Tel: (865) 522-7007
Fax: (865) 525-8985
www.tcwn.org

TCWN
TENNESSEE CLEAN WATER NETWORK

PO Box 1521
Knoxville, TN 37901
625 Market St, 5th Floor
Knoxville, TN 37902

September 15, 2014

By Certified Mail—Return Receipt Requested

Chuck Hagel
Secretary of Defense
1000 Defense Pentagon
Washington, DC 20301-1000

Tracking #7011-2970-0001-6807-8612

Todd D. Hayes
Vice President of Operations
BAE Systems Ordnance Systems, Inc.
4509 West Stone Drive
Kingsport, TN 37660-9982

Tracking #7011-2970-0001-6807-8629

RE: Holston Army Ammunitions Plant, NPDES Permit Nos. TN0003671 & TNR053962 60-Day Notice of Intent to Sue Pursuant to Section 505(b)(1)(A) of the Clean Water Act, 33 U.S.C. § 1365(b)(1)(A)

Dear Secretary Hagel and Mr. Hayes:

I am writing on behalf of the Tennessee Clean Water Network ("TCWN") to notify Secretary Hagel, in your official capacity as the head of the Department of Defense,[1] BAE Systems Ordnance Systems, Inc. ("BAE"), and the state and federal agencies and officials listed below, of serious ongoing violations of the Clean Water Act (the "Act") at the Holston Army Ammunitions Plant ("HAAP") in Kingsport, Tennessee. The HAAP facility is owned by the U.S. Department of the Army and operated by BAE.

TCWN is extremely concerned about chronic and egregious National Pollutant Discharge Elimination System ("NPDES") permit violations at the HAAP, particularly exceedances of health-based limits on discharges of Research Department Explosives ("RDX") to the Holston River each and every month since May 2012. RDX is a highly explosive synthetic pollutant that does not occur naturally in the environment.[2] RDX has been found in the Holston River as far as 143 miles downstream, just above the confluence with the French Broad River in Knoxville.[3]

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[1] *See* 40 C.F.R. § 135.2(3).

[2] EPA, Technical Fact Sheet – Hexahydro-1,3,5,-trinitro-1,3,5-triazine (RDX) (January 2014) (hereinafter "EPA Fact Sheet") at 1, *available at* http://www2.epa.gov/sites/production/files/2014-03/documents/ffrrofactsheet_contaminant_rdx_january2014_final.pdf.

[3] NPDES Permit No. TN0003671 (Oct. 1, 2010) (hereinafter the "Permit"), at R-110.

RDX violations at the HAAP have the potential to harm human health. According to the EPA, RDX is a possible human carcinogen.[4] EPA has established a lifetime health advisory guidance level of 2 micrograms per liter ("µg/L") for RDX in drinking water, with a tap water screening level of 0.61 µg/L.[5] The HAAP's discharge to the Holston River is located upstream from several municipal drinking water intakes, including the First Utility District of Hawkins County ("FUDH"), located just 10 miles downstream, and Morristown Utility Systems, located 67 miles downstream. As recently as June 3, 2014, RDX was found in the Holston River at the Morristown drinking water intake at a concentration of 2 µg/L.[6] In March and April 2014, RDX well above 2 µg/L was found in all five samples of FUDH's finished drinking water.[7]

As described below, BAE and the Army are also responsible for a pattern of ongoing violations of limits for biochemical oxygen demand; a pattern of spills, overflows, and bypasses; and improper sampling and laboratory practices.

Based on this long pattern of serious permit violations, TCWN is prepared to file suit pursuant to Section 505(a)(1) of the Clean Water Act, 33 U.S.C. § 1365(a)(1), sixty days after issuing this notice.

BACKGROUND

RDX is a secondary explosive used extensively by the U.S. military. Major manufacturing of RDX began in 1943. According to EPA, "RDX was produced in enormous quantities at the Government Owned-Contractor Operated (GOCO) Holston Army Ammunition Plant (AAP) in Kingsport, Tennessee, for use in military munitions in World War II and afterward."[8] Today, the HAAP manufactures a wide range of secondary detonating explosives for the Department of Defense, including RDX, HMX, Insensitive Munitions Explosive, and Triamino Trinitrobenzene for use in warheads of all types of bombs, missiles, artillery shells, mortars, and fuzes.[9] The HAAP is the only facility in the United States that currently manufactures RDX.[10]

BAE and the Army first began investigating the presence of explosives in water discharges at HAAP around ten years ago.[11] Sampling was conducted in late 2004 and early 2005 at the Area A cooling water outfall, the Area B Industrial Wastewater Treatment Facility ("IWWTF")

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[4] EPA Fact Sheet, at 1.

