which should be available at the time this Closure Plan is implemented) or the best judgment of those designing the sampling scheme.

Development of the sampling and analysis plan (SAP) portion of this closure plan for initial soil characterization (unless soil screening is used as discussed below) will include consideration of all of the PEP COPCs shown in the WAP (Permit Attachment 3). Additionally, the WAP identifies the COPCs for which there are applicable performance standards. When the SAP for closure actions is submitted (see the schedule in Section 14.8 (Closure Schedule)), it will take into consideration results from periodic pit sampling and records of items treated, as discussed in Section 14.2.4.1 (Closure Schedule) of this Closure Plan. The master list of COPCs presented in the WAP may be expanded, shortened, or otherwise modified, as appropriate, to be consistent with the knowledge of site contaminants available at the time the Closure Plan modification is prepared. In this regard, the modification, which will be submitted to ADEQ for public notice and approval, will include an explanation/justification for any changes to the COPC list.

Once the initial characterization sampling has been completed, the approach for any subsequent sampling and analysis can be altered based on the results from the initial sampling. For example, any potential contaminants not detected at a level of concern in the area to be addressed by the additional sampling can be dropped from the list of analytes to be considered. Similarly, if hot spots (specific areas exceeding performance standards) are identified during the initial characterization and soil is removed, only the remediated areas will be subjected to the verification sampling.

Comparison of soil sampling results to performance standards will be done on the basis of each potential contamination zone (pit base, pit sidewall, pit berm, or ring at depth 1, depth 2, etc.) set up in the sampling design. For example, results from within a sampling ring will be averaged to develop the statistical values described in Section 14.6.3 (Composite Wheel Sampling Approach), which will then be used for comparison to the applicable performance standard. This will be done to reduce the chance of uncontaminated areas of soil inappropriately bringing down the average concentration of the overall area. Conversely, it should also keep the amount of soils requiring removal to a minimum.

Optional Field Screening Methods. It is expected that closure of the OB/OD Treatment Facility will require the collection of a large number of soil samples to isolate areas requiring soil removal and to provide verification that performance standards are met. To reduce costs associated with sampling and analysis and to reduce the amount of time needed to implement closure, the U.S. Army Garrison Yuma Proving Ground might choose to incorporate screening methods (with analyses performed in the field, or rapidly at a fixed facility) into the characterization effort. If this is done, it would be followed by a much smaller number of soil samples collected for verification purposes and submitted to an analytical laboratory certified/licensed by the State of Arizona. The U.S. Army Garrison Yuma Proving Ground will present the screening methods to be utilized in the revision of the closure plan anticipated prior to closure of the unit. This methodology will allow the screening technologies to mature, and gain regulatory acceptance. Some current screening methods from EPA SW-846 are described briefly below:

- Modified method 6010, with accelerated preparation methods
- Modified method 8330, with accelerated preparation methods
- EPA Method 4050, TNT Explosives in Soil by Immunoassay
- EPA Method 4051, Hexahydro-1,3,5-trinitro-1,3,5-trianzine (RDX) in Soil by Immunoassay

- EPA Method 8515, Colorimetric Screening Method for Trinitrotoluene (TNT) in Soil
- EPA Method 8510, Colorimetric Screening Procedure for RDX and HMX in Soil
- EPA Method 6200, Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment

14.7.4.2. Soil Removal

Soils containing hazardous contaminants in excess of the performance standards set in the WAP (Permit Attachment 3) will be excavated and removed from the OB/OD Treatment Facility to the extent practicable. Soil characterization efforts described in Section 14.7.4.1 (Soil Characterization) will define the zone or zones that require removal. Removal of soil will continue in depth and lateral extent until all the impacted soil defined by the characterization effort is removed. If at any time it is determined to be impractical or unfeasible to remove soil to achieve the applicable performance standards, then a Post-Closure Plan will be submitted to the ADEQ as discussed in Section 14.11 (Post-Closure Activities).

In the event soil removal is performed, the boundaries of the areas subject to removal will be marked on the ground. Excavation will proceed across the marked area to the specified depth. When the entire zone has been removed, confirmation samples will be collected and analyzed to verify that underlying exposed soil meets applicable performance standards. Should the analytical results show that the standards have not been met, additional soil removal will be undertaken. Once the standards have been met, excavated areas will be backfilled after the analytical closure progress report is provided to ADEQ and ADEQ concurs the area is not contaminated. Backfill material will be from an approved location and will be placed into the excavation and the surface will be graded.

Confirmation samples will be collected from the walls (or edges for shallow excavations) and floor of the excavation. ADEQ typically requires verification sampling to be at a higher resolution than the characterization sampling described in Section 14.7.4.1 (Soil Characterization). Unless the closure plan amendment or revision can provide a sound basis for some other approach, samples will be collected at a rate of one per 3 linear meters (10 linear feet) of excavated sidewall and one per 9.3 square meters (100 square feet) of excavation bottom. The samples will be analyzed by the method appropriate for the waste constituents identified as being of concern in the initial characterization sampling. If the decision is made to remove soil prior to any sampling effort, the subsequent verification sampling will be performed as described above to provide confirmation of the success of the soil removal action.

The manner in which soil removal is performed will depend on the size of the excavation, if any, which is needed. Small excavations might be performed with hand equipment, but it is more likely that heavy equipment will be involved. Typical soil removal equipment requirements would include:

- Containers ranging from drums to roll-off bins
- Rubber-tired backhoe with smooth and toothed buckets

- Shovels, hoes, and brushes
- Paint, flagging, and stakes
- Decontamination station
- Personal protective equipment (PPE)

Soil would be removed under the following procedure or its equivalent:

1. Mark the areas subject to removal based on soil characterization. Designate, locate, and mark exclusion area boundaries, entry/exit points, personnel decontamination areas, and equipment decontamination areas. Designate a properly sized soil container, which will be reserved for this particular soil profile. Determine specific locations for the backhoe and waste container. Develop the specific extension, swing, reach, and release patterns that the backhoe operator wants to use.
2. Place the equipment decontamination station and prepare it for service.
3. Spread plastic sheeting on adjoining areas, as necessary, to protect against the spilling of excavated soil onto areas not subject to removal. The plastic sheeting will also prevent tracking of the backhoe across areas not subject to removal.
4. Use the backhoe to excavate the soil area to the specified depth and place the excavated soil in the selected container.
5. Use hand tools to remove all loose remnants of the designated soil from the excavation area. Place this soil in the container.
6. Collect confirmation samples from the walls and floor of the excavation.
7. Berm the excavation with soils from a clean source to prevent run-on.
8. Close and secure the containers. Decontaminate all equipment, tools, and personnel. Release excavation equipment and personnel.
9. Repeat the above if confirmation sample results indicate additional removal is required.
10. When the removal has ended, select a suitable borrow source that is known to be free of chemical contaminants. Arrange transportation of the backfill soil to the excavation.
11. Backfill the excavation, compacting between layers.

14.7.5 Decontamination of Closure Equipment

Equipment used to implement closure actions and potentially coming into contact with contaminated materials will be decontaminated before being released from the OB/OD site. This includes any equipment not being considered as waste at the end of closure actions, and may include heavy equipment such as earthmovers or bulldozers if significant earth removal is required. Decontamination will be in the form of washing, spraying, and/or wiping as necessary until there is no visible residues of dust or dirt remaining on the equipment surfaces that may have been exposed to potentially contaminated materials. Stiff bristle brushes or similar devices will be used as necessary in the event potentially contaminated materials prove difficult to remove. Because the OB/OD treatment actions involve no acid, bases, organic solvents, or other liquids, decontamination of heavy equipment is expected to require no more than removal of dirt and dust with minor, if any, levels of contamination. Given the type of contamination anticipated to be present on closure equipment, decontamination to a visually clean surface is judged to be the appropriate criteria.

Decontamination of closure equipment will be performed over an area where all wash water, including over spray, will be captured for management as closure-generated waste. This may mean that equipment decontamination is performed on an OB pad before it is decontaminated or removed. It may also mean that equipment decontamination is performed over heavy plastic sheeting that is laid over sloped ground allowing drainage to a small temporary collection basin installed for that purpose.

14.7.6 Management of Closure-Generated Waste

Waste generated during closure might include residues from decontamination (debris treatment) of burn pads and pans, firebrick from the burn pans (unless they are decontaminated), contaminated soil, rinse water from cleaning equipment used in the closure, and personal protective equipment. Table 14-4 provides a description of the types of closure-generated waste that may be expected depending on the specific closure approach taken. Also shown in the table for each waste stream are volumes that may be involved (if known), the type package that will likely be used for transportation, and expected disposition. Closure-generated waste will be properly stored and managed in the facility and disposed of in accordance with A.A.C. R18-8-262.A (40 CFR 262, “Standards Applicable to Generators of Hazardous Waste”). It will be segregated into groups of similar physical and (suspect) contamination characteristics in order to facilitate characterization and to prevent waste incompatibilities. Hazardous waste determinations, based on the constituents of concern, will be completed for all waste streams according to 40 CFR 262.11, “Hazardous Waste Determination.” Closure-generated waste will be managed at the OB/OD Treatment Facility for as long as necessary during closure actions without triggering the need for a storage permit. This applies only during formal closure actions as described by the closure schedule in Section 14.8 (Closure Schedule). During this time, waste will be properly containerized and periodically inspected in accordance with the operational requirements for a less-than-90-day storage site.

The OB/OD Treatment Facility is designated for the treatment of primarily ignitable and/or reactive (EPA Hazardous Waste Numbers D001 and D003) characteristic wastes. Residues from the treatment, unless they consist of unburned or unexploded PEP materials, no longer qualify as ignitable or reactive. Although treatment residues might contain underlying hazardous constituents as defined in A.A.C. 18-8-268.A (40 CFR 268), they must be managed as hazardous waste only if they qualify as hazardous based on their own characteristics [e.g., if they are determined to be too toxic through use of the Toxicity Characteristic Leaching Procedure (TCLP) analysis for either a hazardous metal, such as lead (EPA Hazardous Waste Number D008), or a hazardous organic, such as 2,4-DNT (EPA Hazardous Waste Number D030)]. If treatment residues no longer qualify as hazardous for any characteristic, they can be disposed in a Class D landfill independent of whether underlying hazardous constituents meet the UTS set in A.A.C. R18-8-268.A (40 CFR 268.48), provided the appropriate documentation and certifications are maintained and submitted as specified in A.A.C. R18-8-268.A (40 CFR 268.7 and 268.9).

No groundwater monitoring was required for the OB/OD facility (YPG 2004c, Submittal 12); therefore, no related closure actions (e.g., cap the well) are required.

Closure-generated waste will be managed and disposed of as hazardous waste if determined to be characteristically hazardous. Because of the suspected presence of underlying hazardous constituents, U.S. Army Garrison Yuma Proving Ground also has the option to manage closure-generated waste as hazardous even in the event that it no longer qualifies as a characteristic hazardous waste. However, this latter option would depend on specific characterization results of closure-generated waste and the management/disposition alternatives available when closure is performed. In any case, closure-generated waste will be managed in accordance with hazardous waste regulations that are in effect at the time of closure.

Hazardous waste determinations for waste contaminated with toxicity characteristic metals and organics are generally based on TCLP analyses as described in the preceding paragraph. However, if analyses for total concentrations in solids are available rather than TCLP values, hazardous waste determinations can still be made by applying the “20 times rule” to the total concentration values. This rule is based on the fact that the TCLP analytical procedure incorporates a dilution factor of 20 into its results when it is used on solid samples. For example, if a solid sample containing 20 mg/kg of lead were subjected to the TCLP analysis and all of the lead leached out of the sample during the process, analysis of the TCLP leachate would result in a value of 1 mg/L. Since the amount of a hazardous constituent that leaches out of the sample under the TCLP analysis is often less than 100% (and no more than 100% can leach out), use of the “20 times rule” is conservative. Again using lead as an example, if a total metals analysis shows a material to have a lead concentration of 100 mg/kg, it will be assumed that the waste is hazardous because the regulatory level (via TCLP analysis) is 5 mg/L, which is 1/20th of the total lead concentration. This is conservative because 5 mg/L is the maximum possible TCLP value from this sample. If less than 100% of the lead were to leach from the sample under TCLP analysis, the TCLP result would be less than 5 mg/L and the sample would not be hazardous for lead.

Closure-generated waste managed as hazardous waste will eventually be moved to the U.S. Army Garrison Yuma Proving Ground less-than-90-day storage site or arrangements will be made to have the waste picked up directly at the closure site for shipment to a commercial, offsite Treatment, Storage, or Disposal Facility (TSDF). Waste disposition will occur through normal channels [HAZMART (Hazardous Material Pharmacy), DRMO (Defense Remarketing and Utilization Office)] to properly permitted facilities. Closure-generated waste containers managed at the site will either be skid-mounted, placed on pallets, or otherwise amenable to placement on pallets so they can be moved by forklift to trucks. Alternatively, in the case of drums, HAZMART has a drum truck with assorted slings and cables and a drum grabber for direct loading onto the truck.

14.8. CLOSURE SCHEDULE

Table 14-5 identifies the closure schedule and activities that will be initiated at the start of closure. The schedule reflects the time required for conducting closure activities and submitting information to the independent PE for the closure certification. At present there is no forecast for when closure of the OB/OD Treatment Facility will be performed. U.S. Army Garrison Yuma Proving Ground will notify the ADEQ at least 45 days prior to the date that closure is expected to begin as required by A.A.C. R18-8-264.A (40 CFR 264.112). In accordance with A.A.C. R18-8-264.A (40 CFR 264.112(d)(2)(i)), the date closure is expected to begin must be either of the following: (1) no later than 30 days after the OB/OD Treatment Facility receives the known final volume of hazardous waste for treatment; or (2) if there is still a reasonable possibility that the unit will receive additional hazardous waste, no later than one year after the date it received the most recent volume of hazardous waste. [That is, if the OB/OD Treatment Facility is inactive (treats no waste) for a year, hazardous waste regulations require that it's closure be started.] Once closure is started, ADEQ will be notified at least 7 calendar days before each major closure event (e.g., decontamination, sampling, excavation, etc.).

A.A.C. R18-8-264.A (40 CFR 264.113) requires closure to be complete within 180 days from its initiation. As indicated in Table 14-5, closure actions are expected to include two rounds of soil sampling (one initial characterization and one verification), which may make the 180-day schedule difficult to achieve. If deemed necessary and appropriate, the SAP and QAPP submittal prior to start of closure actions will include a request for an extension to the closure period pursuant to stipulations in A.A.C. R18-8-264.A (40 CFR 264.113). The QAPP will include all the requirements of Permit Attachment 13.

14.9. CLOSURE PLAN AMENDMENTS

The conditions described in A.A.C. R18-8-264.A (40 CFR 264.112(c), "Closure Plan; Amendment of Plan") and A.A.C. R18-8-270.A (40 CFR 270.42, "Permit Modification at the Request of the Permittee") will be followed to implement changes to the approved Closure Plan. Prior to the closure period, the Closure Plan shall be amended if it is affected by a proposed change in operating plans or design, or by the occurrence of an unexpected event. The request for the amendment shall be submitted at least 60 days prior to implementing any operating plan or design change and within 60 days after an unexpected event occurs. Should unexpected events during the closure period require modification of approved closure activities, the Closure Plan will be amended within 30 days of the unexpected event. A written request detailing the proposed changes and the rationale for those changes and a copy of the amended Closure Plan will be submitted to the ADEQ for approval. Minor changes to the approved Closure Plan, which are equivalent to or do not compromise the closure requirements and performance standards identified in the approved Closure Plan, could be made without prior notification to the ADEQ. Minor changes or Class I modifications will be submitted to the ADEQ pursuant to A.A.C. R18-8-270A (40 CFR 270.42) and will be identified in the Closure Report that accompanies the certification statement (see Section 14.10 (Documentation and Certification of Achieving Closure)).

