24915-000-GPE-GGPT-00001

Resource Conservation and Recovery Act (RCRA)

Research, Development and Demonstration (RD&D) Permit Application – Revision 6

for the Blue Grass Chemical Agent-Destruction Pilot Plant
Blue Grass Army Depot, Richmond, Kentucky

Submitted to:

Energy and Environment Cabinet
Kentucky Department for Environmental Protection
Division of Waste Management
200 Fair Oaks Lane, 2nd Floor
Frankfort, Kentucky 40601

Submitted by:

Blue Grass Army Depot
431 Battlefield Memorial Highway, Richmond, Kentucky 40475-5901
and
Bechtel Parsons Blue Grass
830 Eastern Bypass, Suite 106, Richmond, Kentucky 40475

(CDRL A010)

Submitted 12 NOV 2015, Revision/Submission 6 REWRITE
Final Page Is L-132

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Acronyms/Abbreviations

Acronym	Definition
ACS	agent collection system
ACWA	Assembled Chemical Weapons Alternatives
AEL	airborne exposure limit
AFS	aluminum filtration system
ANR	agent neutralization reactor
ANS	agent neutralization system
AOC	Army Operations Center
APS	aluminum precipitation system
ASTM	ASTM International (formerly the American Society for Testing and Materials)
ATE	ACWA test equipment
BGAD	Blue Grass Army Depot
BGCA	Blue Grass Chemical Activity
BGCAPP	Blue Grass Chemical Agent-Destruction Pilot Plant
BPBG	Bechtel Parsons Blue Grass
CAIRA	Chemical Accident or Incident Response Action
CCR	central control room
CCTV	closed-circuit television
CFR	Code of Federal Regulations
CHB	Container Handling Building
CLA	chemical limited area
CON	Control Room
CRM	contaminated rocket motor
CSB	control and support building
DA	Department of the Army
DE	destruction efficiency
decon	decontamination
DoD	Department of Defense
DOT	Department of Transportation
EAR	Export Administration Regulation
EBH	energetics batch hydrolyzer
ECR	explosive containment room
ECV	explosive containment vestibule
EDT	explosive destruction technology
ENR	energetics neutralization reactor
ENS	energetics neutralization system
EONC	enhanced on-site container
EPA	U.S. Environmental Protection Agency
FCC	facility construction certification
GATS	General Atomics Total Solution

GB	nerve agent sarin, isopropyl methylphosphonofluoridate
GLS	gas/liquid separator
H	blister agent mustard made by the Levinstein process, bis(2-chloroethyl) sulfide or 2,2'-dichlorodiethyl sulfide
HEPA	high-efficiency particulate air (filter)
HHRA	human health risk assessment
HSA	hydrolysate storage area
HVAC	heating, ventilating, and air-conditioning
HWMU	hazardous waste management unit
IBC	intermediate bulk container
IPA	isopropyl alcohol
ITAR	International Traffic in Arms Regulations
KAR	Kentucky Administrative Regulation
KDEP	Kentucky Department for Environmental Protection
KRS	Kentucky Revised Statute
KY	Kentucky
LFL	lower flammable limit
MCS	MPT cooling system
MDB	Munitions Demilitarization Building
MPR	motor packing room
MPT	metal parts treater
MSR	motor shipping room
MWS	munitions washout system
NCR	nose closure removal
NCRS	nose closure removal station
NRC	National Research Council
OB/OD	open burning/open detonation
OPSEC	operations security
OSHA	Occupational Safety & Health Administration
OTE	off-gas treatment (effluent) EBH/ENS
OTM	off-gas treatment system (MPT/ANS)
P&ID	piping and instrumentation diagram
PCB	polychlorinated biphenyl
PE	professional engineer
PEO ACWA	Program Executive Office – Assembled Chemical Weapons Alternatives
PFD	process flow diagram
PHS	projectile handling system
PMD	projectile/mortar disassembly
PPE	personal protective equipment
psi	pound per square inch
psia	pound per square inch, absolute
RCM	rocket cutting machine

RCRA	Resource Conservation and Recovery Act
RCU	recirculating cooling unit(s)
RD&D	research, development, and demonstration
RM	rocket motor
RO	reverse osmosis
RQ	reportable quantity
RSM	rocket shear machine
SCWO	supercritical water oxidation
SDS	spent decontamination system
SFT	shipping and firing tube
SOP	standing operating procedure
SPB	supercritical water oxidation (SCWO) processing building
SRC	single round container
STA	supercritical water oxidation (SCWO) tank area
SWMU	solid waste management unit
TAR	tank assessment report
TMA	toxic maintenance area
TOC	total organic carbon
TOCDF	Tooele Chemical Agent Disposal Facility
TOX	thermal oxidizer
TRRP	technical risk reduction program
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, and disposal facility
UN	United Nations
UPA	unpack area
VSL	vapor screening level
VX	nerve agent, O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate
WAP	Waste Analysis Plan
WSA	waste storage area
WTS	waste transfer station

Part A: Kentucky Hazardous Waste Permit Application

Please type or print clearly in ink (Do not use pencil) DEP-7058A (June 2006)

Kentucky Environmental and Public Protection Cabinet
Department for Environmental Protection
Division of Waste Management
14 Reilly Road - Frankfort, Kentucky 40601

Part A of the Kentucky Hazardous Waste Permit Application

Agency Interest No.	2	8	0	5			

For Official Use Only
Received Date Stamp

Facility's EPA ID No.	K	Y	8	2	1	3	8	2	0	1	0	5

FOR OFFICIAL USE ONLY
Fee Submitted: $ Receipt No.: Date:

☐ FIRST SUBMITTAL *(see INSTRUCTIONS)* ☒ REVISION PAGE 1 OF 13

☐ RENEWAL

1. Name of Facility: Blue Grass Chemical Agent Destruction Pilot Plant

2. Location of Facility: 431 Battlefield Memorial Highway

City: Richmond State: Kentucky Zip Code: 40475-5001

3. County: Madison *See INSTRUCTIONS:* Latitude: 37º 43' 02" N Longitude: 84º 12' 30" W

4. Name of Land Owner: *See INSTRUCTIONS:* U.S. Department of the Army

Legal status of Land Owner: ☒Federal (F) ☐ State (S) ☐County (C) ☐Indian (I)

☐ Municipal (M) ☐District (D) ☐Private (P)

☐ Other (O) specify:

Land Owner's Mailing Address: 431 Battlefield Memorial Highway

City: Richmond State: Kentucky Zip Code: 40475-5001

Facility Land Owner's Telephone Number: (859) 779-6246

5. Existing Facilities, provide the date operation began or construction commenced: January, 1, 1941
(Month, Day, Year)

New Facilities, provide the date operation is expected to begin: February, 1, 2018
(Month, Day, Year)

6. Facility Mailing Address: 431 Battlefield Memorial Highway

City: Richmond State: Kentucky Zip Code: 40475-5001

7. Facility Contact Person: Ramesh Melarkode

Title: Environmental Manager Phone Number: (859) 779-6268

Facility Contact Person may be reached at ☐ Mailing Address ☒Location Address ☐ Other Specify:

Street Address: 431 Battlefield Memorial Highway

City: Richmond State: Kentucky Zip Code: 40475-5001

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Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

8. Name of Facility Operator: *See INSTRUCTIONS:* Bechtel Parsons Blue Grass

Type of Owner: ☒ Federal (F) ☐ State (S) ☐ County (C) ☐ Indian (I)

☐ Municipal (M) ☐ District (D) ☐ Private (P)

☐ Other (O) specify: _____

Operator's Mailing Address: 830 Eastern By-Pass, Suite 106

City: Richmond State: Kentucky Zip Code: 40475

Facility Operator's Telephone Number: (859) 625-1665

New Operator Assumed Responsibility for Facility on this Date: N/A
(Month, Day, Year)

9. Name of Facility Owner: *See INSTRUCTIONS*: U.S. Department of the Army

Legal status of Land Owner: ☒ Federal (F) ☐State (S) ☐ County (C) ☐ Indian (I)

☐ Municipal (M) ☐ District (D) ☐ Private (P)

☐ Other (O) specify: _____

Owner's Mailing Address: 431 Battlefield Memorial Highway

City: Richmond State: Kentucky Zip Code: 40475-5001

Facility Owner's Telephone Number: (859) 779-6246

New Operator Assumed Responsibility for Facility on this Date: January, 1, 1941
(Month, Day, Year)

10. NAICS Codes: (1) 9711 (2) _____ (3) _____ (4) _____

Briefly describe the type of business conducted at this site: National Security (U.S. Army)

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	Container Handling Building (CHB)	RD	S01	9,500	G	1	UC	Store up to 53 EONCs, prior to movement into the MDB for processing
4	Waste Storage Area (WSA) – Inside CLA	RD	S01	5,500	G	1	UC	Store various hazardous wastes inside the CLA prior to transfer to the Waste Transfer Facility (WTS)
4	Waste Transfer Station (WTS) – Outside CLA	RD	S01	176,500	G	1	UC	Store various hazardous wastes outside of the CLA prior to transportation to final treatment/disposal facility. Includes tanker storage area capacity of 120,000 G and bulk solids storage area with a capacity of 32,500 G in addition to the existing 24,000 G capacity.
4	Box Transfer Area, Room 1	RD	S01	1,500	G	1	UC	Store 8 boxes of 36 rocket motors per box
4	Box Transfer Area, Room 2	RD	S01	1,500	G	1	UC	Store 8 boxes of 36 rocket motors per box
4	Agent Neutralization System (ANS) Storage Area	RD	S01	2,750	G	1	UC	Store various secondary wastes as well as contingency storage for the SDS
4	Tray/Container Transfer Room	RD	S01	550	G	1	UC	Store various secondary wastes
4	Metal Parts Treater (MPT) Cooling Conveyor Storage Area	RD	S01	8,190	G	1	UC	Store up to one 20-cubic yard roll-off bin and various trays queued on conveyor
4	Toxic Maintenance Area (TMA) Storage Area	RD	S01	5,500	G	1	UC	Store drums of various waste, contaminated equipment and leaking munitions
4	Explosive Containment Vestibule (ECV) Storage Area, ECV-1	RD	S01	275	G	1	UC	Store various process and secondary wastes
4	Explosive Containment Vestibule (ECV) Storage Area, ECV-2	RD	S01	275	G	1	UC	Store various process and secondary wastes

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	Unpack Area (UPA) No. 1, UPA-1	RD	S01	2,400	G	1	UC	Store munitions and various secondary wastes
4	Unpack Area (UPA) No. 2, UPA-2	RD	S01	2,400	G	1	UC	Store munitions and various secondary wastes
4	Motor Shipping Room (MSR) / Covered Loading Area	RD	S01	350	G	1	UC	Store up to 2 boxes of 30 rocket motors/box & 2 boxes of empty warhead shipping and firing tubes
4	Motor Packing Room (MPR) Storage Area	RD	S01	350	G	1	UC	Store up to 2 boxes of 30 rocket motors/box & 2 boxes of empty warhead shipping and firing tubes
4	Explosive Containment Room (ECR) Storage Area No. 1, ECR-1	RD	S01	55	G	1	UC	Store various secondary wastes
4	Explosive Containment Room (ECR) Storage Area No. 2, ECR-2	RD	S01	55	G	1	UC	Store various secondary wastes
4	SCWO Processing Building (SPB) Storage Area	RD	S01	8,550	G	1	UC	Store AFS Filter Cake/Media and various secondary wastes in roll-off containers and drums
4	Hydrolysate Storage Area (HSA) Agent Hydrolysate Storage Tank – MT-HSS-0104	RD	S02	103,195	G	1	UC	Store agent hydrolysate prior to treatment in SPB
4	Hydrolysate Storage Area (HSA) Agent Hydrolysate Storage Tank – MT-HSS-0105	RD	S02	336,943	G	1	UC	Store agent hydrolysate prior to treatment in SPB
4	Hydrolysate Storage Area (HSA) Agent Hydrolysate Storage Tank – MT-HSS-0205	RD	S02	336,943	G	1	UC	Store agent hydrolysate prior to treatment in SPB
4	Hydrolysate Storage Area (HSA) Energetics Hydrolysate Storage Tank – MT-HSS-0604	RD	S02	316,192	G	1	UC	Store energetics hydrolysate prior to treatment in SPB

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	Hydrolysate Storage Area (HSA) Energetics Hydrolysate Storage Tank – MT-HSS-0704	RD	S02	316,192	G	1	UC	Store energetics hydrolysate prior to treatment in SPB
4	Agent Holding Tank – MT-ACS-0105	RD	S02	1,856	G	1	UC	Stores drained agent prior treatment in the Agent Hydrolyzer(s)
4	Agent Surge Tank – MT ACS-0106	RD	T01, S02	1,856	G	1	UC	Stores drained agent or agent spilled from the SDS prior to treatment in the Agent Hydrolyzer(s)
4	Agent Hydrolysate Sampling Tank – MT-ANS-0103	RD	S02	5,865	G	1	UC	Stores agent hydrolysate until sampling is performed, then releases cleared hydrolysate to the Agent Hydrolysate Storage Tank
4	Agent Hydrolysate Sampling Tank – MT-ANS-0203	RD	S02	5,865	G	1	UC	Stores agent hydrolysate until sampling is performed, then releases cleared hydrolysate to the Agent Hydrolysate Storage Tank
4	Agent Hydrolysate Sampling Tank – MT-ANS-0303	RD	S02	5,865	G	1	UC	Stores agent hydrolysate until sampling is performed, then released cleared hydrolysate to the Agent Hydrolysate Storage Tank
4	Agent Neutralization Reactor – MV-ANS-0101	RD	T01	2,251	G	1	UC	Agent is neutralized before being sent to the Agent Hydrolysate Sampling Tank
4	Agent Neutralization Reactor – MV-ANS-0201	RD	T01	2,251	G	1	UC	Agent is neutralized before being sent to the Agent Hydrolysate Sampling Tank
4	Energetics Neutralization Reactor – MV-ENS-0101	RD	T01	4,007	G	1	UC	Energetics are neutralized before being released to the Energetics Hydrolysate Storage Tank
4	Energetics Neutralization Reactor – MV-ENS-0102	RD	T01	4,007	G	1	UC	Energetics are neutralized before being released to the Energetics Hydrolysate Storage Tank
4	Energetics Neutralization Reactor – MV-ENS-0103	RD	T01	4,007	G	1	UC	Energetics are neutralized before being released to the Energetics Hydrolysate Storage Tank

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	Spent Decontamination System (SDS) Tank – MV-SDS-0101	RD	T01	9,769	G	1	UC	Spent decontamination solution from MDB sumps is collected and treated before being sampled and sent to the appropriate HSA tank
4	Spent Decontamination System (SDS) Tank – MV-SDS-0201	RD	T01	9,769	G	1	UC	Spent decontamination solution from MDB sumps is collected and treated before being sampled and sent to the appropriate HSA tank
4	Spent Decontamination System (SDS) Tank – MV-SDS-0301	RD	T01	9,769	G	1	UC	Agent wash water from the munitions washout process is collected and treated before being sent to the Agent Hydrolyzer(s)
4	Hydrolysate Collection Tank – MT-EBH-1901	RD	S02	1,421	G	1	UC	Collects and stores hydrolysate generated in the EBHs before transferring hydrolysate to the ENRs for further treatment
4	Energetics Batch Hydrolyzer (EBH) – MV-EBH-1101	RD	X99	1,150	G	1	UC	Receives sheared rocket warhead pieces and neutralizes energetics and residual agent
4	Energetics Batch Hydrolyzer (EBH) – MV-EBH-1201	RD	X99	1,150	G	1	UC	Receives sheared rocket warhead pieces and neutralizes energetics and residual agent
4	Energetics Batch Hydrolyzer (EBH) – MV-EBH-1301	RD	X99	1,150	G	1	UC	Receives sheared rocket warhead pieces and neutralizes energetics and residual agent
4	Nose Closure Removal System (NCRS) – MY-NCR-0101	RD	X02	350	J	1	UC	Removes nose closures/lifting plugs from VX and GB projectiles
4	Rocket Cutting Machine (RCM) Line 1 – MX-RHS-0113	RD	X02	1,140	J	1	UC	Separates rocket motors from rocket warheads
4	Rocket Cutting Machine (RCM) Line 2 – MX-RHS-0114	RD	X02	1,140	J	1	UC	Separates rocket motors from rocket warheads.
4	Rocket Shear Machine (RSM) – MY-RHS-0101	RD	X02	1,140	J	1	UC	Punches and drains the warhead, flushes the agent cavity and shears rocket warheads into segments

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	Rocket Shear Machine (RSM) – MY-RHS-0102	RD	X02	1,140	J	1	UC	Punches and drains the warhead, flushes the agent cavity and shears rocket warheads into segments
4	Metal Parts Treater (MPT) – ME-MPT-0101	RD	X03	11,770	J	1	UC	Thermal decontamination of metal parts and various secondary wastes
4	Metal Parts Treater (MPT) – ME-MPT-0201	RD	X03	11,770	J	1	UC	Thermal decontamination of metal parts and various secondary wastes
4	Munitions Washout System (MWS) – MJ-HYP-0104A, MJ-HYP-0103A	RD	X02	910	J	2	UC	Access the agent cavity and washout GB projectiles
4	Munitions Washout System (MWS) – MJ-HYP-0104B, MJ-HYP-0103B	RD	X02	910	J	2	UC	Access the agent cavity and washout GB projectiles
4	MWS Reject Table – MJ-MWS-0103	RD	S01	5	G	1	UC	Provides container storage for projectile rejects associated with the MWS
4	SCWO Tank Area (STA) – RO Reject Tank – MT-RO-0106	RD	S02	80,302	G	1	UC	Store Reverse Osmosis (RO) Reject until waste is shipped off-site
4	SCWO Tank Area (STA) – RO Reject Tank – MT-RO-0206	RD	S02	80,302	G	1	UC	Store Reverse Osmosis (RO) Reject until waste is shipped off-site
4	SCWO Tank Area (STA) – SCWO Effluent Tank – MT-SCWO-0101	RD	S02	47,089	G	1	UC	Store SCWO Effluent until it can be processed through the RO System
4	SCWO Tank Area (STA) – SCWO Effluent Tank – MT-SCWO-0201	RD	S02	47,089	G	1	UC	Store SCWO Effluent until it can be processed through the RO System
4	SCWO Tank Area (STA) – SCWO Effluent Tank – MT-SCWO-0301	RD	S02	47,089	G	1	UC	Store SCWO Effluent until it can be processed through the RO System

DEP-7058A (June 2006)

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	SCWO Tank Area (STA) – RO Permeate Tank – MT-SWS-0101	RD	S02	54,634	G	1	UC	Store RO Permeate until it can be recycled back into the process to be used for make-up water
4	SCWO Tank Area (STA) – RO Permeate Tank – MT-SWS-0201	RD	S02	54,634	G	1	UC	Store RO Permeate until it can be recycled back into the process to be used for make-up water
4	SCWO Processing Building (SPB) – Aluminum Precipitation Reactor – MV-APS-0101	RD	T01	1,523	G	1	UC	Receives hydrolysate and through acidic addition, precipitates out the aluminum contained in the hydrolysate
4	SCWO Processing Building (SPB) – Aluminum Precipitation Reactor – MV-APS-0102	RD	T01	1,523	G	1	UC	Receives hydrolysate and through acidic addition, precipitates out the aluminum contained in the hydrolysate
4	SCWO Processing Building (SPB) – Aluminum Filtration Unit – ML-AFS-1040	RD	X99	2,500	J	1	UC	Receives precipitated hydrolysate and filters out the aluminum before sending the filtrate to the SCWO for processing
4	SCWO Processing Building (SPB) – Aluminum Filtration Unit – ML-AFS-2040	RD	X99	2,500	J	1	UC	Receives precipitated hydrolysate and filters out the aluminum before sending the filtrate to the SCWO for processing
4	SCWO Processing Building (SPB) -- Reverse Osmosis (RO) Unit – ML-RO-0101	RD	X99	129,600	U	1	UC	Receives SCWO Effluent and removes dissolved solids to create RO Permeate (~70%) which is recycled as make-up water and RO Reject (~30%) which will be shipped off-site for disposal
4	SCWO Processing Building (SPB) -- Reverse Osmosis (RO) Unit – ML-RO-0201	RD	X99	129,600	U	1	UC	Receives SCWO Effluent and removes dissolved solids to create RO Permeate (~70%) which is recycled as make-up water and RO Reject (~30%) which will be shipped off-site for disposal
4	SCWO Processing Building (SPB) -- Reverse Osmosis (RO) Unit – ML-RO-0301	RD	X99	129,600	U	1	UC	Receives SCWO Effluent and removes dissolved solids to create RO Permeate (~70%) which is recycled as make-up water and RO Reject (~30%) which will be shipped off-site for disposal

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	SCWO Processing Building (SPB) -- SCWO Reactor – MV-SCWO-1030	RD	X99	1,200	J	1	UC	Receives filtered hydrolysates (energetics & agent) and treats the waste via Super Critical Water Oxidation
4	SCWO Processing Building (SPB) -- SCWO Reactor – MV-SCWO-2030	RD	X99	1,200	J	1	UC	Receives filtered hydrolysates (energetics & agent) and treats the waste via Super Critical Water Oxidation
4	SCWO Processing Building (SPB) -- SCWO Reactor – MV-SCWO-3030	RD	X99	1,200	J	1	UC	Receives filtered hydrolysates (energetics & agent) and treats the waste via Super Critical Water Oxidation
4	SCWO Processing Building (SPB) – Hydrolysate Blend Tank – MT-SCWO-0030	RD	S02	6,662	G	1	UC	Blending of agent hydrolysate, energetics hydrolysate and feed additives to feed to the SCWO reactors
4	SCWO Processing Building (SPB) – Hydrolysate Blend Tank – MT-SCWO-0031	RD	S02	6,662	G	1	UC	Blending of agent hydrolysate, energetics hydrolysate and feed additives to feed to the SCWO reactors
4	SCWO Processing Building (SPB) – Batch Hydrolysate Holding Tank – MT-SCWO-0032	RD	S02	6,662	G	1	UC	Provides temporary storage of hydrolysate batches whose composition is unacceptable for processing in the SCWO reactors
4	SCWO Processing Building (SPB) – Off-Spec Effluent Tank – MT-SCWO-0041	RD	T01	4,213	G	1	UC	Holds liquid effluent which does not meet the specification required for release to the RO units
4	SCWO Processing Building (SPB) – Emergency Relief Tank – MT-SCWO-0040	RD	T01	2,260	G	1	UC	If there is an emergency shutdown, the SCWO reactor contents will be discharged to this tank
4	SCWO Processing Building (SPB) – Aluminum Filtration Feed Tank – MT-AFS-1010	RD	S02	1,644	G	1	UC	Receives energetics hydrolysate from the APRs and feeds to the AFS

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11. PROCESS DESCRIPTION. ***See Instructions***

Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

Commercial Indicator	Unique Unit or Group Name	Legal Status Code	Process Codes	Process Design Capacity Of All Units Listed Under This Name	Unit of Measure	Number Of Individual Units In This Process	Operating Status Code	Description Of Process
4	SCWO Processing Building (SPB) – Aluminum Filtration Feed Tank – MT-AFS-2010	RD	S02	1,644	G	1	UC	Receives energetics hydrolysate from the APRs and feed to the AFS
4	SCWO Processing Building (SPB) – Aluminum Filtrate Tank – MT-AFS-1012	RD	S02	4,233	G	1	UC	Receives energetics hydrolysate from the AFS and feeds to the Hydrolysate Blend Tank(s)
4	Movement of Munitions from Chemical Agent Hazardous Waste Storage Units (HWSUs) to Container Handling Building (CHB) via EONC	RD	T04	18	Per Day	53	CN	1 EONC can hold 6 GB Projectile pallets, with 6 projectiles per pallet, totaling 36 projectiles per EONC, maximum. Each projectile contains 14.5 lb of agent per round, which totals 522 lbs/agent max, per EONC. 1 EONC can hold 2 rocket pallets, with 15 rockets per pallet, for a total of 30 rockets per EONC, maximumGB Rockets total 321 lb/agent max, per EONC. One EONC will be transferred at a time, not to exceed 18 deliveries (EONCs) to the CHB per day.

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Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

12. WASTE STREAM DESCRIPTION. ***See Instructions.***

WASTE STREAM NUMBER	ESTIMATED ANNUAL WASTE AMOUNT	UNIT OF MEASURE	EPA WASTE NUMBERS	PROCESS CODES ASSOCIATED WITH THIS WASTE
1	883	**TONS**	D004, D005, D006, D007, D008, D009, D010, D011, and N001	X03; MPT Residues & Ash
2	2,950	**TONS**	D004, D005, D006, D007, D008, D009, D010, D011, and/or N001	S01, S02, and X99; Aluminum Precipitate
3	84,500	**TONS**	D004, D005, D006, D007, D008, D009, D010, D011, and/or N001	S02 and X99; Reverse Osmosis (RO) Reject (RO Permeate (~70%) is recycled back into the process)
4	8	**TONS**	D024, D037, and/or N001	S01 and X03; Agent Contaminated Munitions Dunnage
5	774	**TONS**	D024 and/or D037 (m-Cresol & PCP)	S01 and X03; Munitions dunnage
6	1078	**TONS**	D001, D003, D008, and/or N001	S01; Rocket Motors
7	15.3	**TONS**	D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D022, D024, D027, D028, D029, D037, F001-F005, and/or N001, N002, N003	S01; Lab Wastes
8	5.2	**TONS**	D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, F001-F005, and/or N001, N002, N003	S01; Maintenance and Miscellaneous Wastes; Oils, Paints, Spent Solvents, Hydraulic Fluids, etc.
9	204	**TONS**	N001	S01; Agent Derived, Listed Secondary Wastes

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Facility's EPA ID Number											
K	Y	8	2	1	3	8	2	0	1	0	5

13. Existing Environmental Permits:

Inter-State Regional Program [A]: _____
Single Well (FURS) [B]: _____
County Program [C]: _____
DOE Program [D]: _____
Other EPA Program [E]: _____ specify: _____
EPA 404 (dredge or fill program) [F]: _____
USGS Program [G]: _____
Area Wells (FURS) [H]: _____
NOTIS [J]: _____
Superfund (CERCLA) [K]: _____
FATES [L]: _____
Municipal (city, town, etc.) Program [M]: _____
NPDES/KPDES (discharges to surface water) [N]: ___KY0020737, KYR10_____
Air Quality Permits [P]: __Title V Permit – BGCAPP V-10-023_____
CDS [Q]: _____
RCRA (hazardous wastes) [R]: __KY8-213-820-105_____
State Program [S]: _____
DOT Program [T]: _____
UIC (underground injection of fluids) [U]: _____
Intra-State Regional Program [W]: _____
Other Federal Program [X]: _____ specify: _____
CICIS (OTS Chemicals in Commerce Information System) [Y]: _____
Other Non Federal Programs [Z]: __Water Withdraw Permit, No. 1013_____

14. FACILITY STATUS:

☒Waste is NOT received from off-site □ Accepts waste from any off-site source(s) [A]
□ Accepts waste from only a restricted group of off-site sources(s) [R]:
Specify: _____

15. PHOTOGRAPHS, DRAWING AND MAP - *See INSTRUCTIONS*

All existing facilities must include photographs (aerial or ground level) that clearly delineate all existing structures; existing storage, treatment or disposal areas; and sites of future treatment, storage or disposal areas. All existing facilities must include a drawing showing the general layout of the facility and a topographic map. The photographs, drawing and map must be attached to this form.

16. If the facility owner is also the facility operator, please skip this section and complete item 17 below.
Owner Certification - I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME (PRINT OR TYPE) SIGNATURE DATE SIGNED

17. Operator Certification - I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME (PRINT OR TYPE) SIGNATURE DATE SIGNED

18. Land Owner Certification - I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME (PRINT OR TYPE) SIGNATURE DATE SIGNED

NOTES

The waste streams listed on page 11 are further described below. These waste streams are those that will be disposed of offsite. One waste stream (rocket motors) is still under evaluation with regard to the final disposition of this waste. There remains the possibility these wastes will be disposed of onsite, but for accountability, this waste stream is listed in the waste stream list on page 11. When the final decision is made on the resolution of the disposal action, Part A will be revised to reflect any changes.

1. Waste stream number 1 is the residues, including munition bodies, that are processed in the metal parts treater (MPT). This also includes ash from the MPT as well as solids collected from the cyclone in the <90-day drums.
2. Waste stream number 2 is the solid residues coming out of the aluminum precipitation system/aluminum filtration system (APS/AFS), which include the waste filter media rolls from the AFS filter unit(s).
3. Waste stream number 3 is the reverse osmosis system (RO) reject from the recycling of the supercritical water oxidation (SCWO) effluent through the RO system. This is the ~30 percent of liquids from the SCWO treatment process that can no longer be used as process water.
4. Waste stream number 4 is the agent-contaminated munitions dunnage, including the pallets, metal banding, and associated wastes.
5. Waste stream number 5 is the munitions dunnage that is not agent contaminated; and includes the pallets, metal banding, and associated wastes.
6. Waste stream number 6 includes the rocket motors and shipping and firing tubes. The final waste disposal determination regarding this waste stream has not been made yet (see introductory paragraph above). Any changes will be reflected in future revisions to this document.
7. Waste stream number 7 includes the various laboratory wastes generated by monitoring/sampling activities associated with the operations process. Agent standards for all 3 agents will be generated throughout the GB campaign.
8. Waste stream number 8 includes the various maintenance and miscellaneous wastes, including waste oils, fluids, paints, spent solvents, etc.
9. Waste stream number 9 includes agent-derived listed secondary wastes generated in the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP).

Part B: Facility Description [401 KAR 38:090, Section 2 & 40 CFR 270.14]

The BGCAPP Main Plant is being constructed by the Department of Defense (DoD) and the Department of the Army for the purpose of destroying chemical-agent-filled munitions stored at the Blue Grass Army Depot (BGAD). The stockpile of chemical agent items includes munitions filled with either GB or VX nerve agents in projectiles or rockets, and Department of Transportation (DOT) bottles. These projectiles, rockets, and DOT bottles currently are stored on-site at the BGAD in the Blue Grass Chemical Activity (BGCA) storage area.

This permit revision is being prepared in response to the most recent Notice of Deficiency for the Revision 5 research, development, and demonstration (RD&D) permit application, and consolidates all of the previously submitted compliance schedule items into one document, as well as provides a final document that can be revised and referenced more easily. This document is also formatted in a typical Part B format, similar to the recently submitted EDT Permit Modification, which will allow for an easier transition to a standard Part B permit, during VX operations. The BGCAPP is a combination of Subpart X and Subpart J permitted neutralization systems, Subpart X permitted supercritical water oxidation (SCWO) systems, and Subpart X thermal treatment systems, as well as Subpart J regulated tank systems and Subpart I regulated container storage areas.

The BGCAPP facility will be located along the eastern boundary of the BGAD chemical limited area (CLA), which will allow for efficient transfer of wastes stored in HWSUs to the BGCAPP. The BGCAPP facility will store and treat these state-listed hazardous wastes under both Federal and Commonwealth of Kentucky hazardous waste regulations.

The format of this revised permit application mirrors the structure of the Kentucky Department for Environmental Protection (KDEP) Part B Permit Application Review Checklist. This format includes applicable Kentucky Administrative Regulation (KAR) sections, with the corresponding Code of Federal Regulations (CFR) citations also identified to allow a more efficient regulatory review of this permit revision.

B-1: General Description [401 KAR 38:090, Section 2 & 40 CFR 270.14(b)]

The BGAD is located in the Blue Grass region of east central Kentucky, approximately in the center of Madison County. The BGAD encompasses 14,596 acres and is approximately 30 miles southeast of Lexington, 85 miles southeast of Louisville, and 90 miles south of Cincinnati, Ohio. It is adjacent to the southeastern portion of Richmond, Kentucky, approximately 5 miles southeast of the center of Richmond, and 10 miles northeast of Berea, Kentucky (Figure B-1).

The installation includes a variety of buildings, structures, and undeveloped areas. The BGAD is located in the Outer Blue Grass Subdivision of the Blue Grass physiographic region. The topography of the Outer Blue Grass Subdivision includes moderately undulating to gently rolling hills that steepen near major streams. The BGAD has open fields and rolling hills with gentle slopes dotted with woodlots of varying sizes. The BGAD is surrounded by agricultural, industrial, low-density residential, commercial, and public land use areas. The public uses of land in the BGAD/Richmond area include educational and recreational activities and areas.

The BGAD, a Federal facility, is a Tier I Joint Munitions & Lethality Life Cycle Management Command (JM&LLCMC) Depot with a primary function of providing munitions, chemical defense equipment, and special operations support to the DOD. As a Tier I facility, the BGAD is staffed to store conventional (i.e., non-nuclear and non-chemical) munitions for training and major force deployment. The BGAD is also the Department of the Army's major storage site for chemical defense equipment. The conventional munitions operations at the BGAD include shipping and receiving, storage, maintenance, inspection, and demilitarization.

In addition to conventional munitions, the Department of the Army began to store chemical weapons at the Blue Grass Installation in 1944. The BGAD began to receive shipments of modern chemical weapons in 1952, and receipt of chemical weapons continued until the mid-1960s. Since the mid-1960s, BGAD's mission has included the safe storage of existing chemical weapons.

In 1996, the Department of the Army established the BGCA as a special unit focused on the management and storage of chemical weapons on the BGAD. The BGCA is a tenant organization of the BGAD. The primary mission of BGCA is the safe storage and monitoring of the chemical weapons stockpile located within the CLA, a highly secured 250-acre site in the northern part of the BGAD.

The BGCAPP Main Plant is located wholly within the BGAD's boundary. The BGCAPP Main Plant is approximately 19 acres in size, and has its entrance on Kentucky (KY) Highway 52. The BGCAPP Main Plant is being constructed and will be operated by the Bechtel Parsons Blue Grass (BPBG) Team to destroy the chemical weapons stockpile stored at BGAD by BGCA, including chemical weapons, process wastes, and secondary wastes. Construction and initial operation of the BGCAPP Main Plant will be under a research program permitted under the RD&D Kentucky Permit number KY8-213-820-105 to ensure the integrated processes function efficiently and provide adequate levels of waste treatment and management.

