

15 July 2022

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

**Subject: Second Quarter 2022 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, states that NDS shall provide EPA with quarterly progress reports. This report submittal includes a summary of the activities completed during the second quarter (2Q) 2022.

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	None Applicable (N/A)
Angel Soto (NDS, Health, Environment, Safety and Security [HESS] Director)	JSoto@Nammo.us (602) 309-5819	N/A
Carole Thompson (NDS, Communications Manager)	CThompson@Nammo.us (480) 898-2565	N/A
Isaac Roll (Geosyntec, Project Engineer)	Iroll@geosyntec.com (602) 513-5829	Replaced Stephen Cummings (former NDS Hess Engineer

Fabrizio Mascioni (Geosyntec Consultants, Project Manager)	FMascioni@Geosyntec.com (602) 513-5816	N/A
Jeremy Musson (Pinyon Environmental [Pinyon], Groundwater Sampling Project Manager)	musson@pinyon-env.com (303) 980-5200	Replaced Christopher Funk

SIGNIFICANT ACTIVITIES DURING REPORTING PERIOD

Deliverables

Consent Order Project:

- Project Website Submittal – N/A;
- Quality Assurance Project Plan, Nammo Defense Systems Inc Facility – Submitted 4/16/2022
- Confirmation and Mitigation Path Forward for Increased Perchlorate Concentration at TTU-14 (Letter) – Submitted 4/22/2022;
- Revised 4Q 2021 TTU Groundwater Monitoring Report – Submitted on 4/22/2022;
- 1Q 2022 Former Thermal Treatment Unit (TTU) Groundwater Monitoring Report – Submitted 5/31/2022;
- TTU Groundwater Sampling and Analysis Plan – Submitted 5/31/2022;
- Sampling and Analysis Plan for Groundwater Screening of PFAS, Former TTU – Submitted 5/31/2022.
- Revised Current Conditions Report – Submitted 6/8/2022

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

- 1Q 2022 Former Water Bore Out (WBO) Groundwater Monitoring Report – Submitted 7/8/2022;

Meetings

- Biweekly meetings between EPA, Arizona Department of Environmental Quality (ADEQ), and NDS related to the Consent Order Project; and,
- Monthly meetings between ADEQ and NDS related to the WBO project.
- NDS Facility Site Walk Orientation with EPA and ADEQ – Completed 5/12/2022.

Field Activities

- Completion of 2Q 2022 groundwater monitoring/sampling at the Former TTU well network – 6/13/2022 through 6/22/2022
- Completion of 2Q 2022 groundwater monitoring/sampling at the former WBO well network during 6/13/2022 through 6/22/2022. The following wells could not be sampled during 2Q, but data collected in early 3Q will be included in the 2Q report:
 - ADEQ-5 – A puncture in the HydraSleeve caused loss of water in the sleeve upon retrieval. A new HydraSleeve was deployed but a second sampling attempt has been delayed due to site contact health-related time off. The well is expected to be resampled by 7/15/2022;
 - NT-16 and 17 – the City of Mesa was given notice two weeks prior to sampling but no confirmation for access was received. The wells were sampled on 7/15/2022.
- Drilling, installation, and well development of wells NT-16 and NT-17 commenced on 1/19/2022 and completed on 4/1/2022.
- Drilling, installation and well development of well NT-15 completed between 5/10/2022 and 6/29/2022. The well was sampled on 7/15/2022.

Stakeholder Interaction

- No stakeholder Interaction meetings during 2Q 2022.

Notable Analytical Results

Consent Order Project:

- 2Q Groundwater Monitoring -
 - Perchlorate was detected in well PF-2 at a concentration of 0.44 µg/L, which is below the established Trigger Level of 3.2 µg/L; and,

- Additional results were not available for review by the laboratory as of the date of this report.

Plant 3 and Former WBO Project:

- NT-15 vertical aquifer samples collected during drilling:
 - Perchlorate – Not Detected (ND) at 300-ft; 174 µg/L at 400-ft; 333 µg/L at 500-ft; 600-ft, and, ND at 700-ft
 - TCE – ND at all sampled depths between 300 to 700 ft below ground surface.
- NT-16 post installation sampling results:
 - Perchlorate – 4.10µg/L (255-ft), 3.43 µg/L (280-ft), and 3.54 µg/L (305-ft)
 - TCE – ND
- NT-17 post installation sampling results:
 - Perchlorate – 4.4µg/L (255-ft), 4.05 µg/L (280-ft), and 4.15 µg/L (305-ft)
 - TCE – ND
- 2Q Groundwater Monitoring – Laboratory results were not received as of the date of this report)

Other Relevant Changes or Updates

Consent Order Project:

- Project schedule outlining completion and submittal of the RFA Reports proposed in the updated CCR document (see attached).