[5] *Id.* at 4.

[6] *Id.*

[7] BAE 2nd Quarter 2014 RDX Holston River Sampling Report (June 18, 2014).

[8] EPA Fact Sheet, at 1.

[9] U.S. Army Joint Munitions Command, Holston Army Ammunitions Plant, *available at* http://www.jmc.army.mil/Installations.aspx?id=Holston.

[10] EPA Fact Sheet, at 2.

[11] Interim Summary Status Report: RDX in Industrial Wastewater Effluent (June 1, 2005), at 1.

(which discharges to the Holston River via Outfall 020), the Area B water intake, and at several downstream sampling locations in the Holston River.[12] The downstream samples were taken at the Area B boundary, in Cherokee Lake (67 miles downstream), and below the Cherokee Dam (91 miles downstream). RDX was present in all instream samples, ranging from 0.37 to 4.2 µg/L.[13] Because RDX as high as 1.6 µg/L was found 91 miles downstream in the initial sampling, an additional sampling point was added in the Holston River just above the confluence with the French Broad River near Knoxville.[14] Subsequent sampling confirmed the consistent and chronic presence of RDX in the IWWTF discharge and in the Holston River.

In early 2007, FUDH sought to install a new drinking water intake in the Holston River about 10 miles downstream from the HAAP. TDEC drinking water officials familiar with the elevated levels of RDX in the river expressed concerns that RDX has a deleterious effect on the membrane filters typically used to treat water for domestic supply. They noted RDX is difficult to remove.[15] TDEC contacted David Hair of EPA for guidance, who recommended TDEC impose limits at HAAP based on Tennessee's narrative criteria for drinking water supply.[16]

TDEC also questioned FUDH regarding its plans for RDX removal, and its engineer said they "determined that the membrane filtration system will remove [RDX] from the raw water source at the reported levels in the Holston River. As such, no additional treatment process is required."[17] That engineer also noted, "If the levels of RDX in the Holston River are of concern to the Division of Water Supply, then the HAAP should be required by the State of Tennessee to reduce these levels."[18] The FUDH intake was then permitted and constructed with the membrane filtration system.

TDEC issued a modified NPDES permit to the HAAP in May 2007 that imposed a monthly average effluent limitation of 12.2 lbs/day for discharges of RDX from Outfall 020. This limit was based on the Holston River's classified use for drinking water supply and Tennessee's long-standing narrative water quality criterion prohibiting the presence of toxics which will produce toxic conditions.[19] The permit writer calculated this loading limit based on EPA's drinking water

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[12] *Id.* at 3.

[13] *Id.* at 3-4.

[14] *Id.* at 4.

[15] Robert Foster, TDEC Division of Water Supply, electronic mail to Paul Davis, TDEC Division of Water Pollution Control (March 30, 2007).

[16] David Hair, EPA, electronic mail to Edward Polk, TDEC WPC (April 16, 2007).

[17] Letter from David L. Jones, P.E. of Consolidated Technologies, Inc. to R. William Hench, P.E., TDEC DWS (April 30, 2007).

[18] *Id.*

[19] Tenn. Comp. R. & Regs. 0400-40-03-.03(1)(j) ("The waters shall not contain toxic substances, whether alone or in combination with other substances, which will produce toxic conditions that materially affect the health and safety of man or animals, or impair the safety of conventionally treated water supplies.").

guidance of 2 µg/L to ensure that no explosives above safe amounts would be present in the Holston River at the FUDH and Morristown drinking water intakes.

The May 2007 Permit provided a five-year compliance schedule to allow BAE and the Army time to design and install treatment equipment before the more stringent, health-based RDX limit took effect.[20] The final compliance date was May 1, 2012, nearly 2 ½ years ago.[21]

Since 2007, the Army and BAE have taken some steps to reduce the RDX discharge; however, the loading of RDX has actually increased.[22] The Army funded, and BAE installed a new reverse osmosis ("RO") unit in Building E7 in April 2012. This system removes significant loadings of RDX from the HAAP discharge, but is currently operating well below design capacity due to filtration and fouling issues. BAE also has cited challenges associated with transporting explosives-laden water from remote buildings to Building E7 for treatment at the RO unit, but has noted that moving this water to the RO unit by tanker truck is possible.

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[20] Permit at 36.