This RD&D permit application will include only the treatment of GB munitions and wastes. VX munitions and wastes will be treated under a Part B permit application that is expected to be submitted just prior to the start of GB operations, to allow ample time for KDEP review. Therefore, only GB-related information will be addressed and included in this permit revision.

The Commonwealth of Kentucky has listed the chemical agent GB as a hazardous waste [401 KAR 31:040, Lists of hazardous waste, Section 7 – Additional Requirement Concerning Nerve and Blister Agents (Waste Number N001)]. Processing of this agent and associated wastes will potentially produce other hazardous wastes, which are outlined in Part A of this application.

B-2: Topographic Map [401 KAR 38:090, Section 2(17) & 40 CFR 270.14(b)(19)]

Figure B-1 is a topographic map of BGAD and surrounding area showing the general location of the BGAD. This map (supplemented by the other figures identified below) contains the features described below.

1. Map Scale, Orientation, and Date Prepared

Due to the size of the facility and the need to show surrounding areas in these figures, the BGAD is requesting KDEP approve the alternative map scale in this Permit Modification Request. Figure B-2 contains a north arrow and the date the figure was prepared.

2. Contour Lines

Each contour line on figures in this Permit Modification represents a change in elevation of 20 feet. These contour lines are sufficient to show surface water flow near the BGCAPP facility.

3. 100-Year Floodplain

The BGCAPP Facility is located within the Flood Insurance Program Zone X. This zone represents areas outside those affected by 500-year flood events, and therefore is not part of the 100-year floodplain. A portion of the Flood Insurance Rate Map for Madison County (i.e., showing the immediate vicinity of the BGCAPP facility) is included as Figure B-3.

4. Surface Waters

Figure B-2 shows major surface water features in blue, and the dry weather and intermittent streams on the BGAD and in the areas near the BGCAPP facility.

5. Surrounding Land Use

The BGAD surrounds the BGCAPP facility, and the Department of the Army currently uses the BGAD primarily for industrial and related activities that are associated with the storage and maintenance of conventional and chemical munitions. The installation includes a variety of buildings, structures, and undeveloped areas, with over 1,100 structures located on the BGAD.

Land use around the BGAD will remain relatively constant in the future, with agriculture remaining an important land use. Madison County contains more than 1,400 farms covering more than 218,000 acres [U.S. Department of Agriculture (USDA) and Kentucky 2007 Agriculture Census database]. The main trend emerging in the area near the BGAD is the conversion of small blocks of farmland to residential and light industrial use. Depending on economic conditions and the success of industrial parks located near the BGAD, this trend, coupled with increasing residential development and use, will probably continue in coming years. Figure B-2 shows the land use around the BGCAPP facility and the BGAD based upon land use information from the Madison County Comprehensive Plan, 2006.

6. Wind Rose

Figure B-4 displays a recent, 5-year wind rose for the BGAD. The highest wind velocities and most prevalent wind directions are from the southwest quadrant to the northeast quadrant. The nearest BGAD northeast quadrant boundary is approximately one mile from the BGCAPP facility.

7. Legal Boundaries

Figure B-1 and Figure B-2 include the BGAD legal boundaries; Figure B-2 shows the boundaries for the BGCAPP Main Plant, and the EDT facility within BGAD.

8. Location of Access Control

Figure B-2 shows the BGAD entrance to the BGCAPP facility. This access point is through a BGAD controlled gate (through the BGAD Restricted Access perimeter). All personnel proceeding beyond this point (i.e., into the BGCAPP facility) are required to show DoD issued photo identification passes. The Department of the Army authorizes use of force to prevent unauthorized entry into the BGCAPP facility during chemical agent operations. Areas used for RCRA chemical agent storage or processing within the BGCAPP facility are fenced and closely monitored.

9. Onsite and Offsite Injection and Withdrawal Wells

Injection or withdrawal wells are not located near the BGCAPP facility.

10. Buildings/Structures

Figure B-5 shows the buildings and structures associated with the BGCAPP facility. There are no established public recreational areas near the BGCAPP facility.

11. Sewers and Outfalls

There are no BGCAPP facility sewers designed to carry process wastes. The BGAD wastewater treatment plant provides treatment of the BGCAPP facility sanitary wastewaters prior to discharge to the surface waters of the Commonwealth.

12. Loading and Unloading Areas

Figure B-5 shows the overall BGCAPP facility layout, where the chemical agent-filled items will be stored and subsequently treated. This layout shows all buildings and areas where wastes will be treated and stored, and are indicated by the cross-hatched shading. Munitions/wastes will be transported from the chemical storage HWSUs to the Container Handling Building (CHB) in enhanced on-site containers (EONCs), where they will be off-loaded from the transport trailer into the CHB, while remaining inside of the EONCs. The EONCs provide secondary containment for the munitions, and the CHB will house all of the EONCs.

RCRA regulations define storage as:

> *"the holding of hazardous waste for a temporary period at the end of which the hazardous waste is treated, disposed of, or stored elsewhere" (40 CFR 260.10).*

Hereinafter, the use of the word "storage" refers to the RCRA definition of storage.

The permitting of this facility allows storage in the CHB for more than 90 days (e.g., during an unforeseen long-term maintenance outage), but the basis of design for the CHB includes the interim storage of EONCs until they can be monitored to a <1 VSL level and cleared to be taken to the Unpack Area (UPA), where the munitions will be unloaded and handled accordingly.

There will be additional waste and scrap metal loading areas, including the northern end of the Munitions Demilitarization Building (MDB), at the termination of the MPT cooling conveyor, where scrap will be loaded into roll-off bins for eventual off-site recycling.

Waste filter-cake will be loaded into roll-off containers at the west side of the Supercritical Water Oxidation (SCWO) Processing Building (SPB) and reverse osmosis (RO) reject will be loaded at the loading station at the southwest end of the SPB, near the SCWO tank area (STA). These loading and unloading areas will be inspected as required, which will be outlined further in the Facility Inspection Plan, which is currently a Compliance Schedule Item requiring submission.

13. Fire Control Facilities

Fire control facilities provided for the BGCAPP facility include a sprinkler system or fire suppression devices inside all facilities that manage or store hazardous wastes as well as fire hydrants accessible to responding fire personnel for control of fires within the BGCAPP facility.

14. Flood Control or Drainage Barriers

The BGCAPP facility is located in Flood Zone X, which is an area of remote flood hazard that is determined to be outside the 500-year flood plain. Given its location within the flood zone, flood control barriers have not been provided for the BGCAPP facility. The drainage from the BGCAPP facility is directed to the nearby retention basin used to capture storm water runoff.

15. Runoff Control Systems

The BGCAPP Main Plant provides runoff control via a storm water collection and discharge system, and also uses gutters on all buildings. This system consists of the facility storm sewers and storm water discharges. The retention basin collects the BGCAPP facility runoff.

16. Locations of Hazardous Waste Units

The location of wastes stored and managed on-site are identified (by shading) on Figure B-5. Hazardous waste cleanup areas and hazardous waste disposal areas do not exist within the BGCAPP facility boundaries.

17. Access and Internal Roads

The initial access road to the BGCAPP facility is off KY Highway 52 as shown on Figure B-1, Figure B-2, and Figure B-5. Internal BGAD roads used for transport of materials and waste are discussed later in this Part.

B-3: Location Information [401 KAR 34:020, Section 9(1) and (2); 38:090, Section 2 (20) and Section 3 & 40 CFR 270.14(b)(11), and 270.14(b)(11)(i through v)]

B-3a: Geological Information

This section addresses the geology of the area upon which the BGCAPP facility is located, including the seismic characteristics, subsurface geology, and karst features.

B-3a(1): Seismic Consideration

The BGCAPP facility is located in Madison County, Kentucky, and is not listed in either 401 KAR 34:340 or Appendix VI of 40 CFR Part 264. A minor fault (Tate Creek Fault) lies approximately 1,500 feet to the south of the BGCAPP facility, and Figure B-6 identifies its location. However, Blume (Jacobs Engineering Group, Inc., and URS/John A. Blume and Associates, Engineer) conducted a geological study and seismological investigation of the facility location in 1987 and concluded the following:

> *"BGAD is located in a tectonic domain generally referred to as the Kentucky River Fault System. No faults in the region are known to have displaced geologically younger materials (Pleistocene and Holocene Ages), even though a number of older faults have displaced Paleozoic Era (400 million years ago) formations. Additionally, there are no indications of faults that are capable or potentially capable within the region."*

Based upon this information, further action is not required to demonstrate compliance with the RCRA seismic standard.

B-3a(2): Subsurface Geology and Karst

A Department of the Interior United States Geological Survey, Geologic Quadrangle Map, Moberly Quadrangle, is included as Figure B-6. The subsurface consists of limestone, dolomite, shale, and recent alluvium. The Ashlock Formation (Ordovician) divides into upper and lower although both are predominantly limestone. The Ashlock occurs in the central and western part of the BGAD. The Drakes Formation, Upper Ordovician, is dolomite and prevails throughout the installation. The Brassfield Dolomite (Lower Silurian) occurs in small areas along the southeast boundary. Silurian and Devonian rocks, composed of shale and dolomite, occur as small remnants along the southeast boundary. Recent deposits consisting of clay and silts floor the drainage ways. Figure B-7 identifies the soil types.

The Drakes Formation, made up of dolomite, limestone, and shale, underlies most of the BGAD and the area around the BGCAPP facility. The lower part of the Ashlock Formation is beneath a small portion of the BGAD (near the western boundary).

Although limestone and dolomite primarily underlie the BGAD, karst topographic features are not well developed or widespread. High content of clay in the limestone has limited solution weathering. In addition, the BGCAPP facility design incorporates features that prevent release of contaminated liquids into the underlying geology.

B-3b: Floodplain Requirements

A portion of the Flood Insurance Program Map for Madison County is included as Figure B-3. This map clearly shows the BGCAPP facility is not part of the 100-year floodplain. The location of the BGCAPP facility is actually within an area outside those affected by 500-year flood events.

B-4: Traffic Information [401 KAR 38:090, Section 2(10) & 40 CFR 270.14(b)(10)]

The transport of hazardous waste from BGCA storage is performed using motorized vehicles only. Hazardous waste will be transported both into and away from the BGCAPP facility either over existing BGAD paved roads or Kentucky highways. During hazardous waste processing, material handling equipment (MHE) will be used to move munitions and other hazardous wastes within the BGCAPP facility.

Estimated Traffic Volume (number, type of vehicles)

EONCs will be used to transport agent-filled rockets, projectiles, over-packs, and DOT bottles from the BGCA HWSUs to the CHB, located at the northwest corner of the MDB. These EONCs will be mounted on specialized trailers and pulled by truck to the service magazine.

In addition to transport of chemical weapons/agent from storage, transport of other hazardous wastes will be within the BGCAPP facility or north on the access road to KY Highway 52 (see Figure B-8) for offsite transport. During BGCAPP facility operations, it is estimated that approximately an additional 250 privately owned vehicles would enter and leave from the Main Plant site each workday during the day shift. This includes ~125 personnel working within the facility and an additional ~125 comprised of government, management, administrative and off-site transient personnel on any given day. There will be approximately 125 POVs entering and leaving the site during the second shift, but the day shift value will be used for maximum expected capacity. Incoming shipment of materials, products and bulk chemicals will result in an additional ~25 commercial vehicles incoming and outgoing as well. There will be several shipments of scrap metal and waste materials from the BGCAPP facility. The trucks that will be used in scrap metal/waste transport include flatbeds, box trucks, and various types of tractor/trailer/tanker or roll-off combinations. Information pertaining to the number of shipments and associated traffic expected during the GB campaign can be found in Table B-1.

Traffic Pattern

The major highways serving the BGCAPP facility are Interstate 75 (running north/south), KY Highway 52 (running east/west), and US 25 (running north/south). The main access is from KY Highway 52 by way of a 24-foot wide paved road with 10-foot shoulders. BGCAPP facility personnel vehicles and other authorized vehicles use this road to access the BGCAPP site. The outward movement of all hazardous wastes will be to KY Highway 52. This access supports operations at the BGCAPP Main Plant and for the proposed EDT facility personnel. The road enters at the mid-northern boundary of the BGAD.

Figure B-8 shows the traffic pattern for BGCAPP facility hazardous wastes, materials, and personnel. BGCAPP facility hazardous wastes will be transported from the facility to KY Highway 52 for offsite transport to appropriately permitted, commercial treatment, storage, and disposal facilities (TSDFs).

Traffic Control Signals

Several methods and signals control traffic on the BGAD and at/around the BGCAPP facility:

a. All major road intersections have traffic control gates and stop signs.
b. All secondary road intersections have stop signs or yield signs.
c. Speed limits are well posted.
d. A stop light, installed at the intersection of KY Highway 52 and the access road at the entrance to the site, controls the safe flow of vehicle traffic into and from the site entrance.
e. The Restricted Area through which personnel and vehicles enter the BGCAPP Main Plant is an area with guards controlling access.
f. The CLA is an area used to control access to chemical agent and chemical-filled munitions by personnel and vehicles proceeding into and around the BGCAPP facility during chemical agent handling and destruction.

Access Road(s) Surfacing and Load-bearing Capacity

The main access road to the BGCAPP facility is, in general, flat terrain with Class E roads. The construction of the access road meets the technical requirements set by the Department of the Army Corps of Engineers. The roads have 10-foot-wide lanes with a minimum cross-slope of 2 percent and 6-foot-wide gravel shoulders with a minimum cross slope of 6 percent.

The maximum load assumed for design is the American Association of State Highway Transportation Officials HS-20 loading 18,000-pound maximum axle load, 32,000-pound maximum axle group, and 72,000-pound maximum vehicle weight.

Stop and yield signs within and around the BGCAPP facility control traffic and entry into the munitions processing area. Personal vehicles are not allowed within the Restricted Area or CLA. Government vehicles that transport BGCAPP facility personnel are parked in designated parking lots, and do not interfere with traffic flow within the fenced facility.

B-5: Requirements for Applicants for Construction Permits [401 KAR 38:090, Section 2(18) and KRS 224.46 520(1)]

The BGCAPP Facility is being constructed under the authority of a currently issued RCRA RD&D permit, dated September 30, 2005. This permit (KY8-213-820-105) has been in effect since issuance and is valid until 1 year after agent-related waste is first introduced into the plant.

B-5a: Alternative Analysis Plan

Not applicable.

B-5b: Specific Requirements for Incinerators and Disposal Facilities

The BGCAPP facility is not an incinerator or land disposal facility, so the respective Federal and Commonwealth of Kentucky requirements do not apply.

B-6: Applicants Other than Interim Status – Past Compliance Record and Other Documents [401 KAR 38:090, Section 2(19)]

The BGCAPP facility is a new treatment and storage unit at BGAD and has not previously received any civil fines or significant deficiencies on environmental compliance inspections. Since the BPBG Team is a joint venture (JV) contracted to operate the BGCAPP Main Plant, these disclosure forms, key personnel statement forms, and disclosure statements are provided in the front of this Permit Modification Request.

B-7: Financial Responsibility to Construct and Operate [401 KAR 38:090, Section 2(24), KRS 224.40-325 & 40 CFR 270.14(b)(18), 264.145, 264.147, and 264.150]

The BPBG Team is the organization contracted to design, construct, and operate the BGCAPP facility for the Government owner. The design, construction, and operation of the BGCAPP facility is under a Federal contract, located on land owned by the Federal government, and exempted as a Federal facility from providing financial assurance in accordance with 40 CFR 264.140(c) and as outlined in Kentucky Revised Statute (KRS) 224.40-110.

B-8: Public Participation [401 KAR 38:050, Sections 14 and 38:090, Section 2(25) & 40 CFR 124.31]

Not applicable for RD&D Permits, unless specifically requested by the permitting authority.

B-9: Fees [401 KAR 39:090, Sections 2 and 3, 39:120, & KRS 224.46-016 and 018]

An existing grant from Assembled Chemical Weapons Alternatives (ACWA) to KDEP includes monies to pay the fee for filing and review of this RD&D Permit Revision. No additional monies are required.

Table B-1 – Estimated Traffic and Waste Shipments

Waste/Material Type	Loads per Day	Days per Week	Loads per Week	Estimated Loads per Month
RO Reject	7.5	7.0	53	212
Aluminum Filter cake	0.36	7.0	3	12
Al Filter media	0.09	7.0	1	4
SFTs	0.83	7.0	6	24
Drummed Waste	0.14	7.0	1	4
Municipal Solid Waste (MSW)	0.25	7.0	2	8
Scrap Recycling	1.63	7.0	12	48
Estimated Waste & Scrap Related Shipments During GB Campaign				312 per Month
Personally Owned Vehicles (POVs)				250 POVs max per Shift
Incoming Bulk Chemicals				25 max per Day

Notes:

1) Weights per munition are based on BGCAPP design criteria.
2) Processing rates are based on the BGCAPP Throughput and Availability Analysis.
3) Remaining assumptions are based on the most recent project Life Cycle Cost Estimate (LCCE) and on Engineering Change Proposal (ECP) – 25.
4) Average number of shipments is estimated, based on current design and planning data. These values are subject to change and should not be set as permit operating limits/conditions.

Figure B-1: BGAD Location

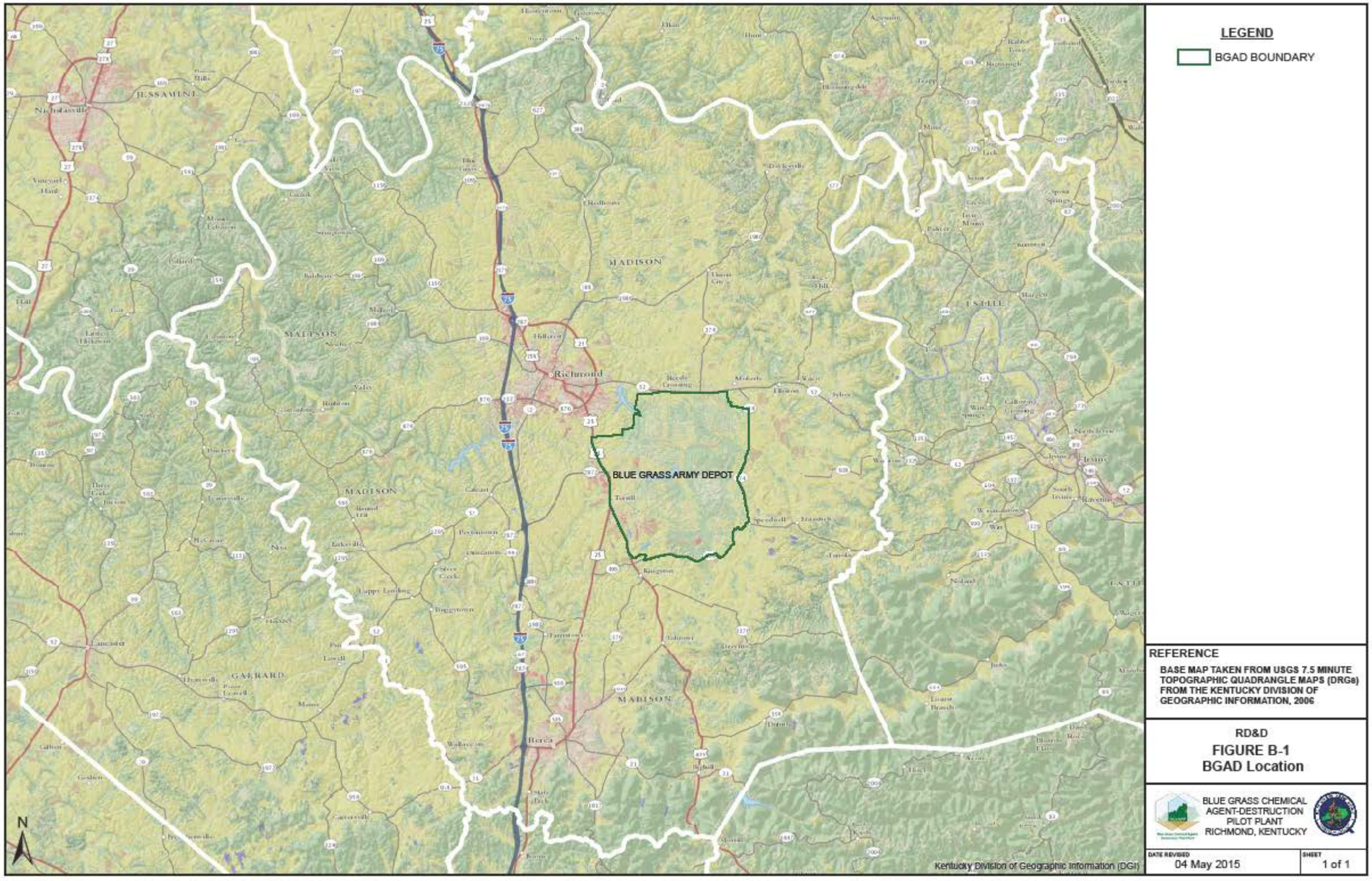


Figure B-2: BGCAPP Facility Location and Surrounding Land Use

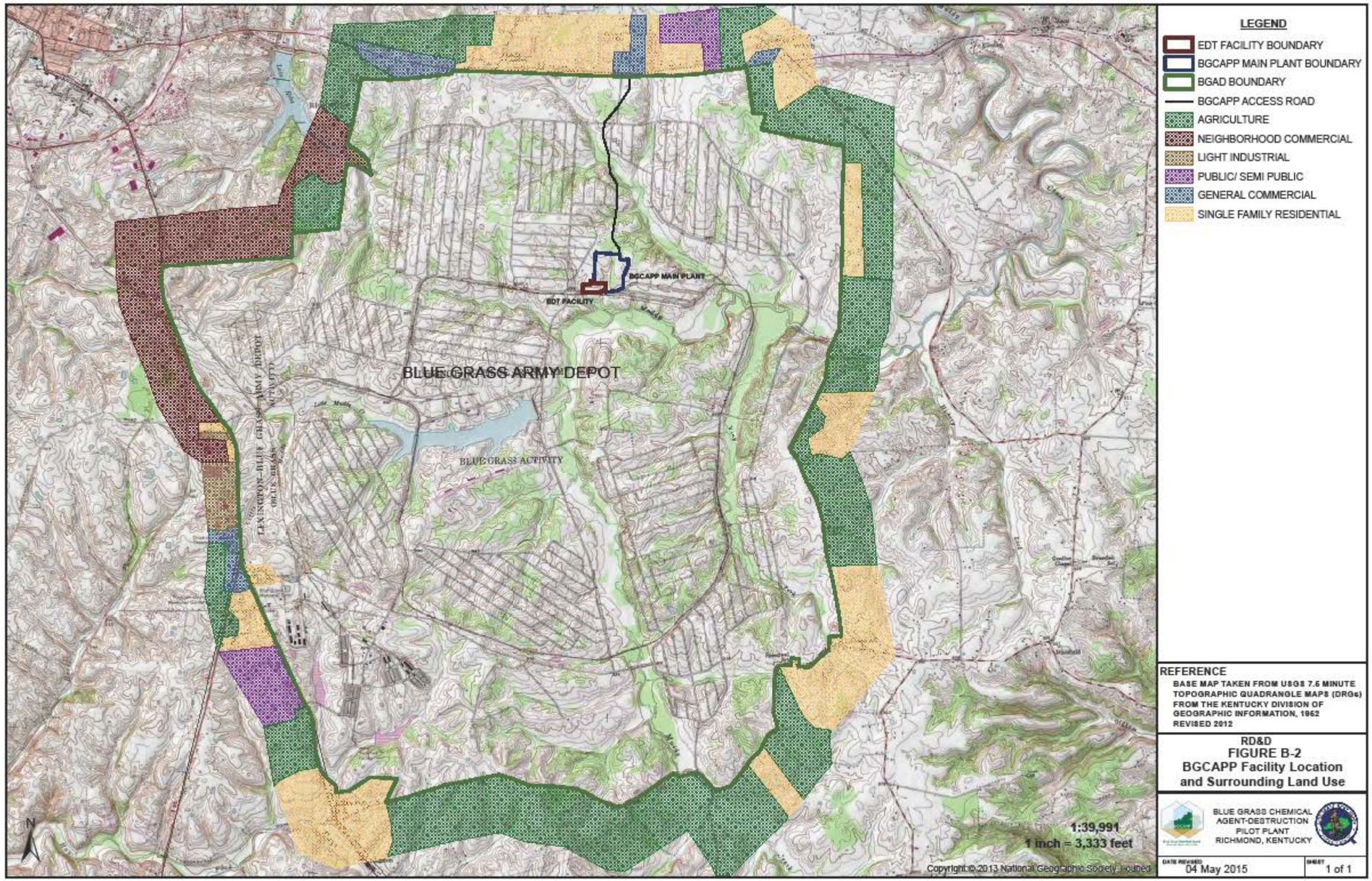


Figure B-3: Facility and Flood Zone

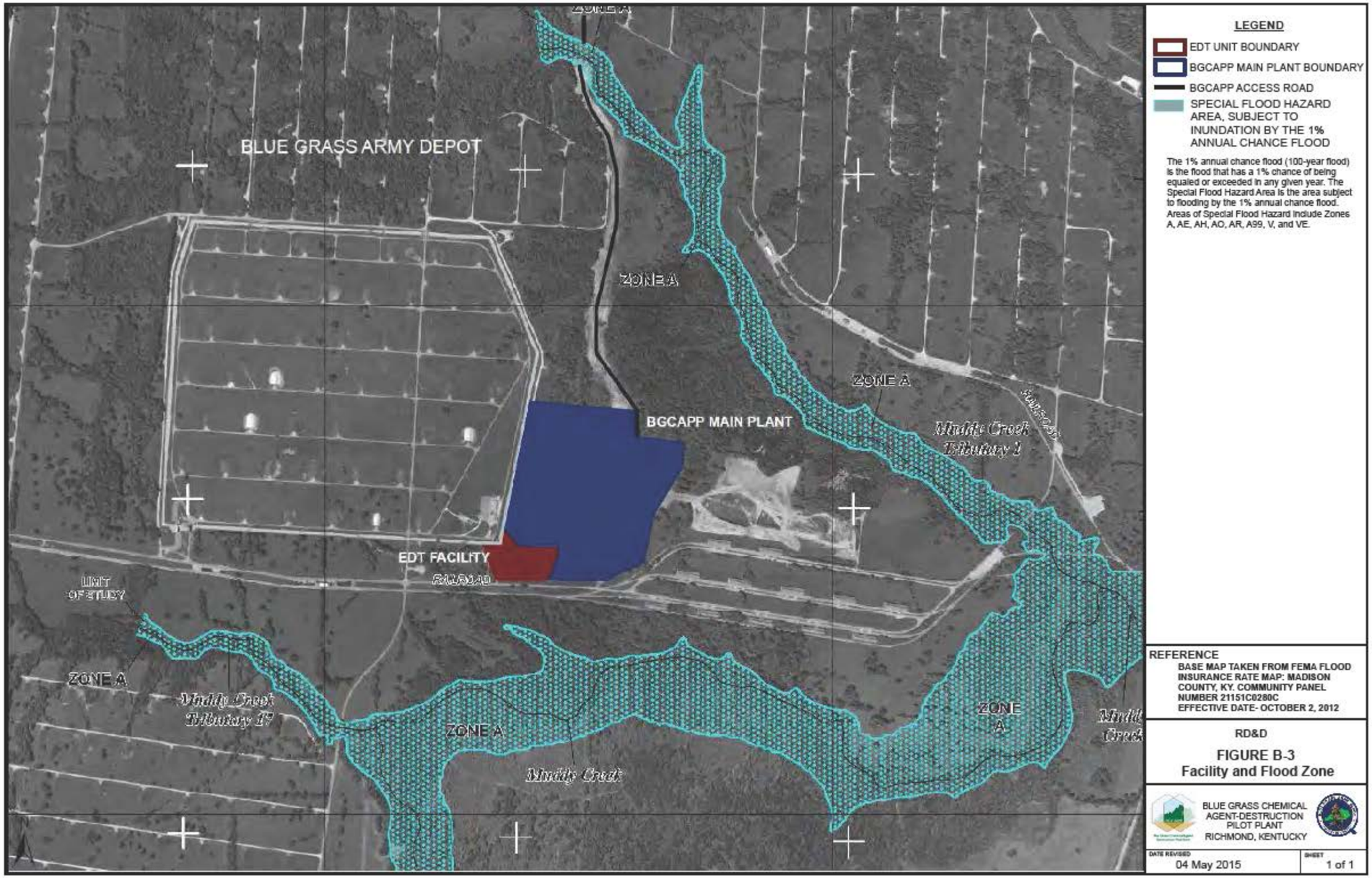
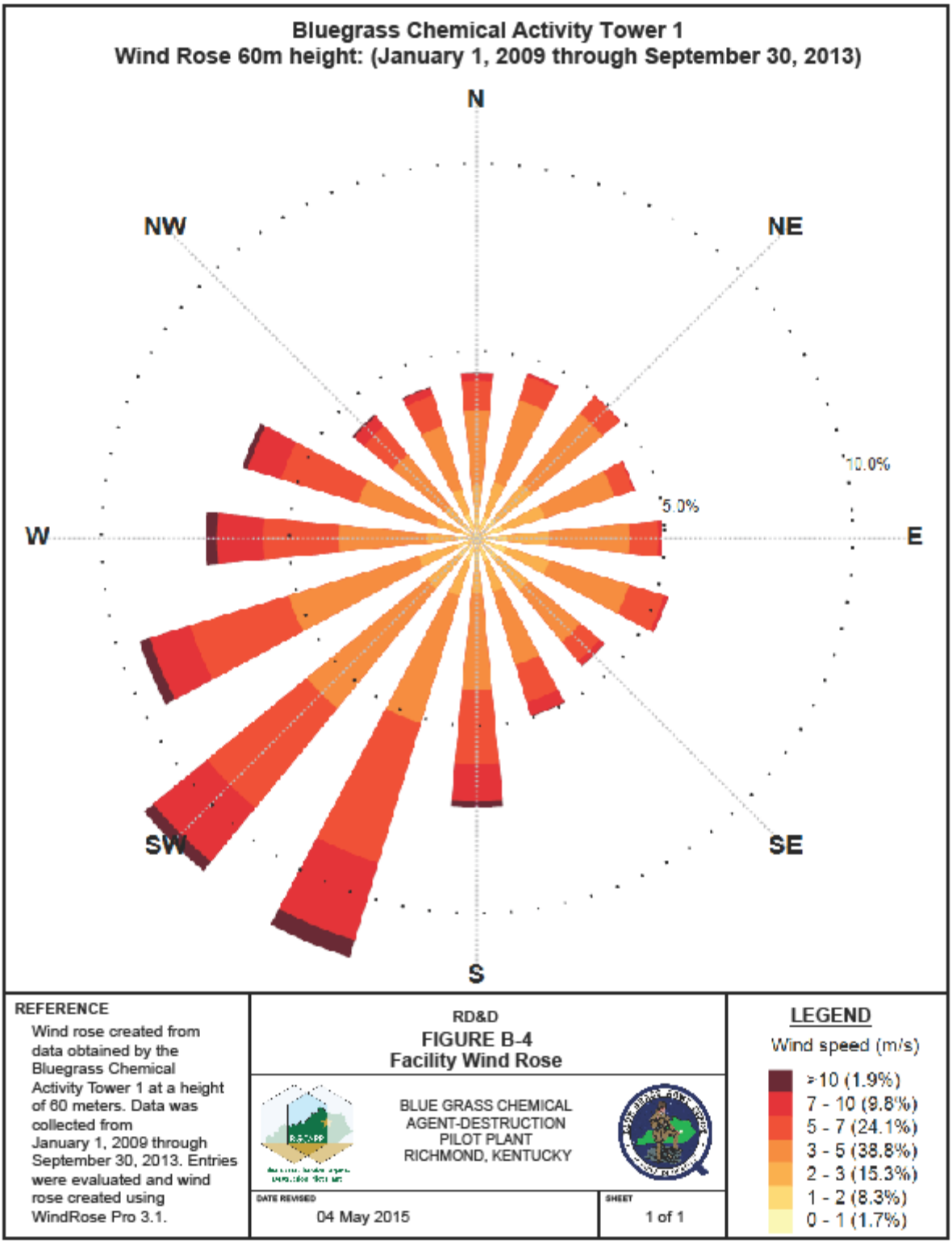


Figure B-4: Facility Wind Rose



[redacted]

OPSEC Sensitive Information Removed (SIR)