Plant 3 and Former WBO Project:

- Lafarge Holcim has not yet provided comments or an update on the Drake Materials sampling work plan submitted on 1/17/2022.

Significant Activities Anticipated During Upcoming Reporting Period

Consent Order Project:

- Submittal of 2Q 2022 TTU Groundwater Monitoring Report 60 days from receipt of laboratory reports; and,

- Completion of 3Q 2022 TTU Sampling approximately 8/29/2022 through 9/9/2022.
- RCRA Facility Assessments for OU1 through OU5.

Plant 3 and Former WBO Project:

- Submittal of 2Q 2022 WBO Groundwater Monitoring Report 60 days from receipt of laboratory reports;
- Completion of 3Q 2022 WBO Sampling approximately 8/29/2022 through 9/9/2022;
- Selection of NT-19 and NT-20 locations and access agreement coordination; and,
- Continue negotiations for access agreements with LafargeHolcim (property owner of Drake Materials facility).

Remediation Systems Updates

Consent Order Project - P&T System:

- The TTU P&T system was operational during 2Q, however due to unavailability of responsible NDS staff during the development of this report, records could not be readily located. Details related to pumping operations and total volumes treated for 2Q will be documented in the 3Q 2022 quarterly status update report.
- In May 2022, a concentrate leak from the bottom corner of the SWE-II evaporator water storage tank was observed. The leak was contained within the concrete secondary containment. As of the date of this report, repairs are being evaluated, and are expected to consist of temporarily powering down the system, draining and cleaning the water storage tank, inspection of the tank interior and repairs.

Plant 3 and Former WBO Project – Fluidized Bed-Reactor (FBR)

- The extraction wells can be operated simultaneously but are typically operated to preferentially extract from well EXT-1 to target groundwater with historically elevated concentrations of perchlorate (in comparison to groundwater extracted from EXT-2).

- The extraction system and FBR vessels are designed to operate and treat groundwater at a flow rate up to 800 gallons per minute (gpm) but is maintained at a flowrate at or below 400 gpm for optimized infiltration basin performance.

The FBR system was operated continuously during the reporting period, with one of the two operating FBR vessels experiencing service/downtime from:

- April 6 to 11 at FBR-230 due to high oxidation reduction potential (ORP) alarms in response to a torn diaphragm in the FBR-230 ethanol pump. Use of the FBR-370 ethanol pump to feed both FBR-230 and 370 was unsuccessful. The diaphragm was repaired on April 8, ethanol was reintroduced to the system, and the system ORP was restored to its normal operating range. FBR-230 was transitioned from recycling mode back to single-pass operations after a downtime of 112 hours.
- April 21 to 22 at FBR-370 due to carbon buildup in FBR-370 strainer. A biomass removal wand was utilized at the FBR-370 strainer for biomass removal, and the system was transitioned back to single-pass operations after experiencing a downtime of 27 hours.
- May 2 to 3 at FBR-370 to replace a downstream section of leaking PVC pipe with stainless steel pipe and to replace a coupler at the FBR-370 fluidization pump. Arizona Pump Resources and ASR Construction completed the repair work and FBR-370 was transitioned back to single-pass operations after a downtime of approximately 29 hours.
- June 20 to 21 at FBR-370 due to carbon buildup in FBR-370 strainer. A biomass removal wand was used to clear the carbon in the strainer, and the system was transitioned back to single-pass operations after experiencing a downtime of approximately 30 hours.

Primary maintenance activities performed have included:

- Routine strainer cleanings on April 6, 12, 13 and 19; May 19 and 26; as well as June 7 and 20 have resulted in FBR system temporary downtime of approximately 45 minutes for each event;

Jocelyn Clark
15 July 2022
Page 7

- Replacement of a torn diaphragm at FBR-370 ethanol pump on April 27 due to which FBR-370 was placed in recycle mode. High ORP alarms due to the torn diaphragm were cleared and upon resumption of ORP readings within standard operating range, FBR-370 was transitioned back to single-pass operations after approximately 2 hours.
- Servicing the main plant air compressor and collection of settled bed height measurements of FBR-370 on May 5. During the activity, the FBR system was shut down and later transitioned to single-pass operations after approximately 75 minutes.
- Replacement of fittings on FBR-230 pneumatic feed valve and phosphoric acid line at the FBR-230 injection point on June 1. FBR-230 was shut down for the maintenance activity and later transitioned back to single-pass operations after experiencing a downtime of approximately 2 hours.

The system operated in single-pass mode for the majority of the second quarter with exception of the above-described activities. Several aboveground PVC piping sections and flanges at the FBR treatment area that had minor leaks or flange deterioration were replaced with stainless steel components.

