



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
US ARMY ENVIRONMENTAL COMMAND
2450 CONNELL ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-7664

IMAE-M

January 20, 2021

SUBJECT: Documentation of 2020 Annual Maintenance Activities
Closed, Covered and Capped Sites
Badger Army Ammunition Plant

Mr. Gregory A. Rudloff, P.G.
Corrective Action Section
Waste Management Branch
Land and Chemicals Division
USEPA - Region 5
77 West Jackson Blvd. (LU-9J)
Chicago, IL 60604-3590

Mr. Steve Martin, P.G.
Wisconsin Department of Natural Resources
GEF2 Central Office
PO Box 7921
Madison, WI 53707-7921

Dear Mr. Rudloff and Mr. Martin:

This letter report summarizes the 2020 activities associated with maintenance of the closed sites at the former Badger Army Ammunition Plant (BAAP) that have been covered or capped. The project sites include:

- Landfill #5 (WDNR License #2813)
- Propellant Burning Ground (PBG) Racetrack Area Including Hazardous Waste Thermal Treatment Unit (HWTTU)
- Landfill #1
- 1949 Pit Cap and PBG Waste Pits (Phases 1 and 2)
- Deterrent Burning Ground (DBG) Area & Landfill #3

Each project site has been maintained following the requirements set forth in the respective approved closure documents. This report provides a brief history of each site followed by a discussion of the maintenance activities performed in 2020. The site history has been condensed for ease of review since the history of each site has been well documented in previous submittals.

A site inspection form has been prepared for each of the project sites to assess the condition of the cap/cover at the time of the inspection. A map depicting the project site locations on BAAP is attached. Maintenance activities are discussed in the narrative portion of this report. It should be noted that the Wisconsin Department of Natural Resources (WDNR) no longer requires annual monitoring of Landfill #2, Landfill #4, and Oleum Landfill cap/covers.

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The BAAP produced smokeless gunpowder and solid rocket propellant as munitions components for the Army between 1942 and 1975.

LANDFILL #5 (WDNR LICENSE #2813)

Landfill #5 (WDNR License #2813) was a solid waste disposal facility used between 1970 and 1988. Waste types consisted primarily of demolition waste and office refuse. In 1988, the landfill was closed with a clay barrier cap which received regulatory approval by the WDNR on September 20, 1989.

The cap is inspected annually for erosion, settlement, undesirable vegetation growth, and other deficiencies. Maintenance includes annual mowing of the vegetation and correction of cap deficiencies to maintain proper grade.

The cap was mowed and vegetation around the two gas probes was cleared during October 2020 and the annual inspection was performed on November 5, 2020. The site was found to be in good condition and no erosion of the cap was identified during the inspection. Settlement of the cap was identified on the east and west sides and in the center of Landfill #5. Settlement on the west side of Landfill #5 was more pronounced. Completion of a topographic survey and grade plan is scheduled for 2021. Unauthorized site access has been reduced by the installation of gates by the WDNR parks personnel. The completed inspection form is attached.

PBG RACETRACK AREA INCLUDING HWTTU

The PBG Racetrack area was used for open burning of propellant and explosive-contaminated wastes and includes the area known as the HWTTU. In 1995, three quarters of the Racetrack area was closed as part of the final closure for the HWTTU, which included the installation of a soil cover system. Closure of this portion of the Racetrack/HWTTU in the PBG area was approved by the WDNR on September 4, 1996. Contaminated soil was removed from the remaining portion of the Racetrack area in 1997 and the WDNR letter dated December 2, 1997 indicated that no additional remedial actions were required for this area.

The cover is inspected annually for erosion, settlement, undesirable vegetation growth, and other deficiencies. Maintenance includes annual mowing of the vegetation and correction of cover deficiencies to maintain proper grade.

The cover was mowed during October 2020 and the annual inspection was performed on November 5, 2020. A site identification sign at the southwest corner of the cover was reinstalled and a site identification sign was added at the site entrance. The site access road was cleared of vegetation. No erosion or settlement of the cover was identified during the inspection. The completed inspection form is attached.

