

15 July 2023

Jocelyn Clark, P.E., Civil/Environmental Engineer
Land, Chemicals and Redevelopment Division, RCRA Branch
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75 Hawthorne Street, LND-4-2
San Francisco, California 94105

VIA ELECTRONIC MAIL

**Subject: Second Quarter 2023 Progress Report
Nammo Defense Systems Inc. Facility
Mesa, Arizona**

Pursuant with Paragraph 34 of the Administrative Order of Consent between Nammo Defense Systems Inc. (NDS) and the United States Environmental Protection Agency Region 9 (EPA) effective 9 February 2021, this report submittal includes a summary of the activities completed during the second quarter (2Q) 2023.

CONTACT INFORMATION AND CHANGES IN PROJECT PERSONNEL

Contact Name and Position	Contact Information	Changes
Jocelyn Clark (EPA, Special Projects Coordinator)	Clark.Jocelyn@EPA.gov (415) 972-3324	No change
Angel Soto (NDS, Health, Environment, Safety and Security [HESS] Director)	JSoto@Nammo.us (602) 309-5819	Matthew Trask, Director, Ethics and Compliance mtrask@nammo.us (480) 898-2495
Carole Thompson (NDS, Communications Manager)	CThompson@Nammo.us (480) 898-2565	No change
Fabrizio Mascioni (Geosyntec Consultants, Project Manager)	FMascioni@Geosyntec.com (602) 513-5816	No change

Isaac Roll (Geosyntec Consultants, Senior Engineer)	iroll@geosyntec.com (602) 513-5829	No change
Jeremy Musson (Pinyon Environmental [Pinyon], Groundwater Sampling Project Manager)	musson@pinyon-env.com (303) 980-5200	No change

SIGNIFICANT ACTIVITIES DURING REPORTING PERIOD

Deliverables

Consent Order Project:

- Unit Cost Estimates for Closure, Post-Closure and Corrective Action Former Thermal Treatment Unit (TTU)– 4/6/23
- Contingency Plan for Groundwater Contamination Limit Exceedances at Primate Facility Well No. 2 – 4/12/23
- First Quarter 2023 Progress Report, Nammo Defense Systems Mesa, Arizona – 4/17/23
- Fourth Quarter 2022 Per- and Polyfluorinated Substances (PFAS) Groundwater Monitoring Results TTU – 4/19/23
- Interim Remedial Action (IRA) Performance, First Quarter 2023 – 5/16/23
- Well Network Sampling Frequency Optimization, Former TTU – 5/19/23
- First Quarter 2023 Groundwater Monitoring Report, Former TTU, Nammo Defense Systems Plant No. 3, Mesa, Arizona – 5/31/23
- Conceptual Site Model (2023 Update) – 6/2/2023

Plant 3 and Former Water Bore Out (WBO) Project:

- Plant 3 Soil Vapor Extraction Implementation Proposal and Work Plan – 4/21/23
- Soil Sampling Investigation – Former Drake Materials Facility – 4/24/23
- Fourth Quarter 2024 Groundwater Monitoring Report, Nammo Defense Systems Plant No. 3, Mesa, Arizona – 5/10/23
- Response to EPA Comments on Annual Adjustment (2023) to Estimated Cost for Implementation of the Remedial Investigation (RI) Work Plan and RI Work Plan Addendum 1, Plant 3 and Former Water Boreout (WBO) Facility, at NDS

Mesa, Arizona Facilities RCRA-09-2021-001– 5/19/23 Fluidized Bed Reactor (FBR) First Quarter 2023 Performance Report – 5/24/23

- Well Network Sampling Frequency Optimization, Plant 3 and Former WBO Unit – 6/1/23
- First Quarter 2023 Groundwater Monitoring Report, Nammo Defense Systems Plant No. 3, Mesa, Arizona – 6/22/23

Meetings

- Biweekly meetings were conducted with EPA, Arizona Department of Environmental Quality (ADEQ), NDS, and its consultants related to the Consent Order Project.
- Monthly meetings were conducted with ADEQ, NDS, and its consultants related to the Voluntary Remediation Program Project.

Field Activities

- 2Q 2023 groundwater sampling was conducted at the Former TTU well network from 5/12/2023 through 5/15/2023.
- 2Q 2023 groundwater sampling was conducted at the former WBO well network from 6/14/2023 through 6/18/2023.

Stakeholder Interaction and Meetings

- NA

Notable Analytical Results

Consent Order Project:

- 2Q 2023 Groundwater Monitoring -
 - Preliminary results received; no exceedances detected.
 - The dedicated pump for IRA extraction on TTU-20 was non-operational during sampling, a sample was unable to be collected for TTU-20 during 2Q.