Figure B-6: Geology Surrounding Facility

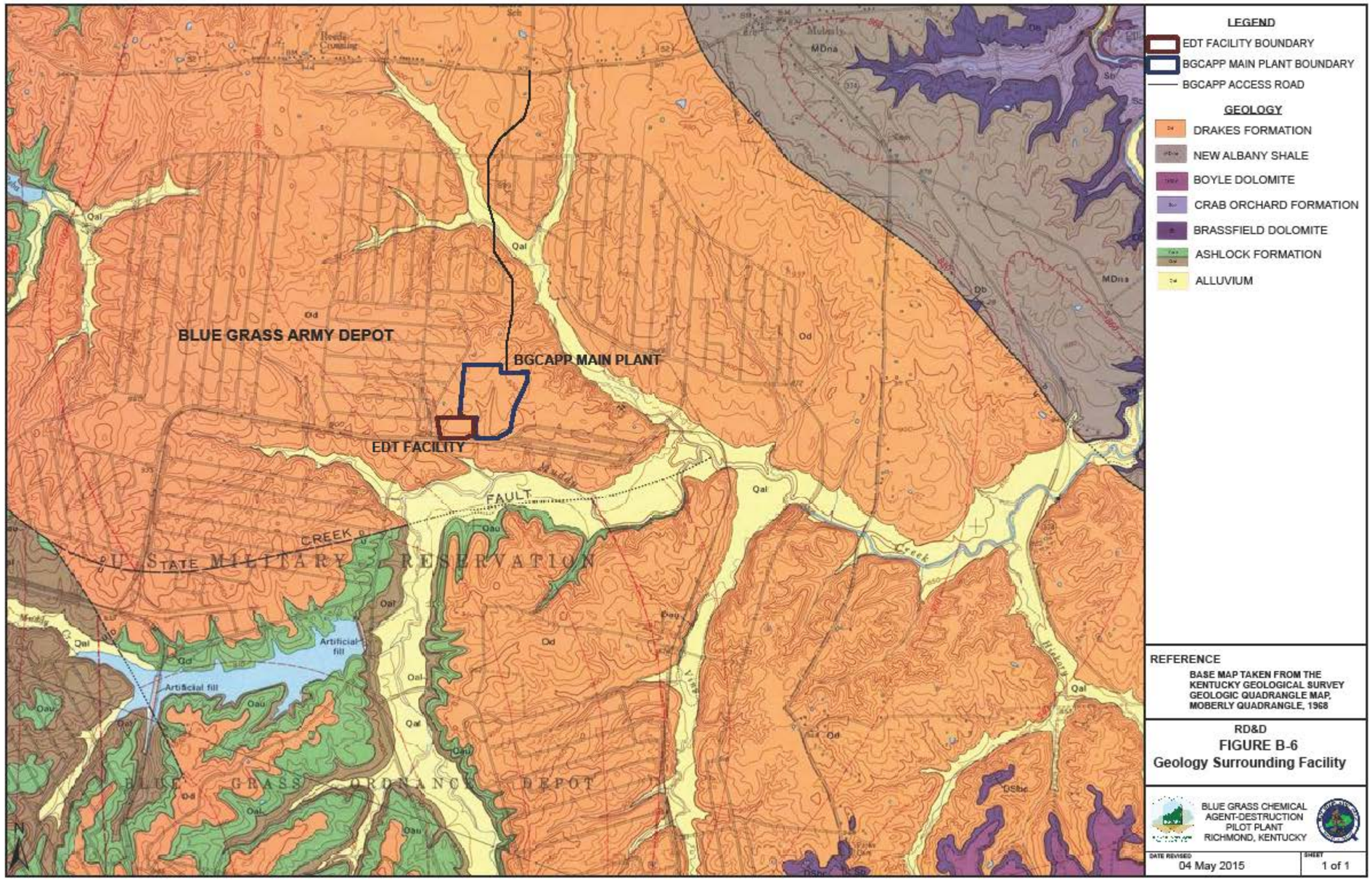


Figure B-7: Soil Types

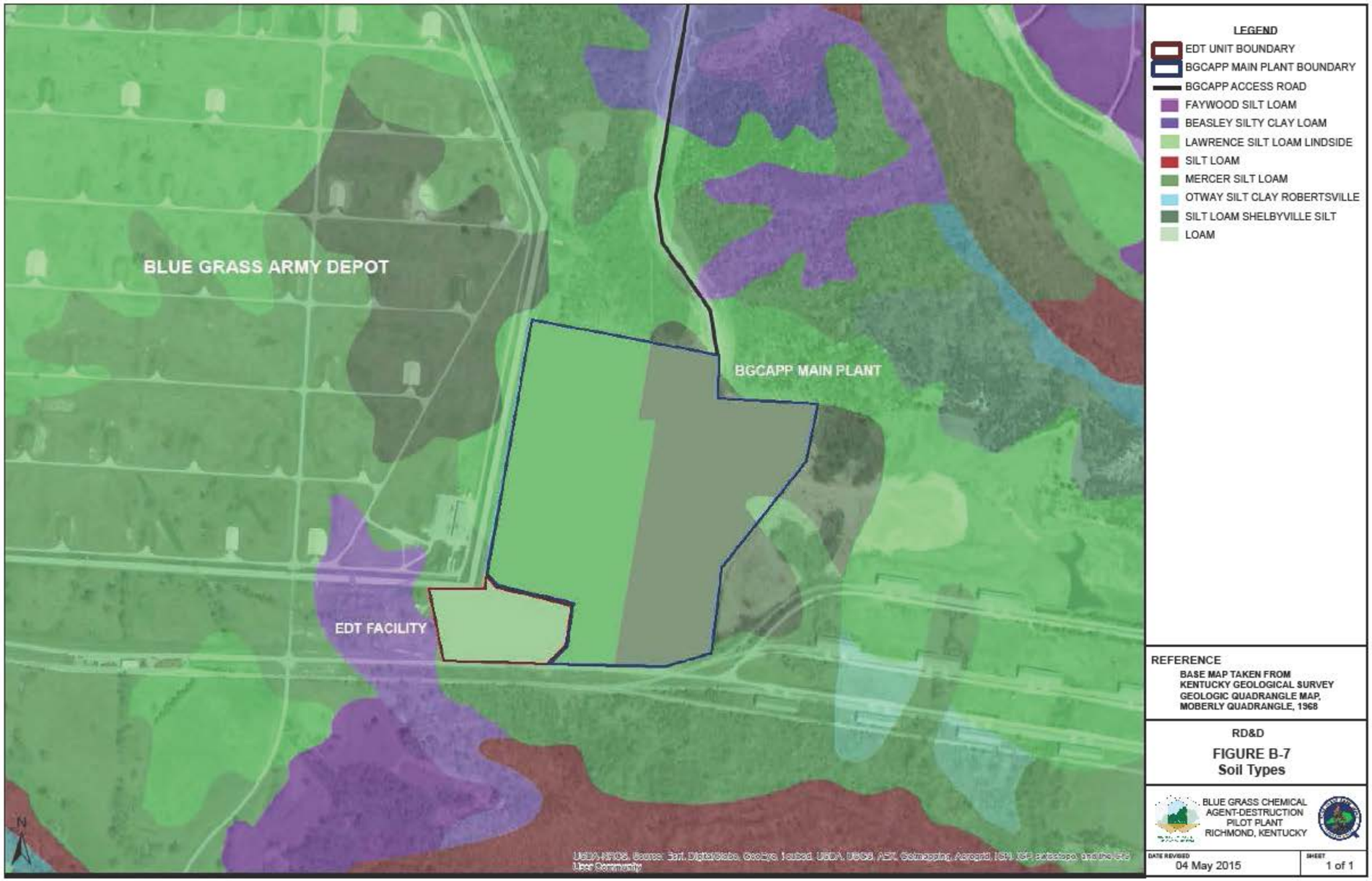


Figure B-8: Traffic Flow

Part C: Waste Analysis Plan [401 KAR 38:090, Section 2(3), 34:020, Section 4 & 40 CFR 270.14(b)(3) and 264.13]

Please see Appendix C1, the Waste Analysis Plan (WAP) that was submitted to KDEP on December 15, 2013, and awaiting final approval. This document fulfills the requirement of Compliance Schedule Item No. 18, and provides the information typically found in Part C of a RCRA Part B Permit Application.

Appendix C1: **Waste Analysis Plan**

Part D: Process Information: General [401 KAR 34:180, 34:190, 34:250, 38:150, 38:160, & 38:230 & 40 CFR 264.170-179, 264.190-200, 264.600-603, 270.15, 270.16, 270.23]

D-0 Process Information: Description and Overview of Facilities

Three types of waste storage and treatment units, containers, tanks, and miscellaneous (Subpart X) units, will be used within the BGCAPP. Listings of drawings reflecting these systems are provided in Appendix D1 (the listings reflect baseline drawings submitted as part of the Rev. 5 application, and drawings that are updated with this application revision), with the following caveats:

- Drawings that cannot be made available for public dissemination, due to either national security concerns or restrictions on the possible transfer of technology (operations security [OPSEC], Export Administration Regulation [EAR], and International Traffic in Arms Regulations [ITAR]), are not submitted with this application.
- Drawings referenced but not submitted are available for viewing at BPBG offices upon request and appointment by authorized representatives from environmental regulatory agencies during regular business hours.

An overall description of the BGCAPP treatment processes is provided below along with descriptions of the individual buildings and areas that will be used to store or treat hazardous wastes. Also, detailed descriptions for the waste storage and treatment units used at the BGCAPP facility are provided in sections as indicated below:

D-1: Process Information: Containers [401 KAR 34:180 and 38:150 & 40 CFR 264.170–179 and 270.15]

D-2: Process Information: Tank Systems [401 KAR 38:160 and 34:190 & 40 CFR 264.192 and 264.190 and 270.16]

D-8: Miscellaneous Units [401 KAR 38:230 and 34:250, Section 2 & 40 CFR 270.23 and 264.601].

These sections are consistent with the KDEP Part B Permit Application Review Checklist. The information in these sections reflects the management, storage, and treatment methods that will be used for the processing of GB during pilot plant testing as part of system integration RD&D. However, these will also be applicable to processing of VX, which is planned subsequent to GB RD&D efforts; processing of VX will not occur until after submittal to KDEP of a Part B permit modification request for VX treatment using the BGCAPP, and issuance of the final permit by KDEP. KDEP approval of the pilot test plan is required prior to the initiation of pilot plant testing. The pilot test plan will be an upcoming Compliance Schedule item submission.

D-0a Overall Process Description and Process Flow Diagram

The BGCAPP design combines neutralization and SCWO technologies that have been successfully individually demonstrated for the Program Executive Office – Assembled Chemical Weapons Alternatives (PEO ACWA) into an integrated plant for testing during the RD&D program. Detailed information for each component of the system is provided in sections D-1, D-2, and D-8. An overview of the process is provided below.

Chemical demilitarization of the BGAD stockpile will occur in the MDB, and subsequent treatment of the residual organic compounds will occur in the SPB.

The integrated system that will be used to safely destroy the agent and energetics will include the following components:

1. Agent and energetics access (mechanical).
2. Agent removal and neutralization by hydrolysis.
3. Energetics removal and deactivation by hydrolysis.
4. Metal and other solids decontamination (decon) by heating to a minimum of 1000°F for 15 minutes in the inductively heated MPTs.
5. Dissolved aluminum removal by precipitation and filtration.
6. Agent/energetic hydrolysates post-treatment using commercial-scale, solid-wall SCWO units.
7. SCWO process effluent concentration by RO, followed by off-site disposal of the concentrate and recycle of the RO product for use as quench water in the SCWO process.
8. MPT, agent neutralization reactor (ANR), and energetics batch hydrolyzer (EBH)/energetics neutralization reactor (ENR) systems off-gas treatment in a thermal oxidizer (TOX) and associated ancillary equipment (cyclone, scrubber, filters) operated under a Title V air permit. The EBH is a large steam-heated inclined drum similar in shape to a traditional cement mixer.
9. Fugitive agent vapor emissions collection and treatment using the MDB heating, ventilation, and air-conditioning (HVAC) system and off-gas treatment system that incorporates particulate and carbon filtration.

The block flow diagram (BFD) referenced in Appendix D1 (24915-00-M5-00-00001) provides an overview of the BGCAPP process. This process will achieve the required 99.9999 percent (as a minimum) destruction efficiency (DE) of GB agent stored at the BGAD.

To initiate the treatment process, munitions will be moved to the BGCAPP facility. The palletized munitions are stored in HWSUs and are currently regulated under the BGAD hazardous waste storage permit. The location of each type of munition is well documented and specific munition types can be located easily and transferred with minimum disturbance of the overall stockpile of munitions. Munitions will be transported in EONCs from the HWSUs to the CHB.

The EONCs are airtight vessels that are specifically designed to contain munitions during transport from the BGAD HWSUs to the CHB. The EONC is a well-established design that has been used safely at the following facilities:

- Tooele Chemical Agent Disposal Facility (TOCDF)
- Anniston Chemical Agent Disposal Facility (ANCDF)
- Umatilla Chemical Agent Disposal Facility (UMCDF)
- Pine Bluff Chemical Agent Disposal Facility (PBCDF).

Each EONC will be received in the CHB where it will be stored until its contents are to be treated,at which point it will be transferred to the UPA, and the air in the sealed EONC will be monitored for agent.

If agent monitoring indicates the EONC does not contain leaking munitions, the EONC will be opened, and the munitions will be transferred to the appropriate conveyor line for treatment of that munition type (projectile or rocket).

If agent monitoring indicates the EONC contains leaking munitions, the EONC will be moved to an area that is under a higher level of engineering control (i.e., sealed area under negative [less than ambient atmospheric] air pressure) where it will be opened and the munitions processed by personnel wearing appropriate personal protective equipment (PPE), with munitions placement on the appropriate processing conveyor line. Contaminated metal straps used to hold leaking munitions in place will be transferred to the MPT for treatment, and contaminated wood pallets may either be treated on site by chemical decontamination or treated in the MPT and then shipped off site to a permitted TSDF. The EONC will be decontaminated and released for further use.

Demilitarization treatment operations on the projectiles and rockets will be performed using remote-control systems in the MDB. The demilitarization of munitions will result in the following components for treatment:

1. Liquid agent and agent-contaminated wash water.
2. Agent-contaminated wood/fiberglass/cardboard.
3. Agent-contaminated metal.
4. Explosive components (e.g., bursters, propellant, and fuzes).
5. Rocket motors (RMs) and contaminated rocket motors (CRMs).

The specific treatment sequences for each type of munition and the operation of each unit within the MDB for treatment of these components will be:

1. Remove energetic components and disassemble the munitions.
2. Drain the agent from the agent cavities.
3. Neutralize the agent (GB) by hydrolysis in hot caustic to a minimum of 99.9999 percent DE.
4. Neutralize the explosives and CRM propellant by hydrolysis to meet the 40 CFR 268 treatment standard for D003 waste streams (deactivation).
5. Place the separated RMs in containers for transport to storage, treatment, recycling, or disposal.
6. Treat the agent-contaminated dunnage and most other agent-contaminated ancillary wastes either by thermal treatment in the MPT or by chemical decontamination. Chemical decontamination is the first choice for wood, PPE, other plastic/rubber wastes, and other organic materials. These materials will be decontaminated using sodium hydroxide (NaOH), sodium hypochlorite (NaOCl), or other appropriate decontamination solution to the appropriate Vapor Screening Level (VSL). Wastes that have been tested to meet these VSLs will be shipped offsite to a permitted TSDF.
7. Ship spent activated carbon generated from the HVAC system off-site for further treatment at a permitted TSDF.
8. Thermally treat agent-contaminated metal parts and other agent-contaminated wastes in the MPT.

Both agent hydrolysis and energetics hydrolysis involve mixing the agent (GB), agent-contaminated liquid, or energetics in an enclosed vessel with hot caustic solution (e.g., NaOH). After treatment, both agent and energetic hydrolysates will be analyzed for residual agent concentration. If the agent concentration is above the target release level, additional treatment will be required. If the agent concentration is below the target release level, the batches of agent hydrolysate and energetic hydrolysate will be transferred to the hydrolysate storage area (HSA) and finally to the SPB for further treatment. After demonstrating 99.9999 percent DE for agent hydrolysate, validated process controls and statistical testing may be used in lieu of analyzing all batches of agent hydrolysate. This alternate analytical approach is described in the Waste Analysis Plan (WAP) in Appendix C1.

Treatment of agent-contaminated waste items (e.g., metal parts, dunnage) in the MDB will consist of heating the waste in the MPT to a minimum of 1000°F for a minimum of 15 minutes to destroy residual agent and energetics, if present. The Department of the Army treatment standard for agent destruction is achieved by this treatment process and, following this treatment, the wastes may be sent offsite either for disposal or for recycling (i.e., this thermal treatment meets the Department of the Army requirement for release to the public). As an alternative to the MPT, certain ancillary (secondary) wastes may be decontaminated with NaOH, NaOCl, or other appropriate decontamination solutions in the MDB. These wastes, along with PPE, and other plastic/rubber items, will be shipped off-site to a permitted TSDF. If decontamination to the appropriate VSL cannot be achieved, these wastes will be treated in the MPT before being shipped off-site for treatment or disposal in a permitted TSDF.

All gas streams (including all exhaust air) from the MDB will be filtered through multiple banks of both particulate (high-efficiency particulate air [HEPA]) filters and activated carbon, and will be monitored for agent in accordance with the Title V air permit.

In the SPB, the pH of the energetics hydrolysate will be adjusted in the APS. The dissolved aluminum in the energetics hydrolysate resulting from dissolution of aluminum rocket components in the EBH system will be precipitated out of the hydrolysate in the APS and then physically separated from the hydrolysate in the AFS. The AFS filtrate will be blended with agent hydrolysate and a fuel source (isopropyl alcohol) and fed to the SCWO system for treatment. The filter cake from the AFS will be shipped off-site to a permitted TSDF.

In the SCWO system, organics in the blended agent and energetics hydrolysate stream will be oxidized to carbon dioxide, resulting in an aqueous waste stream containing only dissolved inorganic salts.

Effluent from the SCWO reactors will be blended with quench water and fed to the RO system. Product water recovered from the RO system will be recycled to treatment processes in the BGCAPP facility (e.g., as quench water). The concentrated waste stream from the RO system will be shipped off-site for disposal.

To the maximum extent possible, process liquid streams will be recycled to conserve water and to prevent discharge to ground or surface water. Water will be recycled via a water recovery system that produces water of a quality suitable for recycling back into the process during the pilot testing and operations phases.

D-0b Overview of the BGCAPP Facilities

Facilities at the BGCAPP that manage or contain hazardous wastes subject to RCRA regulation by KDEP will consist of pre-engineered metal buildings, modular buildings, and field-fabricated buildings and areas. These are described in sections D-0b(1) through D-0b(9).

D-0b(1) Container Handling Building (CHB)

The CHB is a pre-engineered metal building to be used to store munitions received from chemical storage HWSUs. The CHB will receive EONCs that contain the munitions.

D-0b(2) Munitions Demilitarization Building (MDB)

The MDB consists of a pre-engineered building shell with an inner, field-fabricated, reinforced concrete building that contains explosive containment rooms (ECRs). Major equipment in the MDB will be the nose closure removal station (NCRS), projectile and rocket munition drainage stations, munitions washout systems (MWSs), rocket cutting machines (RCMs), rocket shear machines (RSMs), the agent collection system (ACS), the ANR system, the EBH system, the ENR system, MPTs, off-gas treatment units (OTE and OTM), and miscellaneous material handling systems and components (e.g., conveyors). The building includes blast gates and doors as well as an HVAC system designed to maintain negative pressure in contaminated areas, as discussed in section D-0b(3). The MDB will have sufficient secondary containment volume for all container and tank systems, miscellaneous treatment units, and ancillary equipment managing liquids.

D-0b(3) MDB Cascade HVAC System

The MDB HVAC system is designed with “cascade pressure control” to maintain negative pressure within the MDB while providing heating and air conditioning for toxic and nontoxic areas; it is operated under the BGCAPP Title V air permit as an air pollution control system. The cascade HVAC system will serve a fourfold purpose:

1. Maintain a negative pressure environment in the MDB.
2. Maintain the flow of air from areas of low contamination probability to areas of higher contamination probability.
3. Remove any agent present in the air flow from the MDB and its systems prior to discharge to the atmosphere after the air streams have passed through other air pollution control systems, including the off-gas treatment for the MPT (OTM) and the EBH (OTE).
4. Provide for human comfort.

The amount of air exhausted from or supplied to a room will be higher in areas likely to be contaminated. This will minimize the spread of contamination and maintain the toxic boundaries. Air flow will be controlled by modulating the supply air, by modulating the flow of exhaust air, and by setting dampers throughout the building.

Each room in the MDB will have a designated category rating (i.e., A, B, C, D, or E) based on the potential for agent contamination, as follows:

1. Category A – Routinely contaminated by either agent liquid or vapor.
2. Category B – High probability of agent vapor contamination resulting from routine operations.
3. Category C – Low probability of agent vapor contamination.
4. Category D – Not expected to be contaminated by agent.
5. Category E – Maintained at positive atmospheric pressure at all times to prevent contamination by agent (e.g., the central control room [CCR] will be maintained at a positive atmospheric pressure because it will remain occupied even if an emergency were to occur).

Only rooms with Category A, Category B, or Category C ratings will be maintained under a continuous negative pressure by the HVAC system. All process components that involve agent or agent-contaminated materials will be contained in the MDB, which will be vented to a series of filters that process all air drawn by the HVAC system. The HVAC system will control all contaminants that might be released from the process, whether as a point source or as a fugitive emission.

Filter units to which all exhaust air will flow from the MDB will consist of the following:

1. A row of pre-filters, which removes the larger particulate matter.
2. A row of HEPA filters, which removes very fine particulate matter.
3. Six rows of carbon filters, which remove agent and other gaseous contaminants, including organic vapors.
4. A final row of HEPA filters, which captures any particulate that may be released from the carbon filters.

D-0b(4) Hydrolysate Storage Tanks and Tank Area

The hydrolysate storage tanks and tank area (HSA) will consist of large carbon steel tanks and liquid transfer equipment (pumps and ancillary piping systems) for the agent hydrolysate and energetics hydrolysate from the MDB; these will serve as buffer storage for processing hydrolysate feeds to the SPB. The HSTs and tank area will have sufficient secondary containment volume for all tank systems managing liquids. The hydrolysates' vapor pressures are very low. However, as a precaution and to control possible vapors, the hydrolysate tanks are vented to activated carbon adsorbers.

D-0b(5) SCWO Processing Building (SPB)

The SPB will consist of a pre-engineered building containing chemical storage tanks, APS, AFS, SCWO units, RO system, recycled water storage, and STA and storage tanks. The SPB will have sufficient secondary containment volume for all of its container and tank systems, miscellaneous treatment units, and ancillary equipment managing liquids.

D-0b(6) Waste Transfer Station (WTS)

The WTS will consist of field-fabricated container storage buildings, a tanker parking and storage pad for bulk liquids and a concrete pad used to store roll-off boxes for bulk solids. These areas will be used for staging wastes generated in the BGCAPP prior to offsite shipment to final treatment and disposal facilities. The WTS will have approximately 176,500 gallon storage capacity for process and secondary wastes.

Container storage buildings, portable containment pallets and hazardous material storage lockers will be utilized for storage of wastes in drums and smaller containers. These buildings, pallets and lockers will be located on concrete pads but will provide their own secondary containment. Wastes stored in these buildings, pallets and lockers will not exceed 24,000 gallons in capacity.

The tanker storage area for bulk liquid wastes will have a capacity of 120,000 gallons, which is equivalent to twenty-four 5,000 gallon tankers. This area will be built as three separate containment areas with eight slots per containment with a 40,000 gallon capacity in each of the three containments. Secondary containment for liquid wastes will be sized in accordance with regulatory and project requirements.

The roll-off storage area for bulk solid wastes will have a capacity of 32,500 gallons, which is equivalent to eight 20 cubic yard roll-off boxes. Secondary containment for non-liquid wastes will be constructed in accordance with regulatory and project requirements.

D-0b(7) Waste Storage Area (WSA)

The WSA will consist of a pre-engineered building used for storage prior to transfer of wastes to the WTS.

D-0b(8) Other Buildings and Structures

The BGCAPP facility will include other support buildings and structures as necessary (e.g., Access Control Building) that will not be used to contain or treat hazardous wastes.

In addition, the BGCAPP laboratory facility is a research, development, test and evaluation laboratory consisting of a prefabricated building. This building includes 14 lab fume hoods which have inline carbon filtration. Current drawings showing air flow in the facility, roof plan, control diagrams, duct heaters, HVAC controls and network layout and wiring are provided in Appendix D2 for information.

D-0b(9) Plant Systems and Subsystems not Containing Hazardous Waste Management Units

The BGCAPP facility will include support systems as necessary (e.g., plant air) that will not contain hazardous wastes.

D-1 Process Information: Containers [401 KAR 34:180 and 38:150 & 40 CFR 264.170–179 and 270.15]

Appendix C1 of this Permit Application lists and describes the types and characteristics of hazardous wastes stored in containers at this facility.

D-1a Container Management [401 KAR 34:180 and 38:150 & 40 CFR 264.170–179 and 270.15]

BGCAPP will comply with the applicable requirements of KRS 224 and 401 KAR, and with the BGCAPP Permit. Regulated units within BGCAPP will be managed in accordance with 401 KAR Chapter 34 "Standards for Owners and Operators of Hazardous Waste Storage, Treatment and Disposal Facilities."

Hazardous waste container types that will be managed at BGCAPP, and the hazardous waste storage areas—with the waste types stored in each, are described below.

D-1a(1) Hazardous Waste Containers

Several different containers will be used to manage, store, and transport hazardous wastes within BGCAPP, in addition to the munitions themselves. Several of these containers are described below, but this listing is not all-inclusive. As additional types of containers are identified, they will be incorporated into BGCAPP procedures in compliance with 401 KAR 34:180 and 401 KAR 38:150. Only compatible wastes will be containerized together.

D-1a(1)(a) Single Round Container (SRC)

M55 rockets that have been found to be leaking are containerized in an SRC. The SRC was specifically developed to contain the M55 in a substantial steel shell, which has been subjected to a helium leak test as part of the acceptance process. Leaking M55 rockets, which were containerized before the development of the SRC, are stored in a modified M-1 container. The modified M-1 is a heavy steel cylinder bolted on with a gasket seal with eight bolts.

D-1a(1)(b) M16 Series Overpack Container

The M16 series containers are cylindrical steel containers designed to be airtight and designated for the over-pack of projectiles. Overpacked 155-mm projectiles are stored in wooden “egg crates” specifically designed to store the M16 overpack container.

D-1a(1)(c) M10 Series Overpack Container

The M10 series container is a cylindrical steel container that is designed to be airtight and is designated for use as an overpack container for leaking or deteriorated M16 containers and as an overpack container for 8-inch projectiles.

D-1a(1)(d) Enhanced Onsite Container (EONC)

The Department of the Army uses EONCs to store and transport the munitions and bulk containers for the time period immediately preceding demilitarization activities. The EONC is designed to provide vapor-tight containment of agent; all seals on the containers are impervious to agent and are able to withstand decontamination solutions; air monitoring can be performed on the headspace within the EONCs. The EONC will provide secondary containment for the munitions or containers stored within. The EONCs and any components mounted on the surface will fit within an envelope that is 8.5 feet by 8.5 feet by 12 feet high. The combined weight of the EONC and munition holding trays will not exceed 26,000 pounds.

D-1a(1)(e) Intermediate Bulk Containers (IBCs) and Bulk Solid Containers

IBCs (e.g., polytanks) may be used throughout the process to collect various liquid waste streams. Each IBC will have a capacity of up to 300 gallons with nominal dimensions of up to 42 by 48 by 41 inches (L×W×H). DOT-approved bulk solid (box) containers (e.g., B-25 boxes) of various sizes may also be used for solids collection, as appropriate. IBCs and bulk solid containers are manufactured from various materials including carbon steel, stainless steel, and polymers. Specifications and certifications for each type of container that is procured will be obtained to document that these meet DOT requirements for the waste contents to be stored.

D-1a(1)(f) Other Containers and Compatible Liners

A range of other container types and sizes may be used for storage and transportation at BGCAPP. Table D-2 provides a listing of the container types that may be used. Plastic and other liners compatible with the specific wastes to be containerized will also be used as appropriate. Specifications and certifications for each type of container that is procured will be obtained to document that these meet DOT requirements for the waste contents to be stored.

Table D-2 Commonly Used Hazardous Waste Containers

CAPACITY (gallons)	DESCRIPTION	UNITED NATIONS (UN) MARKINGS
350	Open head steel/poly intermediate bulk container	UN 31A/31H1/31H2
110	Open head steel drum	UN 1A2
95	Open head polyethylene salvage drum	UN 1H2
85	Open head steel salvage drum	UN 1A2
85	Open head polyethylene salvage drum	UN 1H2
55	Open head steel salvage drum	UN 1A2
55	Closed head steel drum	UN 1A1
55	Closed head polyethylene drum	UN1H1
55	Open head steel drum	UN 1A2
55	Open head polyethylene drum	UN 1H2
30	Closed head steel drum	UN 1A1
30	Closed head polyethylene drum	UN 1H1
30	Open head steel drum	UN 1A2
15	Closed head polyethylene drum	UN 1H1
8	Open head steel pail	UN 1A2
5	Open head polyethylene pail	UN 1H2
5	Closed head polyethylene pail	UN 1H1
1	Open head polyethylene pail	UN 1H2

D-1a(2) Container Management Methods

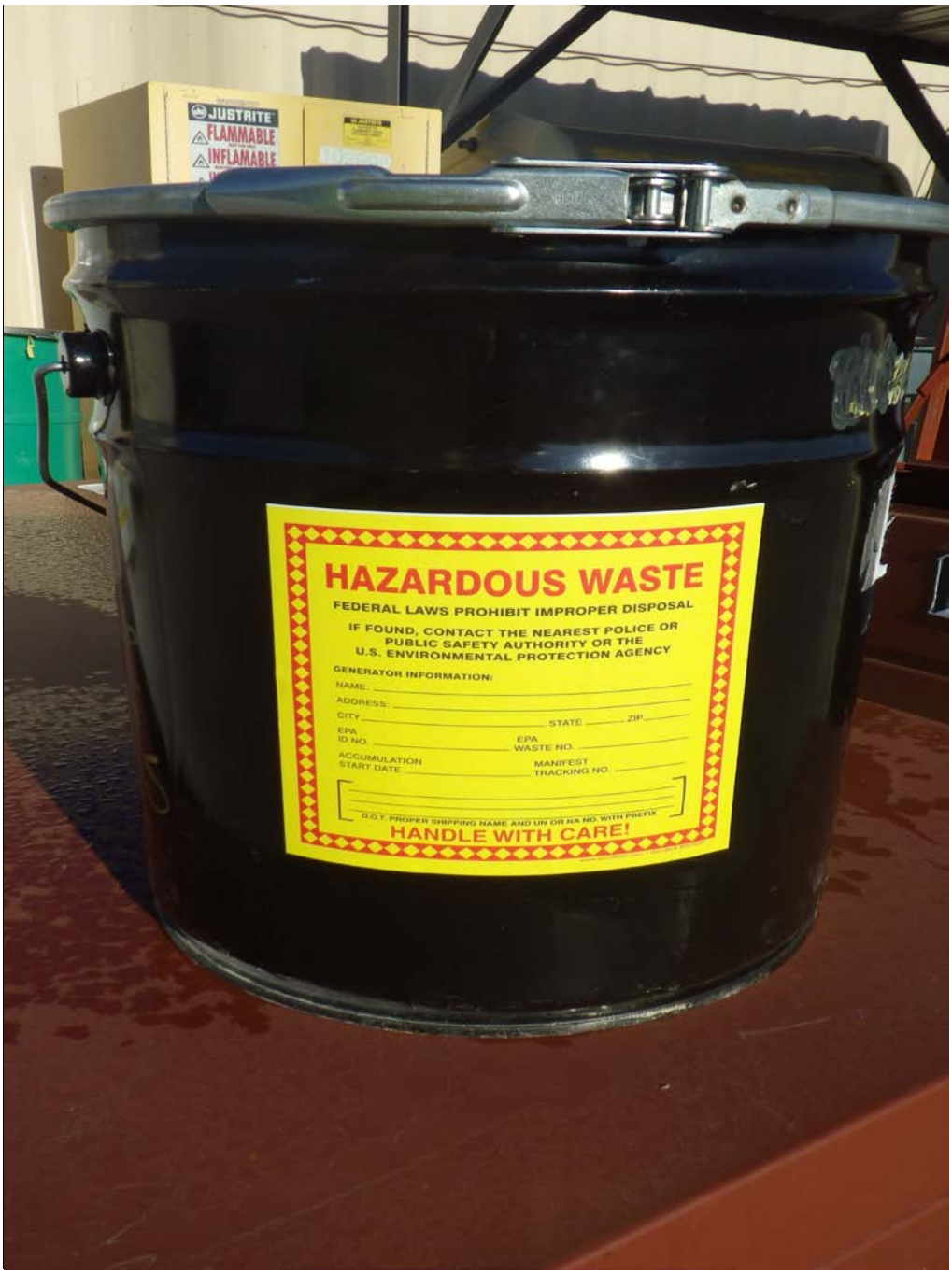
Containers at BGCAPP will be managed in accordance with 401 KAR 38:005, 401 KAR 34:180, and 401 KAR 38:150. Waste shipping containers will meet DOT shipping requirements and will be marked with the appropriate DOT packaging authorization numbers. Storage of hazardous wastes within the facility may occur in IBCs, boxes, and containers. The performance specifications for a specific container will be determined based on the waste characteristics, and wastes will only be stored in compatible containers with compatible liners (as applicable).

Stored wastes will comply with the following general container management standards:

1. If any hazardous waste container leaks, workers will transfer the waste contents into a new container, or the entire leaking container will be over-packed.
2. Appropriate liquid absorbent materials may be added to containers prior to or immediately after placement of wastes in the container.
3. Wastes identified as incompatible will be stored in separate areas. Berms, dikes, walls, or other physical barriers will separate these areas. The same container will not receive incompatible wastes, and workers will clean containers previously holding an incompatible waste or material before using the container for waste storage.

4. Containers of hazardous wastes will remain closed throughout storage, except to add, remove, or characterize wastes.
5. Workers will not open, handle, or store containers in a manner that may rupture the container or otherwise cause it to leak. Pallets will be used to the maximum extent possible to preclude puncture of containers and minimize possible contact with moisture. Only personnel trained to operate the container-moving equipment will move the containers/pallets. Equipment used to move containers may include pallet jacks and forklifts, and other suitable container-transport equipment.
6. Containers will be stacked no more than two high, to maximize the use of space and ensure safe storage of containers.
7. The layout of storage areas will provide sufficient aisle space (minimum of 30 inches) to allow ease of inspection and ensure equipment used to move containers/pallets does not rupture containers. Containers stored within a containment will not contact the containment wall or berm, and will have sufficient space (between the berm or wall and the stored containers) to allow inspection and viewing of the stored containers.
8. BGAD and BPBG policies and procedures forbid smoking within the BGCAPP storage and treatment facilities except in designated areas. Hot work permits preclude open flames, cutting and welding, sparks, and other ignition sources without a permit and any special precautions or requirements. The facility personnel will separate and protect ignitable or reactive hazardous wastes from sources of ignition or possible reaction and radiant heat sources. Containers holding ignitable or reactive wastes will be located more than 15 meters (50 feet) from the BGAD's property boundary.
9. If generator knowledge is insufficient, laboratory analyses and tests will identify incompatible, reactive, and ignitable wastes and materials. Generator knowledge or laboratory results will confirm precautions that can prevent reactions involving ignitable, reactive, and incompatible wastes.
10. Each container in permitted storage will be labeled with the words "Hazardous Waste", a description of the waste stream/waste number, and the date the container was filled. This information will be placed on a label similar to the one included as Figure D-1, Sample Hazardous Waste Label.
11. Weekly (i.e., once between Sunday and Saturday of each week) inspections will be conducted and documented for each of the container storage areas. The inspection will include the elements identified above (i.e., the ten previous elements in this list), but also focus on identifying leaking containers, damage/deterioration of containers, and damage to or leakage/spills within the containment system for each storage area.