A.A.C. R18-8-270.A (Appendix I to 40 CFR 270.42) identifies "equipment replacement or upgrading with functionally equivalent components" as a Class 1 permit modification that does not require prior written approval of the ADEQ. (There are, however, notification requirements that must be met within set timeframes of such a change being put into effect.) A.A.C. R18-8-264.A [40 CFR 264.112(e)] specifies that nothing in the closure and post-closure requirements "shall preclude the owner or operator from removing hazardous waste and decontaminating or dismantling equipment in accordance with the approved partial or final Closure Plan at anytime before or after notification of partial or final closure." The cited regulations recognize that equipment, such as those that make up the OB pans, might need to be replaced in kind with functionally equivalent components during the life of the facility and that such actions can be taken as a Class I modification. Further, once this Closure Plan has been approved, the old replaced components can be dismantled and decontaminated as appropriate in accordance with the methods and activities described in this Closure Plan, but without implementing final closure or otherwise amending this Plan.

14.10. DOCUMENTATION/CERTIFICATION OF ACHIEVING CLOSURE

Closure activities will be monitored and reviewed by an independent Arizona registered professional engineer (PE) in accordance with A.A.C. R18-8-264.A (40 CFR 264.115). Following successful completion of closure activities, the PE will certify that closure was performed in accordance with the methods described in the approved Closure Plan. The PE will observe, as necessary, decontamination, verification sampling, soil and residue removal, and waste management activities. The PE will also review logs of closure actions, the closure plan, and sampling data.

Information regarding waste management during closure activities, including hazardous waste determinations and certifications, will be provided to the independent PE to support closure certification.

Within 60 days of completing closure activities, a certification of closure of the OB/OD Treatment Facility will be provided in accordance with A.A.C. R18-8-264.A (40 CFR 264.115) by an independent Arizona-registered PE and the owner/operator of the U.S. Army Garrison Yuma Proving Ground. The PE and the owner/operator signatures on the closure certifications submitted to the ADEQ will document completion of closure activities in accordance with the approved Closure Plan and A.A.C. R18-8-260 et seq. requirements. The owner/operator certification will use the following language:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

The owner/operator and independent Arizona-registered PE certifications will be completed on forms consistent with those provided by ADEQ (see Permit Attachment 14B). In addition to the certifications, a Closure Report will be submitted to ADEQ. The Closure Report shall include the following information:

1. A brief summary of the closure plan and a brief presentation of the closure results and conclusions.
2. A discussion of the closure procedures, including drawings and photographs where appropriate, and including identification of any deviations from the approved closure plan.
3. A detailed discussion of the conclusions following closure.
4. Data generated from sampling and analysis activities performed pursuant to the plan, including field notes, manifests, bills of lading, LDR forms, laboratory submittal forms, chain-of-custody forms, laboratory reports, and drilling logs.

Additionally, information to satisfy A.A.C. R18-8-208 (Letter of Completion) and –209 (Notice of Remediation and Repository) will be submitted to ADEQ for any soil areas above residential standards or any soils remediated.

Closure of this facility (which may represent partial closure of the overall U.S. Army Garrison Yuma Proving Ground facility) will be considered complete upon receipt of written acceptance issued by the ADEQ.

Copies of documentation supporting the closure of the OB/OD Treatment Facility, including supporting documentation of the PE certification, will remain in the project files in the event that information is requested by the ADEQ. The OB/OD facility is not a hazardous waste disposal facility and, therefore, a Notice in Deed and survey plat are not required.

14.11. POST-CLOSURE ACTIVITIES

The Closure Plan provides for the removal of hazardous wastes, treatment residues, and contaminated soil from the unit. Post-closure care is not planned at this point. If, during closure activities, it is determined that performance standards cannot be achieved through reasonable decontamination and soil removal actions, post-closure care may be necessary. Post-closure care would be detailed in an amendment to the Closure Plan in the form of a Post-Closure Plan. In the unexpected event it is determined during closure that a Post-Closure Plan is necessary, that Plan will be submitted to the ADEQ within 30 days of making the determination, as required by A.A.C. R18-8-264.A [40 CFR 264.112(c)].

The remaining elements of this section discuss facility elements that would be considered in post-closure activities should they become necessary. The discussion includes current status of the facility elements and how they might change before and during closure actions.

14.11.1 Groundwater Monitoring

Soil characterization performed before and during closure is intended to provide verification that groundwater has not been impacted by unit activities. The groundwater monitoring protocol arising from soil exceedances during closure sampling will be addressed specifically in documentation submitted to the ADEQ at that time.

14.11.2 Leachate Collection

The facility operation is not known to have generated leachate. Any impacts due to fluids moving through the OB pads, surrounding soils, or the OD trenches will be confirmed by sample collection and analysis. After decontamination of the pads and pans and removal of soil not meeting the performance standards specified in this Closure Plan, there will be no potential for leachate production of any concern.

14.11.3 Run-On/Runoff Control

Run-on/runoff control will continue through the closure period. The existing perimeter berms will be maintained during closure. After decontamination of the facility and removal of any impacted soils, maintenance of the run-on/runoff control berms will be unnecessary.

14.11.4 Survey Plat

A survey plat of the unit will not be submitted. A survey plat is not required for nondisposal units. The Closure Plan describes the intended approach of achieving clean closure for the OB/OD Treatment Facility. The Plan also describes the possibility that the performance standards achieved could be those for nonresidential SRLs, in which case the U.S. Army Garrison Yuma Proving Ground would work with ADEQ to develop reasonable administrative land use restrictions sufficient to protect human health in a manner functionally equivalent to the restrictions found in the DEUR program. In this case, the OB/OD Treatment Facility will be considered to have achieved closure with land use restrictions, but without the need for any other post-closure care. The requirements for a survey plat set at A.A.C. R18-8-264.A (40 CFR 264.116) would be implemented only in the unexpected event that it is determined to be impractical to achieve either residential or nonresidential SRL values.

14.12. CLOSURE/POST-CLOSURE COST & FINANCIAL ASSURANCE

A.A.C. R18-8-264.A (40 CFR 264 Subpart H) specifies that the Federal Government, as owner and operator of the Kofa Firing Range (KFR) H.W. OB/OD Treatment Facility, is exempt from the following financial requirements:

- Cost estimates for closure
- Financial assurance for closure
- Cost estimates for post-closure care
- Financial assurance for post-closure care
- Financial assurance mechanism for both closure and post-closure care
- State-required mechanism
- State assumption of responsibility

APPENDIX K

SOLID WASTE MANAGEMENT UNIT DESCRIPTIONS

Description of Solid Waste Management Units

Yuma Proving Ground (YPG) is required under 40 CFR § 270.14(d) to provide information on solid waste management units at the facility. This document provides the required information for all the Solid Waste Management Units (SWMUs) currently identified at YPG.

YPG and the Army have taken several steps to identify and manage SWMUs at YPG to address corrective actions and environmental restoration projects. Several reports have been created to document the results of the identification steps are listed briefly below:

AEHA 1988	AEHA (U.S. Army Environmental Hygiene Agency) 1988, *Interim Final Report, Ground-Water Contamination Survey No. 38-26-0882-89, Evaluation of Solid Waste Management Units, Yuma Proving Ground, Yuma, Arizona,* Aberdeen Proving Ground, Maryland, (DCSN-YPG-AROI 692)
ANL 2001	ANL (Argonne National Laboratory) 2001, *Release Assessment for Solid Waste Management Units at Yuma Proving Ground, Arizona,* Chicago, Illinois. (DCSN-YPG-ER00097)
EPA 1999	EPA (U.S. Environmental Protection Agency) 1999. *RCRA Facility Assessment, U.S. Army Yuma Proving Ground, Yuma Arizona, AZ521382099I,* prepared by Tetra Tech EM for EPA Region 9, April, San Francisco, California. (DCSN-YPG-AR01693)
USATHAMA 1980	USATHAMA (U.S. Army Toxic and Hazardous Materials Agency) 1980, *Installation Assessment of Yuma Proving Ground,* Report No. 139, Aberdeen Proving Ground, Maryland. (DCSN-YPG-AF00096)

The *Release Assessment for Solid Waste Management Units at Yuma Proving Ground* produced by ANL in 2001 was a compilation of all previous datasets and a site visit to reduce the uncertainties in the previous reports. A database was produced to organize and maintain the data and produce the report. The database was provided to YPG as a part of the final report.

YPG has updated this database to reflect known site conditions, provide more detail, and add newly identified sites. This update was completed through reviews of administrative records and site knowledge of the authors. A large portion of the data in the original database remains unchanged and not completely verified for accuracy. After updating the database, a new report was created to meet the detailed data requirement for the permit application.

Report Field definitions:

Report Field	Purpose or dataset used
YPG Tracking Number	An internal tracking number assigned for management of units. Any newly added units are identified by 200 series numbers, unless the unit was a portion of an existing unit separated for ease of documentation or closure.
Unit Type	General unit type (i.e., tank, drainfield, wash pad,...).
Consolidated List of Unit Names	Presents the consolidated name use based on prior reports or site specific information obtained. Units have sometimes had several different names in the referenced reports. The name chosen was considered most appropriate for future reporting.
Open / Closed Unit	A designation of Open or closed assigned by YPG if the unit requires any further consideration. Some units may be considered open with No ;Action recommended based on prior reports. Any closed unit is considered removed from any future SWMU lists.
Unit Dimensions	Presents approximate dimensions of the unit. Units may have changed dimensions over time.
Unit Status	Indicates whether a unit is active, inactive, or closed.
Unit Period of Operation	Presents the approximate period of operation for unit.
Waste Type	Identifies the types of contaminants that are known or suspected to be present in the waste and may have been released.
EPA recommendations	Summarizes recommendations from EPA report 1998 (RCRA Facility Assessment).
Location by GPS	Location of unit by handheld GPS, in NAD27 Meters UTM zone 11.
2001 RA Site Visit Observations	Presents the observations by the RA site visit team.
2001 RA Recommendations	Presents the primary recommendations of the RA site visit team.
2001 Rationale for RA Recommendation	Presents the rationale for the recommendations made by the site visit team.
Data Update or changes made	Documents the changes made from the 2001 RA report.
Planned action	Documents YPG's intended actions for the unit.
Rationale'	Presents additional rationale for actions, as warranted.
Schedule	Presents the schedule for actions as anticipated by YPG.
Date of last database update	Provides the date of the last information update.

Definitions of acronyms and terms used.

DD	Decision Document
LUC	Land use controls
LTM	Long Term Monitoring
RA	Remedial Action
RD	Remedial Design
RFI	RCRA Facility Investigation
RFI Workplan	Work plan for investigation of a facility under RCRA Corrective Action as described in *RCRA Facility Investigation Guidance, July 1987, OSW: 530/SW-87-001*
RI	Remedial Investigation

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Tracking Number: YPG-001 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 21 (Tank) and 22 (Drain Field)

Unit Name: Building 2500, Holding Tank and Drain Field

Unit Type: Septic (holding) tank and drain field

Unit Dimensions: Underground storage tank and drain field

Unit Period of Operation: 1955 to unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 East 744492.764 North 3636989.528

Contaminants/waste: CWA and degradation products, VOCs, SVOCs, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations: Soil sampling. Groundwater• sampling may be appropriate depending on soil sampling results.

2001 Observations: Not visited

2001 Recommendations: Defer action to current

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Monitored under RI program see Remedial Investigation Report 2004, section 5.1

Planned Actions DD for LTM and LUC

Rationale: see Remedial Investigation Report 2004, section 5.1

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-002 **Unit Status: Inactive**

EPA SWMU/AOC Number: SWMU 17 Unit

Name: Building 2060, Holding Tank **Unit**

Type: Underground storage tank **Unit**

Dimensions: Underground storage tank

Unit Period of Operation: 1954 to 2002

Unit Coordinates (NAD 27) in meters UTM zone 11 East 743667.52 North 3636469.92

Contaminants/waste: Petroleum hydrocarbons, VOCs, SVOCs

Contaminated Soil: Confirmed **Contaminated Groundwater:** Unlikely

EPA Recommendations: Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: **07/24/04**

Update Data or Changes Made: Updated unit type and dates of operations to reflect the removal of tank in 2002. Monitored under RI program see Remedial Investigation Report 2004, section 5.2

Planned Actions DD for LUC

Rationale: see Remedial Investigation Report 2004, section 5.2

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-003 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 18

Unit Name: Septic Tank and Leach Field at Building 2060

Unit Type: Septic tank, leach field

Unit Dimensions: Unspecified

Unit Period of Operation: 1954 to 1970s

Unit Coordinates (NAD 27) in meters UTM zone 11

East 743508.73
North 3636501.39

Contaminants/waste: Petroleum hydrocarbons, VOCs, SVOCs

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations:	Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations:	Not visited
2001 Recommendations:	Defer action.to current RI.
Lead Regulatory Agency:	ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Septic Tank Removed 2002. Monitored under RI program see Remedial Investigation Report 2004, section 7.2

Planned Actions NFA pending DD completion

Rationale: see Remedial Investigation Report 2004, section 7.1

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-004 Unit Status: Active'

EPA SWMU/AOC Number: SWMU 17, 18 and 19

Unit Name: Petroleum Testing Laboratory, Building 2060, Tank, Septic and Leachate Field, and Satellite Accumulation Area

Unit Type: Contaminated building

Unit Dimensions: Inside building

Unit Period of Operation: 1954 to present East 743508.73

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636501.39

Contaminants/waste: Petroleum hydrocarbons, VOCs, SVOCs

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: No observations

2001 Recommendations: No um!

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made: Closed as duplicate unit

Planned Actions None

Rationale: closed unit

Schedule N/A of Actions:

Tracking Number: YPG-005 Unit Status: Active

EPA SWMU/AOC Number: SWMU 19

Unit Name: Building 2060 Satellite Accumulation Area

Unit Type: Drum storage area

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1954 to present East 743670.550

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636469.389

Contaminants/waste: Multiple (laboratory waste)

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Looks neat and clean; no observed spills.