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LANDFILL #1

Landfill #1 was used as a demolition debris disposal facility between 1942 and 1959. The facility was closed with clay and geomembrane barrier cap in 1997. The Final Construction Report for the Landfill #1 cap, which included the long-term care requirements, was submitted to the WDNR on January 29, 1998. Regulatory approval of the Landfill #1 cap was received in a Liability, Clarification and Current Environmental Conditions letter report dated August 27, 2014.

The cap is inspected annually for erosion, settlement, undesirable vegetation growth and other deficiencies. The cap drainage system cleanouts and outlets, drainage culvert under the site access road, gas vents, site identification signs, and access roads are also inspected annually. Maintenance includes annual mowing of the vegetation and correction of cap deficiencies to maintain proper grade and prevent ponding of storm water.

The cap was mowed during October 2020 and the annual inspection was performed on November 5, 2020. The east passive gas vent was repaired. No erosion or settlement of the cap was identified during the inspection. The completed inspection form is attached.

1949 PIT CAP and PBG WASTE PITS (PHASES 1 and 2)

The 1949 Pit and PBG Waste Pits consisted of four excavated areas that were used for open burning and debris disposal from 1944 to 1962. Metals contained in the backfill soils and buried debris in the 1949 Pit prompted the installation of a clay and geomembrane barrier cap in 1998. The Cap Construction Report for Phase 1 of the 1949 Pit Closure was approved by the WDNR on March 8, 1999.

Construction of Phase 2 of the 1949 Pit Cap, which covers the three PBG Waste Pits, was completed in November 2008. Consistent with Phase 1, the cap consisted of clay and geomembrane barrier components. The Construction Documentation Report for Phase 2 of the PBG was reviewed by the WDNR. According to their letter dated March 25, 2009, the cap is subject to a performance standard, therefore formal approval would not be given; however, the cap was constructed according to plan and no further construction activities were necessary.

The cap is inspected annually for erosion, settlement, undesirable vegetation growth, and other deficiencies. The cap drainage system cleanouts and outlets, drainage culverts under the site access roads, gas vents, perimeter barbed wire fence and gates, site identification signs, and access roads are also inspected annually. Maintenance includes annual mowing of the vegetation and correction of cap deficiencies to maintain proper grade and prevent ponding of storm water.

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The cap was mowed during October 2020 and the annual inspection was performed on November 5, 2020. Damaged or deteriorated fence posts were repaired or replaced. One perimeter toe-drain cleanout was repaired. No erosion or settlement of the cap was identified during the inspection. The completed inspection form is attached.

DBG AREA / LANDFILL #3

The DBG is a closed site of seven acres that is also referred to as Landfill #3. Approximately four acres of this area was used as a borrow pit and a fly ash disposal site from the 1940s through the 1970s. The remaining three acres consisted of three open burn pits that were used for the open burning of deterrent and other production waste. In 2003, a geosynthetic clay liner and geomembrane barrier cap was constructed over the entire seven-acre site.

The cap is inspected annually for erosion, settlement, undesirable vegetation growth, and other deficiencies. The cap drainage system outlets, site identification signs, access roads, perimeter barbed wire fence and gates are also inspected annually. Maintenance includes annual mowing of the vegetation and correction of cap deficiencies to maintain proper grade and prevent ponding of storm water.

The cap was mowed during October 2020 and the annual inspection was performed on November 5, 2020. Damaged or deteriorated fence posts and barbed wire were repaired or replaced. A site identification sign on the east side of the site was replaced. Two outlet drainage pipe covers were also repaired. No erosion or settlement of the cap was identified during the inspection. Unauthorized site access has been reduced by the installation of gates by the WDNR parks personnel. The completed inspection form is attached.

Overall, the project sites are in good condition. During the annual inspections, minor deficiencies were identified, and the necessary repairs were completed.

Please do not hesitate to contact me at 210-466-1351 if you have any questions.