Figure D-1: Hazardous Waste Label



Munitions will be transported to the CHB for storage prior to processing during the RD&D program. BGCAPP personnel are responsible for the safe delivery of these munitions to the BGCAPP, including the following:

1. BGCA will load the rockets and projectile pallets onto the EONC tray, strap it down, and load it into the EONC
2. BGCA will prepare the Department of the Army (DA) Form 4508 Ammunition Transfer document

Custody transfer will take place at the respective HWSU; this is a joint BGCA/BGCAPP activity. Subsequent BGCAPP activities are as follows:

1. Transport of the EONC is performed by BGCAPP personnel from the HWSU to the CHB.
2. BGCAPP will track the inventory and disposal of the munitions within the main plant facility
3. BGCAPP will generate the daily Certificate Of Disposal packet for the munitions that were destroyed within the last 24 hours

BGCAPP owns the EONCs and the transport vehicles and will retain custody of said equipment throughout operations.

Each truck used by BGCAPP can transport one EONC of munitions. The number of trucks per day and the loading configuration in the EONCs will vary depending on the specific operational schedule. EONC movement from the CHB to the munitions demilitarization building (MDB) will continue 24 hours/day, 7 days/week.

When a truck enters the BGCAPP perimeter, it will move to an off-loading area at the CHB. A side-loader forklift or similar device will be used to unload the EONC. All containers present in the CHB will contain the same agent, because the facility will process only one chemical agent at a time.

In accordance with the Kentucky Hazardous Waste regulation 401 KAR 34:180, Section 5, the vapor space of the EONCs containing waste that remain in the CHB for more than 1 week will be monitored—using an agent-monitor port in the EONC—on a weekly basis. This monitoring for agent vapor will be in lieu of the RCRA-required visual inspections of the containers (munitions).

As described above, wastes generated during the RD&D program and systemization activities will be placed in containers whose materials of construction are compatible with the waste. The selection of a container will be made on a case-by-case basis consistent with generator knowledge of the waste stream. If generator knowledge is insufficient, laboratory analyses and tests will identify incompatible, reactive, and ignitable wastes and materials. Generator knowledge or laboratory results will confirm precautions that can prevent reactions involving ignitable, reactive, and incompatible wastes.

All waste containers will always be kept closed during storage except when adding, removing, or characterizing wastes. Containers will be handled in a manner to avoid rupturing or leaking. Container handling will be performed with drum dollies, forklifts, overhead cranes, or other means, as appropriate. A goal of the RD&D demonstration will be to evaluate the safety, suitability, and integration of the container handling procedures within the overall process. Development of container management will continue throughout systemization and the RD&D program.

D-1a(3) Hazardous Waste Container Storage Areas

Several locations within BGCAPP will have permitted container storage areas. These areas will be designed, constructed, and managed in accordance with all applicable standards of 401 KAR 38:005, 401 KAR 34:180, and 401 KAR 38:150. The Part A form summarizes the areas within BGCAPP to be permitted for container storage; more detailed descriptions follow.

D-1a(3)(a) CHB

The CHB is a steel-frame building with insulated metal roofing and insulated siding panels. When an EONC brings munitions to the CHB on a flat-bed trailer, they are off-loaded with a side-loader forklift or similar equipment. The side-loader truck will be used to move munitions from the EONCs into the CHB, and also to transfer them to the UPA.

The EONC storage area is sized to store 53 EONCs.

Permitted storage will be limited to the storage of munitions inside of EONCs. The EONC meets secondary-containment requirements of 401 KAR 34:180, Section 6, for the munitions contained within.

The floor of the CHB is constructed of reinforced concrete. The CHB-MDB transition structure is metal siding with a reinforced concrete floor. The number of construction and expansion joints has been kept to a minimum. All joints between floors and walls will be covered and sealed.

D-1a(3)(b) MDB

Wastes stored in MDB areas will include both munitions and secondary wastes. The Part A form provides additional waste storage details for each of these areas, including both process and secondary wastes managed in each area. The MDB is the primary treatment facility in the chemical weapons destruction process, and includes the following permitted storage areas.

Unpack Areas (UPAs)

Containers and munitions will be brought from the CHB into the MDB via the UPAs. Each UPA is a transition area between the CHB and the hazardous waste processing areas in the MDB. Permitted storage will be limited to the storage of containers inside of EONCs or on secondary containment pallets. The EONC meets secondary containment requirements of 401 KAR 34:180, Section 6, for the munitions contained within. This area will also provide a means to monitor the EONCs for leakers, provide an unpack station, and provide a means to return empty EONCs to the CHB for temporary storage. The floor of each UPA will be constructed of reinforced concrete. The number of construction and expansion joints has been kept to a minimum. In this area, the floor, sumps, and curbs will be coated with an applied material that provides a flexible, external liner. There will be a 4,800-gallon storage capacity, including both munitions and secondary wastes.

Explosive Containment Vestibules (ECVs)

Munitions will be stored on the conveyors, or on the reject systems in these rooms, as applicable. In addition, leaking or reject projectiles that have been placed in overpacks may be stored on the floor in these rooms. Storage of projectiles or rockets, in or out of EONCs, will not exceed the maximum number allowed as determined by the net explosive weight. Secondary containment will be provided by a coated, reinforced concrete floor, sumps, and perimeter curbs/walls. The number of construction and expansion joints has been kept to a minimum in these areas. In these areas, the floor, sumps, and curbs will be coated with an applied material that provides a flexible, external liner. There will be a 550-gallon (total) storage capacity for secondary wastes in these two ECVs. If necessary, spill-containment pallets also may be used.

Explosive Containment Rooms (ECRs)

Munitions containing explosives (projectiles with bursters and rockets) will be processed in ECRs. The number of projectiles in an explosive contaminant room at any time will be limited by the explosive force contained in the aggregate projectiles as determined by the net explosive weight. Munitions will be stored on the conveyors, or on the reject systems, in this room as applicable. In addition, leaking projectiles that have been placed in overpacks may be stored on the floor in this room. Secondary containment will be provided by a coated and reinforced concrete floor, sumps, and perimeter curbs/walls. The number of construction and expansion joints has been kept to a minimum in this area. In this area, the floor, sumps, and curbs will be coated with an applied material that provides a flexible, external liner. There will be a 110-gallon (cummulative total) storage capacity for secondary wastes in these two ECRs. If necessary, spill-containment pallets also may be used.

Tray/Container Transfer Room

Miscellaneous secondary wastes will be stored in this area until it is removed for disposal. Typical containers will include 55-gallon drums, plastic bags, and boxes. There will be a 550-gallon storage capacity for secondary wastes in this area.

ANS Room

Miscellaneous secondary wastes will be stored in this room until they are removed for disposal. The room may also be used to store spent decontamination solution on a contingency basis. Typical containers will include IBCs, 55-gallon drums, plastic bags, and boxes. There will be a 2,750-gallon storage capacity for secondary wastes as well as contingency SDS storage in this area.

Motor Packing Room (MPR)

Separated rocket motors will be stored in this room prior to transfer from the building for storage or treatment/disposal. In addition to the rocket motors, empty fiberglass shipping and firing tube (SFT) segments removed from the warheads will also be stored here. Typical containers will include DOT-approved shipping boxes. There will be a 350-gallon storage capacity for the storage of 2 boxes of rocket motors and 2 boxes of empty SFTs in this area.

Motor Shipping Room (MSR)/Covered Loading Area

Separated rocket motors will be stored in this room prior to transfer from the building for storage or treatment/disposal. In addition to the rocket motors, empty SFT segments removed from the warheads will also be stored here. There will be a 350-gallon storage capacity for the storage of 2 boxes of rocket motors and 2 boxes of empty SFTs in this area.

Box Transfer Areas 1 and 2

Separated rocket motors will be stored in these rooms prior to transfer from the facility for storage or treatment/disposal. In addition to the rocket motors, empty SFT segments removed from the warheads will also be stored here. There will be a 3,000-gallon (total) storage capacity for 36 boxes of rocket motors in these 2 areas.

D-1a(3)(c) SPB Area

Miscellaneous secondary waste (e.g., AFS filter cake) will be stored in this area until it is removed for disposal. Typical containers will include rolloff bins, 55-gallon drums, plastic bags, and boxes. There will be an 8,550-gallon storage capacity for AFS filter cake and secondary wastes in this area.

D-1a(3)(d) Waste Storage Area

Various liquid and solid hazardous wastes will be stored in this area until they are shipped off-site for disposal. Typical containers will include boxes, rolloff bins, and 55-gallon drums. There will be a 5,500-gallon storage capacity for various process and secondary wastes in this area.

D-1b Containers with Free Liquids, and F020, F021, F023, F026, and F027 Wastes [401 KAR 34:180, Section 6 & 40 CFR 264.175]

The containments in storage areas used to store containers at the BGCAPP will include sufficient volume to contain the largest container, more than 10% of all the containers (whether or not the containers actually contain liquids), or the volume of the largest vessel, tank, or miscellaneous unit located within each of the containments. In addition, containers of agent-derived secondary wastes packaged for off-site shipment and treatment/disposal are headspace monitored and are packaged to eliminate free liquids. The BGCAPP facility personnel do not anticipate storing F020, F021, F023, F026, or F027 wastes at this facility. Part A of this application revision identifies the waste streams managed and stored in containers.

D-1b(1) Basic Design Parameters, Dimensions and Materials of Construction for the Containment System [401 KAR 34:180, Section 6 & 40 CFR 264.175]

The design and construction of the containments in the container storage areas will meet the requirements of Federal RCRA and Commonwealth of Kentucky environmental regulations. The concrete base for the containments will be sufficient to withstand the stress of material transport equipment and equipment used to move containers within these areas. The concrete base of the containment will have a coating system sufficiently impervious to contain leaks and spills until these are detected and removed. RCRA-permitted storage will be clearly marked to indicate hazardous wastes are stored in each respective area and to indicate the area is a restricted-access area.

Additional information on secondary containment in the hazardous waste storage areas is provided in Section D-1a(3); Section D-2 provides additional information on secondary containment in the MDB and SPB buildings.

D-1b(2) Description of How Design Promotes Drainage or How Containers are Kept From Contact with Standing Liquids in Containment System [401 KAR 34:180, Section 6, and 38:150 & 40 CFR 264.175 and 270.15]

Where possible, containers will be stored on pallets or containment pans to provide protection from contact with moisture or accumulated liquids. Other methods (e.g., use of slopes, drains, berms) will be used if containers cannot be elevated.

In particular in the WSA, containers will be placed on pallets or containment pans. In the MDB and SPB, pallets and containment pans may also be used. The MDB and SPB storage areas also contain a system of drains and sumps for drainage of liquids away from leaking containers.

D-1b(3) Capacity of the Containment System Relative to the Number and Volume of Containers to be Stored [401 KAR 34:180, Section 6 and 38:150 & 40 CFR 264.175 and 270.15]

Storage areas used to store containers at the BGCAPP will include sufficient volume to contain the largest container, more than 10% of all the containers (whether or not the containers actually contain liquids), or the volume of the largest vessel, tank, or miscellaneous unit located within each of the containments. Specific secondary containment capacities are identified in Section D1a(3).

D-1b(4)Provisions for Preventing or Managing Run-on [401 KAR 34:180, Section 6 and 38:150 & 40 CFR 264.175 and 270.15]

Buildings with roofs and raised thresholds prevent run-on from reaching the stored containers in permitted storage areas.

D-1b(5) How Accumulated Liquids can be Analyzed and Removed to Prevent Overflow [401 KAR 34:180, Section 6, and 38:150 & 40 CFR 264.175 and 270.15]

If generator process knowledge is not adequate to determine the characteristics of accumulated liquids, the BPBGT conducts analyses in accordance with Part C1 of this Permit Application to determine waste characteristics. After the characteristics of the liquid are known, removal will follow in accordance with the SPCC Plan.

D-1c Containers without Free Liquids and F020, F021, F023, F026, and F027 Wastes [401 KAR 38:150, Section 2 and 34:180, Section 6 & 40 CFR 270.15(b) and 264.175]

Not applicable. Although many containers of waste stored within the facility do not contain free liquids, the design of the permitted containments for containers includes capacities that exceed the containment capacities required by Federal or Commonwealth of Kentucky environmental regulations. The BGCAPP is not seeking a waiver for storage of containers with no free liquids and does not plan to store F020, F021, F023, F026, or F027 wastes.

D-1d Requirements for Ignitable or Reactive Wastes and Incompatible Wastes [401 KAR 34:180, Sections 7 and 8 & 40 CFR 264.176 and 264.177]

Containers holding ignitable wastes will be located more than 50 feet from the BGAD facility property line. Reactive wastes will be separated (e.g., placed on a containment pallet) from other wastes by a distance of at least 4 feet, and located more than 50 feet from the BGAD facility property line. Secondary containment capacity will be at least more than 10% of the maximum storage capacity of the containers in the separated area (e.g., containment pallet capacity would be equal to or greater than a single 55-gallon drum).

The BPBGT does not expect incompatible hazardous waste generation in facility processes. Incompatible wastes, if generated, would not be stored together in the same container. BGCAPP personnel wash empty containers prior to reusing if the containers may have previously contained wastes incompatible with new wastes being placed into the container. If questions arise about whether wastes are compatible, the BGCAPP conducts laboratory incompatibility determinations prior to storing containers near each other and to prevent storing potentially incompatible wastes within the same container. Incompatible wastes in separate containers are either stored in separate containments or stored (if liquid) on separate containment pallets.

Containers hold only compatible wastes, usually from a single waste stream. The capacity of the containment pallets is at least 55 gallons, more than 10% of the maximum container storage capacity, and equal to or greater than a single 55-gallon drum.

D-2 Process Information: Tank Systems [401 KAR 38:160 and 34:190 & 40 CFR 264.192 and 264.190 and 270.16]

The BGCAPP tank systems are located outside, within the MDB, and within the SPB, and will be designed, constructed, and operated in accordance with all applicable standards of 401 KAR 38:005, 401 KAR 34:190, and 401 KAR 38:160.

The BGCAPP waste storage tanks were fabricated from carbon steel or chemical-resistant alloys (e.g., Hastelloy® or stainless steel), which, through testing and use at other sites, have been shown to be compatible with agent and energetics hydrolysates, spent decontamination solutions, and brines (e.g., RO reject). Fabrication of BGCAPP tanks includes additional shell thickness as a corrosion allowance—general corrosion will not become a critical factor during the life of the BGCAPP facility, and the BGCAPP will perform non-destructive tank testing as necessary. Tank assessment reports (TARs) for the tanks used to store hydrolysates, spent decontamination solutions, and waste brine solutions were prepared and provided to KDEP in response to RD&D permit Compliance Schedule Item 8. Any remaining TARs for tanks identified subsequent to the Project's response to Compliance Schedule Item 8 will be provided to KDEP upon completion of the TAR.

All agent and agent-contaminated storage tanks are inside the MDB, and headspace emissions from these tanks will be vented through the off-gas treatment and MDB HVAC filtration systems. The HSA and STA waste storage tanks will contain liquids that are agent-derived (N001) and corrosive (D002). Secondary containment capable of containing the contents of the largest tank surrounds these waste tanks (as is provided for the process/storage tanks inside the MDB and SPB) and, because these storage tanks are located outdoors, the associated containments can also capture a 25-year/24-hour storm event and have adequate “freeboard” to prevent “topping” due to wind or wave action during or following this type of heavy rainfall event (i.e., sufficient freeboard to prevent topping due to wind or wave action if both of these events occur simultaneously).

Each treatment or storage tank system (e.g., spent decontamination system [SDS], agent neutralization system [ANS], and energetics neutralization system [ENS]) will process a single waste stream, eliminating the possibility of waste stream incompatibilities.

The Part A form identifies the waste volumes treated or stored in tanks (T01 or S02). All Subpart J-regulated tanks in the HSA and STA will contain carbon filtration on the tank vents as necessary, which serve as Level 2 controls required by Subpart CC.

Specific treatment processes occurring in tank systems are identified and discussed in section D-8 in conjunction with the miscellaneous (Subpart X) treatment units.

D-2a Age of Tank System [401 KAR 34:190, Section 2 & 40 CFR 264.191(b)(4)]

Any BGCAPP tank systems will be "new" tank systems in accordance with RCRA regulations.

D-2b New Tank Systems [401 KAR 34:190, Section 3 & 40 CFR 264.192]

D-2b(1) Assessment of New Tank System's Integrity [401 KAR 34:190, Section 3 & 40 CFR 264.192]

The assessment of adequacy of the tank systems design was performed by an independent professional engineer (PE) and the resulting TARs were submitted to KDEP for review and approval prior to starting installation of each hazardous waste tank system. All tanks that recently have been identified as Subpart J-regulated tank systems are currently undergoing a TAR review and preparation by the TAR subcontractor. These TARs will be provided to KDEP upon their completion. Underground storage tanks will not be used for hazardous wastes at BGCAPP, and tanks storing hazardous waste are located above ground only.

D-2b(2) External Corrosion Protection

Fabrication of BGCAPP tanks includes additional shell thickness as a corrosion allowance, and general corrosion will not become a critical factor during the life of the BGCAPP facility. The visible portions of each tank system are inspected daily for signs of external corrosion or releases of waste.

D-2b(3) Description of Tank System Installation and Testing Plans and Procedures [401 KAR 34:190 Section 3 & 40 CFR 264.192 (b-f)]

An independent, qualified installation inspector or an independent, qualified registered PE will inspect each new tank system prior to placing a new tank system in service. Inspection will include evaluation of/for the following items:

1. Welds to ensure the absence of breaks
2. Integrity to ensure the absence of punctures and cracks
3. Integrity of the protective coatings to ensure it has not been scraped through or otherwise removed in locations
4. Lack of corrosion
5. Other structural damage or inadequate construction/installation.

Discrepancies identified by inspection will be repaired by appropriate methods, and tank systems will not be placed into service without satisfactory inspection results and repairs (if needed).

Hazardous waste tanks and associated ancillary equipment will be tested for tightness to liquid and vapor before being placed into use. Identified discrepancies will be repaired and the tank systems will not be placed into service until applicable inspections have been satisfactorily completed.

Ancillary equipment will be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

Written assessments reviewed and certified by a qualified registered corrosion expert will be performed, indicating the degree of corrosion protection on the tank systems will be adequate and will be properly installed.

D-2c Dimensions and Capacity of Each Tank [401 KAR 38:160 & 40 CFR 270.16(b)]

The capacity and number of hazardous waste tanks is specified in the Part A permit application. The tank dimensions were submitted to KDEP in the TARs submitted prior to beginning BGCAPP tank construction. Capacities for each tank are summarized in Table D-3.

D-2d Description of Feed Systems, Safety Cutoff, Bypass Systems, and Pressure Controls [401 KAR 38:160, Section 1 & 40 CFR 270.16(c)]

The PFDs and P&IDs listed in Appendix D1 show the feed systems, safety cutoffs, bypass systems, pressure controls, and vents present on each tank and tank system, and Table D-3 lists the level sensors and level switches present on each tank. Operation of BGCAPP tanks incorporates controls and follows practices designed to prevent spills and overflows. These tank systems have spill prevention controls, including check valves and tight shutoff valves. Lines that are below the liquid level in the tank incorporate one or more check valves to prevent backflow from downstream equipment that might cause overfilling. All tanks also have overfill controls, including level transmitters and high level alarms with level switches that automatically shut off flow to the tanks. The overfill controls will consist of level sensors that are observed and controlled by operators in the CCRs located in the control and support building (CSB) and the SPB. Trained operators and supervisors will staff these CCRs when the process is operational.

A general summary of these features and controls is as follows:

NOTE: The high-high level switches (LSHH) present on tanks will be less than the “Contained Air Volume” of the tank, which is the basis for the secondary containment volumes.

1. Tanks will be equipped with level transmitters connected to the vessel directly or through diaphragm seals by either flange or national pipe taper connection.
2. The process fluid and vessel design were the basis for selecting the type of level transmitter. Tank level measurements will compensate for changes in fluid density when level is a critical parameter.
3. The level indicators will feed to the Control Room (CON).
4. On high level reading, an alarm will sound in the CCR.
5. On tanks equipped with high-high level (LSHH) reading, the facility control system (FCS) will shut off power to the feed pump.
6. On tanks with high-high-high level sensors (LSHHH), waste feed valves to those tanks will be automatically shut.

Table D-3 RCRA Tank Volumes

Tank Name	Tank ID Number	Total Volume (gal)	Working Volume (gal)	Maximum Waste Volume (gal)	Overfill Protection / Level Control*
SCWO Effluent Tanks	10-MT-SCWO-0101 10-MT-SCWO-0201 10-MT-SCWO-0301	50,898	41,904	47,089	LSHH (vib) LIT (dp) LSLL (vib)
RO Permeate Tanks	10-MT-SWS-0101 10-MT-SWS-0201	57,858	49,377	54,634	LSHH (vib) LIT (dp) LSLL (vib)
RO Reject Tanks	10-MT-RO-0106 10-MT-RO-0206	84,782	74,076	80,302	LSHH (vib) LIT (dp) LSLLL (vib)
Aluminum Precipitation Reactors	MV-APS-0101 MV-APS-0102	1,523	1,081	1,523	LSHHH (pr) LSHH (vib) LIT (radar) LSL (vib)
AFS Feed Tank	MT-AFS-1010 MT-AFS-2010	1,915	1,607	1,644	LSHH (vib) LIT (radar) LSLL (vib)
AFS Filtrate Tank	MT-AFS-1012	4,884	3,472	4,233	LSHH (vib) LIT (radar) LSLL (vib)
SCWO Hydrolysate Blend Tank	MT-SCWO-0030 MT-SCWO-0031	6,662	5,898	6,662	LSHH (vib) LIT (radar) LIT (radar) LSLL (vib)
SCWO Batch Holding Hydrolysate Tank	MT-SCWO-0032	6,662	5,898	6,662	LSHH (vib) LIT (radar) LIT (radar) LSLL (vib)
SCWO Off-Spec Effluent Tank	MT-SCWO-0041	4,807	3,671	4,213	LSHH (vib) LIT (radar) LIT (radar) LSLL (vib)
SCWO Emergency Relief Tank	MV-SCWO-0040	11,064	503	2,260	LSHH (vib) LIT (radar) LIT (radar) LSLL (vib)
Spent Decon Holding/ Agent Washout Treatment Tank	07-MV-SDS-0101 07-MV-SDS-0201 07-MV-SDS-0301	9,769	7,875	9,769	LSHH (vib) LIT (radar) LSLL (vib)
Agent Hydrolyzer	07-MV-ANS-0101 07-MV-ANS-0201	2,251	2,069	2,251	LSHHH (vib) LSHH (vib) LIT (radar)

Tank Name	Tank ID Number	Total Volume (gal)	Working Volume (gal)	Maximum Waste Volume (gal)	Overfill Protection / Level Control*
Agent Hydrolysate Sampling Tanks	MT-ANS-0103 MT-ANS-0203 MT-ANS-0303	5,865	4,970	5,865	LSHHH (vib) LSHH (vib) LIT (radar)
Energetics Neutralization Reactors	MV-ENS-0101 MV-ENS-0102 MV-ENS-0103	4,007	3,082	4,007	LSHH (vib) LIT (radar_
Agent Hydrolysate Storage Tanks	11-MT-HSS-0105 11-MT-HSS-0205	408,103	309,171	336,943	LSHH (vib) LIT (radar) LSLL (vib)
Agent Hydrolysate Storage Tank	11-MT-HSS-0104	112,489	92,235	103,195	LSHH (vib) LIT (radar) LSLL (vib)
Energetics Hydrolysate Storage Tanks	11-MT-HSS-0604 11-MT-HSS-0704	374,849	287,555	316,192	LSHH (vib) LIT (radar) LSLL (vib)
Agent Holding Tank	07-MT-ACS-0105	1,856	1,510	1,856	LSHH (vib) LIT (radar) LSLL (vib)
Agent Surge Tank	MT-ACS-0106	1,856	1,510	1,856	LSHH (vib) LIT (radar) LSLL (vib)
Hydrolysate Collection Tank	07-MT-EBH-1901	1,657	1,283	1,421	LSHH (vib) LIT (radar) LSLL (vib)
EBH Energetics Batch Hydrolyzer	MV-EBH-1101 MV-EBH-1201 MV-EBH-1301	1,550	754	1,150	CCTV 4 weight elements (each)
SCWO Reactors	MV-SCWO-1030 MV-SCWO-2030 MV-SCWO-3030	23	23	23	Not Applicable for plasma

*dp – differential pressure; pr – probe; radar – radar sensor; vib – vibration sensor

Every tank will be in a spill containment whose volume will be adequate to hold the liquid from the largest tank. Each tank will be further equipped with an overflow pipe or piping or pressure relief that discharges to another tank, a sump, or containment of adequate volume to meet the requirements of 401 KAR 34:190 and 40 CFR 264.193. The PE will verify the adequacy of these designs as part of the TARs discussed and referenced in section D-2b(1).

Calibration and testing of the level indicators and shutdowns will occur a minimum of once per year, or be based on manufacturer's recommendations. BGCAPP maintenance will verify the calibration of the level indicators, checking against the inventory records for each tank to ensure accuracy, and the BGCAPP will test the alarms and automatic feed cutoffs each month to ensure operation as designed.

D-2e Diagram of Piping, Instrumentation and Process Flow [401 KAR 38:160, Section 1 & 40 CFR 270.16(d)]

Listings of drawings reflecting tank systems are provided in Appendix D1. The listings reflect baseline drawings submitted as part of the Rev. 5 application, and drawings that are updated with this application revision.

Drawings that cannot be made available for public dissemination, due to either national security concerns or restrictions on the possible transfer of technology (OPSEC, ITAR, and EAR), are not submitted with this application.

Drawings referenced but not submitted are available for viewing at BPBG offices upon request and appointment by authorized representatives from environmental regulatory agencies during regular business hours.

D-2f Containment and Detection of Releases [401 KAR 34:190, Section 4 & 40 CFR 264.193]

D-2f(0) Exemption to Secondary Containment

No exemption to the secondary containment requirements of 401 KAR 34:190, Section 4, or 40 CFR 264.193 is requested or claimed.

D-2f(1) Plans and Description of the Design, Construction, and Operation of the Secondary Containment System [401 KAR 34:190, Section 4 & 40 CFR 264.193(a), (b)(1), and (c)(1)-(c)(4)]

Assessment information on the containment design was submitted to KDEP either as part of a system-specific TAR (e.g., HSA tanks) or as part of a TAR specifically addressing the containment (e.g., MDB horizontal concrete). KDEP subsequently evaluated and approved these TARs to include calculations comparing the minimum required containment volumes and volume provided by the containment design.

D-2f(1)(a) Exceptions for Ancillary Equipment

No exceptions from secondary containment are requested for ancillary equipment.

D-2f(2) Requirements for External Liner, Vault, Double-Walled Tank or Equivalent Device [401 KAR 34:190, Section 4 & 40 CFR 264.193 (d)-(e)]

External liners will provide the secondary containment for the BGCAPP new tank systems in this permit application. The following subparagraphs summarize how these containments comply with environmental regulations:

NOTE: The secondary containment systems in the MDB and SPB are currently being re-evaluated with respect to how each type of containment will be designated. BPBG is currently preparing an Equivalent Device petition for submission to KDEP. This petition will request that KDEP consider the coatings in both the MDB and SPB as an equivalent device, based on the regulations found in 40 CFR 264.193. This petition will be provided to KDEP under separate cover after it has been prepared and appropriately reviewed.

a. The design of secondary containments for the BGCAPP tank system(s) will include capacities that exceed the maximum capacity of the largest tank within its boundary. The volumes for these secondary containments were provided in the PE-certified TARs previously submitted to KDEP.

b. Roofs over the BGCAPP tank systems will prevent run-on or infiltration into secondary containments except for the outdoor hazardous waste tank systems (i.e., STA and HSA). The secondary containments for these outdoor tank systems are of sufficient capacity to contain the largest tank and run-on/precipitation from a 25-year, 24-hour rainfall event with adequate allowance for “freeboard” (i.e., sufficient freeboard to prevent topping due to wind or wave action if both a leak of the largest tank in the containment and the 25-year, 24-hour rainfall event occur simultaneously).

c. These secondary containments will be free of cracks or gaps.

d. These secondary containments were all designed to surround the tanks and cover all the surrounding soils and prevent contact with tank wastes if leaks from the tanks occur.

e. These secondary containments will be lined with coating materials, compatible with the wastes stored, and will be effective as proven at other waste management facilities.

Category A and Category B sumps will be part of the SDS tank system. As such, the sumps will be double-walled and have metal liners. An ultrasonic level-detection sensor will detect the presence of liquid in the sump. The capacitance probe will detect fluid in the interstitial area between the inner and outer sump walls. This will be the leak detection method for leaks occurring in primary sumps. These sumps meet the regulatory requirements for an open-surface tank because these sumps routinely receive/store agent-derived decontamination solutions during PPE decontamination following entry of personnel into the Category A and Category B areas. CCR operators will pump wastes reaching these sumps to the SDS. If an operator identifies a leak from the outer sump wall to the inner sump wall, the BGCAPP will remove the sump from service for repair.

Containments in Category A and Category B areas slope so that liquid spills or leaks in the containment will drain to the sump(s). The sumps in these areas incorporate leak detection sensors instrumented to sound an alarm in the CCR. The CCR operator responsible for the area with the leak detection alarm can take actions needed to investigate the leak, identify the cause of the leak, and initiate appropriate corrective action (e.g., begin repairs, remotely initiate a pumping of the liquid in the sump to the SDS or to the agent collection/toxic storage tanks).

Category C and Category D sumps and sumps in outdoor hazardous waste tank areas will be lined but may not have alarms or stationary, instrumented pumps to drain the sumps. Tank systems in these areas will be inspected daily, and leaks identified, reported, contained, and repaired/removed in a manner consistent with 40 CFR 264.193(c)(4).

HVAC condensate will be generated by recirculating cooling units (RCUs) in Category C and Category D areas, in the same manner that condensate will be generated in Category A and Category B areas. However, the management of the condensate streams in Category C and Category D areas will differ from that in Category A and Category B areas. For those RCUs located in Category C areas, the condensate will be drained to Category C sumps. These sumps will be connected to the MDB's SDS and will be emptied within 24 hours of accumulation of wastes. Category D sumps will be inspected daily and the results documented on the applicable inspection forms. If any wastes are discovered in these sumps, the wastes will be removed as soon as possible, but always within 24 hours, and properly disposed of. Also, based on the configuration of these sumps, a check valve on the sump line combined with the top feeding of the SDS tanks would not allow for any agent-contaminated SDS liquids to flow back into the sumps. MINICAMS® monitoring will be continuous in the Category C areas and would detect the presence of any agent-containing liquids/wastes in these sumps.

D-2f(3) Secondary Containment and Leak Detection Requirements for Ancillary Equipment [401 KAR 34:190, Section 4 & 40 CFR 264.193(c),(f))]

Piping and fittings will be above ground and will either be visually inspected for leaks daily or will be equipped with leak detection. All piping and fittings containing agent or agent-contaminated liquids will be located in the MDB, which will have engineering controls for liquids, monitoring for agent vapors, and closed-circuit television (CCTV) surveillance allowing remote observations of areas for the detection of leaks.

D-2f(4) Requirements for Existing Tank Systems Until Secondary Containment is Implemented – [401 KAR 34:190, Section 4 & 40 CFR 264.193 (i)(1) – (i)(5)]

Not applicable. All tanks in the BGCAPP are new with secondary containment provided for all hazardous waste tank systems in this Permit Application.

D-2f(5) Variance from Secondary Containment [401 KAR 34:190, Section 4 & 40 CFR 270.16 (h), and 264.193 (g)(1) – (g)(3)]

Not applicable. The BGCAPP is not requesting any variance from secondary containment requirements.

D-2g Tank Management Practices

The BGCAPP tanks and tank systems will be equipped with numerous layers of protection to minimize the possibility the hazardous wastes or treatment reagents will cause any elements of a tank system to rupture, leak, corrode, or otherwise fail.

D-2g(1) Controls and Practices to Prevent Spills and Overflows [401 KAR 34:190, Sections 4, 5 and 6 & 40 CFR 264.194(a) and (b), and 264.195(a) – (c)]

D-2g(1)(a) Wastes or Treatment Reagents Will Not Cause Damage

The TARs previously submitted to KDEP certified the design of all the hazardous waste tank systems in this Permit Application. These TARs provided information on the tank systems, including the associated secondary containments and ancillary equipment. These PE-certified TARs provide independent assurances that the tank systems can function without releasing wastes to the environment, and that hazardous waste or treatment residues placed in the tank system do not cause any element of the system to rupture, leak, corrode, or otherwise fail.

These tanks will have fixed roofs and, with the exception of the STA and HSA tank systems, the associated secondary containment sumps and the secondary containment system will be located indoors without the additional capacity required to capture precipitation. The volumes of the secondary containments for the outdoor HSA and STA will provide adequate volume to contain the largest tank, provide capacity for a 25-year, 24-hour rainfall event, and sufficient freeboard (i.e., sufficient freeboard to prevent topping) to address overtopping by wave or wind action.

D-2g(1)(b) Spill and Overfill Prevention Controls

Operation of BGCAPP tanks will incorporate controls and follows practices designed to prevent spills and overflows, as described in section D-2d. These tank systems have spill prevention controls, including check valves and tight shutoff valves. Lines that are below the liquid level in the tank incorporate one or more check valves to prevent backflow from downstream equipment that might cause overfilling. As indicated, all tanks also have overfill controls, including level transmitters, high-level and high-high-level alarms, and automatic feed cutoffs.

D-2g(1)(c)Calibration and Testing

Calibration and testing of the level indicators and shutdowns will occur at a minimum of once per year or based on manufacturer's recommendations. BGCAPP maintenance will verify the calibration of the level indicators, checking against the inventory records for each tank to ensure accuracy, and the BGCAPP will test the alarms and automatic feed cutoffs each month to ensure operation as designed.