2001 Recommendations: No action.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made: Multiple SAA's for various operations in building, operations missions dependent

Planned Actions None until facility closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

~~Tracking Number: YPG-006a Unit Status: Inactive~~

~~EPA SWMU/AOC Number: SWMU 56~~

~~Unit Name: Inactive OB/OD Burn Area at New Demo Area~~

~~Unit Type: Open burning on the ground surface; no ash collection Unit~~

~~Dimensions: 5 acres~~

~~Unit Period of Operation: 1974 to 1986 East 755848.217~~

~~Unit Coordinates (NAD 27) in meters. UTM zone 11 North 3649228.082~~

~~Contaminants/waste: Propellant/degradation products, metals~~

~~Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely~~

~~EPA Recommendations:~~	~~Soil sampling in the burn area. Account for contaminant migration during floods.~~
~~2001 Observations:~~	~~Entire area has been used for OB/OD since 1974, prior to RCRA and use of burn pans, ash was not removed following OB.~~
~~2001 Recommendations:~~	~~Defer action to RCRA permit.~~
~~Lead Regulatory Agency:~~	~~ADEQ Hazardous Waste~~

~~Site Data Update Date: 07/24/04~~

~~Update Data or Update to RCRA Corrective Action program~~
~~Changes Made:~~

~~Planned Actions Characterization~~

~~Rationale: Site contamination data is unknown~~

~~Schedule Characterization plan submission December 2005~~
of Actions:

Tracking Number: YPG-006b Unit Status: Active

EPA SWMU/AOC Number: SWMU 54

Unit Name: Active OB/OD Burn Pads at New Demo Area

Unit Type: Open burning in metal pans, on concrete pads

Unit Dimensions: 2 bermed concrete pads, with 6 pans

Unit Period of Operation: East 756007.448

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3649527.045

Contaminants/waste: Propellant/degradation products, metals

Contaminated Soil: Contaminated Groundwater:

EPA Recommendations:

2001 Observations: Not visited

2001 Recommendations: Defer action to RCRA permit.

Lead Regulatory Agency: ADEQ Hazardous Waste

Site Data Update Date: 07/24/04

Update Data or Changes Made: Update to RCRA permit closure requirements

Planned Actions None

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-006c Unit Status: Active

EPA SWMU/AOC Number: SWMU 53

Unit Name: OD Trenches at New Demo Area

Unit Type: Open detonation trenches

Unit Dimensions: 3 each 30-ft wide trenches, 20 ft deep

Unit Period of Operation: 1974 to present East 755919.022

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3649480.307

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations: Continue monitoring soil quality in trenches

2001 Observations: Trenches active, scattered debris

2001 Recommendations: Defer action to RCRA permit.

Lead Regulatory Agency: ADEQ Hazardous Waste

Site Data Update Date: 07/24/04

Update Data or Changes Made: Update to RCRA permit closure requirements, updated to show 3 actual trenches

Planned Actions None until facility closure ;

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-006d Unit Status: AC1i

EPA SWMU/AOC Number: SWMU 55

Unit Name: OB/OD Burn Ash and Scrap Metal Satellite Accumulation Area at New Demo Area Bunker

Unit Type: Drum storage adjacent to bunker -

Unit Dimensions: Satellite accumulation area

-Unit Period of Operation: 1974 to present East 755275.935

-Unit Coordinates (NAD 27) in meters UTM zone 11 North 3649902,316

Contaminants/waste: Propellant/degradation products, metals

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations:	No action recommended.
2001 Observations:	Satellite accumulation area for ash and scrap metal is well maintained.
2001 Recommendations:	No action.
Lead Regulatory Agency:	ADEQ Hazardous Waste

Site Data Update Date: 07/24/04

Update Data or Changes Made:

Planned Actions None until facility closure

Rationale; Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-006e Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

~~Unit Name: Inactive trash trench at New Demo Area Unit~~

~~Type: Open burning in trench~~

~~Unit Dimensions: 30 x 280 feet~~

~~Unit Period of Operation: unknown to 1985 East 755848.217~~

~~Unit Coordinates (NAD 27) in meters UTM zone 11 North 3649228.082~~

~~Contaminants/waste: PCP~~

~~Contaminated Soil: Possible Contaminated Groundwater: Unlikely~~

~~EPA Recommendations: Not included in EPA RFA.~~

~~2001 Observations: Not documented in RA site visit~~

~~2001 Recommendations:~~

~~Lead Regulatory Agency: ADEQ Hazardous Waste~~

~~Site Data Update Date: 07/24/04~~

~~Update Data or Update to RCRA Corrective Action program~~
~~Changes Made:~~

~~Planned Actions Characterization~~

~~Rationale: Site contamination data is unknown~~

~~Schedule Characterization plan submission December 2005~~
~~of Actions:~~

~~**Tracking Number:** YPG-006f **Unit Status:** Inactive~~

~~**EPA SWMU/AOC Number:** Not included in EPA RFA **Unit**~~

~~**Name:** Inactive South Pad at New Demo Area **Unit Type:**~~

~~Open burning in metal pans, on concrete pads **Unit**~~

~~**Dimensions:** 46 x 15 feet~~

~~**Unit Period of Operation: 1986 1991**~~

~~**Unit Coordinates (NAD 27) in meters UTM zone 11**~~ ~~**East 755848.217**~~

~~**North 3649228.082**~~

~~**Contaminants/waste: Propellant/degradation products, metals**~~

~~**Contaminated Soil:** Suspected **Contaminated Groundwater: Unlikely**~~

~~**EPA Recommendations:** **No** action recommended, but continue to monitor air and soil.~~

~~**2001 Observations:** Not documented in RA site visit~~

~~**2001 Recommendations:** Defer action to RCRA permit.~~

~~**Lead Regulatory Agency:** ADEQ Hazardous Waste~~

~~**Site Data Update Date:** 0724/04~~

~~**Update Data or Changes Made:** Update to RCRA Corrective Action program, updated for current configuration~~

~~**Planned Actions Characterization**~~

~~**Rationale:** Site contamination data is unknown~~

~~**Schedule of Actions:** Characterization plan submission December• 2005~~

~~Tracking Number: YPG-006g Unit Status: Inactive~~

~~EPA SWMU/AOC Number: Not included in EPA RFA Unit~~

~~Name: Inactive North Pad at New Demo Area Unit Type:~~

~~Open burning in metal pans, on concrete pads Unit~~

~~Dimensions: 46 x 15 feet~~

~~Unit Period of Operation: 1986 - 2001 East 756007.448~~

~~Unit Coordinates (NAD 27) in meters UTM zone 11 North 3649527.045~~

~~Contaminants/waste: Propellant/degradation products, metals~~

~~Contaminated Soil: Possible Contaminated Groundwater: Unlikely~~

~~EPA Recommendations: No action recommended, but continue to monitor air and soil.~~

~~2001 Observations: Burn pans in use, but scattered debris over entire OB/OD area; soil piles were observed adjacent to north burn pads with tarps blown off.~~

~~2001 Recommendations: Defer action to RCRA permit.~~

~~Lead Regulatory Agency: ADEQ Hazardous Waste~~

~~Site Data Update Date: 07/24/04~~

~~Update Data or Changes Made: Update to RCRA Corrective Action program, updated for current configuration~~

~~Planned Actions Characterization~~

~~Rationale: Site contamination data is unknown~~

~~Schedule of Actions: Characterization plan submission December 2007~~

Tracking Number: YPG-006h Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Active South Pad (interim status) at New Demo Area

Unit Type: Open burning in metal pans, on concrete pads

Unit Dimensions: 80 x 46 feet

Unit Period of Operation: —1994 - present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 755848.217 North 3649228.082

Contaminants/waste: Propellant/degradation products, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended, but continue to monitor air and soil.

2001 Observations: Burn pans in use, but scattered debris over entire OB/OD area

2001 Recommendations: Reviewed as part of YPG-006b

Lead Regulatory Agency: ADEQ Hazardous Waste

Site Data Update Date: 07/24/04

Update Data or Changes Made: Update to RCRA Corrective Action program, updated for current configuration

Planned Actions ¯Characterization upon closure

Rationale: Site contamination data is unknown

Schedule of Actions: Closure to be after construction of new pads

Tracking Number: YPG-007 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Mobility Range (General)

Unit Type: Active range

Unit Dimensions: Range

Unit Period of Operation: Range

Unit Coordinates (NAD 27) in meters UTM zone 11 East N/A North N/A

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA

2001 Observations: Active range with widely scattered debris, normal desert appearance.

2001 Recommendations: Remove from future SWMU lists, including DSERTS.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions -None

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-008 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 49 and 89

Unit Name: Building 3493 Photographic Waste Disposal Site at Kofa

Unit Type: Wastewater disposal on ground, piping to Kofa lagoons Unit

Dimensions: Soil surface disposal, pipes to closed Kofa lagoon

Unit Period of Operation: Prior to 1970 East 748802.672

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3637812.000

Contaminants/waste: Solvents, metals

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations:	SWMU 49 - Verify 1986 soil sampling results. SWMU 89 - No action recommended. Unit should be removed from future SWMU lists (see AN 114).
2001 Observations:	No ground staining around building observed. Wastes piped under road to west to Kofa sewage lagoons.
2001 Recommendations:	Action. Soil sampling in area of reported surface disposal and in area of pipes leading to Kofa lagoons.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or
Changes Made:

Planned Actions RF1

Rationale: Assess actions required

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-009 Unit. Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA.

Unit Name: Rad Storage Site at Building 3557

Unit Type: Radiological material storage in building

Unit Dimensions: 25 x 25 ft

Unit Period of Operation: Unspecified East 749838.442

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3641101.806

Contaminants/waste: Radiological materials

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or
Changes Made:

Planned Actions None

Rationale:

Schedule N/A of
Actions:

Tracking Number: YPG-010 Unit Status: lilaetiVe:!:

EPA SWMU/AOC Number: AOC 3 Unit

Name: Fuel Bladder Test Site Unit Type:

Petroleum product spill area Unit

Dimensions: 15 to 20 acres

Unit Period of Operation: 1960 to 1980 East 744979.98

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3635391.67

Contaminants/waste: Petroleum hydrocarbons, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Confirmed

EPA Recommendations: Continue action under RI/FS. Account for migration during floods.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Update phases and schedule. Monitored under RI program see Remedial
Changes Made: Investigation Report 2004, section 4.1

Planned Actions Complete DD and RD/RA, install additional SVE units, develop baseline risk assessment for surface soils

Rationale: Federal facilities unit negotiations

Schedule of Actions: DD: Fall 2004, RD/RA implemented Spring 2005

Tracking Number: YPG-011 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA,

Unit Name: Pesticide Mix/Store Facility, Building T-430

Unit Type: Pesticide storage

Unit Dimensions: Wooden shed

Unit Period of Operation: Unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739549.21 North 3639170.70

Contaminants/waste: Pesticides, SVOCs, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Sampling completed for RI see Remedial Investigation Report 2004, section 6.1

Planned Actions Prepared DD for LUC

Rationale: Federal facilities unit negotiations

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-012 Unit Status: Active

EPA SWMU/AOC Number: SWMU 84

Unit Name: Pesticide Mix/Store Facility at Building 416

Unit Type: Pesticide storage

Unit Dimensions: approximately 50 x 50 ft containment area w/ shade

Unit Period of Operation: Unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739472 North 3639394

Contaminants/waste: Pesticides, SVOCs, metals

Contaminated Soil: Unlikely Contaminated Groundwater•: Unlikely

EPA Recommendations:	No action recommended. Unit should be removed from future SWMU lists.
2001 Observations:	Not visited
2001 Recommendations:	Remove from future SWMU lists.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Updated, unit is still in operation, no known leaks or spills, containment sealed

Planned Actions None until facility closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-013a Unit Status: Active

EPA SWMU/AOC Number: SWMU 34

Unit Name: Castle Dome Heliport Septic Tank and Lagoon

Unit Type: Septic tank, leach field

Unit Dimensions: Unspecified

Unit Period of Operation: 1960 to present East 755403.43

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3651884.36

Contaminants/waste: Petroleum hydrocarbons, SVOCs, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations: Soil and groundwater sampling.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ

Site Data Update Date: 07/24/04

Update Data or Changes Made: Regulated under APP rules, no septic tank present. Sampling completed for RI see Remedial Investigation Report 2004, section 7.2

Planned Actions
Non until facility closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-013b Unit Status:¯. Olive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Castle Dome Heliport Washpad 1(south)

Unit Type: Wash pad

Unit Dimensions: 25 x 25 ft

Unit Period of Operation: 1970s to 1980s

Unit Coordinates (NAD 27) in meters UTM zone 11 East 755564.34 North 3652118.41

Contaminants/waste: SVOCs, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Sampling completed for RI; see Remedial Investigation Report 2004, section 6.2.

Planned Actions Prepare a DD for LUC

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-013c **Unit. Status:** **.4001***

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Castle Dome Heliport Washpad 2 (north) **Unit**

Type: Wash pad

Unit Dimensions: 25 x 25 ft

Unit Period of Operation: 1970s to 1980s East 755501.44

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3652200.32

Contaminants/waste: SVOCs, metals

Contaminated Soil: Confirmed **Contaminated Groundwater:** Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ.••Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Sampling completed for RI Remedial Investigation Report 2004, section 6.2.

Planned Actions Prepare a DD for LUC

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-013d Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 38

Unit Name: Inactive Landfill, Castle Dome Heliport Waste Basin

Unit Type: Landfill

Unit Dimensions: 2 acres

Unit Period of Operation: 1958 to 1964 East 755471.52

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3652211.93

Contaminants/waste: VOCs, SVOCs, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: Soil and groundwater sampling. Account for migration during floods.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Updated Data or Changes Made: Sampling completed for RI see Remedial Investigation Report 2004, section 6.2.

Planned Actions Prepare a DD for LUC

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-013e **Unit Status:** **Mady**

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Septic Tank and Leach Field (E) at Kofa Building 3490

Unit Type: Septic tank, leach field

Unit Dimensions: Unspecified

Unit Period of Operation: Unknown to late 1980s/early 19 East 749014.49
Unit Coordinates (NAD 27) in meters UTM zone 11 North 3638814.46

Contaminants/waste: VOCs, metals

Contaminated Soil: Suspected **Contaminated Groundwater:** Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI,

Lead Regulatory Agency

Site Data Update Date: 07/24/04

Update Data or Changes Made: Tank Removed, leach field abandoned in place. Sampling completed for RI see Remedial Investigation Report 2004, section 7.3.

Planned Actions Prepare a DD for LUC

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-013f Unit .Status:

EPA SWMU/AOC Number: SWMU 11

Unit Name: Building 3021 Leach Field and Septic Tank

Unit Type: Septic tank, leach field

Unit Dimensions: Unspecified

Unit Period of Operation: 1960 to 1975 East 743426.63

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639223.80

Contaminants/waste: Petroleum hydrocarbons, VOCs, SVOCs, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Tank Removed, leach field abandoned in place. Sampling completed for RI see Remedial Investigation Report 2004, section 7.4.

Planned Actions DD in review for NFA

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-015 Unit Status: Active

EPA SWMU/AOC Number: SWMU 10

Unit Name: Sewage Lagoon System at Main Administrative Area

Unit Type: Sewage treatment lagoons Unit Dimensions: 500 x 500 ft, 3 lagoons Unit Period of Operation: 1971 to present Unit Coordinates (NAD 27) in meters UTM zone 11

East 740049.107
North 3637534.435

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Possible

EPA Recommendations: No action recommended, but EPA noted that asphalt lining may be inadequate to prevent release to soil.

2001 Observations: Sewage treatment operation appears well maintained.

2001 Recommendations:

Lead Regulatory Agency: ADEQ Aquifer Protection Permit (AAP)

Site Data Update Date: 07/24/04

Update Data or Changes Made: Site visit indicates lagoons not asphalt lined. Operated under APP# 100796

Planned Actions Close IAW APP

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-020 Unit Status: Active

EPA SWMU/AOC Number: SWMU 30

Unit Name: Sewage Treatment Lagoons at Mobility Test Area

Unit Type: Sewage treatment lagoons Unit

Dimensions: 500 x 500 ft, 2 lagoons

Unit Period of Operation: 1954 to present East 744334.617

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3635429.560

Contaminants/waste: Light industrial chemicals (VOCs, photographic)

Contaminated Soil: Possible Contaminated Groundwater: Possible

EPA Recommendations:	Groundwater sampling.
2001 Observations:	New sewage treatment lagoons (lined) to the southeast of Imhoff tank; old lagoons to the southwest
2001 Recommendations:	Action. Obtain information on liner for new lagoons and determine if data are available for old lagoons. Soil sampling.
Lead Regulatory Agency:	ADEQ Aquifer Protection Permit (AAP)

Site Data Update Date: 07/24/04

Update Data or Active Unit Under APP# 100797
Changes Made:

Planned Actions Close IAW APP

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: **YPG-021** **Unit Status: Active**

EPA SWMU/AOC Number: SWMU 30

Unit Name: Imhoff Tank and Sludge Drying Beds at Mobility Test Area Lagoon

Unit Type: Imhoff tank/sludge beds

Unit Dimensions: 25 x 25 ft, 3 each

Unit Period of Operation: 1954 to present **East 744334.617**

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3635429.560

Contaminants/waste: Light industrial chemicals (VOCs, photographic)

Contaminated Soil: Suspected **Contaminated Groundwater: Possible**

EPA Recommendations: Groundwater sampling.