[21] *Id.* There is some correspondence suggesting this compliance date might have been delayed. However, such a change in the permitted compliance schedule is not possible as a matter of law. First, the NPDES permit has not been modified. Any enforcement discretion TDEC may or may not have exercised does not affect the terms of the NPDES permit itself. *See Oregon State Public Interest Research Group, Inc. v. Pac. Coast Seafoods Co.*, 361 F. Supp. 2d 1232, 1243 (D. Or. 2005) (contrasting an enforcement order from a NPDES permit). Second, although interim compliance dates in a permit can be changed as a minor modification without public notice and comment, a final compliance date cannot. Tenn. Comp. R. & Regs. 0400-40-05-.06(5)(b) ("no notice is required for minor permit modifications which include … changing an interim compliance date"). Third, EPA rules, guidance, and caselaw regarding compliance schedules establish that these are allowed "only when necessary to allow a reasonable opportunity to attain compliance with requirements issued or revised less than three years" before. 40 C.F.R. § 122.47(a)(2); *see also In re Star-Kist Caribe*, 3 EAD 172, at **6-7 (1990) ("the only instance in which the permit may lawfully authorize a permittee to delay compliance after July 1, 1977, pursuant to a schedule of compliance, is when the water quality standard itself (or the State's implementing regulations) can be fairly construed as authorizing a schedule of compliance."). Thus, any changes to the compliance schedule at this point could only be in the form of an exercise of enforcement discretion. "[W]here the Agency determines that, despite good faith efforts, a permittee cannot come into immediate compliance with a newly adopted, revised, or interpreted state water quality standard, EPA may bring an enforcement action against the discharger pursuant to § 309 of the Act and issue an administrative compliance order giving the permittee a reasonable amount of time to comply." *Id.* at *21. And finally, in this situation, any permit change to extend the final compliance schedule would constitute impermissible backsliding that does not fall within any of the exceptions. In particular, BAE does not satisfy exemption (vi) because it has never installed treatment sufficient to comply with the RDX limitation, has failed to direct all of its RDX sources to the Reverse Osmosis unit, and added a new source of RDX during the permit term. *See* Tenn. Comp. R. & Regs. 0400-40-05-.08(1)(j)(vi).

[22] The issues referred to in this paragraph are outlined in a powerpoint presentation given at a meeting between BAE, TDEC, and the Army on November 12, 2013.

Immediately after the RO unit was installed in April 2012, the RDX discharge was reduced from previous levels. However, the discharges remained 2-3 times the 12.2 lbs/day limit. Despite still not being in compliance with this limit, the Army and BAE chose to reactivate a long-dormant production line at the HAAP – the Magnesium Nitrate Nitric Acid Concentration Plant ("Maggie") – in November 2012. Reactivation of the Maggie unit coincided with an increase in RDX discharges.

In the fall of 2013, TDEC permit writer Julie A. Harse, P.E., gave a presentation in which she expressed concerns about the lack of progress toward meeting RDX limits at the HAAP. She noted that average RDX loading in 2007 was 61.6 lbs/day, and that the average loading in 2012-2013 had **increased** to 68.2 lbs/day. Her presentation noted that the HAAP had brought the Maggie unit online during that time, and that HAAP had also identified an additional 88.5 lbs/day of RDX that was not being treated at the RO unit.

In March and April 2014, sampling for RDX in the raw water intake and the finished drinking water at FUDH and Morristown was conducted. None of these results for Morristown exceeded 2 µg/L, but the results for FUDH were troubling:

Collection Date	FUDH Raw (µg/L)	FUDH Finished (µg/L)
3/24/14 (TA)	3.5	3.4
4/1/14 (TA)	4.6	6.0
4/16/14 (TA)	9.2	5.4
4/16/14 (CT)	9.4	5.3
4/16/14 (ACC)	8.3	3.5

These data show that the very high levels of RDX in the Holston River consistently result in finished drinking water at FUDH with RDX levels well in excess of EPA's 2 µg/L human health guidance.

On July 9, 2014, Ms. Harse wrote a letter to TDEC's new Director of the Division of Water Resources formally removing herself as the permit writer. In taking this courageous action, Ms. Harse cited her ethical obligations as a licensed professional engineer to "protect the safety, health, and welfare of the public" in the performance of her duties, the lack of progress toward RDX compliance, the increased discharge of RDX during the compliance schedule, the documented presence of RDX in the finished drinking water supply for FUDH, and TDEC's failure to issue an enforcement order.