Sincerely,

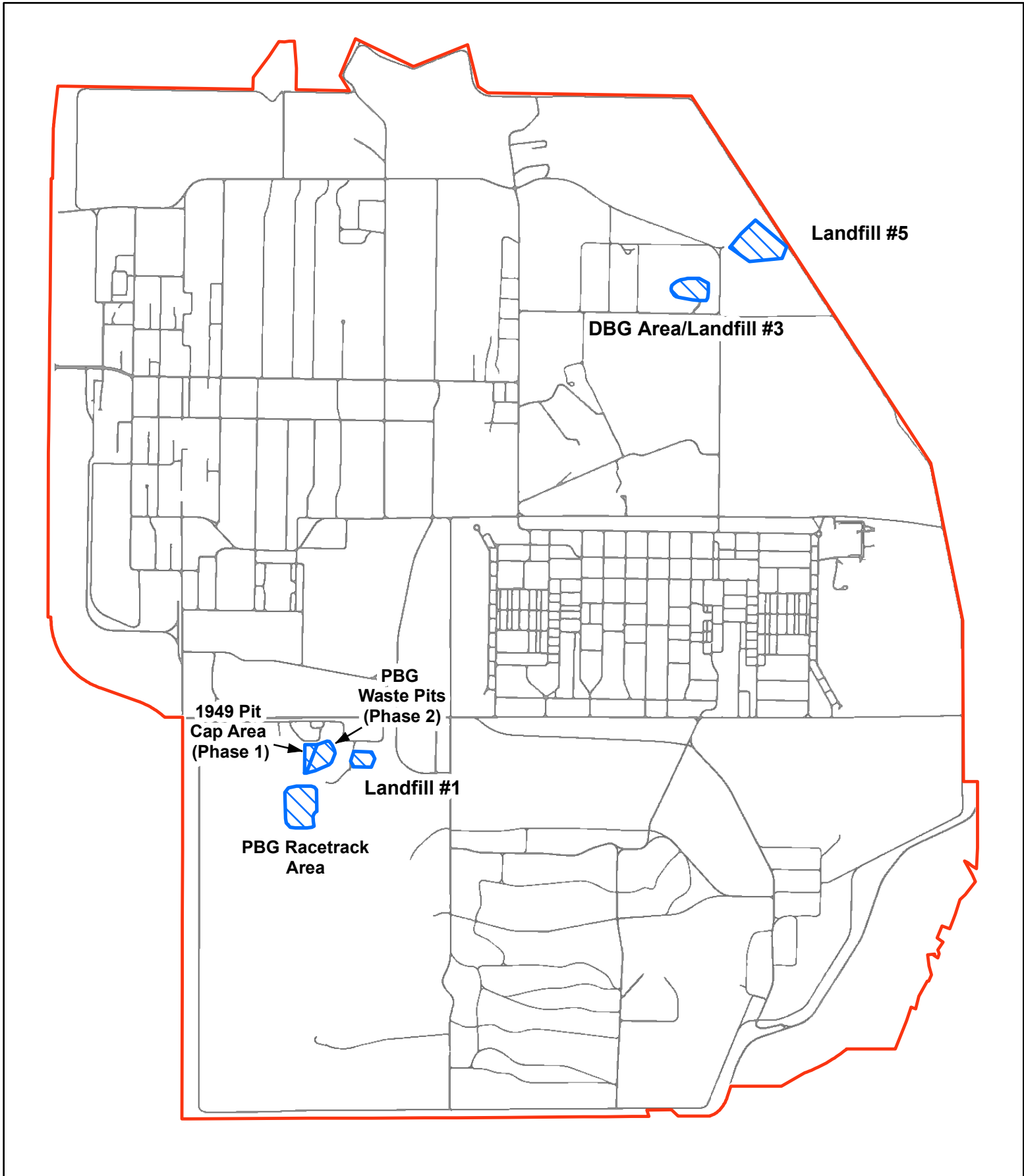


Bryan P. Lynch
Commander's Representative




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Attachments

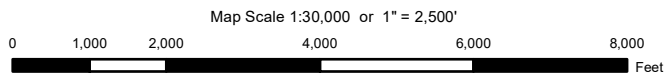
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Legend