2001 Observations: Stained soil and sludge visible; drying beds appear to be unlined.

2001 Recommendations: Action. Obtain information on liner/liquid collection for Imhoff tank and determine if data are available for sludge. Conduct soil sampling.

Lead Regulatory Agency: **ADEQ Aquifer** Protection Permit (AAP)

Site Data Update Date: 07/24/04

Update Data or Changes Made: Active Unit Under APP# 100797, updated drying bed size

Planned Actions Close IAW APP

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-023 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 48

Unit Name: Wash Rack and Lagoon, Kofa Building 3490

Unit Type: Wash rack and lagoon

Unit Dimensions: Unspecified

Unit Period of Operation: Unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 East 748894.52 North 3638867.59

Contaminants/waste: VOCs, SVOCs, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results. Account for migration during floods.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADBQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Sampling completed for RI, Sampling completed for RI see Remedial Investigation Report 2004, section 6.4.

Planned Actions Prepare a DD for LUC

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-024a Unit Status: Active

EPA SWMU/AOC Number: SWMU 51

Unit Name: New Sewage Treatment Lagoon at Kofa

Unit Type: Sewage treatment lagoons

Unit Dimensions: Unspecified

Unit Period of Operation: 1995 to present

Unit Coordinates (NAB 27) in meters UTM zone 11 East 747764.638 North 3637635.339

Contaminants/waste: VOCs, SVOCs, solvents, metals

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Sewage treatment operation appears well maintained.

2001 Recommendations: No action

Lead Regulatory Agency: ADEQ Aquifer Protection Permit (AAP)

Site Data Update Date: 07/24/04

Update Data or Changes Made: Active Unit Under APP # 100794

Planned Actions Close lAW APP

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-024/ Unit Status: Closed

EPA SWMU/AOC Number: SWMU 50

Unit Name: Inactive Sewage Treatment Lagoons at Kofa

Unit Type: Sewage treatment lagoons

Unit Dimensions: 5 acres

Unit Period of Operation: 1976 to 1995

Unit Coordinates (NAD 27) in meters UTM zone H East 748647.552 North 3637649.363

Contaminants/waste: VOCs, SVOCs, solvents, metals

Contaminated Soil: Possible Contaminated Groundwater: Possible

EPA Recommendations: Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Waste and liner appear to have been removed.

2001 Recommendations: No action

Lead Regulatory Agency: ADEQ

Site Data Update Date: 07/24/04

Update Data or Updated closed documentation APP# 100794
Changes Made:

Planned Actions None

Rationale:

Schedule N/A of
Actions:

Tracking Number: YPG-025 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 79

Unit Name: Building 6071 Septic Tank/Leach Field (North)

Unit Type: Septic tank, leach field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1960 to unspecified East 755441.77

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3652159.36

Contaminants/waste: Petroleum hydrocarbons, VOCs, SVOCs, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations: Assess disposal practices. Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

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Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Septic tank verified removed — 1991, leach field abandoned in place. Sampling completed for RI see Remedial Investigation Report 2004, section 7.5

Planned Actions Prepare a DD for LUC

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-026 Unit Status: ..40a0ive...::’

EPA SWMU/AOC Number: SWMU 79

Unit Name: Building 6071 Septic Tank/Leach Field (South)

Unit Type: Holding tank

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1960 to unspecified East 755618.46

Unit Coordinates (NAD 27) in meters **UTM zone 11** North 3652100.85

Contaminants/waste: Petroleum hydrocarbons, VOCs, SVOCs, metals

Contaminated Soil: Suspected **Contaminated Groundwater:** Unlikely

EPA Recommendations: Assess disposal practices. Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Updated unit type to holding tank, tank removed. Sampling completed for RI see Remedial Investigation Report 2004, section 7.4.

Planned Actions Prepare a DD for LUC

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-027 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 37

Unit Name: Inactive Landfill 5 km South-Southeast of MAA, South of Imperial Darn Road

Unit Type: Landfill

Unit Dimensions: 2 acres, possibly larger

Unit Period of Operation: 1950 to 1964 East 741819.406

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3635879.715

Contaminants/waste: Unknown

Contaminated Soil: Suspected Contaminated Groundwater: Possible

EPA Recommendations:	Soil and groundwater sampling. Account for contaminant migration during floods.
2001 Observations:	Construction debris observed on large flat area. Debris covers approximately 2-3 acres.
2001 Recommendations:	Action. Obtain information on landfill contents. Geophysics. Soil sampling and, if warranted, groundwater• monitoring.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or
Changes Made:

Planned Actions RFI

Rationale: develop accurate site data

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-028 **Unit Status: Inactive**

EPA SWMU/AOC Number: SWMU 36

Unit Name: Inactive Landfill **1** mile Northwest of MAA; Southeast of Imperial Dam

Unit Type: Landfill

Unit Dimensions: 1 acre, possibly more

Unit Period of Operation: 1948 to 1949 East Undefined

Unit Coordinates (NAD 27) in meters UTM zone 11 North Undefined

Contaminants/waste: Multiple, unknown

Contaminated Soil: Suspected **Contaminated Groundwater:** Possible

EPA Recommendations:	Soil and groundwater sampling. Account for contaminant migration during floods.
2001 Observations:	Miscellaneous debris observed. Debris in mounds covers approximately 1-2 acres.
2001 Recommendations:	Action. Obtain information on landfill location and waste managed. Confirm location. Possible soil sampling and groundwater monitoring.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: **11/09/00**

Update Data or Changes Made:

Planned Actions Investigate land ownership

Rationale:

Schedule of Actions: **RFT Workplan** submitted **June 2006**

Tracking Number: YPG-029 Unit Status: ......Inactive. •

EPA SWMU/AOC Number: SWMU 41

Unit Name: Inactive Landfill East of Rt. 95, 2 km West Kofa Range

Unit Type: Landfill

Unit Dimensions: 1 acre, possibly larger•

Unit Period of Operation: Conflicting information in various documents East

747745.593 Unit Coordinates (NAD 27) in meters UTM zone 11 North

3637459.090

Contaminants/waste: Unknown

Contaminated Soil: Suspected Contaminated Groundwater•: Possible

EPA Recommendations: Soil and groundwater sampling. Account for contaminant migration during floods.

2001 Observations: Miscellaneous debris observed. Depressions in desert surface. Covers approximately 1-2 acres.

2001 Recommendations: Action. Obtain information on landfill contents. Geophysics. Soil sampling and, if warranted, groundwater• monitoring.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or
Changes Made:

Planned Actions RFI

Rationale: develop accurate site data

Schedule of Actions: RFI Workplan submitted June 2006

?

added OK

RCRA ID: AZ5213820991

Tracking Number: YPG-030 Unit Status: Active

EPA SWMU/AOC Number: SWMU 42

Unit Name: Active Sanitary Landfill 4 km Northwest of Kofa Range

Unit Type: Landfill

Unit Dimensions: 29 acres

Unit Period of Operation: 1969 to present East 747422.164

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3642061.014

Contaminants/waste: Unknown

Contaminated Soil: Possible	Contaminated Groundwater: Possible
EPA Recommendations:	Soil and groundwater sampling. Account for contaminant migration during floods.
2001 Observations: 2001	Large Subtitle D municipal waste landfill
Recommendations:	Defer action to state solid waste regulatory authority.
Lead Regulatory Agency:	ADEQ

rejects Unit
DD_

Site Data Update Date: 07/24/04

Update Data or Changes Made: Landfill regulated under permit # 14016500.00

Planned Actions Close IAW permit

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-031a Unit Status: Inactive

EPA SWMU/AOC Number: AOC 5 and SWMU 60

Unit Name: West Environmental Test Area and Disposal Trenches

Unit Type: CWA munitions disposal

Unit Dimensions: 3 acres

Unit Period of Operation: Early 1950s to 1969 East 743872.32

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3646275.41

Contaminants/waste: CWA and explosives, degradation products, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations:	Continue action under RI/FS, including soil sampling in disposal trenches. Account for migration during floods.
2001 Observations:	Observed from outside the fence; no specific observations.
2001 Recommendations:	Defer action to current RI. Although EPA recommends soil sampling, intrusive sampling should be avoided,
Lead Regulatory Agency:	ADEO Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Monitoring to date documented in Remedial Investigation Report 2004, section 5.4

Planned Actions Prepare a DD for LUC and LTM

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: **YPG-031b** **Unit Status::: Inactive:**

EPA SWMU/AOC Number: SWMU 72

Unit Name: West Environmental Test Area Septic Tank and Drain Field Unit

Type: CWA munitions disposal, septic and leach field

Unit Dimensions: 50 x 100 ft

Unit **Period of Operation: 1959** to unspecified East 743499.83

Unit **Coordinates (NAP 27) in meters UTM zone H** North 3646214.32

Contaminants/waste: CWA and explosives, degradation products, metals

Contaminated Soil: Suspected **Contaminated Groundwater:** Possible

EPA Recommendations: Assess disposal practices. Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Observed from outside the fence. Leach field drainage noted outside the fence.

2001 Recommendations: Defer action to current RI. Intrusive sampling should be avoided.

Lead Regulatory Agency: **ADEQ .Federal Projects**

Site Data Update Date: **10/18/00**

Update Data or Changes Made:

Planned Actions Continue deferral under RI program

Rationale:

Schedule NA **of Actions:**

Tracking Number: YPG-032 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 62

Unit Name: Former Waste Disposal Area

Unit Type: CWA munitions disposal Unit

Dimensions: 5 acres

Unit Period of Operation: 1952 to 1969

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3647376.493 East 745575.378

Contaminants/waste: CWA and explosives, degradation products, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: Soil sampling, including in disposal trenches. Account for migration during floods.

2001 Observations: Observed from outside the fence; no specific observations.

2001 Recommendations: Defer action to current RI. Although EPA recommends soil sampling, intrusive sampling should be avoided.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Monitoring to date documented in Remedial Investigation Report 2004, section 5.

Planned Actions Prepare a DD for LUC and LTM

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-033 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: CS Test Site 8 km West Rt. 95, 4.4 km Southwest Cibola Road

Unit Type: Active range, test site

Unit Dimensions: Range

Unit Period of Operation:

Unit Coordinates (NAD 27) in meters UTM zone 11 East N/A North N/A

Contaminants/waste: CS and degradation products

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001'Recornthendations: Remove from future SWMU lists, including DSERTS.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-034 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: CS Test Site Northeast of Chemical Agent Disposal Area

Unit Type: Active range, test site

Unit Dimensions: Range

Unit Period of Operation: Range East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Possible

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists, including DSERTS

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-035a Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 57 (Part of SWMU 57)

Unit Name: Muggins Mountain Ammunition Disposal Trench

Unit Type: Open trench (scrap metal storage)

Unit Dimensions: 25 x 300 ft, 25 ft deep

Unit Period of Operation: 1952 to 1974, 1986 to 1988, pot East 754905.798

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636061.340

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Suspected **Contaminated Groundwater:** Possible

EPA Recommendations: No action recommended, but closure should be completed along with closure of SWMU 57. Unit is undergoing closure under approved plan (applies to disposal trench, not entire demo area).

2001 Observations: Trench is about 300 ft long, 25 ft deep and 30 ft wide, scattered debris.

2001 Recommendations: Defer to ongoing closure activity.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Currently being addressed in RCRA Corrective Action, site was not well described in earlier documentation

Planned Actions Closure Process Document

Rationale: develop accurate site data

Schedule of Actions: Closure process document revised/submitted 10/2005

Tracking Number: YPG-035b Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 57 (Part of SWMU 57)

Unit Name: Muggins Mountain Ammunition Disposal Demolition Area

Unit Type: Non-CWA munitions disposal

Unit Dimensions: 5 acres (600 acres available)

Unit Period of Operation: 1952 to 1974, 1986 to 1988, pot East 755943.880

Unit Coordinates (NAD 27) in meters UTM zone 11 North 36357451618

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Suspected Contaminated Groundwater: Possible

EPA Recommendations:	No action recommended. Unit is undergoing closure under approved plan (applies to disposal trench, not entire demo area).
2001 Observations:	Large OD area at base of Muggins Mountain; demo activities conducted throughout area
2001 Recommendations:	Defer to ongoing closure activity.
Lead Regulatory Agency:	ADEQ Hazardous Waste

Site Data Update Date: 07/24/04

Update Data or Changes Made: Currently being addressed in RCRA Corrective Action, site was not well described in earlier documentation

Planned Actions Closure Process Document

Rationale: develop accurate site data

Schedule of Actions: Closure process document revised/submitted 10/2005

Tracking Number: YPG-035c **Unit Status:** Inactive

EPA SWMU/AOC Number: SWMU 57 (Part of SWMU 57)

Unit Name: Muggins Mountain Ammunition Disposal Scrap Metal Storage Area

Unit Type: Waste piles (scrap metal) and scattered scrap

Unit Dimensions: 5 acres

Unit Period of Operation: 1952 to 1974, 1986 to 1988, pot

Unit Coordinates (NAD 27) in meters :UTM zone 11 East 754800.203 North 3636137.538

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Suspected **Contaminated Groundwater:** Possible

EPA Recommendations: No action recommended, but closure should be completed along with closure of SWMU 57. Unit is undergoing closure under approved plan (applies to disposal trench, not entire demo area).

2001 Observations: Scrap metal is piled (stored) in several areas in the vicinity of the trench.

2001 Recommendations: Defer to ongoing closure activity.

Lead Regulatory Agency: ADEQ Hazardous Waste

Site Data Update Date: 07/24/04

Update Data or Changes Made: Currently being addressed in RCRA Corrective Action, site was not well described in earlier documentation

Planned Actions Closure Process Document

Rationale: develop accurate site data

Schedule of Actions: Closure process document revised/submitted 10/2005

Tracking Number: YPG-037 Unit Status: 040:W0

EPA SWMU/AOC Number: SWMU 61 Unit

Name: 77th EOD OB/OD Area Unit Type:

Non-CWA munitions disposal Unit

Dimensions: Several acres

Unit Period of Operation: 1973 to 1979

Unit Coordinates (NAD 27) in meters UTM zone 11 East 743888.37 North 3649517.34

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: Soil sampling, including in disposal trenches. Account for migration during floods.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADEQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Monitoring to date documented in Remedial Investigation Report 2004, section 5.5

Planned Actions evaluate contaminants in ecological risk assessment

Rationale: Improve dataset for risk assessment

Schedule of Actions: Eco risk assessment Spring 2005

Tracking Number: YPG-038 Unit Status: Closed.