D-2g(1)(d)Inspection Schedule and Procedure

Plant operators will conduct daily inspections of overfill controls, tanks, data from monitoring and leak detection equipment, construction materials, and the area surrounding the tank systems. Inspections of the tank systems within the Category A and Category B areas (within the MDB) may be conducted from observation areas around the systems or during worker entries into these areas. Scheduling of these inspections may be less than daily based on worker entry schedules. Worker entries will not be conducted solely for tank system inspections (i.e., due to inherent risks). CCR operators also can use CCTV to conduct inspections of the Category A and Category B areas within the MDB on a weekly basis. The basis for the frequency of inspection will be the rate of possible deterioration of equipment and the probability of an environmental or human health incident if deterioration, malfunction, or operator error goes undetected between inspections. The BGCAPP will conduct daily inspections of areas subject to spills, including loading and unloading areas if in use. Details will be provided in the Facility Inspection Plan, which is currently a Compliance Schedule Item requiring submission.

The following paragraphs summarize the criteria and regulatory requirements for these inspections.

1. The aboveground portions of each tank system will be inspected daily for signs of external corrosion or releases of waste – 401 KAR34:190 Sections 4 and 6 (40 CFR 264.195).
2. Overfill controls will be visually inspected monthly if waste is present in the tank system. The inspection will consist of visual observation of the external overfill controls for evidence of deterioration or malfunction. A reading of the level sensors and transmitters associated with overfill control will be obtained daily by operators – 401 KAR34:190 Section 6 (40 CFR 264.195(a)).
3. The BGCAPP hazardous waste tank systems outside the Category A and Category B areas in the MDB (including tank shell and bottom, piping and valves, pumps, tank supports, and construction materials, area around the tank, and secondary containment system) will be visually inspected once daily to detect corrosion, erosion, or signs of waste releases – 401 KAR34:190 Section 6 (40 CFR 264.195(b)).
4. BGCAPP personnel will monitor the temperature, pressure, and flow/level during transfer operations. BGCAPP personnel will also conduct daily inspections of leak detection equipment, including the level indicators in the sumps. The data gathered from monitoring will be reviewed at least daily to ensure tank systems are operating in accordance with design specifications – 401 KAR34:190 Section 6 (40 CFR 264.195(b)).
5. The BGCAPP personnel will inspect hazardous waste tank area sumps, trenches, and secondary containments at least daily. The inspection will consist of a visual observation (i.e., using CCTV and instrument readings) of the sumps, trenches, secondary containment, and readings of the level indicators in the sumps – 401 KAR34:190 Section 6 (40 CFR 264.195(b)).
6. The tank systems within the Category A and Category B areas in the MDB will be inspected weekly – 401 KAR34:190 Section 6 (40 CFR 264.195(c) and (d)).
7. The BGCAPP does not provide external cathodic protection for the hazardous waste tanks; therefore, inspections of this item will not be required.

The BGCAPP will comply with the requirements of 401 KAR 34:190 Section 7 (40 CFR 264.196) if a leak or spill occurs in the tank system.

D-2h Special Requirements for Hazardous Wastes F020, F021, F022 F023, F026, and F027 in Existing Tanks [401 KAR 34:190, Section 4 & 40 CFR 264.193]

Not applicable. The BGCAPP will not accept, store, or produce these F-listed wastes.

D-2h(1) Tank Systems with Ignitable or Reactive Wastes [401 KAR 34:190, Section 9 & 40 CFR 264.198(a)-(b)]

Potentially reactive waste (propellant from "leaker" rocket motors) may be treated in the ENR tanks. However, the waste will be stored and treated in the tanks such that uncontrolled reactions will not occur. Standing operating procedures (SOPs) will include use of temperature control through jacketed reactor heating and cooling, nitrogen blanketing, continuous mixing, and controlled reagent addition along with monitoring of reactor content conditions with sensors (e.g., temperature, pH).

D-2h(2) Tank Systems with Incompatible Wastes [401 KAR 34:180, Section 8 & 40 CFR 264.177(a),(c) & 40 CFR 264.17 (b)]

Not applicable. The BGCAPP does not expect to use facility tank systems to store or treat incompatible wastes.

D-3 Surface Impoundments [401 KAR 34:200 and 38:170 & 40 CFR 264. 220 and 270.17]

Not applicable. BGCAPP waste management units do not include surface impoundments.

D-4 Waste Piles [401 KAR 34:210 and 38:180 & 40 CFR 264.250 and 270.18]

Not applicable. BGCAPP waste management units do not include waste piles.

D-5 Land Treatment [401 KAR 34:220 and 38:200 & 40 CFR 264.270 and 270.21]

Not applicable. BGCAPP waste management units do not include land treatment.

D-6 Landfill Design [401 KAR 34:230 and 38:210 & 40 CFR 264.300 and 270.20]

Not applicable. BGCAPP waste management units do not include landfills.

D-7 Incinerators [401 KAR 34:240 and 38:190 & 40 CFR 264.340 and 270.19]

Not applicable. BGCAPP waste management units do not include incinerators.

D-8 Miscellaneous Units [401 KAR 38:230 and 34:250, Section 2 & 40 CFR 270.23 and 264.601]

Multiple hazardous waste treatment units will be used to destroy the chemical weapons stockpile at BGCAPP. Treatment will occur in both tank systems and miscellaneous (Subpart X) units. These treatment units will be installed during the RD&D program. Each hazardous waste treatment unit will be designed, constructed, and operated in accordance with the applicable standards from 401 KAR Chapter 34 (Standards for Owners and Operators of Hazardous Waste Storage, Treatment and Disposal Facilities).

D-8a Description of Miscellaneous Units

D-8a(1) Description [401 KAR 38:230 and 34:250, Section 2 & 40 CFR 270.23(a)(1) and 264.601]

An overview of all treatment units is provided in section D-0. Specific miscellaneous and tank treatment unit processes are described in detail below in the general order in which treatment will occur. Specific unit footprints, physical characteristics, and dimensions are provided in the drawings referenced in Appendix D1.

D-8a(1)(a) Munitions Unpacking (Miscellaneous Unit)

EONCs containing munitions will be moved from the CHB to the UPA of the MDB for processing. Before the EONC is opened in the UPA to access the munitions, the air in the sealed EONC will be monitored for agent. If agent is detected above an approved action level, the EONC will not be opened until it is transported to the EONC leaker airlock. If no agent is detected, the EONC will be opened in the UPA and the munitions will be unloaded for processing. Unburstered projectiles will be loaded onto a munition tray; the tray will be placed on a conveyor and moved to the nose closure removal (NCR)/munitions washout system (MWS) station. Rockets will be loaded onto the rocket input assembly and conveyed into the ECV where the RCM will begin the processing of the rockets.

If agent is detected in the EONC (indicating a leaking munition), the EONC will be moved to the EONC leaker airlock, which is designed to handle the opening of containers with leaking munitions. In the leaker airlock, the EONC will be opened and the munitions processed by personnel wearing appropriate PPE; they will remove the munitions from the EONC and place these on the appropriate processing conveyor line, with the munitions passing through the ECV or toxic maintenance area (TMA). The contaminated metal straps will be transferred to the MPT for treatment. The contaminated wood pallets may either be treated on site by chemical decontamination or treated in the MPT and then shipped off-site to a permitted TSDF. The EONC will be decontaminated and released for further use.

Overpacked rockets and overpacked projectiles will be removed from the overpacks and placed on the respective conveyors for processing as described above. Overpacked unburstered projectiles will be loaded onto a munition tray for processing through the NCRS.

D-8a(1)(b) Projectile Input Subsystem (Miscellaneous Unit)

The 8-inch GB projectiles will be unpacked in the UPA, placed onto the projectile feed conveyor, and transferred through the ECV and into the ECR for reverse assembly by the NCRS.

The projectile feed conveyor will consists of a combination of a roller-type conveyor and an airlock assembly with a series of doors. The doors will provide for an airlock into the ECV and provide a negative pressure in the ECV, preventing air from flowing into the UPA.

D-8a(1)(c) Rocket Input Subsystem (Miscellaneous Unit)

M55 rockets will be unpacked on the receiving table in the UPA, placed onto the rocket input assembly, and conveyed to the ECV for processing on the RCM. Following RCM processing, the rocket warheads will be conveyed into the ECR through a munition access blast gate for processing by the RSM. The plant will have two RCMs and two RSMs: each will have its own rocket input system, with one RCM located in each ECV and one RSM located in each ECR.

D-8a(1)(d) Nose Closure Removal Station (Miscellaneous Unit)

The NCRS will remove the nose closures from the unburstered nerve-agent projectiles by unscrewing these from the nose of the projectile and placing the removed nose closures in a storage bin or tray. After the nose closures have been removed from each projectile, a robot will transfer the projectile from the NCR station to the MWS station. The removed nose closures that are placed on munitions trays will be processed through the MPT.

D-8a(1)(e) Munition Washout System (Miscellaneous Unit)

At the MWS, the projectile will be inverted and placed into one of the MWS modules that contain a cavity access machine. A ram will be hydraulically forced into the projectile, collapsing the burster well into the agent cavity. The agent will drain by gravity and then be pumped to the agent storage tank in the ANS. A washout nozzle array (nozzles providing high-pressure water jets) will be integrated into the shaft of the burster well ram and provide the high-pressure water sprays to clean and flush the cavity. After flushing of the cavity, the projectile will be placed back on the munition tray and transferred to the MPT. If for any reason a projectile cannot be processed, it will be placed in storage on a reject table (permitted storage area listed in Part A) in proximity to the MWS, where the rejects can be managed until processed manually.

D-8a(1)(f) RCM (Miscellaneous Unit)

The RCM's design will be based on a commercially available pipe cutter: the whole rocket, inside the SFT, will be placed into the RCM, which will clamp the motor end of the SFT into a rotating chuck, with a cutting wheel blade shearing the rocket into sections as it is rotated by the chuck. The cutting wheel will cut through the SFT and then through the rocket at the point between the warhead and the rocket motor. After the wheel cuts the rocket into sections, the warhead's SFT will be removed from the warhead and sent out of the MDB. The warhead will be sent to the ECR and the rocket motor (if not contaminated) will be packaged for transport out of the MDB.

D-8a(1)(g) RSM (Miscellaneous Unit)

The RSM will demilitarize the M55 rocket warheads and CRMs. The RSM will extract agent from rockets in a punch, drain, and wash station and then shear these into segments to access the energetics for neutralization in the EBH. Drained agent extracted at the RSM will be pumped directly into the agent storage tanks; all agent washout water will be pumped to the spent decontamination solution storage tanks and agent surge tank. From the storage tanks, the agent and flush material will be pumped to the ANS for agent neutralization.

The rocket-warhead processing at the RSM will occur after these have been removed from their SFTs. The RSM to be used at the BGCAPP is similar to the RSM used at baseline operations, but it has been modified to process warheads that have been removed from the SFT to include a high-pressure flushing step that will serve to wash residual agent from the agent cavity and remove any gelled agent. A fully automated, hydraulically powered RSM will be installed in each ECR.

D-8a(1)(h) Punch/Drain and Wash Station (Miscellaneous Unit)

The punch/drain and wash station will clamp the rocket warhead while it is punched, drained, and washed out. To reduce residual agent in the rocket warhead cavity and therefore minimize the amount of agent processed in the EBH, the baseline RSM punch-and-drain station has been modified to include a pressurized water spray system.

The sprays will remove the residual agent and dissolve solidified material that does not drain during the punch-and-drain cycle. The high-pressure water flush system will improve cleaning of the rocket warhead while minimizing changes to the baseline RSM system.

The flush rate will be maintained at less than the drain rate capacity, assisted by vacuum, to avoid pressurizing the warhead.

D-8a(1)(i) Rocket Shear Station (Miscellaneous Unit)

The rocket warhead, with the agent cavity drained and washed, will be conveyed from the punch/drain and wash station to the rocket shear station. Shearing will be necessary to open the interior of the agent cavity for improved decontamination, to open the interior of the burster for improved explosive neutralization, and to cut the warhead into smaller sections that can be safely placed into the EBHs. When processing the CRMs, cutting the CRM propellant into smaller pieces also exposes more of its surface area to the hot caustic in the EBH, increasing the rate of propellant hydrolysis.

The rocket shear station will have an optical sensor that reads the position of a pusher arm that will move the rocket forward for shearing. The sensor output will identify the location of each cut that the blade will make. The rocket will be progressively positioned under the blade, which will shear the warhead and rocket motor in a predefined pattern. Water or decon solution (e.g., 1% NaOH solution) will be sprayed to cool the rocket shear blades; the solution will be collected in the sheared rocket collection container and then sent to the EBH along with the warhead sections. Cooling of the shear blades using the sprayed water or decon solution during cutting of the rockets will prevent ignition of the rocket warhead energetic material. The solid material from the rocket shear station will be transferred to the EBH for further processing.

D-8a(1)(j) Agent Neutralization by Hydrolysis (Tank System)

The agent drained from the munitions, as well as the wash liquid from the drain-and-wash operation, will be hydrolyzed in the ANS reactors. Hot NaOH solution will be used to neutralize GB agent.

In the neutralization process, the agent will be destroyed to at least 99.9999 percent on a mass basis (i.e., the mass of agent entering the ANS versus the mass of agent leaving the hydrolysis system).

The 99.9999 percent DE will be accomplished in the ANS in the two jacketed hydrolyzers (2,062 gallons each) and three sampling tanks (4,838 gallons each). The hydrolyzers will neutralize the agent, using process water and caustic, and allow sampling of hydrolysate. The sampling tanks will be used to store treated hydrolysate while awaiting laboratory analysis confirming agent destruction. The transfer of hydrolysate into the sampling tank will allow use of the hydrolyzer for processing another batch. The contents of the sampling tanks will be agitated to maintain uniform mixing and allow collection of representative samples for laboratory analysis. After sampling, the sampling system will be flushed with heated process water to remove any remaining agent hydrolysate.

The ANS will perform the following functions:

1. Neutralize agent GB with caustic.
2. Process agent-contaminated spent decontamination and wash water.
3. Cool the hydrolysate from reaction temperature to 100°F for sampling.
4. Hold hydrolysate until sample analyses confirm 99.9999 percent agent DE has been achieved. GB hydrolysates are sampled in the agent hydrolysate sampling tanks.

5. Transfer cleared hydrolysate (i.e., 99.9999 percent DE) to the agent hydrolysate storage tanks.
6. Reprocess failed hydrolysate in the agent hydrolyzers until 99.9999 percent DE is achieved.

D-8a(1)(k) Energetics Batch Hydrolyzer (Miscellaneous Unit)

Explosives and CRM propellant contained in the rockets will be treated in EBHs.

After the M55 rockets and M56 warheads are drained of agent and sheared in the RSM, the segments will be conveyed to the EBHs for processing. The EBH drum will be partially filled with hot NaOH solution, and sheared rocket segments placed in the rotating drum will have energetics dissolved and hydrolyzed. Rocket warhead segments and fin assemblies (containing aluminum) will be fed and processed separately from the steel-casing CRM segments in separate EBHs, because aluminum in the rocket segments will react with the NaOH solution.

Hydrogen gas generated by the reaction of aluminum with NaOH will be monitored, and an air or nitrogen purge will be provided to ensure hydrogen levels are maintained below 25 percent of the lower flammable limit (LFL). The EBH room will be designed as an ECR.

After the first EBH is charged, the second and third EBHs will also be able to receive rocket segments and energetics. Following completion of energetics treatment in the EBHs, the solid residues will be separated from the liquid hydrolysate and transferred to the MPT for thermal decontamination. The hydrolysate will be transferred to the ENRs for final energetics destruction and confirmation of destruction. Samples will be taken to verify the hydrolysate is below the target release level for agent, or statistical methods may be used to establish minimum operating parameters that, if met, ensure destruction of energetics to a target release level. Following confirmation of destruction, the energetics hydrolysate will be transferred to the energetic hydrolysate storage tanks in the HSA. If the residual agent concentration is above the target release level or the required minimum operating parameters are not achieved, additional reaction time will be required in the ENRs before transfer to the HSA.

Gases from the EBHs and ENRs will be sent to the dedicated air pollution control devices (e.g., EBH OTE) and then released to the MDB HVAC filtration system.

D-8a(1)(l) ENS (Tank System)

The energetics hydrolysate will not be released from the MDB until it has been tested for agent and verified to have met all requirements for release from engineering controls. The hydrolysate will be transferred to the energetic hydrolysate storage tanks in the HSA. If the residual agent concentration is above the target release level, additional reaction time will be required in the ENRs before transfer to the HSA. Headspace gases from the ENRs will be sent to an air pollution control device (e.g., MPT OTM) and then released to the MDB HVAC filtration system.

D-8a(1)(m) Decontamination Solution Supply and Spent Decontamination Solution Capture/Storage System (Tank System)

Decontamination solution will be used in the following activities:

a. Washing down and decontaminating agent spills
b. Decontaminating equipment
c. Decontaminating PPE that may have been contaminated during toxic-area entries.

Decontamination solution will be applied to an area of contamination and then rinsed with water after allowing sufficient contact time. The wash water will drain to sumps in the MDB.

The decontamination solution will be based on NaOH, NaOCl, soap and water, or other decontamination solutions. Decontamination solutions will be evaluated and selected based on overall performance, safety/health of workers, and environmental impacts.

D-8a(1)(n) MPT (Miscellaneous Unit)

The MPT will thermally decontaminate munitions bodies and other materials using inductive heating and superheated steam. Air will be excluded from the system through the use of airlocks and nitrogen purges.

Projectiles and other materials will be placed in trays on a conveyor for processing. The rolling conveyor will convey or carry these through the first MPT door into the inlet airlock. The tray will be staged in the inlet airlock, which is purged with nitrogen, until other trays in the MPT have completed processing and been moved downstream. The tray will then be conveyed through the gate into MPT zone 1, where it will be held until it reaches the desired initial temperature. It will then be moved into MPT zone 2 where it will be further heated for a sufficient time to ensure the complete mass of material has achieved a minimum of 1000°F for a minimum of 15 minutes. After these conditions have been achieved, the tray from zone 2 will be moved into the exit airlock where it will be kept for a sufficient period to ensure it has cooled in the nitrogen atmosphere to prevent the formation of dioxins and related compounds. This type of sequential operation will allow for continuous treatment of trays of material while ensuring the material in each tray has been heated to a minimum of 1000°F for a minimum of 15 minutes.

D-8a(1)(o) MPT Cooling System (MCS) (Miscellaneous Unit)

The MPT cooling system (MCS) will cool the trays exiting the MPT to a temperature that allows safe handling.

D-8a(1)(p) OTM (Miscellaneous Unit)

The OTM (a permitted air pollution control system) will remove air pollutants from the MPT offgas and from the vent gases of the ACS, ANS, ENS, and SDS tank systems. The OTM will consists of:

- Two TOXs
- Two cyclones
- A common wet venturi scrubber system
- Filters and blowers.

Each MPT will have its own TOX and cyclone, and the offgas from the two MPTs will be combined prior to further treatment in the scrubber system and filter before discharge to the MDB HVAC filtration system.

The TOX unit will be a flamed thermal oxidizer that oxidizes organics that may be present in the MPT, ANS room tanks, and ENS offgases. It will handle a wide variety of materials, including halogenated organics, methane, hydrocarbons, ammonia, carbon monoxide, and hydrogen.

The TOX unit will handle the following input streams:

1. Air feed to the oxidizing section to ensure the residual oxygen level in the unit effluent will be at least 5 percent.

2. Fine mist of water to the oxidizing section to maintain the operating temperature at 2000°F with capability to operate at 2200°F if the gas feed has a higher heating value. A 2200°F temperature will be required if contaminated wood pallets and SFTs from CRMs from the rocket handling system are processed in the MPT.
3. Natural gas to maintain the operating temperature at 2000°F (or 2200°F) if the heating value in the gas feed is not sufficient to maintain the operating temperature.
4. Fine mist of water to the cooling section to maintain the exit temperature at 1200°F.

The TOX will consist of two sections, an oxidizing section, and a quench section. The oxidizing section will have a minimum gas residence time of 2 seconds within a temperature range of 2012°F to 2372°F.

The MPT cyclone will remove ash and other large particulate matter from the TOX unit effluent gases and discharge the gases to the combined scrubber system.

The venturi/scrubber system will be a combination of a venturi impaction scrubber that captures particulates and rapidly quenches the hot gases, followed by an absorption tower that captures acid gases. Caustic solution will be added to the system to maintain pH and neutralize the captured acids.

The OTM off-gas filter will remove residual particulate matter greater than 3 µm in diameter. This filter will also serve as a demister, removing fine mist that may pass through the scrubber tower's demister system.

The gas reheater will reheat the OTM outlet gases to maintain the relative humidity of the blower effluent stream below 55 percent, to avoid condensation in the HVAC ducts. The treated offgases from the OTM will then go to the MDB HVAC filtration system.

D-8a(1)(q) HSA (Tank System)

Following confirmation of destruction, the agent hydrolysate and energetics hydrolysate are transferred to the energetic hydrolysate storage tanks in the HSA. The hydrolysates are stored in the HSA tanks until transferred to the SPB for final processing.

D-8a(1)(r) Aluminum Precipitation System (APS)/Aluminum Filtration System (AFS) (Miscellaneous Unit)

The energetics hydrolysate will be transferred from the HSA to the APS in the SPB, where the pH of the hydrolysate will be adjusted so that dissolved aluminum will precipitate and then be filtered in the AFS.

The AFS filtrate will be transferred to the SCWO feed tanks for blending with the agent hydrolysate. The filter cake will be managed in a permitted container storage area in the SPB (see Part A) until it can be removed and disposed of at a permitted TSDF.

D-8a(1)(s) SCWO Units (Miscellaneous Unit)

The SCWO units will be used to treat the agent and energetics hydrolysates and spent decontamination fluid. These waste streams may be processed through the SCWO units either individually or as blends. All materials fed to the SCWO units will have agent concentrations previously verified as below the target release level for agent; therefore, the SCWO and downstream operations will not require engineering controls for agent.

The SCWO process is based on the unique properties of water at conditions above its thermodynamic critical point, with a temperature of approximately 705°F and pressure of approximately 3,206 pound per square inch, absolute (psia). At these supercritical conditions, organic materials and oxidant gases are generally completely miscible in water, and the elevated pressure increases the mixture density in the reactor, thereby allowing rapid and complete oxidation reactions. Tests conducted as part of the technical risk reduction program (TRRP) have provided data on the appropriate ratios of caustic and salt transport additives. The SCWO TRRP reports have been submitted to KDEP as required by the RD&D Permit, Compliance Schedule Item No. 1.

The SCWO reactor will be a vertical down-flow high-pressure cylindrical vessel. A replaceable annular liner will be fitted into the vessel as shown in the SCWO reactor drawings previously provided to KDEP. A small flow of air or nitrogen will be maintained in the annulus between the liner and the pressure vessel, to inhibit the ingress of process fluid into the annulus.

The material to be reacted (hydrolysate. or spent decontamination solution. or blends of these streams), along with air, will be pumped through the feed-nozzle at the top of the reactor. The feed material will be supplemented with additional organic feed (supplemental fuel) in order to increase its heating value and maintain an autogenous reaction. Isopropyl alcohol (IPA), fuel oil, or kerosene may be used as supplemental fuels at the BGCAPP, as necessary.

During system startup, an electric feed pre-heater will heat the SCWO reactor to the fuel initiation temperature at the nominal operating pressure of approximately 3,400 pounds per square inch (psi). At this point, flows of oxidant and fuel will begin so that reaction in the SCWO is initiated. Oxidation of the fuel will bring the SCWO system to the full operating temperature before the hydrolysate will be introduced. After the hydrolysate flow is initiated, fuel flow will be reduced to accommodate the heat released by hydrolysate oxidation. As the hydrolysate feed rate is ramped up to the target throughput, the fuel, water, and air flow rates will be adjusted as required to maintain the desired operating conditions.

In the SCWO reactor, the organic constituents of the waste will be converted to carbon dioxide (CO_2), water (H_2O), nitrogen (N_2) or nitrous oxide (N_2O), and sulfates and phosphates (if sulfur or phosphorus is present in the feed). The resulting acids (i.e., hydrochloric [HCl], hydrofluoric [HF], sulfuric [H_2SO_4], phosphoric [H_3PO_4], depending on the agent being processed) will ultimately react with caustic to form the respective sodium salts, including sodium chloride (NaCl), sodium fluoride (NaF), monosodium phosphate (NaH_2PO_4), and sodium sulfate (Na_2SO_4). The salts, not soluble in the supercritical fluid, will be carried through the reaction zone (from the injector to the quench region) as solids or as slurries. At the bottom of the reactor, quench water will be introduced, lowering the temperature below the critical point and converting the supercritical fluid to a liquid into which the salts dissolve. All of the reaction products will flow out the bottom of the SCWO reactor.

The quenched reactor effluent will be passed through a series of heat exchangers to cool it to near-ambient temperature, passed through a high-pressure gas/liquid separator (GLS), and then passed through pressure reduction control valves. The gas stream and the liquid stream will be depressurized separately. The liquid stream will go to a second GLS to further remove gases that were soluble at high pressure—principally residual CO_2. The gas will be combined with the main gas stream exiting the high-pressure GLS. The SCWO aqueous effluent will exit the bottom of the low-pressure gas/liquid separator and be pumped to the SCWO effluent tank for storage before it is transferred to the RO system.

During upset conditions, the SCWO effluent will be diverted to the off-spec effluent tank (MV-SCWO-0041) and not to the tanks in the STA. The off-spec effluent tanks will be located in the SPB and air emissions will be controlled by the SPB HVAC system.

D-8a(1)(t) Reverse Osmosis (RO) (Miscellaneous Unit)

The RO unit will process the effluent from the SCWO units. SCWO effluent will first be processed in the feed pretreatment subsystem, which will consist of multimedia filters, and cartridge filters. The effluent, following this preparation step, will then be fed to an RO unit for brine concentration. The RO unit will create a permeate product stream that will be of suitable quality for reuse in the SCWO system, and a concentrate stream rejected by the RO unit. Reject from the RO unit will be combined with the backwash liquid from multimedia filters and blow-down from pretreatment units, stored in the RO reject tanks, and then shipped off-site to a permitted TSDF.

RO permeate will be introduced into the SCWO reactor near the bottom to reduce the SCWO effluent's temperature to below the critical point, and result in the re-solution of the inorganic constituents to allow discharge from the reactor.

D-8a(2) Treatment Unit Design/Construction Details [401 KAR 250, Sections 1, 2 and 3 & 40 CFR 270.23(a)(2), 264.601, and 264.602]

This section describes the criteria for locating the Subpart X treatment units, design and construction of the units, operating conditions, maintenance, monitoring and inspection, safety features, and closure.

D-8a(2)(a) Criteria Used for Location of Units

The BGCAPP facility is located on the BGAD near the munitions storage area to minimize the distance chemical munitions are transported. This location minimizes the risk to the public and workers while being compliant with prohibitions against public transport of chemical weapons. Part B of this application addresses the adequacy of the BGCAPP location within the BGAD (e.g., geology, surrounding land use, seismic concerns, and meteorology).

D-8a(2)(b) Design and Construction (including containment systems)

During construction, a Professional Engineer (PE) will be present at the facility to verify the hazardous waste management units (HWMUs) are being built in accordance with the facility design. Before pilot testing with hazardous waste begins, a PE will perform facilities construction certification (FCC) of each Kentucky regulated hazardous waste building, area, and system. The PE will certify that each building, area, and system has been constructed as designed and in accordance with the RD&D permit. The FCC process is required by 401 KAR 38:030, which in this case is governed by 40 CFR 270.30 (l)(2)(i). Containment systems are discussed in sections D-1 and D-2. A list of drawings of the facility is provided in Appendix D1.

Individual subsystems will be completed in a staged manner. As a subsystem is completed, it will be turned over to the Systemization Group, which will test its mechanical ability, liquid and gas containment integrity, and numerous other functions. Systemization will be conducted using simulant and surrogate materials, and no chemical agent or any agent-contaminated materials will be processed during systemization. Although the systemization phase of the program does not involve the processing of hazardous waste, it is the first part of the overall on-site RD&D program. The RD&D objective that begins during systemization will be the assessment of the system's overall ability to function as an integrated unit, and the identification of problems in the interfaces between the subsystems.

D-8a(2)(c) Operating Conditions

After all of the subsystems have been subjected to rigorous testing under the systemization program and the results of systemization have been deemed acceptable by the Department of the Army, ACWA, and BPBG, the program will move into the second on-site phase of the RD&D program, termed "pilot testing." Pilot testing starts by processing the munitions at very slow rates, with a large amount of testing and verification taking place during the processing. Pilot testing will begin with the processing of GB rockets, followed by projectiles. It is anticipated testing with the GB inventory will meet the system integration objectives of the RD&D program.

The bases for this conclusion are as follows:

- All of the components of the BGCAPP are tested during the RD&D program.
- The Newport Chemical Agent Disposal Facility (NECDF) completed operations on VX years prior to the start of BGCAPP operations; therefore, an RD&D program is not required for this agent. Treatment of munitions will ramp up during the RD&D program, with GB munitions processing taking place slowly. As the system is validated and issues are identified and resolved, the processing rates will increase over a period of approximately 5 months (the 5-month period is based on an assumption that no major problems arise). The program schedule is designed to allow sufficient time to identify and overcome minor problems. If major problems arise during the RD&D period, the RD&D program may require the full 1-year period allowed by the RD&D regulations that is being requested in this permit application. It is the intent of BPBG to use the entire RD&D campaign to treat all GB agent containing munitions and associated wastes. If operations take longer than the anticipated one year, BPBG may seek additional time as outlined in the Office of Solid Waste and Emergency Response (OSWER) Policy Directive for RD&D permits.

The BGCAPP is an integrated facility whose effectiveness depends on the integrated processes, and not the effectiveness of individual miscellaneous Subpart X (or other) treatment units. The sole function of the BGCAPP is destruction of the chemical agent and treatment or disposal of the associated energetics, and operating conditions will be selected to meet that function. The operating conditions of some units (e.g., MPT) will be well defined before start of operations. The operating conditions of other units will be adjusted as necessary during pilot plant testing to determine optimal conditions.

For hydrolysis of agent and energetics, destruction of GB to a 99.9999 percent DE has been demonstrated at bench scale. Approximate temperature and reaction times have been determined that will ensure agent and energetics are hydrolyzed and aluminum components are dissolved. Conditions will ensure 99.9999 percent DE will be accomplished by the ANS and ENS.

For the MPT, the Department of the Army cites a temperature of 1000°F for at least 15 minutes as a performance-based standard for the destruction of chemical agents. The MPT unit has been designed, tested, and demonstrated to meet this military unique chemical agent treatment standard. This standard (previously referred to as XXXXX or 5X) has been used for more than 30 years and, when met, allows the release of the treated item or waste to the public. Treatment of metallic and other solid wastes, including secondary wastes, potentially contaminated with chemical agent at BGCAPP will also occur in the MPT under these conditions. To demonstrate achievement of the performance standard, thermal dosimeters will be applied to munition bodies and other metal parts after liquid agent has been removed. These dosimeters will be located on the outside and inside of the munition bodies and will "pop" when the pre-determined criteria (1000°F for 15 minutes) has been achieved.

BGCAPP SCWO units will treat both energetics and agent hydrolysate and effectively mineralize any remaining organics in these wastes. The SCWO has treated (at the scale employed at the BGCAPP) industrial wastewater in Japan and agent hydrolysate during tests for the Department of the Army at Corpus Christi, Texas. In both instances, the technology was extremely effective in treating organics. Treatment of the highly corrosive hydrolysate at Corpus Christi produced an effluent that was essentially devoid of any organics (i.e., total organic carbon [TOC] <10 ppm). Establishment of a performance standard and adjustment of operating conditions will occur during RD&D testing associated with the GB agent campaign.

Following SCWO treatment of hydrolysate, the RO system will treat, recover, and recycle (in the SCWO) the majority of the resulting wastewater (approximately 70 percent). The BGCAPP will ship the RO reject off-site to appropriately licensed and permitted RCRA facility(s). The RO unit is a proven technology for removing contaminants like salts from water. The Department of the Army and others have repeatedly demonstrated the RO's treatment effectiveness by treating wastewaters ranging from brackish water to industrial waste streams while meeting a wide variety of water quality requirements. RO unit operating conditions and effluent will be evaluated and a performance standard established during RD&D testing associated with the GB agent campaign.

Process integration involves many individual units and systems performing together to achieve the desired goal of final munitions demilitarization and agent/energetics destruction. This can best be measured by the successful completion of the deliberate ramping up of munitions processing during the GB campaign to the successful demonstration test at full rate. This full scale demonstration will be accompanied by the achievement of the 99.9999 percent DE at the exit of hydrolysate from the ANS. These two components (achievement of full scale throughput and attainment of the 99.9999 percent DE) will demonstrate that all individual processes are working as designed from the onset of munitions processing in the ANS to waste streams exiting the RO unit.

Additional operating details for the miscellaneous units will include:

- GB Nerve Agent Munitions – GB 8-Inch Projectile (no energetics are associated with this munition)
    1) Remove the pallet of projectiles from the EONC.
    2) Load the projectiles onto a tray.
    3) Convey the tray to the NCR and MWS.
    4) Via robot, transfer each individual projectile to the NCRS and remove the lifting plug from the nose.

5) Via robot, transfer the individual projectiles from the NCRS and load them into the MWS module, nose-down.

6) Hydraulically collapse the burster well into the projectile's agent cavity.

7) Gravity-drain the agent through the nose of the projectile.

8) Wash out the agent cavity using high pressure water.

9) Send the drained agent and washout water to storage tanks in the agent neutralization room.

10) Replace each washed munitions body into its tray.

11) Convey the tray of washed projectiles to the MPT for thermal treatment.

- GB 8-inch Leaking Munition Processing Sequence

1) The overpacked GB projectiles will be removed from the EONC in the UPA.

2) The munition will be transferred to the TMA where they will be manually unpacked and placed on a tray on the conveyor system for processing through the MWS.

3) In the ECV, the overpacked projectiles will be manually unpacked and placed on the conveyor system for transfer to the projectile/mortar disassembly (PMD) for processing.

4) The empty overpack containers will be taken to the TMA for chemical decontamination or thermal decontamination in the MPT prior to offsite recycling or disposal at a permitted TSDF.

- GB M55 Rockets – Nonleakers

1) Remove the pallet of rockets from the EONC (UPA).