-  Cap & Cover Site
-  Road
-  BAAP Boundary

**Cap & Cover Sites
Badger Army Ammunition Plant**



**ANNUAL CAP & COVER INSPECTION FORM
BADGER ARMY AMMUNITION PLANT
Landfill #5**

Date: 11/5/20 **Weather:** Clear
Inspector: B. Jacobs **Ground Surface Conditions** Dry

Inspection Checklist

Component	Comments
Cap and Vegetation	Cap has been mowed; see Note 1
Drainage Ditches	Drainage on west side impaired due to settlement; see Note 1
Gas Probes	Good condition; see Note 2
Access Roads	Good condition
Site ID Signs	Good condition
General Housekeeping	Good condition; access reduced by installation of WDNR gates

Notes:

1. Settlement of the cap noted on the east and west sides and within the center of Landfill #5. Settlement on the west side of Landfill #5 was more pronounced. Completion of a topographic survey and grade plan is scheduled for 2021.
 2. Protective casing heave, up to 8 inches, noted around gas probes; however, there are no monitoring requirements.
- WDNR - Wisconsin Department of Natural Resources

**ANNUAL CAP & COVER INSPECTION FORM
 BADGER ARMY AMMUNITION PLANT
 PBG Racetrack Area Including HWTTU**

Date: 11/5/20
Inspector: B. Jacobs

Weather: Mostly Sunny
Ground Surface Conditions Dry

Inspection Checklist

Component	Comments
Cap and Vegetation	Cover has been mowed and in good condition
Drainage Ditches	Good condition
Access Road	Cleared access road of vegetation
Site ID Signs	Added sign at entrance location and reinstalled southwest sign
General Housekeeping	Good condition

**ANNUAL CAP & COVER INSPECTION FORM
BADGER ARMY AMMUNITION PLANT
Landfill #1**

Date: 11/5/20 **Weather:** Clear
Inspector: B. Jacobs **Ground Surface Conditions** Dry

Inspection Checklist

Component	Comments
Cap and Vegetation	Cap has been mowed and in good condition
Toe Drain Cleanouts	Good condition
Drainage Ditches	Good condition
Drainage Pipes	Trimmed and clear of vegetation
Gas Vents	Repaired east passive gas vent turbine
Access Road	Good condition
Road Culvert	Trimmed and clear of vegetation
Site ID Signs	Good condition
General Housekeeping	Good condition

**ANNUAL CAP & COVER INSPECTION FORM
 BADGER ARMY AMMUNITION PLANT
 1949 Pit Cap/PBG Waste Pits (Phases 1 and 2)**

Date: 11/5/20
Inspector: B. Jacobs

Weather: Cloudy
Ground Surface Conditions Dry

Inspection Checklist

Component	Comments
Cap and Vegetation	Cap has been mowed and in good condition
Toe Drain Cleanouts	Replaced broken coupling on south side cleanout
Drainage Ditches	Good condition
Drainage Pipes	Trimmed and clear of vegetation; replaced downed marking post on north side
Gas Vents	Good condition
Access Roads	Good condition
Road Culvert	Trimmed and clear of vegetation
Gate and Fencing	Minor fence repair completed including post replacement and barbed wire repair
Site ID Signs	Good condition
General Housekeeping	Good condition

**ANNUAL CAP & COVER INSPECTION FORM
BADGER ARMY AMMUNITION PLANT
DBG Area/Landfill #3**

Date: 11/5/20
Inspector: B. Jacobs

Weather: Clear
Ground Surface Conditions Dry

Inspection Checklist

Component	Comments
Cap and Vegetation	Cap has been mowed and in good condition
Drainage Ditches	Good condition
Drainage Pipes	Trimmed and clear of vegetation; repaired two outlet pipe covers
Access Roads	Good condition
Gates and Fencing	Minor fence repair completed including post replacement and barbed wire repair
Site ID Signs	Replaced missing sign on east side
General Housekeeping	Good condition; access further reduced by installation of WDNR gates

WDNR - Wisconsin Department of Natural Resources