EPA SWMU/A0C Number: SWMU 43

Unit Name: Lead Arsenate Burial Site

Unit Type: Drum burial

Unit Dimensions: Augered bole (2 ft diameter x 20 ft deep)

Unit Period of Operation: Late 1960s East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Metals

Contaminated Soil: No (area remediated) Contaminated Groundwater: No (area remediated)

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions None

Rationale: Closed Unit

Schedule N/A of Actions:

Tracking Number: YPG-039 **Unit. Status: Active**

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Kofa Range (Impact Area)

Unit Type: Active range

Unit Dimensions: Range

Unit Period of Operation: Range

Unit Coordinates (NAD 27) in meters UTM zone 11 East N/A
Not N/A

Contaminants/waste: Unknown

Contaminated Soil: Possible **Contaminated Groundwater: Unlikely**

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Active range with widely scattered debris, normal desert appearance

2001 Recommendations: Remove from future SWMU lists, including DSERTS.

Lead Regulatory Agency: Unassigned

Site Data Update Date: **07/17/00**

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A **of Actions:**

Tracking Number: YPG-040 **Unit Status: Active**

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Pyrotechnic Range (Impact Area)

Unit Type: Active range

Unit Dimensions: Range

Unit Period of Operation: Range

Unit Coordinates (NAD 27) in meters UTM zone 11 East N/A North N/A

Contaminants/waste: Unknown

Contaminated Soil: Possible **Contaminated Groundwater:** Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists, including DSERTS.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/2000

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A **of Actions:**

Tracking Number: YPG-041 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Cibola Range (Impact Area)

Unit Type: Active range

Unit Dimensions: Range

Unit Period of Operation: Range

Unit Coordinates (NAD 27) in meters UTM zone 11 East N/A North N/A

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Active range with widely scattered debris, normal desert appearance.

2001 Recommendations: Remove from future SWMU lists, including DSERTS.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/2000

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-043 Unit Status:

EPA SWMU/AOC Number: AOC 2

Unit Name: Former Fire Training Pit Near Laguna Air Field and Building 3021

Unit Type: Fire training area

Unit Dimensions: 95 ft diameter pit

Unit Period of Operation: Mid 1960s to 1987

Unit Coordinates (NAP 27) in meters UTM zone 11 East 743290.89 North 3639275.77

Contaminants/waste: Petroleum hydrocarbons, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Unlikely

EPA Recommendations: Continue action under RI/FS and close unit. Account for migration during floods.

2001 Observations: Not visited

2001 Recommendations: Defer action to Aquifer Protection Permit.

Lead Regulatory Agency: ADEQ Aquifer Protection Permit (AAP)

Site Data Update Date: 07/24/04

Update Data or Changes Made: Historic site is closed with issuance of permit, new site assigned. Closure confirmed in APP #101346

Planned Actions None

Rationale:

Schedule of Actions: N/A

Tracking Number: YPG-043a Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Live Fire Crash Training Pit (LFCTP)

Unit Type: Fire Training Pit

Unit Dimensions: 100 foot diameter

Unit Period of Operation: unknown

Unit Coordinates (NAD 27) in meters UTM zone 11 East 743290.89 North 3639275.77

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not documented in RA site visit

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or New facility, SWMU to account for future operations under APP # 101346
Changes Made:

Planned Actions None until facility. closure

Rationale: permit requirement

Schedule of Actions: Closure not scheduled

~~Tracking Number: YPG-044 Unit Stat~~ ~~Active~~

~~EPA SWMU/AOC Number: SWMU 52~~

~~Unit Name: Kofa Ammunition Deflagration Site~~

~~Unit Type: Open burning test area~~

~~Unit Dimensions: 20 x 20 ft~~

~~Unit Period of Operation: Mid 1970s to present~~

~~Unit Coordinates (NAD-27) in meters UTM zone 11~~ East 756064.618
North 3648023.578

~~Contaminants/waste: Petroleum, explosives/degradation products, metals~~

~~Contaminated Soil: Suspected~~ ~~Contaminated Groundwater: Unlikely~~

~~EPA Recommendations:~~ ~~Soil sampling. Groundwater sampling may be appropriate, depending on soil sampling results. Account for migration during floods.~~

~~2001 Observations:~~ ~~Small test facility, scattered debris, ground staining from burns~~

~~2001 Recommendations:~~ ~~Action. Obtain information on soil, if available. Soil sampling.~~

~~Lead Regulatory Agency:~~ ADEQ AqAquifer Protection Permit

~~Site Data Update Date: 07/24/04~~

~~Update Data or Site identified in permitting of new operation co-located, cleanup required~~
~~Changes Made: under APP # P-105294~~

~~Planned Actions Facility closure~~

~~Rationale: permit requirement~~

~~Schedule Spring 2005~~
~~of Actions:~~

Tracking Number: YPG-045 Unit Status: >Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Building 506 Underground Storage Tank

Unit Type: Underground storage tank

Unit Dimensions: Underground storage tank

Unit Period of Operation: 1953 to 1989 East 739624.39

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3638780.54

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Confirmed Contaminated Groundwater: Confirmed

EPA Recommendations: Continue action under RI/FS.

2001 Observations: Not visited

2001 Recommendations: Defer action to current RI.

Lead Regulatory Agency: ADHQ Federal Projects Unit

Site Data Update Date: 07/24/04

Update Data or Changes Made: Monitoring to date documented in Remedial Investigation Report 2004, section 4.3

Planned Actions complete FS, continue LTM, include in LUC DD

Rationale:

Schedule of Actions: DD: Fall 2004

Tracking Number: YPG-100 Unit Status: inactive

EPA SWMU/AOC Number: SWMU 80

Unit Name: Abandoned Mines and Mining Claims (Multiple)

Unit Type: Abandoned mines and mining claims

Unit Dimensions: Small mines, with scattered tailings

Unit Period of Operation: Mid to late 1800s to early 1940 East 781273.953

Unit Coordinates (NAD 27) in meters **UTM zone 11** North 3645862.815

Contaminants/waste: Metals, possibly other contaminants

Contaminated Soil: Suspected **Contaminated Groundwater:** Unlikely

EPA Recommendations:	Observe and note tailings and other leachable residuals, accounting for contaminant migration during floods.
2001 Observations:	Mine shafts (vertical and horizontal), small digs, tailings and mining debris
2001 Recommendations:	No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions No Action

Rationale: No apparent threat, possible SHPPO site

Schedule N/A of Actions:

Tracking Number: YPG-101 Unit Status: Active

EPA SWMU/AOC Number: SWMU 46

Unit Name: Building 3490, Used Oil Aboveground Storage Tank

Unit Type: Aboveground storage tank

Unit Dimensions: Aboveground storage tank, 3,500 gallons

Unit Period of Operation: Unknown to present East 748830.784

Unit Coordinates (NAD 27) **in** meters UTM zone H North 3638918.251

Contaminants/waste: Petroleum hydrocarbons, metals

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Soil sampling when tank is replaced or removed.

2001 Observations: Unit recently closed and awaiting removal. Staining oberved on concrete pad.

2001 Recommendations: Future action. Soil sampling if cement pad is to be removed.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Updated to active status

Planned Actions RFI after pad removal

Rationale: Pad intact, however small cracks and stains

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-102 **Unit Status: Active**

EPA SWMU/AOC Number: SWMU 13

Unit Name: Aircraft Wash Rack at Laguna Army Airfield

Unit Type: Vehicle wash, with oil/water separator **Unit**

Dimensions: Unspecified

Unit Period of Operation: 1970 to present East 743573.202

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639367.305

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely **Contaminated Groundwater:** Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit appears to be well maintained.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions No Action

Rationale:

Schedule N/A of **Actions:**

Tracking Number: YPG-103 Unit Status: Closed

EPA SWMU/AOC Number: SWMU 4

Unit Name: Battery Acid Neutralization Pit, Administrative Area

Unit Type: Acid neutralization pit

Unit Dimensions: 47 x 20 ft, 7 ft deep

Unit Period of Operation: 1967 to 1985

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739413.907 North 3639154.558

Contaminants/waste: Acids, metals

Contaminated Soil: No (area remediated Contaminated Groundwater: No (area remediated)

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-104 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 3

Unit Name: Battery Maintenance at Building 20.0.

Unit Type: Battery maintenance and storage Unit

Dimensions: 150 square feet

Unit Period of Operation: 1967 to unknown East 739413.907

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639154.558

Contaminants/waste: Acid, metals

Contaminated Soil: Possible	Contaminated Groundwater: Unlikely
EPA Recommendations:	Soil sampling beneath the sump in the building prior to new use or building destruction.
2001 Observations:	Building now used for tool storage. Sump filled in with cement. No release observed.
2001 Recommendations:	Future action. Soil sampling beneath building if building is to be removed.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or
Changes Made:

Planned Actions RFT upon building removal

Discontinue

Rationale: No threat until excavation

Schedule of Actions: Removal not scheduled

Tracking Number: YPG-105 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 24

Unit Name: Battery Maintenance Shop Building 2076

Unit Type: Battery maintenance and storage

Unit Dimensions: 300 square feet

Unit Period of Operation: 1958 to mid 1960s

Unit Coordinates (NAD **27) in meters** UTM zone 11 East 743887.422 North 3636508.577

Contaminants/waste: Acid, metals

Contaminated Soil: Unlikely **Contaminated Groundwater:** Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit appears inactive, clean.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned 'Actions No Action

Discontinue

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-106 Unit Status: Unknown

EPA SWMU/AOC Number: AOC 6

Unit Name: Bldg. 2105 UST for Photographic Waste Fixer

Unit Type: Underground storage tank

Unit Dimensions: Underground storage tank

Unit Period of Operation: Unknown

Unit Coordinates (NAD 27) in meters UTM zone 11 East 743912.701 North 3636153.271

Contaminants/waste: Solvents, metals

Contaminated Soil: Confirmed Contaminated Groundwater: Possible

EPA Recommendations: Verify documentation. Ensure that contamination does not remain.

2001 Observations: 2-in, pipe within cement paved circle the size of a manhole cover was observed in a paved area in the vicinity of the unit location.

2001 Recommendations: Action. Obtain information on UST status, contents. Possible UST and soil sampling.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 10/05/00

Update Data or Changes Made:

Planned Actions RFI

Rationale: Lack of data

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-107 **Unit Status: Inactive**

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Building 5007 Hazardous Materials Pickup. Area at West Environinental Test Area **Unit**

Type: Materials pickup, former bunker

Unit Dimensions: 20 x **40 ft**

Unit Period of Operation: Never used East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: CWA and explosives, degradation products, metals

Contaminated Soil: Unlikely **Contaminated Groundwater:** Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A **of Actions:**

Tracking Number: YPG-108 **Unit Status: Inactive**

EPA SWMU/AOC Number: SWMU 83

Unit Name: Building 204 Drum Storage Area

Unit Type: Drum storage area

Unit Dimensions: 20 x 20 ft

Unit Period of Operation: 1983 to unknown East 739348

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639358

Contaminants/waste: Petroleum hydrocarbons, solvents

Contaminated Soil: Possible **Contaminated Groundwater: Unlikely**

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead **Regulatory** Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Unit does exist, well maintained

Planned Actions RFI upon Closure

discontinue

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-109 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 82

Unit Name: Building 204 Truck Maintenance Building Solvent Storage Area

Unit Type: Used oil and solvent storage on concrete pads

Unit Dimensions: Unspecified

Unit Period of Operation: Unspecified East 739348

Unit Coordinates (NAB 27) in meters UTM zone 11 North 3639358

Contaminants/waste: Petroleum hydrocarbons, solvents

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists,

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or
Changes Made:

Planned Actions RFI upon Closure

discontinue

Rationale: Active unit; no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-110 **Unit Status: Inactive**

EPA SWMU/AOC Number: SWMU 5

Unit Name: Building 204 Used Oil Aboveground Storage Tank

Unit Type: Aboveground storage tank

Unit Dimensions: Aboveground storage tank, 1,000 gallons

Unit Period of Operation: 1988 to 2000 East 739428.591

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639155.467

Contaminants/waste: Petroleum hydrocarbons, metals

Contaminated Soil: Possible **Contaminated Groundwater:** Unlikely

EPA **Recommendations:** Soil sampling beneath the tank when tank is replaced or removed. Monitor concrete for cracks.

2001 Observations: Unit is labeled "out of service." Concrete stained but no cracks observed.

2001 Recommendations: Future action. Soil sampling if cement pad is to be removed.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions RFI upon Closure

discontinue

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-111 Unit Status: Unknown

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Building 2064 Test Vehicle Maintenance Waste Oil Tank

Unit Type: Waste oil tank

Unit Dimensions: Tank

Unit Period of Operation: Report pages missing East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Unit removed
Changes Made:

Planned Actions None

Rationale:

Schedule N/A of
Actions:

Tracking Number: YPG-112 Unit Status: inactive

EPA SWMU/AOC Number: SWMU 88

Unit Name: Building 2085 Test Vehicle Maintenance Waste Oil Tank

Unit Type: Used oil storage in aboveground tank

Unit Dimensions: Aboveground storage tank

Unit Period of Operation: Unspecified

Unit Coordinates (NAP 27) in meters UTM zone 11 East N/A North N/A

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations:	No action recommended. Unit should be removed from future SWMU lists.
2001 Observations:	Not visited
2001 Recommendations:	Remove from future SWMU lists.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made: Building and tank removed in -4997

Planned Actions Closed Unit

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-113 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 64

Unit Name: Building 2103 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1961 to unspecified East 743752.993

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3635985.039

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Found area where sentry station was located, but area is now desert. No septic tank was found, but leach field is assumed to be area of

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made: Building removed

Planned Actions RFI Upon removal of tank

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Estimated

Tracking Number: YPG-114 Unit Status: Active

EPA SWMU/AOC Number: SWMU 15

Unit Name: Building 3008 Satellite Accumulation Area Unit

Type: Drum storage area

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1960 to present East 743439334

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639407.710

Contaminants/waste: Solvents, metals

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Looks neat and clean; no observed spills.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions No Action

Rationale: Active unit, no observed or known releases

Schedule N/A of Actions:

Tracking Number: YPG-115 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 28

Unit Name: Building 2102 Photographic Waste Disposal Site

Unit Type: Surface disposal on ground

Unit Dimensions: Unspecified

Unit Period of Operation: 1983 to 1988 East ‘743659.

Unit Coordinates (NAD 27) in meters TJTM zone 11 North "3636301:

Contaminants/waste: Solvents, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations:	Soil sampling. Groundwater sampling may be appropriate depending on soil sampling results. Account for migration during floods.
2001 Observations:	Unit determined to be at Building 2102. Reportedly, circuit boards have not been manufactured at YPG. Unit refers to disposal of
2001 Recommendations:	Action. Confirm that circuit boards were not manufactured at YPG. Conduct soil sampling in area around back door of Building 2102.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made: Units removed upon building renovation 2003

Planned Actions Verify removal and residual contamination

Rationale: Complete documentation

Schedule of Actions: RFI Workplan:submitted June 2006

Estimated

Tracking Number: YPG-116 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 63

Unit Name: Building 3125 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft.

Unit Period of Operation: 1979 to unspecified East 744488.802

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3643228.681

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations:	Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations:	Septic tank and leach field west of building. Septic tank was not opened. Lush vegetation in leach field area.
2001 Recommendations:	Action. Collect information on building disposal practices. Confirm septic tank location. Sample septic and soil in leach field. Possible groundwater sampling.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 7/24/04

Update Data or Changes Made: Closed via sampling and assessment of operations, detailed report dated 9/22/03

Planned Actions None

Rationale:

Schedule of Actions: N/A

Tracking Number: YPG-117 Unit Status: >Closed

EPA SWMU/AOC Number: AOC 6

Unit Name: Building 3125 UST for Photographic Waste

Unit Type: Underground storage tank

Unit Dimensions: Underground storage tank

Unit Period of Operation: 1980 to 1989

Unit Coordinates (NAD 27) in meters UTM zone 11 East 744518.004 North 3643233.210

Contaminants/waste: Solvents, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations:	Verify documentation. Ensure that contamination does not remain.
2001 Observations:	Unable to locate UST or determine whether UST was removed.
2001 Recommendations:	Action. Obtain information on UST status, contents. Possible soil sampling and, if warranted, groundwater monitoring.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions RFI

Rationale: Lack of data

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-118 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 67

Unit Name: Building 3489 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1982 to unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 East 748759.992 North 3637246.248

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations:	Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations:	Found leach field, but could not locate septic tank.
2001 Recommendations:	Action. Collect information on building disposal practices. Find septic tank location. Sample septic and soil in leach field. Possible sediment (wash) sampling.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 10/18/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-119 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 68

Unit Name: Building 3527 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1982 to unspecified East 749215.279

Unit Coordinates (NAD 27) in meters. UTM zone 11 North 3639002.969

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Found leach field, but could not locate septic tank.