2) Place each rocket individually onto the rocket input assembly, which conveys it through the airlock to the ECV and to the RCM. The RCM separates the rocket into three pieces: the warhead, the warhead's SFT, and the RM.

3) Transfer the RM (still contained in its section of the SFT) to a container for further treatment at another location on BGAD or an offsite TSDF.

4) Transfer the warhead's SFT to a container for disposal at a permitted Toxic Substances Control Act (TSCA) landfill.

5) Convey the rocket warhead to the punch-and-drain station of the RSM in the ECR.

6) Punch holes in the top and bottom of the rocket warhead agent cavity with the punch-and-drain station.

7) Drain the agent through the lower clamp. Send the drained agent into an agent storage tank in the agent neutralization room.

8) Introduce high-pressure water. Flush the agent cavity (the optimum flush duration, pressure, and flow rate will be evaluated during simulant, surrogate, and agent testing in the RD&D program), maintaining suction at a slightly higher flow rate than the inflow.

9) Send the washout water to a storage tank in the agent neutralization room.

10) Move the rocket warhead to the shear station for cutting.

11) Cut the warhead portion into segments. The warhead includes the fuze, the burster, and the washed agent cavity.

12) Send the warhead segments to the EBHs.

13) Send the energetics hydrolysate from the EBH to the ENS for further hydrolysis, as required.

14) Sample and analyze the energetics hydrolysate to verify that it no longer exhibits the characteristic of reactivity and that the agent concentration is below the target release level for agent before transfer to the HSA.

15) Transfer the energetics hydrolysate from the HSA to the APS and the AFS in the SPB.

16) Chemically precipitate the aluminum and then remove the precipitate by filtration. The aluminum precipitate is characterized and sent offsite to a permitted disposal facility. Send the filtrate to the SCWO for further treatment.

17) Send solid material (rocket sections and pieces) from the EBHs through the MPT for thermal treatment at a minimum of 1000°F for a minimum of 15 minutes.

- GB M55 Rockets – Leakers – The known leakers will be processed at the end of each agent campaign at BGCAPP. The unknown leakers will be accumulated in the ECVs and then processed in a leaker campaign, or these previously unknown leakers will be overpacked and sent back to the leaker HWSU for processing during the known leaker rocket campaign.

1) For known overpacked leakers (stored in the HWSUs in overpacks):

a. The EONCs of overpacked rockets will be monitored for agent in the UPA. If agent monitoring indicates the EONC does not contain any leaking overpacks, the EONC will be opened and the overpacks transferred to the ECV.

b. In the ECV, the rocket overpack will be opened manually by operations personnel in PPE and the rocket removed from the overpack. The rocket will be placed on the RCM conveyor system in the ECV.

2) For unknown leakers (leakers that are not overpacked and are identified in EONCs and at the RCM):

a. Leaking rocket(s) may be detected during agent monitoring of EONCs in the UPA. EONCs found to contain previously unknown leakers will be transported to the EONC leaker airlock so the leakers can be removed from the EONC and sent to the ECV. Personnel in appropriate PPE will place each potentially contaminated rocket onto the RCM conveyor system.

b. A previously unknown leaker may also be detected when monitoring for agent at the RCM or while observing the RCM. Leakers identified or found at the RCM may either be stored for a short duration, overpacked, and sent back to the HWSU for later processing; or the leaker may be processed immediately if the number of stored leakers in the ECV is sufficient to justify stopping normal rocket processing to process the stored leakers. Personnel in appropriate PPE will place the leakers onto the RCM conveyor system.

3) The RCM will separate the leaking rocket into three pieces: warhead, warhead's SFT, and CRM.

4) The warhead will be processed in one of the two ECRs.

5) After the warhead has been punched and drained, the agent contaminated warhead and rocket motor, each housed within the SFT, will be sheared and placed into the EBH for processing.

6) The CRM will be conveyed to the ECR for processing at the RSM, which will shear the rocket motor into four approximately 8-inch pieces and the tailfin.

7) The tailfin section and the segments of rocket motor will be transferred to and processed in separate EBHs.

8) The energetics hydrolysate will be sent from the EBHs to the ENS for further hydrolysis.

9) Before the energetics hydrolysate is transferred to the HSA, it will be sampled and analyzed to verify it no longer exhibits the characteristic of reactivity, and verify the agent concentration is below the target release level for agent. This is accomplished by use of the ASTM E680 Standard, Test Method for Drop Weight Impact Sensitivity of Solid-Phase Hazardous Materials, and works with both solid and liquid waste samples.

10) The energetics hydrolysate will be transferred from the HSA to the APS and AFS in the SPB.

11) In the APS and AFS, aluminum will be chemically precipitated from the energetics hydrolysate and the precipitate will be removed by filtration. The aluminum precipitate will be characterized and sent off-site to a permitted disposal facility. The filtrate will be sent to the SCWO for further treatment.

12) Solid material (rocket sections and pieces) from the EBHs will be sent through the MPT for thermal treatment at a minimum of 1000°F for a minimum of 15 minutes.

13) As an alternative to processing of agent and energetics hydrolysate from rocket leakers in the SPB, these may be collected in separate tanks and shipped off-site for treatment and disposal in order to avoid PCB contamination of SPB process equipment. PCBs are part of the matrix found in the rocket SFTs. These waste streams will be treated or disposed of at a permitted, off-site TSCA facility. A TSCA permit application has been prepared and submitted to EPA Region 4 for management of this waste.

- GB M56 Warheads – The GB M56 warheads will be processed and treated in the same method as the rockets except that, because these have no rocket motors, it will not be necessary to cut and remove the rocket motor in the RCM.

- Wood Pallets – Wood pallets not exposed to a leaking munition will not be processed through the BGCAPP and will be managed by appropriate methods to promote waste minimization. The quantity of agent-contaminated wood pallets and miscellaneous non-contaminated dunnage is reflected on the Part A Application. All pallets and other dunnage associated with leaking munitions will be tested following Department of the Army approved methods. If these are contaminated, these will be treated by chemical decontamination. The decontaminated wastes will be managed by appropriate means to minimize waste. If chemical decontamination does not prove successful, the contaminated material will be treated in the MPT.
- Agent-Contaminated Plastic and PPE – Plastic materials that are not contaminated with agent will be managed by appropriate methods to promote waste minimization without any further treatment at BGCAPP. Plastic and PPE will be assumed to be contaminated if these have been exposed to agent. Agent-contaminated plastic material (e.g., personnel protective ensembles, aprons, and gloves) generated during the RD&D program will be chemically decontaminated. If chemical decontamination is not successful, the material will be treated in the MPT. The decontaminated residue will be sent off-site to a permitted TSDF for treatment/disposal.
- Miscellaneous Agent-Contaminated Metal Parts (e.g., banding, pumps, and pipe) – Metal material and parts not contaminated with agent will be appropriately managed to minimize waste without any further treatment at BGCAPP. Agent-contaminated metal material and parts generated during the RD&D program will be chemically decontaminated. If chemical decontamination is not successful or efficient, the material will be treated in the MPT. The decontaminated residue will be appropriately managed to minimize waste.
- Spent Activated Carbon – Agent-contaminated spent activated carbon will be shipped off-site for further treatment and disposal at a permitted TSDF. Spent activated carbon not contaminated with agent will be managed to minimize waste.
- SDS – SDS that is generated during the RD&D program will be processed as follows:

    1) The SDS from sumps in the Category A or Category B areas will be pumped to the SDS storage tanks. Liquid in the sumps in the Category C areas will be characterized and, based on the results of the characterization; the sumps will either be pumped to the SDS storage tanks or will be managed by other appropriate means.

    2) The SDS in the SDS tanks will be sampled and analyzed to verify it is below the target release level for agent

        a. If the agent concentration is below the target release level for agent, the SDS will be sent to the HSA for further treatment in the SPB.

        b. If the residual agent concentration is above the target release level for agent, the SDS in the SDS tank will be treated with caustic and resampled or sent the SDS to the ANR for further treatment.

D-8a(2)(d) Maintenance, Monitoring and Inspection Information

Inspections of the BGCAPP waste storage and treatment tanks, Subpart X systems, and the container storage areas—including containers/tanks/Subpart X systems, containment, safety, emergency, and operating equipment needed to prevent, detect, or respond to environmental or human health hazards—will be performed in accordance with the Facility Inspection Plan, which is currently a Compliance Schedule Item requiring submission. Maintenance and monitoring will be conducted in accordance with SOPs developed for these activities.

D-8a(2)(e) Safety Features

Appendix F1 provides a hazard analysis of the Subpart X systems addressing waste feed controls, fire suppression, pressure relief, and other unit specific hazards.

D-8a(2)(f) Closure

Appendix I1 of this Permit Application provides a proposed schedule and procedure for RCRA closure of these units.

D-8a(3) Effectiveness of Treatment [401 KAR 38:230, Section 1 & 40 CFR 270.23(d)]

The proposed facility is a full-scale pilot plant that will be used to validate the National Research Council's (NRC's) requirement for research on process integration. Although some integration research of the BGCAPP can and will be conducted using surrogates and simulants, testing with live agents and agent-containing munitions is necessary to verify the design will properly destroy the BGAD's chemical agent munitions stockpile. The overriding criterion that drives this design is that the facility be capable of performing the RD&D in a manner that is safe and protective of human health and the environment.

The main purpose of this RD&D is to demonstrate and evaluate the efficacy of the BGCAPP integrated processes. This will be done by operating the individual (proven) components (e.g., RSM and EBH) first with surrogates (during systemization) and then with agent-bearing wastes under the RD&D program. Using this approach, the efficiency and performance of the pilot plant and its integrated processes can be adequately assessed.

During the RD&D program, the integrated processes will be assessed for the capability to meet efficiency and performance criteria. The process will be tested to:

a. Demonstrate 99.9999 percent DE for agent via hydrolysis on the initial batches of agent processed.
b. Demonstrate sufficient destruction of energetics by hydrolysis to ensure the solids exiting the ENS meet the 401 KAR 37:040 treatment standard for D003 waste streams (Deactivation).
c. Validate the plant's anticipated overall hazardous waste characteristics (i.e., to assess the type of TSDF that is appropriate for each and to allow evaluation and acceptance by TSDFs) and generation rates.
d. Identify the operating parameters and ranges that will ensure successful operation of systems and processes and simultaneous compliance with applicable environmental standards.
e. Confirm procedures developed for operations include sufficient environmental compliance and hazardous waste management provisions to ensure regulatory compliance is maintained.

f. Verify the MPT can treat the materials to a minimum of 1000°F for a minimum of 15 minutes.
g. Verify the EBH performs as designed.
h. Verify proper operation of the SCWO system on actual hydrolysate.

To this end, the BGCAPP is being designed and built to the same standards as a full-scale treatment facility. For example, the blast-resistant containments, the highly filtered HVAC exhausts, and the numerous other protective systems that are necessary for a fully functional system also are necessary to ensure safety and environmental protection during the RD&D program. Because of this requirement, and because it is very difficult to add equipment after the treatment areas are contaminated with agent, the full facility shall be built to support the RD&D program and then tested as one unit. As a result, the BGCAPP is described as a full scale, pilot plant. However, this RD&D permit application is only for the destruction of GB under the RD&D program.

The technology that is intended to be used by the BGCAPP was chosen to meet the requirement of KRS 224.50-130 (3a) and (4), which requires the technology to:

- Exist in an operational facility, or to have been demonstrated in a disposal program at a comparable scale, and
- Create less risk of release, acute or chronic health effect, or adverse environmental effect

This determination was made through an extensive testing, evaluation, and selection process that was documented and critiqued by internal DoD groups and independently reviewed by many NRC panels. Table D-4 lists the major reports in which the NRC panels chronicled and critiqued the progress of the evaluation and selection process.

The evaluation process first examined numerous alternate technologies (NRC 1993), and NRC 2002 and NRC 2002a identified two technologies that were subsequently demonstrated under the ACWA program. These evaluations (see Table D-4) identified the General Atomics Total Solution (GATS) process, on which the BGCAPP design is based, as the one with lower hydrocarbon and carbon monoxide emissions. The final Environmental Impact Statement (EIS) for BGCAPP (December 2002) also discusses alternate technologies and draws the same conclusion.

The ability to destroy the chemical weapons stockpile will be assessed during the BGCAPP RD&D program. A Part B Permit application will be submitted prior to completing the RD&D program to allow KDEP and other regulators to further evaluate the process' safety and environmental compliance based upon the additional data collected during the RD&D demonstration test.

Table D-4 Major NRC Reports Relevant to Destruction of Weapons at BGAD

Report Date	Report Title
NRC 1993	Alternative Technologies for the Destruction of Chemical Agents and Munitions
NRC 1995	Review of Alternative Chemical Disposal Technologies
NRC 1999	Review and Evaluation of Alternative Technologies for Demilitarization of Assembled Chemical Weapons
NRC 2000	Evaluation of Demonstration Test Results of Alternative Technologies for Demilitarization of Assembled Chemical Weapons, a Supplemental Review for Demonstration II
NRC 2000a	Integrated Design of Alternative Technologies for Bulk-Only Chemical Agent Disposal Facilities
NRC 2001	Analysis of Engineering Design Studies for Demilitarization of Assembled Chemical Weapons at Pueblo Chemical Depot
NRC 2001a	Disposal of Neutralent Wastes
NRC 2002	Analysis of Engineering Design Studies for Demilitarization of Assembled Chemical Weapons at Blue Grass Army Depot, 2002
NRC 2002a	Update Engineering Design Studies for Demilitarization of Assembled Chemical Weapons at Blue Grass Army Depot
NRC 2004	Effects of Degraded Agent and Munition Anomalies
NRC 2005	Interim Design Assessment for the Blue Grass Chemical Agent Destruction Pilot Plant
NRC 2006	Review and Assessment of the Proposals for Design and Operation of Designated Chemical Agent Destruction Pilot Plants
NRC 2007	Review of Chemical Agent Secondary Waste Disposal and Regulatory Requirements
NRC 2008	Review and Assessment of Developmental Issues Concerning Metal Parts Treater Design for the Blue Grass Chemical Agent Destruction Pilot Plant
NRC 2008a	Review of Secondary Waste Disposal Planning for the Blue Grass and Pueblo Chemical Agent Destruction Pilot Plants
NRC 2009	Assessment of Explosive Destruction Technologies for Specific Munitions at the Blue Grass and Pueblo Chemical Agent Destruction Pilot Plants
NRC 2011	Assessment of Approaches for Using Process Safety Metrics at the Blue Grass and Pueblow Chemical Agent Destruction Pilot Plants
NRC 2012	The Blue Grass Chemical Agent Destruction Pilot Plant's Water Recovery System
NRC 2012a	Assessment of Agent Monitoring Strategies for the Blue Grass and Pueblo Chemical Agent Destruction Pilot Plants
NRC 2012b	Disposal Options for the Rocket Motors from Nerve Agent Rockets Stored at Blue Grass Army Depot
The NRC reports are available for purchase or download at www.nap.edu.	

D-8a(3)(b) Justification for Research

The BGCAPP ultimately will destroy all chemical weapons at the BGAD using alternative technologies. NRC panels reviewed the results of previous evaluations of alternative technologies in a series of reports listed in Table D-4 and, in its last report, identified GATS as the most mature alternative process for use at the BGAD. The report suggested improvements in the design, but indicated that, although all of the individual processes are acceptable for application at the BGAD, RD&D shall be performed to refine and demonstrate the integrated process before going to full operation. The BGCAPP design incorporates the design improvements identified by the NRC, and the BGCAPP RD&D program incorporates this integration research. The final stage of development is the testing and evaluation of the integrated process under a carefully developed RD&D program that is the purpose of this application.

The RD&D program to be conducted at the BGCAPP includes the following goals:

1. Conduct a thorough program of system integration including the conveyance of munitions and munition segments from one treatment location to the next including the MPT treatment and release of the munition parts from the MDB.
2. Demonstrate that 99.9999 percent DE of GB agent can be achieved in the ANRs as required by KRS 224.50-130.
3. Demonstrate that the energetics can be treated in the EBHs and the ENS.
4. Demonstrate that the MPT will thermally treat projectile bodies and solid residue from the EBH to a minimum of 1000°F for a minimum of 15 minutes (i.e., the Department of the Army treatment standard for chemical agent destruction).
5. Demonstrate the performance of the SCWO reactor system.

The RD&D program described in this application is being conducted to demonstrate the agent and energetics destruction capabilities of the BGCAPP integrated process. As data are obtained from both ongoing equipment design and testing programs, data are fed back to the BGCAPP team so that the information can be used to improve and validate the plant processes. This data feedback will continue during the RD&D demonstration phase. However, no changes will be made that may increase risk or environmental releases, and the expected outcome of the RD&D program will be further reductions in risk.

The present permit application requests approval for the BGCAPP to be built and operated as a full-scale pilot plant to conduct a demonstration of the agent and energetics destruction capabilities as integrated plant processes. Much of the RD&D program will not involve hazardous wastes; the initial tests will be performed using simulants and surrogate materials. After the overall plant's performance, safety, environmental acceptability, and reliability have been established, the RD&D program will progress to initially include small amounts of agent; after demonstrated performance, increasingly larger amounts of agent and chemical munitions will be processed. At the conclusion of the research, the facility will have demonstrated that it is capable of operating at full capacity and the remainder of the stockpile will be processed under a Part B permit.

The information that is included in the RD&D permit compliance schedule (Appendix A of the draft RD&D permit provided as a supplement to this application) includes the additional information that would be required in a Part B permit application for a hazardous waste treatment facility. Therefore, the submission of the compliance schedule items will be used for the completion of a Part B permit application.

The performance test is the transition from operation under the RD&D permit to operation under the full RCRA Part B permit with activities prior to and including the performance test occurring under the RD&D permit.

D-8a(3)(c) System Integration

A thorough program of system integration including the conveyance of munitions and munition components from one part of the treatment process to the next, up to and including the release of the munition residue from the MDB, shall be demonstrated as part of RD&D testing. System integration has two components:

1) Ability of the equipment to function as one unit with the actual wastes.
2) Maximizing the operators' proficiency under safe operating conditions.

Optimizing the operators' proficiency under carefully controlled and supervised conditions has traditionally not been considered as RD&D. However, such human factors research is essential to maximize safety and protect the environment; hence it has been made an important component of the BGCAPP RD&D process. Before hazardous waste (agent) operations begin, the operators will be thoroughly trained in their duties and responsibilities through coursework, simulations, and actual hands-on experience with simulated munitions. ACWA test equipment (ATE) munitions will be constructed to have physical dimensions that are similar to the actual munitions, but these do not contain the chemical agent and energetics.

However, only operations conducted with actual munitions can provide the required operator experience and proficiency to verify the process fully addresses human factors and, therefore, minimizes risk to human health and to the environment. The proficiency in handling and processing actual chemical munitions can only be achieved through slow and deliberate step rate changes in which the operators handle the actual munitions at initially very low rates with heightened direct supervision by management and system engineers. As the operators gain experience, the processing rates will be increased.

To ensure increased oversight by management and systems engineers, initial munition processing will occur only on the day shift. Night shift activities will concentrate on preventive and corrective maintenance activities, monitoring the EBH neutralization process, and pre-staging of munitions for the next day of operations. The step changes in processing rates will typically be scheduled at 4-week intervals to ensure each of the four rotating operations shifts have an opportunity to process munitions on day shift. The step rate changes also will provide a logical progression that fosters systematic improvements in operator proficiency. The RD&D demonstration phase with agent munitions is required to demonstrate that the integrated BGCAPP facility and operators can proficiently process actual munitions as compared to the simulated munitions used in systemization. The step rate changes will also allow protection of human health and the environment to be verified.

1. Justification for Conducting with Hazardous Waste – To establish successful system integration, all BGCAPP subsystems shall operate as an integrated facility. This requires the processing to include agent, agent hydrolysate, energetics, energetics hydrolysate, munition components, dunnage, and secondary waste. Appropriate development of this process integration requires the processing of real munitions unique to BGAD.

2. Measurements and Observations Required – Process integration will be considered to have been achieved if the facility successfully operates at the peak munitions processing rate. Process integration is the overarching objective: it demonstrates the facility and operators can achieve the necessary results when operating as a unit and when treating the actual hazardous wastes at the peak processing rate.
3. Safety and Environmental – Maximum safety and environmental protection will be achieved by performing this verification at an initially very slow rate during weeks 1 through 4 and stepwise increases in the processing rate as information is gathered. This slow ramp-up will ensure adequate time to properly evaluate the agent and energetic destruction results and to verify the operators' levels of knowledge and performance ensure safe operation.
4. Success Criteria – Process integration will be considered successful at each ramp up rate when all operators are assessed to be proficient at their functions, and all exit streams meet the safety and environmental requirements as discussed in the following subsections.

D-8a(3)(d) Demonstrate 99.9999 Percent DE for GB

Demonstration that 99.9999 percent DE can be achieved for GB agent in the ANRs as required by KRS 224.50-130 and 401 KAR 34:350 shall be achieved as part of RD&D pilot testing.

1. Justification for Conducting Operations with Hazardous Waste – Agent hydrolysis has been demonstrated to achieve the requisite 99.9999 percent DE for GB in the previous testing conducted by the PEO ACWA. Agent destruction at the BGCAPP shall be demonstrated using the BGCAPP equipment with the BGAD munitions as required by KRS 224.50-130(3)(a). This only can be demonstrated by conducting tests with the chemical agent (i.e., state listed hazardous waste).
2. Measurements and Observations Required – The GB drained from the munitions will be stored in the ACS until a sufficient quantity of agent has been accumulated for processing in the ANR. The agent will then be transferred from the ACS to an ANR for hydrolysis and the hydrolysate will be analyzed for GB. The DE can then be calculated as required by KRS 224.50-130. The number of ANS batches to be tested in this way will be established in the test plan, which will be submitted in accordance with the BGCAPP's compliance schedule.
3. Safety and Environmental – The hydrolysate batches processed in the ANRs will not be released from the MDB until the analytical results demonstrate the target release level has been met. The ANR vents to the MPT OTM and then to the MDB HVAC filter system before release to the atmosphere. These multiple layers of protection will provide a high degree of safety and protection to the environment. A slow start of operation (as specified in the test plan) maximizes personnel safety and protection of the environment by minimizing the amount of agent in process while the initial batch of agent is neutralized.
4. Success Criteria – The process meets the 99.9999 percent DE as required by KRS 224.50-130.

D-8a(3)(e)Demonstrate EBH's Ability to Treat Rocket Energetics

Demonstration that the rocket energetics can be treated in the EBHs and the ENS shall be demonstrated.

1. Justification for Conducting with Hazardous Waste – EBH performance has been demonstrated to achieve this objective using pieces of M61 (i.e., training) rockets with energetics during the TRRP for the EBH. The test also demonstrated the hydrogen (H_2) levels may be maintained below 25 percent of the LFL. Although energetics neutralization has been demonstrated, it is necessary to verify and demonstrate these results with the BGCAPP equipment and BGAD munitions. This involves system integration and includes the transfer of the rocket warhead segments from the RSM to the EBHs and the transfer of the treated EBH solid residue from the EBH to the MPT. This objective can only be validated by treating agent-contaminated energetic components of the leakers in the BGAD stockpile. This verification shall be completed for all installed EBHs.
2. Measurements and Observations Required – The hydrogen (H_2) gas concentration shall be monitored in the EBHs' vent gases to ensure H_2 gas concentration is below 25 percent of the LFL. The EBH and vent gas system will demonstrate the ability to safely control the increased H_2 generation for each processing rate increase in the ramp-up schedule. Hydrolysate leaving each EBH batch will go to the ENRs for further treatment. The solids leaving the EBHs will go to the MPT. No specific measurements will be made on the EBH solid residue except for observing whether the mechanical equipment is operating properly under agent munition operations. The energetics hydrolysate will be sampled in the ENR and tested to verify successful energetics and agent treatment.
3. Safety and Environmental – Maximum safety and environmental protection will be achieved by verifying the system performance at a slow rate during weeks 1 through 4 and increasing stepwise as the performance objectives are met. This slow ramp-up will ensure adequate time to verify completion of energetics and agent hydrolysis and verify the energetics hydrolysate meet the target release levels (i.e., for energetics and agent) before transfer to the HSA.
4. Success Criteria:
    a. Hydrogen monitoring system works as designed at all rocket-processing rates in each EBH.
    b. EBH solids transfer system to the MPT continues to effectively transfer solids as the rocket feed rates increase.
    c. Hydrolysate leaving the ENR meets the required energetics destruction and the agent target release level.

<u>D-8a(3)(f) Demonstrate MPT's Ability to Treat Projectiles</u>

Demonstration that the MPT can thermally treat batches of projectile bodies to a minimum of 1000°F for a minimum of 15 minutes shall be achieved as part of RD&D studies.

a. Justification for Conducting with Hazardous Waste – TRRP testing with ATE munitions have demonstrated the MPT can thermally treat a full tray of projectiles to a minimum of 1000°F for a minimum of 15 minutes. Thermal treatment in the MPT shall be demonstrated to verify the previous results with actual munitions from the BGAD stockpile.

b. Measurements and Observations Required – Temperature measurements will be performed to confirm the temperature profile previously demonstrated during systemization. Thermal dosimeters will be used to ensure 1000°F will have been maintained for at least 15 minutes in accordance with DA performance standards for agent destruction.

c. Safety and Environmental – Slow initial operating rates will ensure all material in the MPT achieves the appropriate temperature before it is removed from the MPT. The batch nature of the operation will allow the time per batch or the power input to be increased to establish the operating conditions necessary to ensure proper decontamination of the metal. Air pollution will be controlled for MPT off-gas by discharge through the OTM and then through the MDB HVAC filtration system.

d. Success Criteria – Verify by temperature measurements of the treated munition bodies that the projectile carcasses in the first trays of material have been exposed to a minimum of 1000°F for a minimum of 15 minutes. This will be accomplished by the use of thermal dosimeters on the munition bodies.

<u>D-8a(3)(g) Demonstrate Performance of SCWO Reactor System</u>

Demonstration of effectiveness of the SCWO reactor system for destroying organics shall be achieved as part of RD&D pilot testing.

1. Justification for Conducting with Hazardous Waste – Tests with the agent and energetic hydrolysates were performed under the PEO ACWA engineering design study (EDS) test program. Testing under the RD&D program is required to demonstrate the SCWO treatment of the blended hydrolysate. All materials fed to the SCWO have previously been tested for agent and verified to be below the target release level. Processing the hydrolysate will ensure the SCWO effluent meets the expected performance criteria before the water is further treated in the water recovery system. Because the SCWO performance can be assessed early in the RD&D program, the hydrolysate can either be stored in the HSA or it can continue to be processed through the SCWO units while RD&D continues on the other upstream treatment units.

2. Measurements and Observations Required – The operating parameters of the SCWO reactors will be monitored to verify the equipment is performing properly. The SCWO effluent will be analyzed for TOC.

3. Safety and Environmental – SCWO has been demonstrated to have extremely low emissions. According to all available data, the air emissions from the SCWO will not require further treatment prior to release to the environment.

4. Success Criteria – Demonstration of successful treatment of organics in wastewater will be based on measurement of TOC in the effluent stream.

D-8a(4) Disposal Units [401 KAR 38:230, Section 1, 34:250, Section 4 & 40 CFR 270.23(a) and 264.603]

Not applicable. The BGCAPP facility does not include any disposal units.

D-8b Waste Characterization, A Description of the Wastes To Be Treated [401 KAR 38:230, Section 1, and 34:020, Section 4 & 40 CFR 270.23, 264.13 (b), and 264.601(a)(1), (b)(1), (c)(1)]

Part C1 presents descriptions of the wastes managed at the BGCAPP facility and the analyses used to characterize these wastes.

D-8c Assessment of the Units [401 KAR 38:230, Section 1, 34:250, Sections 2–3, and 34:190, Section 3 & 40 CFR 270.23 (a) (2), 264.601, 264.602, and 264.192]

The basis of design for the components of the miscellaneous Subpart X treatment units, as well as the BGCAPP facility as a whole, includes the characteristics of the waste managed, the loads imposed on the foundation, and seismic standards. Project PEs review and certify the units and ancillary equipment as meeting the appropriate construction standards, including sufficient structural strength and compatibility with the waste treated; ensuring the systems do not collapse, rupture, or fail. Factors considered in this design review:

1. Characteristics of the waste to be handled
2. Standards to which the unit was constructed
3. Loads imposed on the foundation
4. Whether the miscellaneous unit is placed in a saturated zone or is located within a seismic fault zone
5. Frost heave
6. Soundness of the unit and its ancillary equipment in preventing releases.

In addition, as discussed in section D-2, the assessment of adequacy of the tank systems design, into which Subpart X treatment units will be incorporated, was performed by an independent PE and the resulting TARs were submitted to KDEP for review and approval prior to starting installation of each hazardous waste tank system. All tanks that recently have been identified as Subpart J-regulated tank systems currently are undergoing a TAR review and preparation by the TAR subcontractor. These TARs will be provided to KDEP upon their completion.

D-8d Secondary Containment and Detection of Releases [38:230 Section 1, 34:190, Sections 3 and 4, and 34:250, Section 2 & 40 CFR 270.23(e), 264.192, 264.193, 264.601, and 270.23(e)]

All miscellaneous treatment units that handle wastes with free liquids are inside secondary containments inside the MDB or SPB; secondary containment in these facilities is discussed in section D-2.

All of the miscellaneous units are located indoors, are not exposed to precipitation, and do not receive runoff from precipitation.

D-8d(1) No Free Liquids [401 KAR 38:230, Section 1 and 40 CFR 270.23(e)]

Wastes without “free liquids” are maintained in a closed environment (e.g., the MDB or SPB or in containers that prevent wind dispersion of waste during conveyance or during production of waste residue during the treatment process (e.g., filter press cake generation). See section D-1a for a discussion of the procedures used to prevent the wind dispersion of wastes and residues (i.e., closed containers, opened only to add, remove or otherwise manage the waste within the containers). The BGCAPP facility uses the same procedures to manage wastes in miscellaneous Subpart X treatment units.

D-8e Assessment of the Operation of the Unit [401 KAR 38:230, Section 1, and 34:250, Section 2 & 40 CFR 270.23(b) and 264.601]

This section addresses the BGCAPP facility from the perspective of protection of public health, the environment, and safety of facility personnel.

Franklin Engineering will prepare the human health risk assessment (HHRA) and this document will be provided to KDEP as a separate submittal in accordance with the Compliance Schedule found in Appendix A of the draft permit.

D-8f Site Assessments [401 KAR 38:230, Section 1 & 40 CFR 270.23(b)]

Paragraphs B-2 and B-3a provide assessments of the hydrology, geology, and meteorology associated with the Subpart X units in this application; land use maps for the BGCAPP and the BGAD are provided in Figure B-3.

D-8g Potential Exposure Pathways [401 KAR 38:230, Section 1 & 40 CFR 270.23(c)]

The forthcoming HHRA will list the potential exposure pathways for human and environmental receptors, and will assess the potential magnitude and nature of potential exposures.

D-8h Additional Information [401 KAR 38:230, Section 1, & 40 CFR 270.23e]

The forthcoming HHRA will evaluate and discuss the air emissions and reductions provided by the BGCAPP design. Noise from the BGCAPP facility does not affect surrounding populations due to relatively low expected noise levels and the substantial distance between the facility and the nearest resident. Workers' levels of occupational noise exposure may exceed Occupational Safety and Health Administration (OSHA) permissible exposures limits, but the BGCAPP provides workers with suitable hearing protection and medical surveillance.

D-8i Requirements Specific to OB/OD Units or Geologic Repositories Used for Storage/Treatment of Hazardous Waste [401 KAR 38:230, Section 1 and 40 CFR 270.23]

Not applicable. The BGCAPP does not use open burning/open detonation (OB/OD) or geologic repositories for storage/treatment of any hazardous wastes.

