

## **TECHNICAL BRIEFING – 2011 ANNUAL MONITORING REPORT GROUP 1 SITES – MARCH 2012**

The document reviewed was a compilation and analysis of 2011 monitoring results for Group 1 sites. Monitoring of the sites began in 2011 to evaluate explosives in groundwater at Group 1 sites and to collect monitored natural attenuation (MNA) long-term results. Group 1 sites consist of the following: 40, 93, 156, and 157. Sites 40, 93, and part of 157 are located on a peninsula on Picatinny Lake; the other part of Site 157 and Site 156 are located on the shoreline. The buildings included in these sites were used in the manufacturing, testing, and cleanup of explosives. Prior to the start of monitoring activities, a soil removal action was completed.

The response action for groundwater was a combination of MNA and land use controls (LUCs). The MNA monitoring program had several objectives as follows: 1) evaluate long-term effectiveness of MNA; 2) verify exposure to contaminants and breakdown products do not pose additional risks; and 3) assess whether it is necessary to implement any contingency actions. In addition to monitoring of groundwater, surface water and sediment are also sampled.

Four quarters of sample collection were completed in 2011. Groundwater and surface-water samples were collected in March, June, August, and December; sediment samples were collected in January, March, October, and December. Routinely groundwater samples were collected from 10 monitoring wells although there was one event in which an additional well was added. Analytes were as follows: 2-amino-4,6-dinitrotoluene (DNT), 4-amino-2,6-DNT, RDX, and 2,4,6-trinitrotoluene (TNT). The annual report provides a summary of the results as follows:

### 1<sup>st</sup> Quarter

- 2,4-amino-4,6-DNT and 4-amino-4,6-DNT were not detected above the Site Cleanup Level (SCL) in any of the monitored wells.
- RDX was detected in concentrations exceeding at all locations except Well 1-93-MW-002; the maximum detected concentration was 180 micrograms per liter (ug/L) at 1-40-MW-002.
- TNT was detected at concentrations greater than the SCL at five locations with the maximum concentration detected at Well 1-40-MW-002 (523 ug/L).
- There were no constituents of concern (COCs) detected in surface water or sediment samples.

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### 2<sup>nd</sup> Quarter

- 2-amino-4,6-DNT and 4-amino-4,6-DNT were not detected above the Site Cleanup Level (SCL) in any of the monitored wells.
- RDX was detected in concentrations exceeding the SCL at six locations; the maximum detected concentration was 204 ug/L at Well 1-157-MW-003
- There were no constituents of concern (COCs) detected in surface water or sediment samples.

### 3<sup>rd</sup> Quarter

- 2,4-amino-4,6-DNT and 4-amino-4,6-DNT were not detected above the Site Cleanup Level (SCL) in any of the monitored wells.
- RDX was detected at all wells with the detection exceeding the SCL in 7 of the 10 wells; the maximum concentration was 174 ug/L in Well 1-157-MW-003.
- TNT was detected at concentrations exceeding the SCL at 4 out of 10 monitoring locations with the maximum of 204 ug/L detected at Well 1-40-MW-002
- No COCs were detected above the SCLs in surface water. 2-amino-4,6-DNT and 4-amino-2,6-DNT were detected below the SCL.
- No COCs were detected above the SCLs in sediment.

### 4<sup>th</sup> Quarter

- 2-amino-4,6-DNT and 4-amino-2,6-DNT were not detected in 2 wells and 1 well, respectively; other detections were below the SCL
- RDX was detected at all monitoring locations except Well 1-40-MW-005.
- TNT was detected at concentrations exceeding the SCL in 4 wells as follows: 1-157-MW-003, 1-157-MW-006S, 1-40-MW-002, and 1-40-MW-003; the maximum concentration of 117 ug/L was found at 1-40-MW-002.
- No COCs were detected in surface water or sediment.

### Groundwater Results Overview

Table 1 presents a summary of the four quarters of groundwater sampling data. The table is formatted to provide a means to easily assess the results for each compound.

### Data Trends

The report also presupposes to identify trends in the data. However, in most cases the conclusions are based on only several quarters of data. None of the decreases noted in recent data have been order of magnitude differences. For example, the report notes the following: “TNT and RDX concentrations at 40MW-2 have decreased for the last three quarters (second, third and fourth quarter of 2011) since attaining their peak 2011 concentration in March, specifically: TNT decreased from 523 ug/L in March 2011 to 119 ug/L in December 2011: and RDX decreased from 180 ug/L in March 2011 to 41.6 ug/L in December 2011.” It is the reviewer’s opinion that while there are observed decreases in concentrations the timeframe is too short to be significant as is the magnitude of the decrease; observations of Site 40 based on over 10 years (a much longer time period) of accumulated data are more relevant.

### Conclusion

Monitoring will be continued in accordance with the current program. Additional monitoring will be required to determine whether there are significant reductions in contaminant concentrations before any changes to the existing program can be made. The report notes that the current remedy is still protective of human health and the environment.