2001 Recommendations: Action. Collect information on building disposal practices. Find septic tank location. Sample septic and soil in leach field. Possible groundwater sampling.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 10/18/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

estimated

Tracking Number: YPG-120 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 73

Unit Name: Building 3555 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1985 to unspecified East 749490.221

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639886.627

Contaminants/waste: Unknown

Contaminated Soil: Possible	Contaminated Groundwater: Unlikely
EPA Recommendations:	Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations: 2001	Septic tank full, enhanced vegetation in leach field area.
Recommendations:	Action. Collect information on building disposal practices. Sample septic and soil in leach field.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 10/18/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

estimated

~~Tracking Number: YPG-121 Unit Status: Inactive~~

~~EPA SWMU/AOC Number: SWMU 70~~

~~Unit Name: Building 3558 Septic Tank and Drain Field~~

~~Unit Type: Septic tank and drain field~~

~~Unit Dimensions: 50 x 100 ft~~

~~Unit Period of Operation: 1981 to unspecified East 749838.442~~

~~Unit Coordinates (NAD 27) in meters UTM zone 11 North 3641101.806~~

~~Contaminants/waste: Unknown~~

~~Contaminated Soil: Possible~~	~~Contaminated Groundwater: Unlikely~~
~~EPA Recommendations:~~	~~Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.~~
~~2001 Observations: 2001~~	~~Found sentry station, but unable to locate septic or leach field.~~
~~Recommendations:~~	~~No action~~
~~Lead Regulatory Agency:~~	~~Unassigned~~
~~Site Data Update Date:~~	10/18/00
~~Update Data or Changes Made:~~	
~~Planned Actions RFI~~	
~~Rationale~~:	
~~Schedule of Actions:~~	~~RFI Workplan submitted June 2006~~

estimated

deleted

AOD

RCRA ID: AZ5213820991

Tracking Number: YPG-122 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 69

Unit Name: Building 3566 Septic Tank and Drain Field

Unit Type: Septic tank and drain field Unit

Dimensions: 50 x 100 ft

Unit Period of Operation: 1971 to unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639900.937 East 749342.779

Contaminants/waste: Unknown

Contaminated Soil: Possible

Contaminated Groundwater: Unlikely

EPA Recommendations:	Assess disposal practices. Conduct soil sampling, Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations:	Septic tank full, lush vegetation in leach field area. Major wash to west of leach field. Drums, ash, garbage disposed in area west of
2001 Recommendations:	Action. Collect information on building disposal practices. Sample septic and soil in drain field, and possibly sediment in wash. Note new unit created for disposal area behind (west) of building.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 10/18/00

Update Data or Changes Made:

Planned Actions RFI

Estimated

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-123 **Unit Status: Inactive**

EPA SWMU/AOC Number: SWMU 65

Unit Name: Building 3587 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x **100 ft**

Unit Period of Operation: 1961 to unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 East 749125.081 North 3639079.051

Contaminants/waste: Unknown

Contaminated Soil: Possible **Contaminated Groundwater:** Unlikely

EPA **Recommendations:** Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.

2001 Observations: Found area where security station was located, but new fire house is now there. No septic or leach field could be located.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made: Building removed

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006\

estimated

deleted

Tracking Number: YPG-1.24 **Unit Status: Unknown,**

EPA SWMU/AOC Number: SWMU 90

Unit Name: Building 3640 Uranium Residue Storage

Unit Type: Radiological material storage in building **Unit**

Dimensions: 24 x 36 **ft**

Unit Period of Operation: Unspecified East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Radiological waste, uranium

Contaminated Soil: Unlikely **Contaminated Groundwater:** Unlikely

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: **07/17/00**

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A **of Actions:**

Tracking Number: YPG-125 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 71

Unit Name: Building 3743 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1977 to unspecified

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3634158.042 East 747952.650

Contaminants/waste: Unknown

Contaminated Soil: Possible

Contaminated Groundwater: Possible

EPA Recommendations:	Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations:	Standing water noted created by game watering trough. Water not likely associated with leachfield.
2001 Recommendations:	Action. Collect information on building disposal practices. Confirm septic tank location. Sample septic and soil in leach field. Possible groundwater sampling.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Closed via site assessment 2003

Planned Actions None.

Rationale:

Schedule of Actions: N/A

Tracking Number: YPG-126 **Unit Status:** Inactive

EPA SWMU/AOC Number: SWMU 81

Unit Name: Building 409 Sign Shop Catch Tank for Paint Waste

Unit Type: Catch tank for paint wastes

Unit Dimensions: Tank

Unit Period of Operation: Unspecified to present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739455 North 3639411

Contaminants/waste: Paint wastes

Contaminated Soil: Unlikely **Contaminated Groundwater: Unlikely**

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions RFI upon Closure

Rationale: Active unit, no observed or known **releases**

Schedule of Actions: Closure not scheduled

Tracking Number: **YPG-127** **Unit Status: Inactive**

EPA SWMU/AOC Number: SWMU 74

Unit Name: Building 5100 Septic Tank and Drain Field

Unit Type: Septic tank and drain **field Unit**

Dimensions: 50 x 100 ft

Unit Period of Operation: 1985 to unspecified East 742729.004

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3644742.039

Contaminants/waste: Unknown

Contaminated Soil: Possible **Contaminated Groundwater:** Unlikely

EPA Recommendations:	Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations:	Septic tank partially full. Unclear where leach field is located. Seems that Buildings 5101 and 5100 share same septic system.
2001 Recommendations:	Action. Collect information on building disposal practices. Find leach field. Sample septic and soil in leach field. Possible groundwater sampling.
Lead Regulatory Agency:	Unassigned
Site Data Update Date:	10/18/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June **2006** estimated

Tracking Number: YPG-128 Unit Status: inactive:

EPA SWMU/AOC Number: SWMU 87

Unit Name: Building 531 Drum Storage Area

Unit Type: Drum storage area, drain

Unit Dimensions: 10 x 10 ft

Unit Period of Operation: 1988 to unspecified East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Closed unit Changes Made:

Planned Actions '`No Action

Rationale:

Schedule N/A of Actions:

~~**Tracking Number:** YPG-129 **Unit Status:** Active~~

~~**EPA SWMU/AOC Number: SWMU 75**~~

~~**Unit Name:** Building 6000 Septic Tank and Drain Field~~

~~**Unit Type:** Septic tank and drain field **Unit**~~

~~**Dimensions: 50** x **100 ft**~~

~~**Unit Period of Operation:** 1960 to unspecified East 752260.675~~

~~**Unit Coordinates (NAD 27) in meters UTM zone 11** North 3655993.284~~

~~**Contaminants/waste:** Unknown~~

~~**Contaminated Soil:** Possible **Contaminated Groundwater:** Unlikely~~

~~**EPA Recommendations:** Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.~~

~~**2001 Observations:** Septic tank full, may be active; vegetation in leach field area. Building vacant, but appears to be office space.~~

~~**2001 Recommendations:** No action~~

~~**Lead Regulatory Agency:** Unassigned~~

~~**Site Data Update Date:** **10/18/00**~~

~~**Update Data or Changes Made:** Not Vacant, operational as~~ n requires

~~**Planned Actions** No Action~~

~~**Rationale:**~~

~~**Schedule** N/A **of Actions:**~~

~~Tracking Number: YPG-130 Unit Status: Active~~

~~EPA SWMU/AOC Number: SWMU 76~~

~~Unit Name: Building 6003 Septic Tank and Drain Field~~

~~Unit Type: Septic tank and drain field~~

~~Unit Dimensions: 50 x 100 ft~~

~~Unit Period of Operation: 1960 to unspecified East 752506.047~~

~~Unit Coordinates (NAD 27) in meters UTM zone 11 North 3656716.178~~

~~Contaminants/waste: Unknown~~

~~Contaminated Soil: Possible Contaminated Groundwater: Unlikely~~

~~EPA Recommendations:~~	~~Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.~~
~~2001 Observations:~~	~~Septic tank full, may be active; vegetation in leach field area. Building vacant, but appears to be office space.~~
~~2001 Recommendations:~~	~~No action~~

~~Lead Regulatory Agency: Unassigned~~

~~Site Data Update Date: 10/18/00~~

Update Data or Changes Made: Not Vacant, operational as mission requires

nve

Planned Actions No Action

r

~~Rationale:~~

~~Schedule N/A of Actions~~:

Tracking Number: YPG-131 Unit Status: Unknown

EPA SWMU/AOC Number: SWMU 77

Unit Name: Building 6004 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1960 to unspecified East 752692.875

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3656674.162

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations:	Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations: 2001	Septic tank full, may be active; lush vegetation in leach field area. Photo lab vacant.
Recommendations:	Action. Collect information on building disposal practices. Sample septic and soil in leach field.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 10/18/00

Update Data or Changes Made:

Planned Actions RFT

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Estimated

~~**Tracking Number:** **YPG-132** **Unit Status: Inactive**~~

~~**EPA SWMU/AOC Number: SWMU 78**~~

~~**Unit Name:** Building 6016 Septic Tank and Drain Field~~

~~**Unit Type:** Septic tank and drain field~~

~~**Unit Dimensions:** 50 x 100 ft~~

~~**Unit Period of Operation:** 1985 to unspecified~~

~~**Unit Coordinates (NAD 27) in meters UTM zone 11**~~ ~~East 752068944~~ ~~North 3655922.564~~

~~**Contaminants/waste:** Unknown~~

~~**Contaminated Soil:** Possible~~	~~**Contaminated Groundwater:** Unlikely~~
~~**EPA Recommendations:**~~	~~Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.~~
~~**2001 Observations:**~~	~~Septic tank not located but is presumed to be under latrine.~~
~~**2001 Recommendations:**~~	~~No action~~
~~**Lead Regulatory Agency:**~~	~~Unassigned~~

~~**Site Data Update Date:**~~ ~~**10/18/00**~~

~~**Update Data or Changes Made:**~~

~~**Planned Actions**~~ ~~No Action~~

~~**Rationale:**~~

~~**Schedule**~~ ~~N/A~~ ~~**of Actions:**~~

Tracking Number: YPG-133 Unit Status: <Inactive

EPA SWMU/AOC Number: SWMU 66

Unit Name: Building 3482 Septic Tank and Drain Field

Unit Type: Septic tank and drain field

Unit Dimensions: 50 x 100 ft

Unit Period of Operation: 1973 to unspecified East 750561.126

Unit Coordinates (NAD 27) **in** meters UTM zone 11 North 3643278.949

Contaminants/waste: Unknown

Contaminated Soil: Possible	Contaminated Groundwater: Unlikely
EPA Recommendations:	Assess disposal practices. Conduct soil sampling. Groundwater sampling may be appropriate depending on soil sampling results.
2001 Observations:	Found building, but unable to locate septic or leach field.
2001 Recommendations:	Action: Collect information on building disposal practices. Find septic tank/leach field location. Sample septic and soil in leach field. Possible sediment (wash) sampling.
Lead Regulatory Agency:	Unassigned

Site Data Update Date:	10/18/00
Update Data or Changes Made:	

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

estimated

Tracking Number: YPG-134 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Cibola Coyote Drop Zone

Unit Type: Active range, drop zone Unit

Dimensions: Range

Unit Period of Operation: Range East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists, including DSERTS.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or
Changes Made:

Planned Actions None

Rationale:

Schedule N/A of
Actions:

Tracking Number: YPG-135 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Cibola Roadrunner Drop Zone

Unit Type: Active range, drop zone

Unit Dimensions: Range

Unit Period of Operation: Range East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists, including DSERTS,

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-136 **Unit Status: Inactive**

~~**EPA SWMU/AOC Number: AOC 7**~~

~~**Unit Name:** Contaminated (ground staining) area at Mobility Test Area Building 2300 (south of building)~~

~~**Unit Type:** Ground stain from aerial photo~~

~~**Unit Dimensions:** Unknown, probably less than 1 acre~~

~~**Unit Period of Operation:** Unspecified (1953 aerial photo **East 744133.774**~~

~~**Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636983.244**~~

~~**Contaminants/waste: Unknown**~~

~~**Contaminated Soil: Suspected** **Contaminated Groundwater:** Possible~~

~~EPA Recommendations:~~	~~Identify area of ground staining~~
~~**2001 Observations:**~~	~~Present building use unknown. No ground staining could be located.~~
~~**2001 Recommendations:**~~	~~Action. Obtain information on building activities, wastes produced, and past/present disposal practices. Soil sampling south of building.~~
~~**Lead Regulatory Agency:**~~	~~Unassigned~~

~~**Site Data Update Date: 08/30/00**~~

~~**Update Data or Changes Made:**~~

~~**Planned Actions RFI**~~

~~**Rationale:** Document issue closure~~

~~**Schedule of Actions:** **RFI** Workplan submitted June 2006~~

Tracking Number: YPG-137 Unit Status: Active

EPA SWMU/AOC Number: SWMU 86

Unit Name: DRMO Recyclable Materials Storage Area at MAA

Unit Type: Material storage

Unit Dimensions: Unspecified

Unit Period of Operation: Unspecified East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: None

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations:	No action recommended. Unit should be removed from future SWMU lists.
2001 Observations:	Not visited
2001 Recommendations:	Remove from future SWMU lists.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions None

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-138 Unit Status: Active

EPA SWMU/AOC Number: SWMU 35

Unit Name: Building 3109 Satellite Accumulation Area

Unit Type: Drum storage area

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1961 to present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 747559.773 North 3641774.165

Contaminants/waste: Petroleum hydrocarbons, metals

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations:	No action recommended.
2001 Observations:	No concrete pad. Most (but not all) drums stored on plastic spill containment pads.
200.1. Recommendations:	No action
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions No Action

Rationale:

Schedule N/A of Actions:

discontinue

Tracking Number: YPG-139 Unit Status: Active

EPA SWMU/AOC Number: SWMU 14

Unit Name: 3015, Bead Blaster for Paint Removal

Unit Type: Paint removal and storage area Unit

Dimensions: Unit

Unit Period of Operation: Mid 1980s to present East 743478.973

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639415.492

Contaminants/waste: metals

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations:	No action recommended.
2001 Observations:	Bead plaster and dried waste paint storage inside building, well maintained.
2001 Recommendations:	No action
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions No Action

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-140 Unit Status: Active

EPA SWMU/AOC Number: SWMU 12

Unit Name: Building 3015 Satellite Accumulation Area

Unit Type: Used oil drum storage, inside building

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1970 to present

Unit Coordinates (NAD 27) in meters UTM zone 11 East N/A North N/A

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended,

2001 Observations: Unit moved to YPG-114

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or
Changes Made:

Planned Actions
None

Rationale:

Schedule N/A of
Actions:

Tracking Number: YPG-141 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 39

Unit Name: Inactive Landfill 1 Mile Northeast of MAA, Southwest of LAAF

Unit Type: Landfill

Unit Dimensions: 2 acres, possibly larger

Unit Period of Operation: 1964 to 1967

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3638920.936 East 742070.288

Contaminants/waste: Unknown

Contaminated Soil: Suspected Contaminated Groundwater: Possible

EPA Recommendations:	Soil and groundwater sampling. Account for contaminant migration during floods.
2001 Observations:	Miscellaneous debris observed at bottom of wash; debris covers approximately 3-4 acres.
2001 Recommendations:	Action. Obtain information on landfill contents. Geophysics. Soil sampling and, if warranted, groundwater monitoring.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-142 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Inactive Landfill at LAAF (Airplane Burial Site)

Unit Type: Landfill (airplane burial site)

Unit Dimensions: Unknown, probably no more than several acres

Unit Period of Operation: 1943 or 1944

Unit Coordinates (NAP 27) in meters UTM zone 11 East 743623 North 3638703

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Nothing visible from desert surface. Location provided by LAA operations.