Appendix D1: **Permit Controlled Documents and Drawings**

Permit Controlled Documents and Drawings – Baseline			
Drawing Number	Revision	Title	Page #(s)
24915-000-C0-00-00001	8	SITE WORK GENERAL NOTES, LEGEND AND ABBREVIATIONS	1
24915-000-C2-00-00001	18	SITE PLAN	1
24915-000-S0-00-00010	6	GENERAL TYPICAL SUMP DETAILS	1
24915-00-M5-00-00001	9	GENERAL PROCESS BLOCK FLOW DIAGRAM PFD	1
24915-00-M5-00-00002	2	GENERAL LEGEND AND SYMBOLS PROCESS FLOW DIAGRAM	1
24915-00-M5-00-00003	0	GENERAL WATER BALANCE PFD	2
24915-00-M5-00-00003	1	GENERAL WATER BALANCE PFD	1
24915-00-M6-00-00010	4	NON-FACILITY SPECIFIC SYMBOLS AND LEGEND P AND ID	1
24915-00-M6-00-00011	4	NON-FACILITY SPECIFIC SYMBOLS AND LEGEND P AND ID	1
24915-00-M6-00-00012	3	NON-FACILITY SPECIFIC SYMBOLS AND LEGEND P AND ID	1
24915-00-M6-00-00013	3	NON-FACILITY SPECIFIC SYMBOLS AND LEGEND P AND ID	1
24915-00-M6-00-00014	3	NON-FACILITY SPECIFIC SYMBOLS AND LEGEND P AND ID	1
24915-00-M6-00-00015	1	NON-FACILITY SPECIFIC SYMBOLS AND LEGEND P AND ID	1
24915-06-AE-00-00001	2	CHB GENERAL ARRANGEMENT GROUND FLOOR PLAN - EL. 910 FT - 6-1/2 IN.	1
24915-07-AE-00-00001	8	MDB GENERAL ARRANGEMENT OVERALL FLOOR PLAN - EL. 910'-0"	1
24915-07-B2-MPT-00001	4	MPT INTERFACE CONNECTION DRAWING – 20 SHEETS	20
24915-07-M5-ACS-00001	6	MDB AGENT COLLECTION/TOXIC STORAGE PROCESS FLOW DIAGRAM - REV A-B WERE 07-M5-TCAC-00001 SHEET 2 OF 3	2
24915-07-M5-ACS-00001	7	MDB AGENT COLLECTION/TOXIC STORAGE PROCESS FLOW DIAGRAM - REV. A-B WERE 07-M5-TCAC-00001 SHEET 3 OF 3	1
24915-07-M5-ANS-00001	8	MDB AGENT NEUTRALIZATION PFD	1
24915-07-M5-ANS-00001	9	MDB AGENT NEUTRALIZATION PFD	3
24915-07-M5-ANS-00001	10	MDB AGENT NEUTRALIZATION PFD	1
24915-07-M5-ANS-00002	8	MDB AGENT NEUTRALIZATION SAMPLING PROCESS FLOW DIAGRAM	1
24915-07-M5-EBH-00001	10	EBH PROCESS FLOW DIAGRAM - 10 SHEETS	10
24915-07-M5-ENS-00001	8	MDB ENERGETICS NEUTRALIZATION PROCESS FLOW DIAGRAM	1
24915-07-M5-ENS-00001	7	MDB ENERGETICS NEUTRALIZATION PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-TNE-00001 SHT 2 OF 4	1
24915-07-M5-ENS-00001	7	MDB ENERGETICS NEUTRALIZATION PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-TNE-00001 SHT 3 OF 4	1

24915-07-M5-ENS-00001	6	MDB ENERGETICS NEUTRALIZATION REACTORS PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-TNE-00001 SHT 4 OF 4	1
24915-07-M5-ENS-00002	8	MDB ENERGETICS NEUTRALIZATION SAMPLING PROCESS FLOW DIAGRAM	1
24915-07-M5-MCS-00001	1	MDB MPT COOLING SYSTEM PROCESS FLOW DIAGRAM	1
24915-07-M5-MPT-00001	9	MDB METAL PARTS TREATMENT PROCESS FLOW DIAGRAM - REVS. A-C WERE 07-M5-TMP-00001	1
24915-07-M5-MPT-00001	7	MDB METAL PARTS TREATMENT PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-TMP-00001 SHT 2 OF 4	1
24915-07-M5-MPT-00001	7	MDB METAL PARTS TREATMENT PROCESS FLOW DIAGRAM - REVS. A-C WERE 07-M5-TMP-00001 SHT 3 OF 4	1
24915-07-M5-MPT-00001	8	MDB METAL PARTS TREATMENT PROCESS FLOW DIAGRAM	1
24915-07-M5-MWS-00001	9	MDB MUNITIONS WASHOUT SYSTEM PROCESS FLOW DIAGRAM - REV A-C WERE 07-M5-TMW-00001 SHEET 1 OF 3	1
24915-07-M5-MWS-00001	6	MDB MUNITIONS WASHOUT SYSTEM PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-TMW-00001 SHT 2 OF 2	1
24915-07-M5-MWS-00001	6	MDB MUNITIONS WASHOUT SYSTEM PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-TMW-00001 SHT 3 OF 3	1
24915-07-M5-OTE-00001	9	MDB OFFGAS TREATMENT EBH/ENR PROCESS FLOW DIAGRAM - REV A-C WERE 07-M5-QGE-00001 SHEET 1 OF 4	1
24915-07-M5-OTE-00001	9	MDB OFFGAS TREATMENT EBH/ENR PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-QGE-00001 SHT 2 OF 4	1
24915-07-M5-OTE-00001	9	MDB OFFGAS TREATMENT EBH/ENR PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-QGE-00001 SHT 3 OF 4	1
24915-07-M5-OTE-00001	8	MDB OFFGAS TREATMENT EBH/ENR PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-QGE-00001 SHT 4 OF 4	1
24915-07-M5-OTM-00001	10	MDB OFFGAS TREATMENT MPT PROCESS FLOW DIAGRAM - REVS. A-C WERE 07-M5-QGM-00001 SHT 1 OF 4	1
24915-07-M5-OTM-00001	7	MDB OFFGAS TREATMENT MPT PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-QGM-00001 SHT 2 OF 4	1
24915-07-M5-OTM-00001	6	MDB OFFGAS TREATMENT MPT PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-QGM-00001 SHT 3 OF 4	1
24915-07-M5-OTM-00001	6	MDB OFFGAS TREATMENT MPT PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-QGM-00001 SHT 4 OF 4	1
24915-07-M5-PHS-00001	4	MDB PROJECTILE DEMILITARIZATION PROCESS FLOW DIAGRAM - REV A-C WERE 07-M5-HHP-00001 SHEET 1 OF 2	1
24915-07-M5-PHS-00001	6	MDB PROJECTILE DEMILITARIZATION PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-HHP-00001 SHT 2 OF 2	1
24915-07-M5-RHS-00001	9	MDB ROCKET SHEAR MACHINE PROCESS FLOW DIAGRAM - REV A-C WERE 07-M5-HHR-00001 SHEET 1 OF 2	1
24915-07-M5-RHS-00001	9	MDB ROCKET SHEAR MACHINE PROCESS FLOW DIAGRAM - REVS. A-B WERE 07-M5-HHR-00001 SHT 2 OF 2	1
24915-07-M5-SDS-00001	10	MDB SPENT DECONTAMINATION SYSTEM PROCESS FLOW DIAGRAM	1

24915-07-M5-SDS-00001	7	MDB SPENT DECONTAMINATION SYSTEM PROCESS FLOW DIAGRAM	1
24915-07-M6-ACS-00002	6	MDB AGENT SURGE TANK PID - SUPERSEDES SK-MP-0033	1
24915-07-M6-ACS-00003	7	MDB AGENT HOLDING TANK PID	1
24915-07-M6-ANS-00001	10	MDB AGENT HYDROLYZER TR-1 PID	1
24915-07-M6-ANS-00002	5	MDB AGENT HYDROLYZER TR-2 PID	1
24915-07-M6-ANS-00003	9	MDB AGENT HYDROLYZER VENT SYSTEM PID	1
24915-07-M6-ANS-00005	9	MDB AGENT HYDROLYZER FEED MANIFOLD TR1 P_ID	1
24915-07-M6-ANS-00006	4	MDB AGENT HYDROLYZER FEED MANIFOLD TR2 PID	1
24915-07-M6-ANS-00007	8	MDB AGENT HYDROLYZER FEED MANIFOLD TR 1 P_ID	1
24915-07-M6-ANS-00008	3	MDB AGENT HYDROLYZER FEED MANIFOLD TR 2 P_ID	1
24915-07-M6-ANS-00009	8	MDB AGENT HYD PUMPS AND HEAT EXCHANGER TR1 P_ID	1
24915-07-M6-ANS-00010	3	MDB AGNT HYD PUMPS AND HEAT EXCHCHANGER TR2 P_ID	1
24915-07-M6-ANS-00011	9	MDB AGENT HYDROLYSATE SAMPLING TANK PID	1
24915-07-M6-ANS-00012	4	MDB AGENT HYDROLYSATE SAMPLING TANK PID	1
24915-07-M6-ANS-00013	4	MDB AGENT HYDROLYSATE SAMPLING TANK PID	1
24915-07-M6-ANS-00014	9	MDB AGENT HYDROLYSATE PUMP PID	1
24915-07-M6-ANS-00015	3	MDB AGENT HYDROLYSATE PUMP P_ID	1
24915-07-M6-ANS-00016	3	MDB AGENT HYDROLYSATE PUMP P_ID	1
24915-07-M6-ANS-00017	6	MDB AGENT HYDROLYSATE PUMP P_ID	1
24915-07-M6-ANS-00018	8	MDB AGENT HYDROLYZER SAMPLER PID	1
24915-07-M6-ANS-00020	9	MDB AGENT HYDROLYSATE SAMPLER PID	1
24915-07-M6-EBH-00001	4	MDB EBH BLAST DOORS (FIRST LEVEL) P AND ID	1
24915-07-M6-EBH-00002	4	MDB EBH BLAST DOORS (SECOND LEVEL) P AND ID	1
24915-07-M6-EBH-01005	9	EBH CONDENSATE TANK PID	1
24915-07-M6-EBH-01006	9	EBH STM-WTR AND CHILLED SEC. LOOP PID	1
24915-07-M6-EBH-01018	4	EBH NITROGEN SUPPLY PID	1
24915-07-M6-EBH-01021	5	EBH UNIT 1 FEED VALVES PID	1
24915-07-M6-EBH-01022	5	EBH UNIT 2 FEED VALVES PID	1
24915-07-M6-EBH-01023	5	EBH UNIT 3 FEED VALVES PID	1
24915-07-M6-EBH-01030	9	EBH CAUSTIC HEATER PID	1
24915-07-M6-EBH-01035	11	EBH UNIT 1 PID	1
24915-07-M6-EBH-01036	7	EBH UNIT 2 PID	1
24915-07-M6-EBH-01037	8	EBH UNIT 3 PID	1
24915-07-M6-EBH-01075	9	EBH SOLIDS TRANSFER CONVEYOR PID	1
24915-07-M6-EBH-01085	10	EBH HYDROLYSATE COLLECTION PID	1
24915-07-M6-EBH-01088	9	EBH ROBOT 1-5 PID	1
24915-07-M6-ENS-00001	7	MDB ENR FEED 50 PERCENT CAUSTIC PID	1
24915-07-M6-ENS-00002	8	MDB ENR FEED ENER HYD AND ENR VENT GAS PID	1

24915-07-M6-ENS-00005	8	MDB ENERGETICS NEUTRALIZATION REACTOR 1 PID	1
24915-07-M6-ENS-00006	4	MDB ENERGETICS NEUT. REACTOR 2 PID	1
24915-07-M6-ENS-00007	4	MDB ENERGETICS NEUT. REACTOR 3 PID	1
24915-07-M6-ENS-00017	8	MDB ENERGETICS NEUT. PUMPS REACTOR 1 PID	1
24915-07-M6-ENS-00018	2	MDB ENERGETICS NEUT. PUMPS REACTOR 2 PID	1
24915-07-M6-ENS-00019	2	MDB ENERGETICS NEUT. PUMPS REACTOR 3 PID	1
24915-07-M6-ENS-00023	9	MDB ENERGETICS NEUT SAMPLER PID	1
24915-07-M6-ENS-00025	5	MDB ENR FEED OTE CONDENSATE P&ID	1
24915-07-M6-MCS-00001	6	MDB MPT COOLING SYSTEM - LINE 1 PID	1
24915-07-M6-MCS-00002	6	MDB MPT COOLING SYSTEM - LINE 2 PID	1
24915-07-M6-MPT-00001	10	MDB MPT INLET AIRLOCK-CONVEYOR LINE 1 PID	1
24915-07-M6-MPT-00002	12	MDB MPT LINE 1-CONTROLS PID	1
24915-07-M6-MPT-00003	10	MDB MPT OUTLET AIRLOCK-CONVEYOR LINE 1 PID	1
24915-07-M6-MPT-00004	6	MDB MPT LINE 1 - COOLING PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MPT-00007	10	MDB MPT STEAM SUPERHEATER LINE 1 AND 2 PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MPT-00012	10	MDB MPT INLET AIRLOCK PURGING - LINE 1 PID	1
24915-07-M6-MPT-00013	9	MDB MPT OUTLET AIRLOCK PURGING - LINE 1 PID	1
24915-07-M6-MPT-00014	5	MDB MPT INLET AIRLOCK PURGING - LINE 2 PID	1
24915-07-M6-MPT-00015	5	MDB MPT OUTLET AIRLOCK PURGING - LINE 2 P&ID	1
24915-07-M6-MPT-00017	7	MDB DEMIN COOLING SURGE TANK AND PUMPS PID	1
24915-07-M6-MPT-00018	6	MDB DEMIN WATER COOLER AND DISTRIBUTION PID	1
24915-07-M6-MPT-00019	5	MDB MPT INLET AIRLOCK/CONVEYOR LINE 2 PID	1
24915-07-M6-MPT-00020	6	MDB MPT LINE 2 CONTROLS PID	1
24915-07-M6-MPT-00021	7	MDB MPT OUTLET AIRLOCK/CONVEYOR LINE 2 PID	1
24915-07-M6-MPT-00022	4	MDB MPT LINE 2 - COOLING PID	1
24915-07-M6-MWS-00001	10	MDB AGENT WASHOUT PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00002	10	MDB DRAINED AGENT PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00003	12	MDB WASHOUT WATER TANK AND JET PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00004	6	MDB CAM INFEED CONVEYOR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00005	8	MDB MWS CAM NO. 1 - 155 MM DETAILS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00006	8	MDB MWS CAM NO. 2 - 155 MM DETAILS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00007	8	MDB MWS CAM NO. 3 - 155 MM DETAILS PIPING AND INSTRUMENT DIAGRAM	1

24915-07-M6-MWS-00008	4	MDB MWS HYDRAULIC POWER UNIT PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00012	5	MDB MWS CAM 155 MM SPARE DETAILS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00013	5	MDB MWS CAM NO. 1 8-INCH DETAILS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MWS-00014	5	MDB MWS CAM NO. 2 8-INCH DETAILS PID	1
24915-07-M6-NCD-00001	5	MDB NCD SUMPS AND SUMP PUMPS P AND ID	1
24915-07-M6-NCR-00001	6	MDB MWS NOSE CLOSURE REMOVAL SYSTEM PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-OTE-00005	8	MDB EBH SCRUBBER TOWER	1
24915-07-M6-OTE-00007	8	MDB EBH SCRUBBER RECIRC PUMP PID	1
24915-07-M6-OTE-00009	8	MDB EBH REHEATER AND BLOWERS PID	1
24915-07-M6-OTE-00011	2	MDB EBH FILTERS PID	1
24915-07-M6-OTM-00001	8	MDB MPT THERMAL OXIDIZER UNIT LN 1 PID	1
24915-07-M6-OTM-00002	4	MDB MPT THERMAL OXIDIZER UNIT - LN 2 PID	1
24915-07-M6-OTM-00005	9	MDB MPT VENTURI-SCRUBBER TOWER PID	1
24915-07-M6-OTM-00006	9	MDB MPT OFFGAS BLOWERS PID	1
24915-07-M6-OTM-00007	9	MDB MPT RECIRCULATION SURGE TANK PID	1
24915-07-M6-OTM-00008	9	MDB MPT VENTURI RECIRCULATION PUMP PID	1
24915-07-M6-OTM-00011	7	MDB MPT OFFGAS VENT VALVING PID	1
24915-07-M6-OTM-00013	8	MDB SCRUBBER RECIRCULATION COOLERS PID	1
24915-07-M6-OTM-00014	7	MDB MPT CYCLONE LINE 1 PID	1
24915-07-M6-OTM-00015	5	MDB MPT CYCLONE LINE 2 PID	1
24915-07-M6-PHS-00060	5	MDB PROJECTILE OUTPUT CONVEYOR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-RHS-00051	4	MDB ROCKET PROCESSING SYSTEM DWG1-LN1 PID	1
24915-07-M6-RHS-00052	5	MDB ECV CONVEYOR DWG 1 - LINE 1 PID	1
24915-07-M6-RHS-00053	5	MDB ECV CONVEYORS DWG 2 - LINE 1 PID	1
24915-07-M6-RHS-00054	6	MDB ROCKET PROCESSING SYSTEM DWG2-LN1 PID	1
24915-07-M6-RHS-00055	7	MDB ROCKET SHEAR MACHINE FEED - LINE 1 P&ID	1
24915-07-M6-RHS-00056	7	MDB ROCKET SHEAR MACHINE - LINE 1 PID	1
24915-07-M6-RHS-00057	8	MDB RHS - AGENT WASHOUT PUMP TRAIN 1 PID	1
24915-07-M6-RHS-00058	6	MDB RHS-DRAINED AGENT PUMPS, TRAIN 1 PID	1
24915-07-M6-RHS-00059	4	MDB ROCKET PROCESSING SYSTEM DWG1-LN2 PID	1
24915-07-M6-RHS-00060	6	MDB ECV CONVEYORS DWG 1 - LINE 2 PID	1
24915-07-M6-RHS-00061	7	MDB ECV CONVEYORS DWG 2 - LINE 2 PID	1
24915-07-M6-RHS-00062	6	MDB ROCKET PROCESSING SYSTEM DWG2-LN2 PID	1
24915-07-M6-RHS-00063	6	MDB ROCKET SHEAR MACHINE FEED - LINE 2 PID	1
24915-07-M6-RHS-00064	7	MDB ROCKET SHEAR MACHINE - LINE 2 PID	1

24915-07-M6-RHS-00065	8	MDB RHS-AGENT WASHOUT PUMP, TRAIN 2 PID	1
24915-07-M6-RHS-00066	7	MDB RHS-DRAINED AGENT PUMPS, TRAIN 2 PID	1
24915-07-M6-RHS-00067	6	MDB RHS - WATER JET PUMPS PID	1
24915-07-M6-RHS-00068	6	MDB MOTOR-SFT TRANSFER CONVEYOR AND ROBOT PID	1
24915-07-M6-RHS-00069	2	MDB SFT BOX LOAD CONVEYOR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-RHS-00070	3	MDB MOTOR BOX LOAD AND BUFFER CONVEYORS PID	1
24915-07-M6-RHS-00071	2	MDB BUFFER AND TRANSFER CONVEYORS P&ID	1
24915-07-M6-RHS-00072	6	MDB MONITORING AIRLOCK AND CONVEYOR PID	1
24915-07-M6-RHS-00074	2	MDB FULL CONTAINER OUTPUT CONVEYOR P&ID	1
24915-07-M6-RHS-00075	2	MDB MOTOR-SFT EMPTY BOX INPUT CONVEYOR P&ID	1
24915-07-M6-RHS-00076	6	MDB MPR INLET AIRLOCK AND CONVEYOR PID	1
24915-07-M6-RHS-00077	3	MDB RSM-1 HYDRAULIC SYSTEM SHT-1 P&ID	1
24915-07-M6-RHS-00078	2	MDB RSM-1 HYDRAULIC SYSTEM SHT-2 P&ID	1
24915-07-M6-RHS-00079	2	MDB RSM-2 HYDRAULIC SYSTEM SHT-1 P&ID	1
24915-07-M6-RHS-00080	2	MDB RSM-2 HYDRAULIC SYSTEM SHT-2 P&ID	1
24915-07-M6-RHS-00081	5	MDB RCM CUTTER AND TABLE ASSEMBLY LN-1 PID	1
24915-07-M6-RHS-00082	5	MDB RCM SFT REMOVAL ASSEMBLY LN-1 PID	1
24915-07-M6-RHS-00083	4	MDB RCM ROTATING CONVEYOR LN-1 PID	1
24915-07-M6-RHS-00084	3	MDB RCM CUTTER AND TABLE ASSEMBLY LN-2 PID	1
24915-07-M6-RHS-00085	4	MDB RCM SFT REMOVAL ASSEMBLY LN-2 PID	1
24915-07-M6-RHS-00086	4	MDB RCM ROTATING CONVEYOR LN-2 PID	1
24915-07-M6-SDS-00001	9	MDB SPENT DECON HOLDING TANK 0101 PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00002	9	MDB SPENT DECON HOLDING TANK 0201 PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00003	9	MDB SPENT DECON HOLDING TANK 0301 PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00004	8	MDB SPENT DECON FEED PUMPS 0101A-B PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00005	7	MDB SPENT DECON FEED PUMPS 0102A-B PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00006	7	MDB CATEGORY A SUMPS AND SUMP PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00007	6	MDB CATEGORY B SUMPS AND SUMP PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00008	8	MDB CATEGORY C SUMPS AND SUMP PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00009	6	MDB SPENT DECON FEED MANIFOLD PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00010	10	MDB SPENT DECON SAMPLER PIPING AND INSTRUMENT DIAGRAM	1

24915-07-M6-SDS-00011	3	MDB CAT-A SUMP PUMPS DISTRIBUTION HDR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00012	5	MDB CAT-B SUMP PUMPS DISTRIBUTION HDR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00013	4	MDB CAT-C SUMP PUMPS DISTRIBUTION HDR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-THS-00001	7	MDB TMA LOAD AND INPUT AIRLOCK/CONVEYOR PID	1
24915-07-M6-THS-00002	7	MDB TMA TRANSFER CONVEYORS PID	1
24915-07-M6-THS-00004	6	MDB TMA OUTPUT AIRLOCK/CONVEYOR PID	1
24915-07-M6-THS-00005	5	MDB TURNTABLE CONVEYOR NO. 3 PID	1
24915-07-M6-THS-00006	5	MDB MPT BUFFER CONVEYOR PID	1
24915-07-M6-THS-00007	5	MDB TURNTABLE CONVEYOR NO. 2 PID	1
24915-07-M6-THS-00008	3	MDB TRAY INUPT CONVEYORS PID	1
24915-07-M6-THS-00009	6	MDB TRAY INPUT AIRLOCK/CONVEYOR NO. 1 PID	1
24915-07-M6-THS-00010	5	MDB TRAY TRANSFER CONVEYOR PID	1
24915-07-M6-THS-00011	5	MDB TRAY INPUT AIRLOCK/CONVEYOR NO. 2 PID	1
24915-07-M6-THS-00012	5	MDB PROJECTILE BUFFER CONVEYOR PID	1
24915-07-M6-THS-00013	4	MDB TURNTABLE CONVEYOR NO. 1 PID	1
24915-07-M6-THS-00014	5	MDB EBH RESIDUE BLAST GATE PID	1
24915-07-M6-THS-00015	5	MDB RESIDUE BUFFER CONVEYOR PID	1
24915-07-M6-THS-00016	6	MDB MWS INPUT AIRLOCK/CONVEYOR PID	1
24915-07-M6-THS-00017	5	MDB CAM INFEED CONVEYOR PID	1
24915-07-M6-THS-00018	6	MDB MWS CONVEYORS PID	1
24915-07-M6-THS-00019	5	MDB TRAY TRANSFER COOLING CONVEYOR LN 1 PID	1
24915-07-M6-THS-00020	5	MDB TRAY TRANSFER COOLING CONVEYOR LN 2 PID	1
24915-07-M6-THS-00021	3	MDB TRAY BUFFER COOLING CONVEYORS PID	1
24915-07-MTD-ACS-00001	1	AGENT HOLDING TANK MT-ACS-0105	9
24915-07-MTD-ACS-00002	1	AGENT SURGE TANK MT-ACS-0106	9
24915-07-MTD-ANS-00001	2	AGENT HYDROLYSATE SAMPLING TANKS MT-ANS-0103, 0203, 0303	10
24915-07-MVD-SDS-00001	2	SPENT DECON HOLDING-AGENT WASHOUT TREATMENT TANKS MV-SDS-0101, 0201, 0301	11
24915-08-M5-HVAC-00001	4	FILTER AREA CASCADE SYSTEM FILTER UNITS HVAC AIR FLOW DIAGRAM	1
24915-08-M5-HVAC-00002	4	FILTER AREA CASCADE SYSTEM FILTER UNITS HVAC AIR FLOW DIAGRAM	1
24915-08-M6-HVAC-00001	6	FILTER AREA FILT0801 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00002	6	FILTER AREA FILT0802 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00003	6	FILTER AREA FILT0803 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00004	6	FILTER AREA FILT0804 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00005	6	FILTER AREA FILT0805 HVAC CONTROL DIAGRAM	1

24915-08-M6-HVAC-00006	5	FILTER AREA FILT0806 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00007	5	FILTER AREA FILT0807 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00008	5	FILTER AREA FILT0808 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00009	4	FILTER AREA FILT0809 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00010	4	FILTER AREA FILT0810 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00011	4	FILTER AREA FILT0811 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00012	4	FILTER AREA FILT0812 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00013	4	FILTER AREA FILT0813 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00014	4	FILTER AREA FILT0814 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00015	3	FILTER AREA CASCADE VENTILATION SYSTEM HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00016	3	FILTER AREA CASCADE VENTILATION SYSTEM HVAC CONTROL DIAGRAM	1
24915-10-A1-00-00001	2	SPB GROUND FLOOR PLAN	1
24915-10-DB-00-00002	2	SPB FOUNDATION LOCATION PLAN - SH 1, AREA 10-01 THRU 10-09	1
24915-10-DB-00-00006	2	SPB SLAB ON GRADE PLAN SH 1 BLDG AREA 10-01	1
24915-10-DB-00-00007	2	SPB SLAB ON GRADE PLAN SH 2 BLDG AREA 10-02	1
24915-10-DB-00-00008	2	SPB SLAB ON GRADE PLAN SH 3 BLDG AREA 10-03	1
24915-10-DB-00-00009	3	SPB SLAB ON GRADE PLAN SH 4 BLDG AREA 10-04 AND 10-07	1
24915-10-DB-00-00010	3	SPB SLAB ON GRADE PLAN SH 5 BLDG AREA 10-05 AND 10-08	1
24915-10-DB-00-00011	3	SPB SLAB ON GRADE PLAN SH 6 BLDG AREA 10-06 AND 10-09	1
24915-10-DB-00-00014	2	SPB PERIMETER FOOTINGS AND SLAB SECTIONS AND DETAILS	1
24915-10-DB-00-00017	2	SPB FOUNDATIONS SECTIONS AND DETAILS - SH 1	1
24915-10-DBC-00-00004	D	GAS BOTTLE CANOPY, SUPPORT, EQUIPMENT AND MISC FDN CALCS (SPB)	398
24915-10-M0-AFS-09002	5	SPB AFS ARRANGEMENT SHEET 1	1
24915-10-M5-AFS-00001	9	AFS PFD - 2 SHEETS	2
24915-10-M5-APS-00001	9	SCWO ALUMINUM PRECIPITATION PROCESS FLOW DIAGRAM	1
24915-10-M5-APS-00001	7	SCWO ALUMINUM PRECIPITATION PROCESS FLOW DIAGRAM - SUPERSEDES 21-M5-APS-00001	2
24915-10-M5-RO-00001	6	SPB - WATER RECOVERY - R.O. UNIT PROCESS FLOW DIAGRAM - WAS BG-40-F-090 SUPERSEDES SK-F-031	2
24915-10-M5-RO-00002	10	SPB - WATER RECOVERY - TANKS PROCESS FLOW DIAGRAM	1
24915-10-M5-RO-00002	8	SPB - WATER RECOVERY - TANKS PROCESS FLOW DIAGRAM	2
24915-10-M5-SCWO-00001	11	SPB SCWO PROCESS FLOW DIAGRAM - 10 SHEETS	10
24915-10-M6-AFS-00001	5	AFS TRAIN 1 PID	1
24915-10-M6-AFS-00002	5	AFS TRAIN 2 PID	1
24915-10-M6-AFS-00003	5	AFS FILTRATION TANK PID	1
24915-10-M6-APS-00004	6	SPB ALUMINUM PRECIPITATION REACTOR-1 PID	1

24915-10-M6-APS-00005	4	SPB ALUMINUM PRECIPITATION REACTOR-2 PID	1
24915-10-M6-APS-00006	3	SPB ALUM PRECIPITATION REACTOR PUMPS PID	1
24915-10-M6-APS-00008	3	SPB PRECIPITATION HCL SCUBBER PID	1
24915-10-M6-RO-00003	4	SPB R.O. CHEMICAL INJECTION PID	1
24915-10-M6-RO-00007	2	SPB MULTIMEDIA FILTERS PID	1
24915-10-M6-RO-00008	2	SPB MULTIMEDIA FILTERS PID	1
24915-10-M6-RO-00009	2	SPB WATER SOFTENER PID	1
24915-10-M6-RO-00010	4	SPB RO REJECT TANK 0106 PID	1
24915-10-M6-RO-00011	4	SPB RO REJECT TANK 0206 PID	1
24915-10-M6-RO-00012	4	SPB RO REJECT TANK PUMPS PID	1
24915-10-M6-RO-00013	5	SPB SCWO EFFLUENT TANK AND PUMPS TR-1 PID	1
24915-10-M6-RO-00014	4	SPB SCWO EFFLUENT TANK AND PUMPS TR-2 PID	1
24915-10-M6-RO-00015	4	SPB SCWO EFFLUENT TANK AND PUMPS TR-3 PID	1
24915-10-M6-RO-00016	3	SPB RO PERMEATE TANKS PID	1
24915-10-M6-RO-00017	2	SPB RO PERMEATE PUMPS PID	1
24915-10-M6-RO-00021	3	SPB SCWO EFFLUENT CAUSTIC DAY TK AND PUMP PID	1
24915-10-M6-RO-00022	3	SPB CANISTER FILTER AND RO UNIT 0101 PID	1
24915-10-M6-RO-00023	3	SPB CANISTER FILTER AND RO UNIT 0201 PID	1
24915-10-M6-RO-00024	3	SPB CANISTER FILTER AND RO UNIT 0301 PID	1
24915-10-M6-SCWO-00013	7	SPB HYDROLYSATE BLEND TANK 1 PID	1
24915-10-M6-SCWO-00014	6	SPB OFF-SPEC TANK AND PRESS. RELIEF VESSEL PID	1
24915-10-M6-SCWO-00015	7	SPB HYDROLYSATE BLEND TANK 2 PID	1
24915-10-M6-SCWO-00016	6	SPB HP AIR DISTRIBUTION PID	1
24915-10-M6-SCWO-00018	6	SPB AGENT-ENRGTCS HYDROLYSATE DIST HDR PID	1
24915-10-M6-SCWO-00019	6	SPB PRESSURE RELIEF HEADERS PID	1
24915-10-M6-SCWO-00020	6	SPB BATCH HYDROLYSATE HOLDING TANK PID	1
24915-10-M6-SCWO-00021	7	SPB SOLID FEED ADDITIVES PID	1
24915-10-M6-SCWO-00022	6	SPB HCL AND NAOH FEED ADDITIVES PID	1
24915-10-M6-SCWO-00023	6	SPB H2S04 FEED ADDITIVES PID	1
24915-10-M6-SCWO-00024	5	SPB FLUSH WATE HEATER PID	1
24915-10-M6-SCWO-00025	6	SPB CONDENSATE COLLECTION POT PID	1
24915-10-M6-SCWO-00026	6	SPB REACTOR BLOWDOWN AND PRESS RELIEF HDR PID	1
24915-10-M6-SCWO-00027	5	SPB GAS EFFLUENT DUCT HEATER PID	1
24915-10-M6-SCWO-00029	4	SPB HYROL BATCH TANK HEATER P&ID	1
24915-10-M6-SCWO-00030	4	SPB HYROL BLEND TANK HEATERS 1 AND 2 PID	1
24915-10-M6-SCWO-00054	4	SPB PROCESS WATER TANK AND PUMPS PID	1
24915-10-M6-SCWO-00055	0	SPB SCWO PIPING AND INSTRUMENT DIAGRAM	1
24915-10-M6-SCWO-01011	7	SPB TRAIN 1 REACTOR FUEL FEED PID	1
24915-10-M6-SCWO-01012	7	SPB TRAIN 1 QUENCH WATER AND HYDROL FEED PID	1

24915-10-M6-SCWO-01013	7	SPB TRAIN 1 REACTOR PID	1
24915-10-M6-SCWO-01014	7	SPB TRAIN 1 EFFLUENT COOLING PID	1
24915-10-M6-SCWO-01015	7	SPB TRAIN 1 GAS-LIQUID SEPARATION PID	1
24915-10-M6-SCWO-01016	6	SPB TRAIN 1 GAS ANALYZER SYSTEM PID	1
24915-10-M6-SCWO-01017	7	SPB TRAIN 1 FEED WATER AND PREHEATER PID	1
24915-10-M6-SCWO-01018	6	SPB TRAIN 1 REACTOR AIR FEED PID	1
24915-10-M6-SCWO-01019	4	SPB TRAIN 1 TOC SAMPLE ANALYZER PID	1
24915-10-M6-SCWO-02011	4	SPB TRAIN 2 REACTOR FUEL FEED PID	1
24915-10-M6-SCWO-02012	4	SPB TRAIN 2 QUENCH WATER AND HYDROL FEED PID	1
24915-10-M6-SCWO-02013	4	SPB TRAIN 2 REACTOR PID	1
24915-10-M6-SCWO-02014	4	SPB TRAIN 2 EFFLUENT COOLING PID	1
24915-10-M6-SCWO-02015	4	SPB TRAIN 2 GAS-LIQUID SEPARATION PID	1
24915-10-M6-SCWO-02016	3	SPB TRAIN 2 GAS ANALYZER SYSTEM PID	1
24915-10-M6-SCWO-02017	4	SPB TRAIN 2 FEED WATER AND PREHEATER PID	1
24915-10-M6-SCWO-02018	3	SPB TRAIN 2 REACTOR AIR FEED PID	1
24915-10-M6-SCWO-02019	3	SPB TRAIN 2 TOC SAMPLE ANALYZER PID	1
24915-10-M6-SCWO-03011	4	SPB TRAIN 3 REACTOR FUEL FEED PID	1
24915-10-M6-SCWO-03012	4	SPB TRAIN 3 QUENCH WATER AND HYDROL FEED PID	1
24915-10-M6-SCWO-03013	4	SPB TRAIN 3 REACTOR PID	1
24915-10-M6-SCWO-03014	4	SPB TRAIN 3 EFFLUENT COOLING PID	1
24915-10-M6-SCWO-03015	4	SPB TRAIN 3 GAS-LIQUID SEPARATION PID	1
24915-10-M6-SCWO-03016	3	SPB TRAIN 3 GAS ANALYZER SYSTEM PID	1
24915-10-M6-SCWO-03017	4	SPB TRAIN 3 FEED WATER AND PREHEATER PID	1
24915-10-M6-SCWO-03018	3	SPB TRAIN 3 REACTOR AIR FEED PID	1
24915-10-M6-SCWO-03019	3	SPB TRAIN 3 TOC SAMPLE ANALYZER PID	1
24915-11-DBC-00-00002	C	HSA MAT FOUNDATION CONTAINMENT CAPACITY EVALUATION	37
24915-11-M5-HSS-00001	5	HSA AGENT HYDROLYSATE PROCESS FLOW DIAGRAM	1
24915-11-M5-HSS-00001	4	HSA AGENT HYDROLYSATE PROCESS FLOW DIAGRAM	2
24915-11-M5-HSS-00002	5	HSA ENERGETICS HYDROLYSATE PROCESS FLOW DIAGRAM	1
24915-11-M5-HSS-00002	4	HSA ENERGETICS HYDROLYSATE PROCESS FLOW DIAGRAM	2
24915-11-M6-HSS-00001	6	HSA AGENT HYDROLYSATE STORAGE TANK PID	1
24915-11-M6-HSS-00002	6	HSA AQUEOUS HYDROLYSATE PUMPS PID	1
24915-11-M6-HSS-00003	4	HSA ORGANIC HYDROLYSATE PUMPS PID	1
24915-11-M6-HSS-00004	7	HSA AGENT HYDROLYSATE STORAGE TANK TR-1 PID	1
24915-11-M6-HSS-00005	6	HSA AQUEOUS HYDROLYSATE PUMPS TRAIN 1 PID	1
24915-11-M6-HSS-00006	5	HSA ORG HYDRO PUMPS AND SUMP PUMP TR-1 PID	1
24915-11-M6-HSS-00007	6	HSA AGENT HYDROLYSATE STORAGE TANK TR-2 PID	1
24915-11-M6-HSS-00008	5	HSA AQUEOUS HYDROLYSATE PUMPS TRAIN 2 PID	1
24915-11-M6-HSS-00009	3	HSA ORGANIC HYDROLYSATE PUMPS TRAIN 2 PID	1

24915-11-M6-HSS-00010	6	HSA ENR HYDRO ST TK MT-HSS-0604 TR-1 PID	1
24915-11-M6-HSS-00011	7	HSA ENERGETICS HYDROLYSATE PUMPS TR-1 PID	1
24915-11-M6-HSS-00012	5	HSA ENR HYDRO ST TK MT-HSS-0704 TR-2 PID	1
24915-11-M6-HSS-00013	6	HSA ENERGETICS HYDROLYSATE PUMPS TR-2 PID	1
24915-13-A1-00-00001	5	UB OVERALL FLOOR PLAN - EL. 903'-6"	1
24915-23-A1-00-00001	3	LAB FLOOR PLAN EL. 908'-0"	1
24915-23-A1-00-00002	3	LAB ENLARGED FLOOR PLAN EL. 908'-0" AREA 23-01	1
24915-23-A1-00-00003	2	LAB ENLARGED FLOOR PLAN EL. 908'-0" AREA 23-02	1

Appendix D2: New Permit Controlled Documents and Drawings and Those Requiring Revision Since Rev. 5 Baseline

This appendix includes a list of drawings that have been revised since the submission of RD&D Permit Revision 5. These drawings will be provided in a separate volume.