Plant 3 and Former WBO Project:

- 2Q 2023 Groundwater Monitoring –
 - Results from 2Q groundwater monitoring have not yet been received.

- NT-4 was found to be buried during the sampling event as a result of construction activities, and a sample could not be collected for NT-4 during 2Q.

Action Items for Next Reporting Period

Consent Order Project:

- Resubmittal of *Annual Adjustment (2023) to Estimated Cost for Implementation of the Remedial Investigation (RI) Work Plan and RI Work Plan Addendum 1, Plant 3 and Former Water Boreout (WBO) Facility, at NDS Mesa, Arizona Facilities RCRA-09-2021-001*, based on revisions discussed during the EPA and NDS biweekly meeting held on 6/22/23.
- Submittal of 2Q 2023 Former TTU Groundwater Monitoring Report 60 days from receipt of laboratory reports (8/31/23).
- Completion of 3Q 2023 Former TTU sampling September 2023.
- Responses to EPA comments on elements of the Community Relations Plan received on 6/5/23 - Due 8/3/23

Plant 3 and Former WBO Project:

- Monitoring well NT-4 was found to be buried during 2Q sampling as a result of construction activities. Attempts to uncover the well will be made in 3Q.
- Submittal of 2Q 2023 WBO Groundwater Monitoring Report 60 days from receipt of laboratory reports (8/31/23).
- Completion of 3Q 2023 WBO sampling September 2023.
- Permitting and drilling coordination for NT-23 and NT-24.

Remediation Systems Updates

Consent Order Project – Interim Response Hydraulic Containment System:

- The IRA groundwater extraction and treatment system operated through the week of 6/29/23 before being shut down due to leaks in the evaporator. The evaporator was cleaned out on 7/10/23 in anticipation of repairs that will be scheduled upon return of maintenance personnel on 7/18/23.
- The IRA system extracted a total of 18,000 gallons of water during 2Q (TTU-1: 10,000; TTU-2: 7,000; TTU-20: 1,000).

Plant 3 and Former WBO Project – Hydraulic Containment FBR System

The hydraulic containment system implemented at the former WBO pits area uses an FBR system to treat water extracted from one or two extraction wells (EXT-1 and EXT-2), where EXT-2 is typically held in reserve while EXT-1 is operated. During 2Q, groundwater extraction was temporarily switched from EXT-1 to EXT-2 on 6/23/23, for groundwater sampling at the request of Pinyon. Groundwater extraction was switched back from EXT-2 to EXT-1 following sampling on 6/23/23.

From 4/1/23 to 4/19/23 the FBR system operated continuously at an average flow rate of approximately 275 gallons per minute to minimize carbon lifting in FBR-230 while awaiting repairs to the FBR-230 biomass separators. Once the biomass separators were repaired, the flow in FBR-230 was gradually increased, allowing for the system to operate at an average flow rate of approximately 350 gallons per minute from 4/2023 to 5/21/23. From 5/22/23 to 6/30/23 the FBR system operated continuously at an average flow rate of approximately 400 gallons per minute, although the FBR-230 feed flow meter was reading lower than the actual flow rate. The FBR-230 feed flow meter has been inspected and repairs are planned for 3Q.

Approximately 45 minutes of temporary system downtime was experienced for strainer cleanings on 4/3, 4/4, 4/18, 4/26, 5/16, 5/30, 5/8, 5/12, 5/15, 5/20, and 6/29/23. FBR 230 experienced approximately 3 hours of downtime on 4/11/23 during a recirculation pump inspection. Both FBRs experienced approximately 19 hours of downtime on 5/4/23 due to an EXT-1 variable frequency drive fault, which was rectified by restarting EXT-1. Both FBRs experienced approximately 3 hours of downtime on 6/1/23 so the leaking spool on the FBR-370 recycle line could be replaced. Both FBRs experienced approximately 39 hours of downtime on 6/21/23 and 6/22/23 due to a power outage at the site.

A 2Q progress report further describing performance and operations and maintenance responsibilities will be submitted to ADEQ by August 31, 2023.

Jocelyn Clark
15 July 2023
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If you have any questions about this report, please contact Fabrizio Mascioni with Geosyntec.

Sincerely,

A handwritten signature in black ink that reads "Fabrizio Mascioni". The signature is written in a cursive style with a small flourish at the end.

Fabrizio Mascioni, R.G. (AZ 65652)
Principal

Copies to: Matthew Trask, NDS
Kyle Johnson, ADEQ
Antony Leverock, ADEQ
Robin Thomas, ADEQ
Steve Armann, EPA
William Frier, EPA
Carol Hibbard, SRPMIC
Christopher Horan, SRPMIC