2001 Recommendations: Action. Geophysics. Soil sampling and, if warranted, groundwater monitoring.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

estimated added

Tracking Number: YPG-143 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 40

Unit Name: Inactive Landfill South-Southeast of LAAF

Unit Type: Landfill

Unit Dimensions: 8 acres

Unit Period of Operation: Prior to 1950 (but EPA and AE East 744466.055

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3637840.811

Contaminants/waste: Multiple, unknown

Contaminated Soil: Possible	Contaminated Groundwater: Possible
EPA Recommendations:	Soil and groundwater sampling. Account for contaminant migration during floods.
2001 Observations:	Walked over 1-2 square miles looking for landfill. Only evidence of anything was bricks and scattered debris.
2001 Recommendations:	Action. Confirm presence of landfill first with geophysics. Obtain information on landfill contents. Soil sampling and, if warranted, groundwater monitoring.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions:

ADD

added

Tracking Number: YPG-144 Unit Status: Closed

EPA SWMU/AOC Number: SWMU

92 Unit Name: Incinerator at Building

S-5 Unit Type: Incinerator

Unit Dimensions: Unit

Unit Period of Operation: 1974 to 1986 East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: None

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations:	No action recommended. Unit should be removed from future SWMU lists.
2001 Observations:	Not visited
2001 Recommendations:	Remove from future SWMU lists.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/17/00

Update Data or
Changes Made:

Planned Actions Closed Unit

Rationale:

Schedule N/A
of Actions:

Tracking Number: YPG-145 Unit Status: C1OSed,

EPA SWMU/AOC Number: SWMU 29

Unit Name: Interim Status YPG Hazardous Waste Storage Facility at Mobility Test Area

Unit Type: Permitted hazardous waste storage, concrete pads

Unit Dimensions: 6 x 10 x 6 ft. concrete pads

Unit Period of Operation: 1988 to present

Unit Coordinates (NAD 27) in meters UTM zone 11

East 744295.039

North 3635896.477

Contaminants/waste: Multiple

Contaminated Soil: Unlikely

Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Hazardous waste storage facility in interim status, well maintained.

2001 Recommendations: Defer action to RCRA permit.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Clean Closed by letter HWPU-EX1768
Changes Made:

Planned Actions Closed Unit

Rationale:

Schedule N/A of
Actions:

Tracking Number: YPG-146 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 91

Unit Name: KFR GP-17A and 20 Photographic Disposal Area

Unit Type: Surface disposal on ground

Unit Dimensions: 24 x 36 ft

Unit Period of Operation: Unspecified East 751474

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3643766

Contaminants/waste: Solvents, metals

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Active Unit Changes Made:

Planned Actions RFI upon Closure

Rationale: Active unit, no observed or own releases

Schedule of Actions: Closure not scheduled

discontinue

Tracking Number: YPG-147 Unit Status: Active

EPA SWMU/AOC Number: SWMU 16

Unit Name: LAAF Sewage Treatment Lagoons

Unit Type: Sewage treatment lagoons Unit Dimensions:

10 acres

Unit Period of Operation: 1962 to 1997, 1997 to present

Unit Coordinates (NAD 27) in meters UTM zone 11

East 743409.256

North 3639048.450

Contaminants/waste: VOCs, metals

Contaminated Soil: Possible

Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Sewage treatment operation appears well maintained.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Active Unit regulated by APP# 100795
Changes Made:

Planned Actions Facility Closure

Rationale: Permit. Requirements:••

Schedule of Actions: 09.30re not: scheduled

Absolutive

Tracking Number: YPG-148 Unit Status: Active

EPA SWMU/AOC Number: SWMU 47

Unit Name: Building 3490 Satellite Accumulation Area

Unit Type: Drum storage area

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1974 to present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 748975.663 -North 3638936.024

Contaminants/waste: Caustic soap

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Inside satellite accumulation area

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or
Changes Made:

Planned Actions RFI upon Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-149 Unit Status: Active

EPA SWMU/AOC Number: SWMU 59

Unit Name: Building 5101 Satellite Accumulation Area

Unit Type: Drum storage area

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1960 to present

Unit Coordinates (NAD 27) **in meters** UTM zone **11** East 742692.276 North 3644748.843

Contaminants/waste: Solvents, paints, oil, battery electrolytes

Contaminated Soil: Unlikely **Contaminated** Groundwater: Unlikely

EPA Recommendations:	Institute best management practices (store drums on a bermed concrete pad).
2001 Observations:	Drums stored on concrete pad. Minor soil staining at edge of pad. Some drums stored open with oil.
2001 Recommendations:	Action. Remove stained soil and dispose properly.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made: Updated name as facility mission changes

Planned Actions UI upon Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-150 Unit Status: Inactive

EPA SWMU/AOC Number: SWMU 85

Unit Name: Non-PCB Transformer Storage Area

Unit Type: Outdoor storage area

Unit Dimensions: 40 x 80 ft

Unit Period of Operation: Unspecified East 739390

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639313

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended. Unit should be removed from future SWMU lists.

2001 Observations: Not visited

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/17/00

Update Data or Changes Made: Active area just east of building 204 in yard

Planned Actions RF1 upon Closure

Rationale; Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: **YPG-151** **Unit Status: Inactive**

EPA SWMU/AOC Number: AOC 4

Unit Name: Service Station No. 2 UST Site at Mobility Test Area **Unit**

Type: Underground storage tank removal and cleanup **Unit**

Dimensions: Underground storage tanks

Unit Period of Operation: 1953 to **1994** East 743981.244

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636405,418

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Confirmed **Contaminated Groundwater:** Possible

EPA Recommendations: Complete ongoing investigation and remediation.

2001 Observations: USTs removed and area remediated.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/26/04

Update Data or Changes Made: site investigated and no action currently required. LUST Case File #4715.3801,02

Planned Actions No Action

Rationale: No threat to groundwater or other receptors

Schedule of Actions: N/A

Discontinue

Tracking Number: YPG-152 Unit Status: inactive

EPA SWMU/AOC Number: AOC 6

Unit Name: Service Station No. 3 at Mobility Test Area

Unit Type: Underground storage tanks (3) Unit

Dimensions: Underground storage tanks

Unit Period of Operation: 1960s to 1991

Unit Coordinates (NAD 27) in meters UTM zone 11 East 743600.664 North 3636379.499

Contaminants/waste: Petroleum hydrocarbons (gasoline)

Contaminated Soil: Confirmed Contaminated Groundwater: Possible

EPA Recommendations:	Verify documentation. Ensure that contamination does not remain.
2001 Observations:	USTs removed; remediation ongoing.
2001 Recommendations:	No action
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/26/04

Update Data or Changes Made: site investigated and no action currently required. LUST Case File #4715.3801.01

Planned Actions No Action

Rationale: No threat to groundwater or other receptors

Schedule of Actions: ':4'-iNTA'

Tracking Number: YPG-153 Unit Status: Active

EPA SWMU/AOC Number: SWMU 2

Unit Name: PCB Storage Area at Building 416

Unit Type: Bermed concrete pad

Unit Dimensions: 24 x 20 ft

Unit Period of Operation: 1984 to present East 739549.111

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639203.554

Contaminants/waste: Polychlorinated biphenyls

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action "recommended. No PCBs are currently stored, and spill prevention measures are adequate.

2001 Observations: Well maintained; no observed spills.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/25/04

Update Data or Changes Made: Co located with pesticide facility

Planned Actions RFT upon Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-154 **Unit Status:** Active

EPA SWMU/AOC Number: SWMU 27

Unit Name: Building 2102, Silver Recovery Unit

Unit Type: Silver recovery unit, inside building

Unit Dimensions: Inside building

Unit Period of Operation: 1950s to present East 743777.510

Unit Coordinates (NAD 27) in meters UTM zone **11** North 3636121.486

Contaminants/waste: Solvents, metals

Contaminated Soil: Unlikely **Contaminated Groundwater:** Unlikely

EPA Recommendations:	No action recommended,
2001 Observations:	Three units in operation inside building. Silver is reduced to < 5 ppm.
2001 Recommendations:	No action
Lead Regulatory Agency:	Unassigned

Site Data Update **Date:** **07/24/04**

Update Data or Changes Made: Machines removed, combine SWMU with YPG-115, delete from future lists

Planned Actions No Action

Rationale: Combine actions with YPG-115

Schedule of Actions: N/A

Tracking Number: YPG-155 Unit Status: Active

EPA SWMU/AOC Number: SWMU 9

Unit Name: Brine Lagoon at Main Administrative Area

Unit Type: Brine lagoons (cement lined)

Unit Dimensions: 120 x 120 ft

Unit Period of Operation: 1986 to present East 739635.138

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639182.256

Contaminants/waste: Metals

Contaminated Soil: Possible Contaminated Groundwater: Possible

EPA Recommendations:	Monitor groundwater
2001 Observations:	Brine lagoon appears intact and clean; liner on top of cement; weeds observed growing in corners,
2001 Recommendations:	Action. Remove weeds. Obtain liner specifications and determine if there is any documented release. If warranted, monitor groundwater.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions No Action

Rationale: Brine release only

Schedule N/A of Actions:

~~Tracking Number: YPG-156 Unit Status: Inactive~~

~~EPA SWMU/AOC Number: SWMU 33~~

~~Unit Name: Brine Lagoons (Soil) at Castle Dome Heliport Annex~~

~~Unit Type: Brine lagoons (soil lined)~~

~~Unit Dimensions: Approximately 200 x 200 ft, by 6 ft deep~~

~~Unit Period of Operation: 1986 to unspecified~~

~~Unit Coordinates (NAD 27) in meters UTM one 11~~ ~~East 752532.933~~ ~~North 3656476.776~~

~~Contaminants/waste: Metals, unknown~~

~~Contaminated Soil: Possible~~ ~~Contaminated Groundwater: Unlikely~~

~~EPA Recommendations:~~ ~~Monitor groundwater~~

~~2001 Observations:~~ ~~Soil lagoon inactive. The RO unit may be located inside a locked building not visited. Standing water in lagoon and weeds growing;~~

~~2001 Recommendations:~~ ~~Action. Obtain documents on lagoon history, wastes managed and release controls. Sludge and soil sawing.~~

~~Lead Regulatory Agency:~~ ~~Unassigned~~

~~Site Data Update Date:~~ ~~10/05/00~~

~~Update Data or Changes Made:~~

~~Planned Actions No Action~~

~~Rationale: Brine release only~~

~~Schedule N/A of Actions:~~

Tracking Number: YPG-157 Unit Status: Active

EPA SWMU/AOC Number: SWMU I

Unit Name: Building 710 Satellite Accumulation Area Unit

Type: Aboveground storage tank and drum storage Unit

Dimensions: Satellite accumulation area

Unit Period of Operation: 1988 to present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739311.577 North 3638461,483

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Looks neat and clean; no observed spills.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or
Changes Made:

Planned Actions RFI upon Closure:

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-158 Unit Status: Active

EPA SWMU/AOC Number: SWMU 20

Unit Name: Building 2500 Satellite Accumulation Area

Unit Type: Drum storage area

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1955 to present East 744473.109

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636966.627

Contaminants/waste: Sulfuric acid

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended for inside SAA at hood)

2001 Observations: Outside drum storage area inactive. Materials stored inside at three hoods.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions .- upon Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-159 Unit Status: Active

EPA SWMU/AOC Number: SWMU 44

Unit Name: Building 3490 Antifreeze Recycling Unit

Unit Type: Antifreeze recycling unit

Unit Dimensions: Small unit

Unit Period of Operation: 1991 to present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 748975.663 North 3638936.024

Contaminants/waste: Antifreeze

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit located inside building at SAA.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Recommend removal from SWMU list. Self-contained unit / portable
Changes Made:

Planned Actions No Action/remove from list

Rationale:

Schedule N/A of
Actions:

Tracking Number: YPG-160 **Unit Status: Active**

EPA SWMU/AOC Number; SWMU 45

Unit Name: Building 3490, Spent Antifreeze Satellite Accumulation Area **Unit**

Type: Drum storage area

Unit Dimensions: 20 x 40 ft

Unit Period of Operation: 1997 to present East 748975.663

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3638936,024

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely **Contaminated Groundwater: Unlikely**

EPA Recommendations: Institute best management practices (store drums on spill-containing pallets).

2001 Observations: Looks neat and clean; no observed spills but minor floor staining.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Recommend removal from SWMU list. Self-contained unit / portable

Planned Actions No Action

Rationale: Active unit, no observed or known releases

Schedule of Actions: N/A

Tracking Number: YPG-161 Unit Status: ..:Inactive

EPA SWMU/AOC Number: SWMU 23

Unit Name: Building 2090 Satellite Accumulation Area

Unit Type: Drum storage area, aboveground tank Unit

Dimensions: Satellite accumulation area

Unit Period of Operation: 1954 to present East 743849.070

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636562.291

Contaminants/waste: Solvents, used oil

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: Institute best management practices (place drums on bermed concrete pads).

2001 Observations: Unit no longer active, operation moved to Kofa, Building 3490.

2001 Recommendations: Remove from future SWMU lists.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/25/04

Update Data or Changes Made: Building Active for test program

Planned Actions: upon. Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: **YPG-162** **Unit Status:** **Inactive**

EPA SWMU/AOC Number: AOC 7

Unit Name: Surface Impoundments in Southwest Corner of MAA, West of Canal (from aerial photograph)

Unit Type: Surface impoundments from aerial photograph (3)

Unit Dimensions: Approximately 10 to 20 acres

Unit Period of Operation: Unspecified (1953 aerial photo East N/A

Unit Coordinates (NAD 27) in meters UTM zone 11 North N/A

Contaminants/waste: Unknown

Contaminated Soil: Possible **Contaminated Groundwater;** Possible

EPA Recommendations: Investigate surface impoundment location.

2001 Observations: Unable to locate old impoundments because of heavy underbrush west of canal.

2001 Recommendations: Action. Obtain information on impoundments, including waste managed; confirm location. Possible soil sampling and groundwater monitoring.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/26/04

Update Data or FUDS Site
Changes Made:

Planned Actions No **Action**

Rationale:

Schedule N/A **of**
Actions:

Tracking Number: YPG-163 Unit Status: Close

EPA SWMU/AOC Number: AOC 6 Unit

Name: UST No. 3003 and 3004 Unit Type:

Underground storage tanks (2) Unit

Dimensions: Underground storage tanks

Unit Period of Operation: Unknown East 743470.550

Unit Coordinates (NAD 27) **in** meters UTM zone **11** North 3639058.573

Contaminants/waste: Petroleum hydrocarbons (jet fuel, JP-4)

Contaminated Soil: Suspected Contaminated Groundwater: Unlikely

EPA Recommendations: Verify documentation. Ensure that contamination does not remain.