Permit Controlled Documents and Drawings – New & Revised			
Drawing Number	Revision	Title	Page #(s)
NEW DOCUMENTS AND DRAWINGS			
24915-00-HAC-00-00001	A	RCRA HAZARDOUS WASTE TANK VOLUME	66
24915-000-C0-00-00001	8	SITE WORK GENERAL NOTES, LEGEND AND ABBREVIATIONS	1
24915-007-V1A-MX00-00024	5	MDB MWS NOSE CLOSURE REMOVAL SYSTEM P&ID	2
24915-10-DBC-00-00010	0	SCWO HEAT EXCHANGER 10-ME-RO-0101 FDN CONTAINMENT DESIGN LOCATED OUTSIDE SPB	20
24915-10-DB-00-00049	5	SPB AREA FOUNDATION LOCATION PLAN – SH 4 AREA 10-13 & 10-14	1
24915-10-DB-00-00071	3	SPB AREA MISC EQUIPMENT FOUNDATONS FOUNDATION SCHEDULE	1
LABORATORY DRAWINGS – FOR INFORMATION ONLY			
24915-000-V1A-AKBP-00190	B04	Airflow Plan	3
24915-000-V1A-AKBP-00191	B02	Roof Plan	2
24915-000-V1A-AKBP-00380	B02	Control Diagrams	2
24915-000-V1A-AKBP-00454	B03	Duct Heater	2
24915-000-V1A-AKBP-00469	B03	HVAC Controls	2
24915-000-V1A-AKBP-00483	B02	Network Layout & Wiring	12
REVISED DOCUMENTS AND DRAWINGS			
Drawing Number	Revision	Title	Page #(s)
24915-000-C2-00-00001	19	SITE PLAN	1
24915-07-M6-ACS-00002	7	MDB AGENT SURGE TANK – SUPERSEDES SK-MP-0033	1
24915-07-M6-ACS-00003	8	MDB AGENT HOLDING TANK PID	1
24915-07-M6-ANS-00001	11	MDB AGENT HYDROLYZER TR-1 PID	1
24915-07-M6-ANS-00002	6	MDB AGENT HYDROLYZER TR-2 PID	1
24915-07-M6-ANS-00003	11	MDB AGENT HYDROLYZER VENT SYSTEM PID	1
24915-07-M6-ANS-00005	10	MDB AGENT HYDROLYZER FEED MANIFOLD TR1 PID	1
24915-07-M6-ANS-00007	9	MDB AGENT HYDROLYZER FEED MANIFOLD TR 1 PID	1
24915-07-M6-ANS-00008	4	MDB AGENT HYDROLYZER FEED MANIFOLD TR 2 PID	1
24915-07-M6-ANS-00009	9	MDB AGENT HYD PUMPS AND HEAT EXCHANGER TR1 PID	1
24915-07-M6-ANS-00010	4	MDB AGNT HYD PUMPS AND HEAT EXCHCHANGER TR2 PID	1
24915-07-M6-ANS-00011	11	MDB AGENT HYDROLYSATE SAMPLING TANK PID	1
24915-07-M6-ANS-00012	6	MDB AGENT HYDROLYSATE SAMPLING TANK PID	1

Permit Controlled Documents and Drawings – New & Revised			
Drawing Number	Revision	Title	Page #(s)
24915-07-M6-ANS-00013	6	MDB AGENT HYDROLYSATE SAMPLING TANK PID	1
24915-07-M6-ANS-00014	10	MDB AGENT HYDROLYSATE PUMP PID	1
24915-07-M6-ANS-00015	4	MDB AGENT HYDROLYSATE PUMP P_ID	1
24915-07-M6-ANS-00016	4	MDB AGENT HYDROLYSATE PUMP P_ID	1
24915-07-M6-ANS-00017	7	MDB AGENT HYDROLYSATE PUMP P_ID	1
24915-07-M6-ANS-00018	9	MDB AGENT HYDROLYZER SAMPLER PID	1
24915-07-M6-ANS-00020	10	MDB AGENT HYDROLYSATE SAMPLER PID	1
24915-07-M6-EBH-00001	5	MDB EBH BLAST DOORS (FIRST LEVEL) P AND ID	1
24915-07-M6-EBH-00002	5	MDB EBH BLAST DOORS (SECOND LEVEL) P AND ID	1
24915-07-M6-EBH-01005	10	EBH CONDENSATE TANK PID	1
24915-07-M6-EBH-01006	10	EBH STM-WTR AND CHILLED SEC. LOOP PID	1
24915-07-M6-EBH-01018	5	EBH NITROGEN SUPPLY PID	1
24915-07-M6-EBH-01021	6	EBH UNIT 1 FEED VALVES PID	1
24915-07-M6-EBH-01022	6	EBH UNIT 2 FEED VALVES PID	1
24915-07-M6-EBH-01023	6	EBH UNIT 3 FEED VALVES PID	1
24915-07-M6-EBH-01030	11	EBH CAUSTIC HEATER PID	1
24915-07-M6-EBH-01035	12	EBH UNIT 1 PID	1
24915-07-M6-EBH-01036	8	EBH UNIT 2 PID	1
24915-07-M6-EBH-01037	9	EBH UNIT 3 PID	1
24915-07-M6-EBH-01075	10	EBH SOLIDS TRANSFER CONVEYOR PID	1
24915-07-M6-EBH-01085	11	EBH HYDROLYSATE COLLECTION PID	1
24915-07-M6-ENS-00001	8	MDB ENR FEED 50 PERCENT CAUSTIC PID	1
24915-07-M6-ENS-00002	10	MDB ENR FEED ENER HYD AND ENR VENT GAS PID	1
24915-07-M6-ENS-00005	10	MDB ENERGETICS NEUTRALIZATION REACTOR 1 PID	1
24915-07-M6-ENS-00006	6	MDB ENERGETICS NEUT. REACTOR 2 PID	1
24915-07-M6-ENS-00007	6	MDB ENERGETICS NEUT. REACTOR 3 PID	1
24915-07-M6-ENS-00017	9	MDB ENERGETICS NEUT. PUMPS REACTOR 1 PID	1
24915-07-M6-ENS-00018	3	MDB ENERGETICS NEUT. PUMPS REACTOR 2 PID	1
24915-07-M6-ENS-00019	3	MDB ENERGETICS NEUT. PUMPS REACTOR 3 PID	1
24915-07-M6-ENS-00023	11	MDB ENERGETICS NEUT SAMPLER PID	1
24915-07-M6-ENS-00025	6	MDB ENR FEED OTE CONDENSATE P&ID	1
24915-07-M6-MCS-00001	8	MDB MPT COOLING SYSTEM - LINE 1 PID	1
24915-07-M6-MCS-00002	8	MDB MPT COOLING SYSTEM - LINE 2 PID	1
24915-07-M6-MPT-00001	12	MDB MPT INLET AIRLOCK-CONVEYOR LINE 1 PID	1

Permit Controlled Documents and Drawings – New & Revised			
Drawing Number	Revision	Title	Page #(s)
24915-07-M6-MPT-00002	15	MDB MPT LINE 1-CONTROLS PID	1
24915-07-M6-MPT-00003	12	MDB MPT OUTLET AIRLOCK-CONVEYOR LINE 1 PID	1
24915-07-M6-MPT-00004	8	MDB MPT LINE 1 - COOLING PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MPT-00007	11	MDB MPT STEAM SUPERHEATER LINE 1 AND 2 PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-MPT-00013	11	MDB MPT OUTLET AIRLOCK PURGING - LINE 1 PID	1
24915-07-M6-MPT-00015	6	MDB MPT OUTLET AIRLOCK PURGING - LINE 2 P&ID	1
24915-07-M6-MPT-00017	9	MDB DEMIN COOLING SURGE TANK AND PUMPS PID	1
24915-07-M6-MPT-00018	8	MDB DEMIN WATER COOLER AND DISTRIBUTION PID	1
24915-07-M6-MPT-00019	7	MDB MPT INLET AIRLOCK/CONVEYOR LINE 2 PID	1
24915-07-M6-MPT-00020	8	MDB MPT LINE 2 CONTROLS PID	1
24915-07-M6-MPT-00022	6	MDB MPT LINE 2 - COOLING PID	1
24915-07-M6-MWS-00008	5	MDB MWS HYDRAULIC POWER UNIT PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-NCD-00001	6	MDB NCD SUMPS AND SUMP PUMPS P AND ID	1
24915-07-M6-NCR-00001	7	MDB MWS NOSE CLOSURE REMOVAL SYSTEM PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-OTE-00005	9	MDB EBH SCRUBBER TOWER	1
24915-07-M6-OTE-00007	9	MDB EBH SCRUBBER RECIRC PUMP PID	1
24915-07-M6-OTE-00009	9	MDB EBH REHEATER AND BLOWERS PID	1
24915-07-M6-OTE-00011	3	MDB EBH FILTERS PID	1
24915-07-M6-OTM-00001	10	MDB MPT THERMAL OXIDIZER UNIT LN 1 PID	1
24915-07-M6-OTM-00002	6	MDB MPT THERMAL OXIDIZER UNIT - LN 2 PID	1
24915-07-M6-OTM-00005	10	MDB MPT VENTURI-SCRUBBER TOWER PID	1
24915-07-M6-OTM-00006	10	MDB MPT OFFGAS BLOWERS PID	1
24915-07-M6-OTM-00007	10	MDB MPT RECIRCULATION SURGE TANK PID	1
24915-07-M6-OTM-00008	10	MDB MPT VENTURI RECIRCULATION PUMP PID	1
24915-07-M6-OTM-00011	8	MDB MPT OFFGAS VENT VALVING PID	1
24915-07-M6-OTM-00013	9	MDB SCRUBBER RECIRCULATION COOLERS PID	1
24915-07-M6-OTM-00014	9	MDB MPT CYCLONE LINE 1 PID	1
24915-07-M6-OTM-00015	6	MDB MPT CYCLONE LINE 2 PID	1
24915-07-M6-RHS-00059	5	MDB ROCKET PROCESSING SYSTEM DWG1-LN2 PID	1
24915-07-M6-RHS-00077	4	MDB RSM-1 HYDRAULIC SYSTEM SHT-1 P&ID	1
24915-07-M6-SDS-00004	9	MDB SPENT DECON FEED PUMPS 0101A-B PIPING AND INSTRUMENT DIAGRAM	1

Permit Controlled Documents and Drawings – New & Revised			
Drawing Number	Revision	Title	Page #(s)
24915-07-M6-SDS-00005	8	MDB SPENT DECON FEED PUMPS 0102A-B PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00006	8	MDB CATEGORY A SUMPS AND SUMP PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00007	7	MDB CATEGORY B SUMPS AND SUMP PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00008	9	MDB CATEGORY C SUMPS AND SUMP PUMPS PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00009	7	MDB SPENT DECON FEED MANIFOLD PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00010	11	MDB SPENT DECON SAMPLER PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00011	4	MDB CAT-A SUMP PUMPS DISTRIBUTION HDR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00012	6	MDB CAT-B SUMP PUMPS DISTRIBUTION HDR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-SDS-00013	5	MDB CAT-C SUMP PUMPS DISTRIBUTION HDR PIPING AND INSTRUMENT DIAGRAM	1
24915-07-M6-THS-00001	8	MDB TMA LOAD AND INPUT AIRLOCK/CONVEYOR PID	1
24915-07-M6-THS-00002	8	MDB TMA TRANSFER CONVEYORS PID	1
24915-07-M6-THS-00004	7	MDB TMA OUTPUT AIRLOCK/CONVEYOR PID	1
24915-07-M6-THS-00005	6	MDB TURNTABLE CONVEYOR NO. 3 PID	1
24915-07-M6-THS-00006	6	MDB MPT BUFFER CONVEYOR PID	1
24915-07-M6-THS-00007	7	MDB TURNTABLE CONVEYOR NO. 2 PID	1
24915-07-M6-THS-00008	4	MDB TRAY INUPT CONVEYORS PID	1
24915-07-M6-THS-00009	7	MDB TRAY INPUT AIRLOCK/CONVEYOR NO. 1 PID	1
24915-07-M6-THS-00010	6	MDB TRAY TRANSFER CONVEYOR PID	1
24915-07-M6-THS-00011	6	MDB TRAY INPUT AIRLOCK/CONVEYOR NO. 2 PID	1
24915-07-M6-THS-00012	6	MDB PROJECTILE BUFFER CONVEYOR PID	1
24915-07-M6-THS-00013	6	MDB TURNTABLE CONVEYOR NO. 1 PID	1
24915-07-M6-THS-00014	6	MDB EBH RESIDUE BLAST GATE PID	1
24915-07-M6-THS-00015	6	MDB RESIDUE BUFFER CONVEYOR PID	1
24915-07-M6-THS-00016	7	MDB MWS INPUT AIRLOCK/CONVEYOR PID	1
24915-07-M6-THS-00017	6	MDB CAM INFEED CONVEYOR PID	1
24915-07-M6-THS-00018	7	MDB MWS CONVEYORS PID	1
24915-07-M6-THS-00019	6	MDB TRAY TRANSFER COOLING CONVEYOR LN 1 PID	1
24915-07-M6-THS-00020	6	MDB TRAY TRANSFER COOLING CONVEYOR LN 2 PID	1

Permit Controlled Documents and Drawings – New & Revised			
Drawing Number	Revision	Title	Page #(s)
24915-07-M6-THS-00021	4	MDB TRAY BUFFER COOLING CONVEYORS PID	1
24915-08-M6-HVAC-00001	7	FILTER AREA FILT0801 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00002	7	FILTER AREA FILT0802 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00003	7	FILTER AREA FILT0803 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00004	7	FILTER AREA FILT0804 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00005	7	FILTER AREA FILT0805 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00006	6	FILTER AREA FILT0806 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00007	6	FILTER AREA FILT0807 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00008	6	FILTER AREA FILT0808 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00009	5	FILTER AREA FILT0809 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00010	5	FILTER AREA FILT0810 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00011	5	FILTER AREA FILT0811 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00012	5	FILTER AREA FILT0812 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00013	5	FILTER AREA FILT0813 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00014	5	FILTER AREA FILT0814 HVAC CONTROL DIAGRAM	1
24915-08-M6-HVAC-00015	4	FILTER AREA CASCADE VENTILATION SYSTEM HVAC CONTROL DIAGRAM	1
24915-10-DBC-00-00004	0	GAS BOTTLE CANOPY, SUPPORT, EQUIPMENT AND MISC FDN CALCS (SPB)	398
24915-10-M6-AFS-00001	6	AFS TRAIN 1 PID	1
24915-10-M6-AFS-00002	6	AFS TRAIN 2 PID	1
24915-10-M6-AFS-00003	6	AFS FILTRATION TANK PID	1
24915-10-M6-APS-00004	7	SPB ALUMINUM PRECIPITATION REACTOR-1 PID	1
24915-10-M6-APS-00005	5	SPB ALUMINUM PRECIPITATION REACTOR-2 PID	1
24915-10-M6-APS-00006	4	SPB ALUM PRECIPITATION REACTOR PUMPS PID	1
24915-10-M6-APS-00008	4	SPB PRECIPITATION HCL SCUBBER PID	1
24915-10-M6-RO-00013	6	SPB SCWO EFFLUENT TANK AND PUMPS TR-1 PID	1
24915-10-M6-RO-00014	5	SPB SCWO EFFLUENT TANK AND PUMPS TR-2 PID	1
24915-10-M6-SCWO-00013	8	SPB HYDROLYSATE BLEND TANK 1 PID	1
24915-10-M6-SCWO-00054	5	SPB PROCESS WATER TANK AND PUMPS PID	1
24915-10-M6-SCWO-01019	5	SPB TRAIN 1 TOC SAMPLE ANALYZER PID	1
24915-11-DBC-00-00002	0	HSA MAT FOUNDATION CONTAINMENT CAPACITY EVALUATION	36
24915-11-M6-HSS-00001	7	HSA AGENT HYDROLYSATE STORAGE TANK PID	1
24915-11-M6-HSS-00002	7	HSA AQUEOUS HYDROLYSATE PUMPS PID	1
24915-11-M6-HSS-00003	5	HSA ORGANIC HYDROLYSATE PUMPS PID	1

Permit Controlled Documents and Drawings – New & Revised			
Drawing Number	Revision	Title	Page #(s)
24915-11-M6-HSS-00004	8	HSA AGENT HYDROLYSATE STORAGE TANK TR-1 PID	1
24915-11-M6-HSS-00006	6	HSA ORG HYDRO PUMPS AND SUMP PUMP TR-1 PID	1
24915-11-M6-HSS-00007	7	HSA AGENT HYDROLYSATE STORAGE TANK TR-2 PID	1
24915-11-M6-HSS-00009	4	HSA ORGANIC HYSROLYSATE PUMPS TRAIN 2 PID	1
24915-11-M6-HSS-00010	7	HSA ENR HYDRO ST TK MT-HSS-0604 TR-1 PID	1
24915-11-M6-HSS-00011	8	HSA ENERGETICS HYDROLYSATE PUMPS TR-1 PID	1
24915-11-M6-HSS-00012	6	HSA ENR HYDRO ST TK MT-HSS-0704 TR-2 PID	1
24915-11-M6-HSS-00013	8	HSA ENERGETICS HYDROLYSATE PUMPS TR-2 PID	1
24915-13-A1-00-00001	6	UB OVERALL FLOOR PLAN - EL. 903'-6"	1

Appendix D3: **Safety Data Sheets for Nerve Agent GB**

This appendix includes Safety Data Sheets for Nerve Agent GB, as requested in Technical Notice Of Deficiency, Comment 9.

Part E: Groundwater Monitoring [401 KAR 34:060 Section 1 & 40 CFR 264.90(b)(2)]

Groundwater monitoring requirements are not applicable. The BGCAPP facility is not a land-based disposal unit. The BGCAPP facility was designed to contain and control all releases, thereby preventing impacts to the groundwater. Although the BGCAPP facility does receive wastes that contain free liquids (i.e., projectiles containing chemical agent), the design and hazard prevention procedures of the facility provide protection for the environment and general public, eliminating the requirement for groundwater monitoring in the vicinity of the facility.

In addition, the BGCAPP facility does not contain any identified solid waste management units (SWMUs) that require groundwater monitoring. The BGCAPP is performing an investigation of the groundwater background levels for the entire BGCAPP site to include the EDT facility. The first quarter groundwater sampling was completed in July 2015 and quarterly sampling will be conducted prior to beginning agent operations.

Part F: Procedures to Prevent Hazards

Please see Appendix F1, Procedures to Prevent Hazards, that was approved by KDEP on May 23, 2014. This section fulfills the requirement of Compliance Schedule Item No. 16 and provides the information typically found in Part F of a RCRA Part B Permit Application.

Appendix F1: **Procedures to Prevent Hazards**

Part G: Contingency Plan and Emergency Procedures [401 KAR 38:090, Section 2(7), 34:040, Sections 1-7, and 34:190 Section 7 & 40 CFR 264.50-264.56 and 264.196]

Please see Appendix G1, the Contingency Plan that was approved by KDEP on March 25, 2014. This submission fulfills the requirement of Compliance Schedule Item No. 13 and provides the information typically found in Part G of a RCRA Part B Permit Application.

Included in section G-1 below are revised Coordination Agreements. These agreements will replace those referenced in any previous documentation and are consistent with the Blue Grass Army Depot (BGAD) permitting documentation. Also, see Figure G-1 through Figure G-3 below, which include updated maps for facility location, waste shipping routes, etc. Please also see Appendix G2, the Chemical Accident or Incident Response and Assistance (CAIRA) Plan, which was submitted to KDEP along with the Contingency Plan Response on April 21, 2014, as requested. The CAIRA Plan includes response actions taken by the BGAD and BGCA if a chemical agent related event were to occur. Appendix G3, the Spill Prevention, Control & Countermeasures (SPCC) Plan, is also attached, based on an earlier submission to KDEP dated February 11, 2014.

G-1: Coordination Agreements [401 KAR 34:040 Section 3 & 40 CFR 264.52(c)]

The BGCAPP facility, as a tenant activity of the BGAD, does not enter into coordination agreements with organizations outside of the BGAD. The BGCAPP facility receives additional emergency support from the BGAD, a fixed military installation with onsite capabilities for any potential emergency. These capabilities include the BGAD Provost Marshal and security force, the BGAD Fire Department (which also conducts emergency spill response), and the BGAD Health Clinic. Ambulance service is available for personnel transport to local hospitals. The Contingency Plan has been coordinated with each onsite agency with emergency response duties.

The BGAD maintains agreements with the following offsite emergency support activities:

a. Richmond Police Department, Richmond, Kentucky
b. Madison County Sheriff's Department, Richmond, Kentucky
c. Kentucky State Police Post 7, Richmond, Kentucky
d. Berea Police Department, Berea, Kentucky
e. Madison County, Kentucky; Mutual Support Agreement
f. Madison County, Kentucky; Meteorological Data and Meteorological Services
g. Richmond Fire Department, Richmond, Kentucky
h. Madison County Fire Department, Richmond, Kentucky
i. Madison County Emergency Medical Services, Richmond, Kentucky
j. Clark County Regional Medical Center, Winchester, Kentucky
k. St. Joseph Berea Hospital, Berea, Kentucky
l. Baptist Health Richmond Hospital, Richmond, Kentucky

The BGAD maintains current copies of the emergency support agreements.

Table G-1 – Emergency Response Agency Notification List

Agency[a]	Phone Number
BGAD Fire Department[b]	911 (from facility phone) (859) 779-6911 (from off-post or cell phone)
Kentucky Department of Environmental Protection (KDEP), Environmental Response Team	(502) 564-2380 (Monday-Friday, 0730-1530)[c] (800) 928-2380 (24 hr)
Kentucky Emergency Response Commission (ERC)[c]	(800) 255-2587 (502) 564-7815
National Response Center	(800) 424-8802 (D.C. area) (202) 267-2675
Madison County 911 Center and Central Dispatch	(859) 624-4776
Local Emergency Planning Committee[e]	(859) 624-4787
State Fire Marshall[f]	(502) 564-3626
Motor Vehicle Enforcement[g]	(502) 564-3276
U.S. EPA, Region 4, 24-hr Spill Reporting[h]	(404) 562-8700
U.S. Coast Guard, 8th District, Marine Safety	(504) 589-6261
U.S. Army Environmental Center (optional)	(410) 436-4714
HQDA (DAEN-2CE)-AOC [i]	(703) 697-0218
CHEMTREC (Information Only)	(800) 424-9300

NOTES:

[a] ***Agency notifications are only made by the BGAD Environmental Office***.

[b] The fire department having jurisdiction must be notified. The BGAD onsite fire department is designated as the fire department with jurisdiction.

[c] Notify both the KDEP and Kentucky Emergency Response Coordinator of a release at or above the reportable quantity (RQ).

[d] The NRC notifies the U.S. Coast Guard and U.S. EPA (includes chemical surety and toxic gases).

[e] 911 should notify adjoining jurisdictions if they are at risk. Notify the following jurisdictions, if required:

- Clark County (859) 745-7415
- Estill County (606) 723-2201
- Fayette County (859) 258-3600
- Garrard County (859) 792-3023
- Jackson County (606) 287-8305
- Jessamine County (859) 887-5447
- Rockcastle County (606) 256-2195
- Powell County (606) 256-2195

[f] If a fire hazard exists, the State Fire Marshall must also be notified; therefore, when reporting to KDEP and Kentucky ERC, tell them to notify the State Fire Marshall of the fire hazard.

[g] Notify Motor Vehicle Enforcement if hazardous material was released on public roadway, or if motor vehicle enforcement assistance is needed.

[h] The NRC notifies U.S. EPA Region 4. The BGAD may also notify Region 4.

[I] Notify the U.S. Army Operations Center (AOC) in a crisis only.

NOTE: In Kentucky, the following specific RQs apply to petroleum products. Notify state and local agencies of a release at or above following RQs:

Diesel:	Federal = Any quantity that poses any threat to water KY RQ = 75 gallons on land or water
All other petroleum products:	Federal = Any quantity that poses any threat to water KY RQ = 25 gallons on land or water

Figure G-1: BGCAPP Facility Location

Figure G-2: Hazardous Materials/Waste Routes

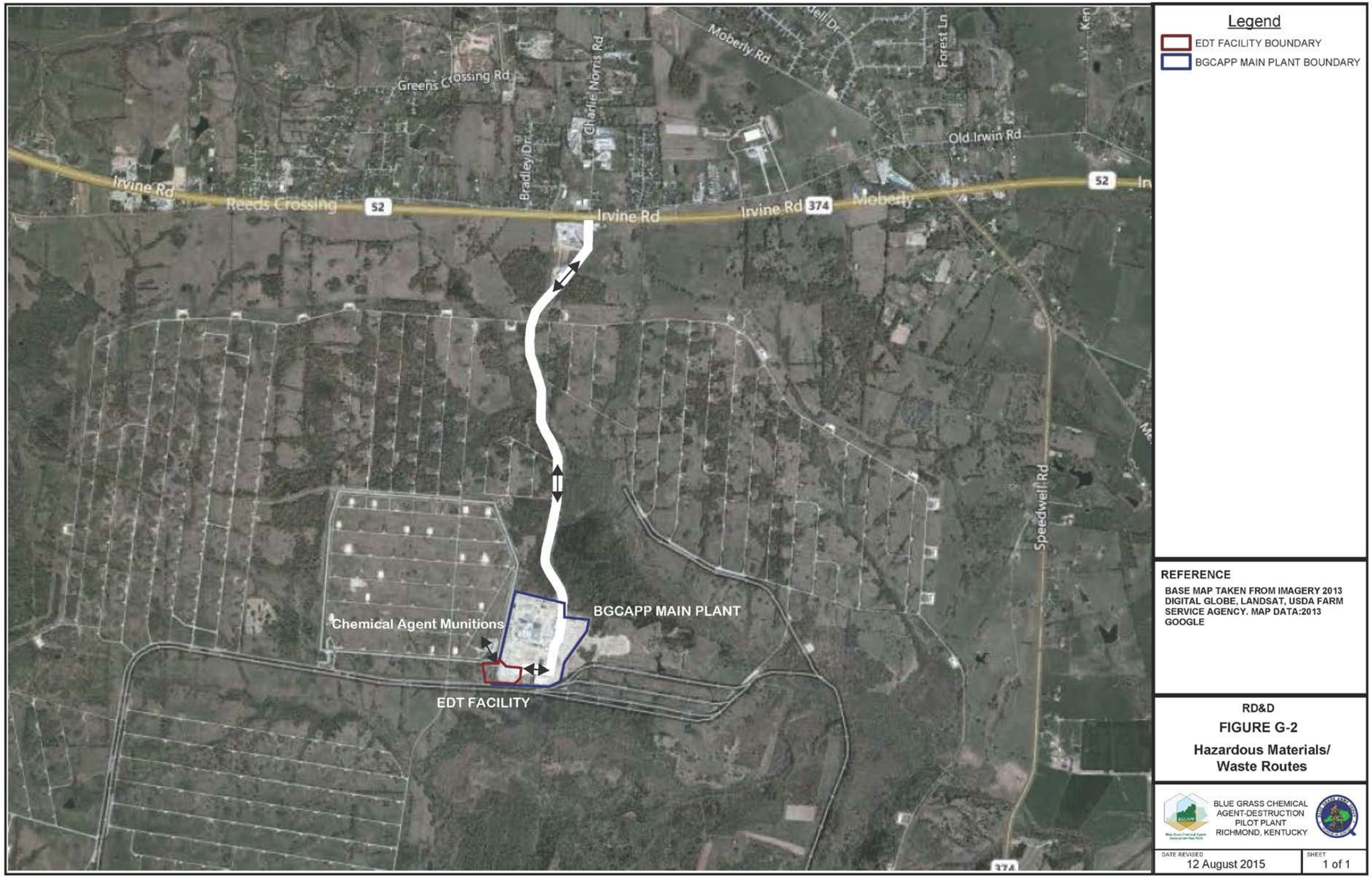


Figure G-3: Evacuation Routes Map

Appendix G1: **Contingency Plan and Emergency Response**

Appendix G2: **CAIRA Plan**

Appendix G3: **SPCC & Contingency Augmentation**

Part H: Personnel Training [401 KAR 34:020 Section 7 and 40 CFR 264.16]

Please see Appendix H1, the Personnel Training Plan that was approved by KDEP on February 19, 2014. This plan has been revised based on discussions with KDEP and all of these changes have been incorporated into the document. This training plan fulfills the requirement of Compliance Schedule Item No. 15 and provides the information typically found in Part H of a RCRA Part B Permit Application.

Appendix H1: **Personnel Training Plan**

Part I: Closure Plan, Post Closure Plans and Financial Requirements [401 KAR 34:070 Sections 2–6; 34:080 Section 2(3); 34:180 Section 9; 34:190 Section 8; 34:250 Section 2; & 40 CFR 264.111–115, 264.178, and 264.601]

Please see Appendix I1, the Closure Plan that was submitted to KDEP on December 18, 2013, and awaiting approval. A final Closure Plan will be submitted on or before December 31, 2015. This submission fulfills the requirement of Compliance Schedule Item No. 28 and provides the information typically found in Part I of a RCRA Part B Permit Application. The equipment decontamination plan will be submitted to KDEP as a technical secondary document along with the revised Closure Plan, once it has been finalized.

Appendix I1: **Closure Plan**

Part J: Other Federal Laws

The BGCAPP facility adheres to the existing permits of BGAD. The BGAD Chemical Storage Permit previously addressed other federal laws pertinent to the BGCAPP facility.

As stated in the BGAD Chemical Storage Permit, there are wetlands located at the BGAD. However, the BGCAPP facility will not affect these wetlands.

J-1: Wild and Scenic River Act

BGCAPP facility operations will not affect wild or scenic rivers.

J-2: National Historic Preservation Act

Operations of the BGCAPP facility will not affect cultural resources on the BGAD. No additional facilities will be constructed in support of BGCAPP facility operations outside of the existing BGCAPP footprint. During any additional BGCAPP facility earthwork activities, if the discovery of a culturally significant item is made, activities will be halted and notification of appropriate personnel to identify and remove the item(s) will be made.

J-3: Endangered Species Act

There are two rare plant species, with one species of concern, located on the BGAD. The Kentucky State Nature Preserves Commission survey performed from 1992–1994 identified the Running Buffalo Clover and the Spinulose Wood Fern as rare plant species found on the BGAD. During this survey, a map of the areas in which these species were growing was prepared. The BGCAPP facility is not located in these areas.

BGAD has not identified endangered animal species on the BGAD or the area around the BGCAPP facility.

J-4: Coastal Zone Management Act

The operation of the BGCAPP facility will not affect any coastal zone areas.

J-5: Fish and Wildlife Coordination Act

The operation of the BGCAPP facility does not result in the impoundment, diversion, control, or modification of any surface water bodies; therefore, this act is not applicable.

Part K: Waste Minimization [401 KAR 38:090 Section 2(23) and 38:030 Section 1 & 40 CFR 270.30]

The operations of the BGCAPP facility will be conducted with waste minimization goals in mind. The BPBG Team is committed to excellence in environmental protection. All employees are stewards of the environment and responsible for the elimination, reduction, recycling, and proper disposal of waste. Source reduction and waste minimization are prime considerations in all phases of the BGCAPP project: Design, Construction, Systemization, Operations, and Closure. Simply stated, the BGCAPP environmental policy is:

> *"We will eliminate waste generation at the source wherever feasible without compromising quality. When waste generation occurs, we will employ practical measures to reduce its volume and toxicity."*

The BPBG Team's commitment to this policy will reduce overall risk exposure and allow achievement of these pollution prevention goals, resulting in an expected lifecycle cost savings for operation of the BGCAPP Facility. The Facility Waste Minimization Plan is document 24915-00-G01-GGEN-00028 and is located in Appendix K1.

Appendix K1: **Waste Minimization Plan**

BGCAPP Waste Minimization Plan, Revision 0, Prepared by Bechtel Parsons Blue Grass Team (BPBGT), May 2010

Part L: Signatures [401 KAR 38:070 Section 7 & 40 CFR 270.11]

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on 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."

Ron Hink Project Manager Bechtel Parsons Blue Grass BGCAPP Facility Operator	Lee G. Hudson Colonel, U.S. Army Commanding BGCAPP Facility Owner