

12 January 2022

Mrs. Jocelyn Clark  
Physical Scientist  
US Environmental Protection Agency Region 9  
San Francisco, California

**Subject: Fourth Quarter 2021 Progress Report Nammo Defense Systems Inc.  
Facility, Mesa, Arizona**

Dear Mrs. Clark,

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, states that NDS shall provide EPA with quarterly progress reports. This report submittal includes a summary of the activities completed during the fourth quarter (4Q) 2021.

**Contact Information and Changes in Project Personnel**

Contact Name and Position	Contact Information	Changes
Jocelyn Clark (EPA, Special Projects Coordinator)	<a href="mailto:Clark.Jocelyn@EPA.gov">Clark.Jocelyn@EPA.gov</a> 415-972-3324	Changed from William Fryer
Angel Soto (NDS, HESS Director)	<a href="mailto:JSoto@Nammo.us">JSoto@Nammo.us</a> 602-309-5819	N/A
Carole Thompson (NDS, Communications Manager)	<a href="mailto:CThompson@Nammo.us">CThompson@Nammo.us</a> 480-898-2565	N/A

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Fabrizio Mascioni (Geosyntec Consultants, Manager)	Project	<a href="mailto:FMascioni@Geosyntec.com">FMascioni@Geosyntec.com</a> 602-513-5816	N/A
Stephen Cummings (NDS, Environment, and Security Engineer)	Health, Safety	<a href="mailto:Scummings@Nammo.us">Scummings@Nammo.us</a> 480-536-3456	N/A

### **Significant Activities During Reporting Period**

#### *Deliverables*

##### Consent Order Project:

- Submittal of a revised Current Conditions Report based on 10/18/21 EPA comments – 11/18/2021;
- Project Website Submittal – uploaded 3Q Progress Reports and the website has been made searchable and indexed to be searched on any search engine; and,
- 3Q 2021 TTU Groundwater Monitoring Report – 11/18/2021.

##### Plant 3 and Former WBO Project:

- N/A

#### *Meetings*

- Biweekly meetings between EPA, ADEQ, and NDS related to the Consent Order Project;
- Monthly meetings between ADEQ and NDS related to the WBO project;
- RFI Work Plan expectations meeting (EPA, ADEQ, NDS, and Geosyntec) – 12/15/21;

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### *Field Activities*

- Completion of 4Q 2021 groundwater monitoring/sampling at the Former Thermal Treatment Unit (TTU) well network on 11/17-18/2021, and 12/22/2021; and,
- Completion of 4Q 2021 groundwater monitoring/sampling at the former Water Boreout (WBO) well network during 11/8/2021 through 11/18/2021, and 1/5/2022 (NT-18S/D only).

### *Stakeholder Interaction*

NA

### *Notable Analytical Results*

Consent Order Project: N/A

Plant 3 and Former WBO Project:

- Results from dual-nested well NT-18 at Plant 3, installed during 2Q 2021, continue to show perchlorate results below Arizona Water Quality Standards (AWQS). VOCs analysis have been consistent in the two quarters following installations, with concentrations exceeding the AWQS for both TCE and 1,1-DCE in the shallow screen, and concentrations below the AWQS in the deep screen during 4Q 2021:
  - NT-18S (shallow) 254 µg/L of TCE and 210J µg/L of 1,1-DCE; and,
  - NT-18D (deep) – 0.199J µg/L of TCE and 0.239J µg/L of 1,1-DCE.

### *Other Relevant Changes or Updates*

Consent Order Project: N/A

Plant 3 and Former WBO Project:

- Received access agreements from City of Mesa for two out of three monitoring wells (NT-16 and NT-17) on 11/23/2021. Access agreement approval for NT-15, located at City of Mesa Falcon Field Airport has been placed on hold by the City;
- Meeting and site walk on 12/7/2021 with LafargeHolcim and Drake Materials to discuss vadose zone sampling within Drake Material Facility. Obtained

concurrence on sampling locations and agreed on submittal of a work plan by 1Q 2022 to LafargeHolcim before starting work.

### **Significant Activities Anticipated During Upcoming Reporting Period**

#### Consent Order Project:

- Submittal of a Former TTU IRA Focused Feasibility Study to EPA;
- Submittal of 4Q 2021 TTU Groundwater Monitoring Report; and,
- Completion of 1Q 2021 TTU Sampling .

#### Plant 3 and Former WBO Project:

- Submittal of 3Q 2021 WBO Groundwater Monitoring Report (revised from prior report);
- Submittal of 4Q 2021 WBO Groundwater Monitoring Report;
- Completion of 1Q 2022 WBO Sampling;
- Distribution of community notices for installation of monitoring wells NT-16 and NT-17;
- Commence installation of two monitoring wells (NT-16 and NT-17) within City of Mesa property on 1/18/2022;
- Continue negotiations for access agreements with LafargeHolcim (property owner of Drake Materials facility) – Estimated negotiations completion by end of 1Q2022 (revised from prior report), and submittal of a work plan to LafargeHolcim during 1Q 2022.

### **Remediation Systems Updates**

#### Consent Order Project - P&T System:

- TTU-1 and TTU-2 were actively pumping during the reporting period, except for the following dates during which the wells were temporarily shut off;
  - Both wells shut off during 3Q 2021 quarterly sampling from 21 to 29 July 2021;
- TTU-11 was shut off in October 2021 prior to planned injection as part of an *in situ* bio-pilot. The well is planned to remain inactive as additional *in situ* bio-pilot

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activities are being considered by NDS. One additional round of post bio-pilot performance monitoring at TTU-20 is recommended during 1Q;

- Total volume treated approximately 80,500 gallons.

#### Plant 3 and Former WBO Project – Fluidized Bed-Reactor

- Extraction well EXT-2 operated from October 1 to December 31. EXT-1 has remained offline due to ongoing troubleshooting with EXT-1 air conditioning unit parts and identification of appropriate contractor to perform repairs on the system. Extraction wells are operated separately to maintain a flowrate at or below 400 gallons per minute in order to avoid overfilling the infiltration basins that receive the treated water.

The system experienced prolonged downtime on:

- October 6 to 7, when an electrical fault was experienced at the EXT-2 extraction well variable frequency drive (VFD). Following site safety protocols for lightening, personnel were able to access the site, address the fault, and transition the system back to single-pass operations after approximately 44 hours of downtime. December 14 for approximately 24 hours pending input of additional phosphoric acid.
- December 15 for approximately 24 hours due to a low flow alarm at the EXT-2 extraction well.
- December 16 for approximately 20 hours when the system was remotely transitioned to recycle-mode operations due to a high ORP alarm on FBR-230.

Primary maintenance activities performed have included:

- Air compressor servicing on October 7;
- Strainer cleanings (typically 45 minutes) on October 7 and 18, November 2 and 29, and December 7 and 29; and

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- Temporary system transition to recycle mode on October 12 and December 13, in order to drain/transfer storm water collected in the auxiliary tank to FBR-370.

The system operated consistently for the entire quarter with exception of troubleshooting for one low flow alarm condition, one electrical fault, and a refill of phosphoric acid. Intermittent 30 minute to 1 hour biweekly shut down activities were consistent with minor or planned maintenance activities.

If you have any questions about this report, please contact either Mr. Angel Soto with NDS, or Mr. Fabrizio Mascioni with Geosyntec.

Sincerely,



Fabrizio Mascioni, R.G. 65652 (AZ)  
Senior Geologist

cc: Angel Soto, Nammo Defense Systems Inc.  
Christopher Horan, Salt River Pima-Maricopa Indian Community  
Carol Hibbard, Salt River Pima-Maricopa Indian Community