2001 Observations: USTs removed and replaced with double walled steel tanks. Remediation completed,

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/26/04

Update Data or Changes Made: Updated to include UST 3003. LUST case file 0682.05 completion undocumented

Planned Actions Document review

Rationale:

Schedule of Actions: Report June 2005

Tracking Number: YPG-164 Unit Status: Closed

EPA SWMU/AOC Number: AOC 6 Unit

Name: USTs No. 3111, 3112. and 3113 Unit

Type: Underground storage tanks (3) Unit

Dimensions: Underground storage tanks

Unit Period of Operation: Unspecified East 747589.048

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3641868.060

Contaminants/waste: Petroleum hydrocarbons (diesel and gasoline)

Contaminated Soil: Confirmed Contaminated Groundwater: Possible

EPA Recommendations:	Verify documentation. Ensure that contamination does not remain.
2001 Observations:	USTs removed and replaced with double walled steel tanks. Remediation completed.
2001 Recommendations:	No action
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/26/04

Update Data or Changes Made: UST reference #99-0012694 closure completed -

Planned Actions No Action

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-165 Unit Status: Closing

EPA SWMU/AOC Number: AOC 6

Unit Name: USTs No. 207 and 209

Unit Type: Underground storage tanks (2)

Unit Dimensions: Underground storage tanks

Unit Period of Operation: Pre-1970 to 1991

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739269.181 North 3638942.753

Contaminants/waste: Petroleum hydrocarbons (diesel and gasoline)

Contaminated Soil: Confirmed Contaminated Groundwater: Possible

EPA Recommendations: Verify documentation. Ensure that contamination does not remain.

2001 Observations: USTs removed and replaced with double walled steel tanks. Remediation ongoing.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: LUST Case File #0682.02. UST facility ID 0-005341, corrected site name from 5207/5209 to 207/209

Planned Actions Characterization report development

Rationale:

Schedule of Actions: Characterization report submitted June 2005

Tracking Number: YPG-166 Unit Status: Active

EPA SWM_U/A0C Number: SWMU 26

Unit Name: Building 2096 Satellite Accumulation Area

Unit Type: Used oil and solvent storage in steel tank Unit

Dimensions: Satellite accumulation area

Unit Period of Operation: 1955 to present East 743947.529

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636674.397

Contaminants/waste: Solvents, petroleum hydrocarbons

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Storage area well maintain

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions RFT upon Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Obsolete

Tracking Number: YPG-167 Unit Status: Active

EPA SWMU/AOC Number: SWMU 31

Unit Name: Building 6006 and 6021, Satellite Accumulation Area

Unit Type: Used oil storage on concrete pad

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1960 to present East 752612.074

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3656549.191

Contaminants/waste: Petroleum hydrocarbons.

Contaminated Soil: Unlikely **Contaminated Groundwater:** Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit is empty and well maintained.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made: Building operations vary with mission requirements

Planned Actions upon Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

discontinued

Tracking Number: YPG-168 Unit Status: Active

EPA SWMU/AOC Number: SWMU 32

Unit Name: Vehicle Wash Rack at Castle Dome Annex

Unit Type: Vehicle wash, with oil/water separator Unit

Dimensions: Unspecified

Unit Period of Operation: Unknown to present East 752671.753

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3656510.935

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit does not appear to have been used recently.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made: Updated site to Castle Dome Annex

Planned Actions AFI upon Closure

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-I 69 Unit Status: Active

EPA SWMU/AOC Number•: SWMU 6

Unit Name: Building 206 Satellite Accumulation Area

Unit Type: Storage on unbermed concrete pad

Unit Dimensions: Satellite accumulation area

Unit Period of Operation: 1955 to present East 739298.898

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639090.699

Contaminants/waste: Petroleum hydrocarbons, metals

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Institute best management practices (drums should be placed on a bermed concrete pad).

2001 Observations: 2001 No drums observed in the boveground sto tank. No visible signs of r

Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 10/05/00

Update Data or Changes Made:

Planned Actions RFI upon Closure.

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

discontinued

Tracking Number: YPG-170 Unit Status: Unknown

EPA SWMU/AOC Number: SWMU 7

Unit Name: Building 206, Antifreeze Recycling Unit

Unit Type: Antifreeze recycling unit

Unit Dimensions: Mobile unit

Unit Period of Operation: 1991 to present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739298.898 North 3639090.699

Contaminants/waste: Antifreeze

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit not present at time of RA visit. Mobile unit could be out of service.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 10/05/00

Update Data or Changes Made:

Planned Actions No Action

Rationale:

Schedule N/A of Actions:

Tracking Number: YPG-171 **Unit Status: Unknown**

EPA SWMU/AOC Number: SWMU 8

Unit Name: Building 206, Refrigerant Recycling Unit

Unit Type: Refrigerant recycling unit

Unit Dimensions: Mobile unit

Unit Period of Operation: 1991 to present East 739298.898

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639090.699

Contaminants/waste: Freon

Contaminated Soil: Unlikely **Contaminated Groundwater:** Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit not present at time of RA visit. Mobile unit could be out of service.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions No Action

Rationale:

Schedule N/A **of Actions:**

Tracking Number: YPG-172

Unit Status: Active

EPA SWMU/AOC Number: SWMU 25

Unit Name: Vehicle Wash Rack at Mobility Test Area

Unit Type: Vehicle wash, with oil/water separator

Unit Dimensions: Unspecified

Unit Period of Operation: 1993 to present

Unit Coordinates (NAD 27) in meters UTM zone 11

East 744210.416

North 3636358.914

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Unlikely

Contaminated Groundwater: Unlikely

EPA Recommendations: No action recommended.

2001 Observations: Unit does not appear to have been used recently.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions .: RffitipOlf•ele§nre

Rationale: Active unit, no observed or known releases

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-173 Unit Status: Active

EPA SWMU/AOC Number: SWMU 58

Unit Name: Kofa Scrap Metal Yard

Unit Type: Open air scrap metal storage

Unit Dimensions: 200 x 200 ft (fenced), 5-10 acres open storage

Unit Period of Operation: 1986 to present East 754800.203

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3636137,538

Contaminants/waste: Explosives and degradation products, metals

Contaminated Soil: Suspected Contaminated Groundwater: Possible

EPA Recommendations:	No action recommended, but closure should be completed along with closure of SWMU 57. Unit is undergoing closure.
2001 Observations:	Scrap metal is stored in the northeast quadrant of the fenced area only. There are only several dozen pieces of scrap stored here.
2001 Recommendations:	Defer to ongoing closure activity.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Not related to Muggins Mountain, active scrap recovery storage area

Planned Actions Report upon Closure

Rationale: Active Unit

Schedule of Actions: Closure not Scheduled

Tracking Number: YPG-174 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA REA

Unit Name: Building 3490, Used Oil Aboveground Storage Tank

Unit Type: Aboveground storage tank

Unit Dimensions: Aboveground storage tank, 5,000 gallons

Unit Period of Operation: 2000 to present East 748824

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3638895

Contaminants/waste: Petroleum hydrocarbons, metals

Contaminated Soil: Unlikely Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: New unit for used-oil storage with secondary containment. No evidence of release.

2001 Recommendations: No action

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Second unit sometimes related to building 3504

Planned Actions UPI- after pat removal '.

Rationale: Pad intact, however small cracks and stains

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-175 Unit Status: Inactive

EPA SWMU/AOC Number: AOC 7

Unit Name: Contaminated area at Building 2310 (west of building)

Unit Type: Ground stain/pool of dark liquid from aerial photo

Unit Dimensions: Unknown, probably less than 1 acre

Unit Period of Operation: Unspecified (1953 aerial photo East 744172.048

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3637052.950

Contaminants/waste: Unknown

Contaminated Soil: Suspected Contaminated Groundwater: Possible

EPA Recommendations:	Identify area of ground staining and pool of liquid.
2001 Observations:	Building now used to store new tires. No ground staining could be located.
2001 Recommendations:	Action. Obtain information on building activities, wastes produced, and past/present disposal practices. Soil sampling west of building.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 08/30/00

Update Data or Changes Made:

Planned Actions RH

Rationale:

Schedule of Actions: RF1 Workplan submitted June 2006

Tracking Number: YPG-176 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA Unit

Name: Building 3566 Disposal Area, West of Building Unit

Type: Surface disposal, drain pipe from building Unit

Dimensions: 20 x 100 ft.

Unit Period of Operation: Unknown

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3639900.937 East 749342.779

Contaminants/waste: Unknown

Contaminated Soil: Possible Contaminated Groundwater: Unlikely

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Apparent discharge area is a major wash.

2001 Recommendations: Action. Obtain information on building disposal practices and drain pipe effluent. Sample soil in area behind (west of) building. Clean area.

Lead Regulatory Agency: Unassigned

Site Data Update Date: 10/05/00

Update Data or Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

~~Tracking Number: YPG-177~~

~~Unit Status: Inactive~~

~~EPA SWMU/AOC Number: SWMU 33~~

~~Unit Name: Wash rack discharge lagoons at Castle Dome Annex~~

~~Unit Type: Brine lagoons (cement lined)~~

~~Unit Dimensions: Approximately 200 x 200 ft, by 6 ft deep~~

~~Unit Period of Operation: 1986 to unspecified~~

~~Unit Coordinates (NAD 27) in meters UTM zone 11~~ ~~East 752627.866~~

~~North 3656392.743~~

~~Contaminants/waste: Metals, unknown~~

~~Contaminated Soil: Possible~~ ~~Contaminated Groundwater: Unlikely~~

~~EPA Recommendations: Monitor groundwater.~~

~~2001 Observations: Cement lagoon inactive. Cement cracked, repairs failed. The RO may be located inside a building that was locked during the site~~

~~2001 Recommendations: Action. Obtain documents on lagoon history, wastes managed and release controls. Sludge and soil sampling.~~

~~Lead Regulatory Agency: Unassigned~~

~~Site Data Update Date: 07/24/04~~

~~Update Data or Changes Made: Updated to reflect lagoon for wash rack~~

~~Planned Actions RN upon Closure~~

~~Rationale: Active unit, no observed or known releases~~

~~Schedule of Actions: Closure not scheduled~~

Tracking Number: YPG-178 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Inactive Landfill 3 km East of Main Administrative Area

Unit Type: Landfill

Unit Dimensions: 1 acre, possibly more

Unit Period of Operation: Unknown East 741322.093

Unit Coordinates (NAD 27) **in** meters UTM zone 11 North 3636372.353

Contaminants/waste: Multiple, unknown

Contaminated Soil: Suspected Contaminated Groundwater: Possible

EPA Recommendations:	Soil and groundwater sampling. Account for contaminant migration during floods.
2001 Observations:	Miscellaneous debris observed. Debris in mounds covers approximately 1-2 acres.
2001 Recommendations;	Action. Obtain information on landfill contents. Geophysics. Soil sampling and, if warranted, groundwater monitoring.
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 11/09/00

Update Data or
Changes Made:

Planned Actions RFI

Stimated

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-200 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Building 2090 Waste USTs Unit

Type: Underground Storage Tank Unit

Dimensions: Unknown, suspect 2 USTs

Unit Period of Operation: Unknown

Unit Coordinates (NAB 27) in meters UTM zone 11 East 743788 North 3636777

Contaminants/waste: Solvents, petroleum hydrocarbons

Contaminated Soil: Contaminated Groundwater:

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not reviewed in RA site visit

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: ADEQ UST

Site Data Update Date: 07/24/04

Update Data or Changes Matte: Added unit, tanks suspected of being waste related

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

estimate

Tracking Number: YPG-201 Unit Status: Active Actv.07

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Washrack at Building 204

Unit Type: Washrack without Oil water separator

Unit Dimensions: 100 x 100

Unit Period of Operation: unknown - present

Unit Coordinates (NAD 27) in meters UTM zone 11 East 739316 North 3639364

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Contaminated Groundwater:

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not reviewed in RA site visit

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Added unit
Changes Made:

Planned Actions RFT upon Closure

Rationale:

Schedule of Actions: Closure not scheduled

Tracking Number: YPG-202 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Washrack and oil water separator facility # 2056

Unit Type: Washrack with Oil water separator

Unit Dimensions: 100 x 100

Unit Period of Operation: unknown

Unit Coordinates (NAD 27) in meters UTM zone 11 East 743554 North 3636652

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Possible Contaminated Groundwater: Possible

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not reviewed in RA site visit

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Added unit
Changes Made:

Planned Actions RFI

Estimate

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Tracking Number: YPG-203 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: UST at Building S-5

Unit Type: Underground Storage Tank (1)

Unit Dimensions:

Unit Period of Operation: Unknown - 2001 East 739157

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3638918

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Contaminated Groundwater:

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not reviewed in RA site visit

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Added Unit
Changes Made:

Planned Actions RFT

Rationale: suspected leaking tank

Schedule of Actions: RFI Workplan submitted June 2006

estimated

Tracking Number: YPG-204 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: AAFES UST

Unit Type: Underground Storage Tank (3)

Unit Dimensions:

Unit Period of Operation: 1950s - 1994 East 739220

Unit Coordinates (NAD 27) **in** meters UTM zone **11** North 3638854

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Confirmed Contaminated Groundwater: Confirmed

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not reviewed in RA site visit

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: ADEQ UST

Site Data Update Date: 07/26/04

Update Data or Added unit. ADEQ LUST File 0682.03
Changes Made:

Planned Actions Phase II Characterization

Rationale:

Schedule of Actions: Characterization report submitted June 2005

Estimated

Tracking Number•: YPG-205 **Unit Status: Inactive**

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Building 3478 UST

Unit Type: Underground Storage Tank **(1)**

Unit Dimensions:

Unit Period of Operation: unknown East 749308

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3640161

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: **Contaminated Groundwater:**

EPA Recommendations: Not included in EPA RFA.

2001 Observations: Not reviewed in RA site visit

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/24/04

Update Data or Changes Made: Added Unit

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

estimated

Tracking Number: YPG-206 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Building 3479 UST

Unit Type: Underground Storage Tank (1)

Unit Dimensions:

Unit Period of Operation: unknown

Unit Coordinates (NAD 27) in meters UTM zone 11 East 750133 North 3642424

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Contaminated Groundwater:

EPA Recommendations:	Not included in EPA RFA,
2001 Observations:	Not reviewed in RA site visit
2001 Recommendations:	Not reviewed in RA site visit
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/24/04

Update Data or Added Unit Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

Started

Tracking Number: YPG-207 Unit Status: Inactive

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: Building S-991 UST

Unit Type: Underground Storage Tank (1)

Unit Dimensions:

Unit Period of Operation: unknown East 739735.

Unit Coordinates (NAD 27) in meters UTM zone 11 North 3638688

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Contaminated Groundwater:

EPA Recommendations:	Not included in EPA RFA.
2001 Observations:	Not reviewed in RA site visit
2001 Recommendations:	Not reviewed in RA site visit
Lead Regulatory Agency:	Unassigned

Site Data Update Date: 07/24/04

Update Data or Added Unit
Changes Made:

Planned Actions RFI

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006

estimated

Tracking Number: YPG-208 Unit Status: Active

EPA SWMU/AOC Number: Not included in EPA RFA

Unit Name: KFR Fuel Station #4 spill site

Unit Type: Spill Site

Unit Dimensions: 250 x 250

Unit Period of Operation: 1950s - present East 749417

Unit Coordinates (NAD 27) in meters UTM zone 11 : North 3639127

Contaminants/waste: Petroleum hydrocarbons

Contaminated Soil: Contaminated Groundwater:

EPA Recommendations: Not included in EPA RFA.

2001 Observations:

2001 Recommendations: Not reviewed in RA site visit

Lead Regulatory Agency: Unassigned

Site Data Update Date: 07/27/04

Update Data or Changes Made: Added unit, unit site of repeated spill events and requires investigation

Planned Actions RF1

Rationale:

Schedule of Actions: RFI Workplan submitted June 2006