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

Sincerely,



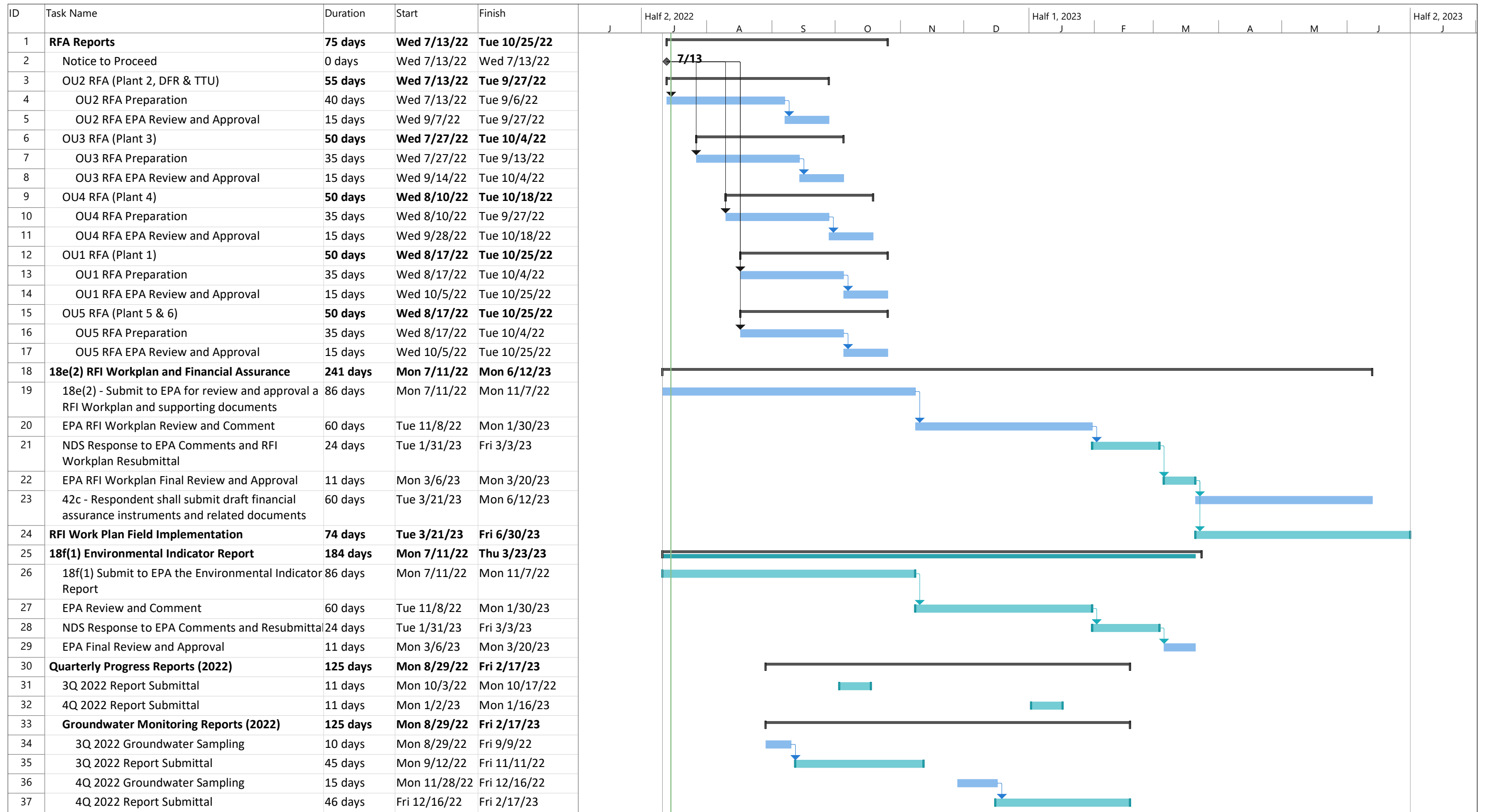
Fabrizio Mascioni, R.G. 65652 (AZ)
Principal

Jocelyn Clark
15 July 2022
Page 8

cc: Angel Soto, Nammo Defense Systems Inc.
Christopher Horan, Salt River Pima-Maricopa Indian Community (SRPMIC)
Carol Hibbard, SRPMIC
Kyle Johnson, Arizona Department of Environmental Quality (ADEQ)
Anthony Leverock, ADEQ
Robin Thomas, ADEQ
William Frier, EPA
Steve Arman, EPA

Attachment – Project Schedule

PROJECT SCHEDULE



Project: NDS Consent Order Sch Date: Fri 7/15/22	Task		Project Summary		Manual Task		Start-only		Deadline	
	Split		Inactive Task		Duration-only		Finish-only		Progress	
	Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
	Summary		Inactive Summary		Manual Summary		External Milestone			