On August 27, 2014, TDEC entered into a "Compliance Agreement" with the United States Department of the Army and BAE. This agreement is not an enforcement order, imposes no penalties, and imposes no enforceable corrective action obligations. In sharp contrast, the Compliance Agreement merely provides that the "Army and BAE shall continue to use their best

efforts to address issues relating to the RDX treatment system."[23] This provision falls short on many grounds, not the least of which being that the Permit already imposes a mandatory, non-negotiable requirement to actually **comply** with the RDX loading limit as of May 1, 2012, not merely to try to comply. Two and a half years after the end of an already-generous five-year compliance schedule, BAE and the Army should not merely be making "best efforts" – they should have fixed the RDX treatment problem by now **or** reduced production to comply with the RDX loading limit. Instead, BAE and the Army have done precisely the opposite by adding the Maggie production line in November 2012 and discharging more RDX after the end of the compliance period than they did at the beginning.

Moreover, although TCWN has reviewed every one of TDEC's water enforcement orders going back to 2007, TCWN is unaware of TDEC ever having entered into a "compliance agreement" with any other permittee. Normally, TDEC acts as the regulator and issues an order with mandatory corrective actions and penalties for serious violations such as those at issue here. **Unfortunately, TDEC's failure to meaningfully enforce the NPDES permit for the Holston Army Ammunitions Plant comes at the expense of a potentially serious public health risk: explosives in the drinking water being distributed every day to customers of FUDH at levels that exceed EPA's advisory level.**

The RDX violations continue to this day, and are likely to continue until mandatory enforcement requirements are imposed by EPA or by a federal court through this citizen suit.

LOCATION OF VIOLATIONS

The HAAP is located on the Holston River at 4509 West Stone Drive, Kingsport, Tennessee. The facility is located in Sullivan and Hawkins Counties. The facility discharges through multiple outfalls to the Holston River and the South Fork Holston River (including the tributaries Madd Branch, AFG Stream, and Arnott Branch), all of which are waters of the United States and waters of the State of Tennessee.[24] The bulk of the violations described in this notice letter occur at Outfall 020, the outfall for the main industrial wastewater treatment plant at the HAAP, the IWWTF. Outfall 020 is located at approximately Latitude 36-32-24/Longitude 82-36-42 and discharges directly to the Holston River at river mile 141.5.[25]

DESCRIPTION OF VIOLATIONS

Section 301(a) of the Act, 33 U.S.C. § 1311(a), prohibits the discharge of pollutants from a point source to waters of the United States except in compliance with, among other conditions, a NPDES permit issued pursuant to Section 402 of the Act, 33 U.S.C. § 1342. BAE operates under individual NPDES Permit Number TN0003671 (the "Permit") and the multisector stormwater permit, TNR053962. Part II.C. of the Permit provides:

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[23] Compliance Agreement, Case No. WPC 12-0140 (Aug. 27, 2014) (hereinafter the "Compliance Agreement"), at 6 ¶ 1.

[24] *Id.* at 2.

[25] Permit at R-2 and R-110.

> All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable state and federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

Each violation of the NPDES permit is a violation of the Act, subject to penalties for each day of violation of each effluent limitation. The violations described herein are ongoing and are likely to continue. Furthermore, neither EPA nor TDEC has commenced, or is diligently prosecuting, an administrative penalty action pursuant to Section 309 of the Act, 33 U.S.C. § 1319 (or equivalent state law),[26] or a court case to enforce the Act.

1. RDX EFFLUENT VIOLATIONS AT OUTFALL 020

The health-based NPDES permit limit of 12.2 lbs/day of RDX discharges at Outfall 020 took effect on May 1, 2012.[27] As the following table demonstrates, the HAAP has significantly exceeded this limit each and every month since the limit took effect:

Month	Discharge	Limit	Units	% Excess	days of violation
Jul-14	35.5	12.2	lbs/day	191%	31
Jun-14	28.1	12.2	lbs/day	130%	30
May-14	42.9	12.2	lbs/day	252%	31
Apr-14	65.2	12.2	lbs/day	434%	30
Mar-14	45.1	12.2	lbs/day	270%	31
Feb-14	57.4	12.2	lbs/day	370%	28
Jan-14	32.6	12.2	lbs/day	167%	31
Dec-13	53.1	12.2	lbs/day	335%	31
Nov-13	67.1	12.2	lbs/day	450%	30
Oct-13	54.7	12.2	lbs/day	348%	31
Sep-13	51.1	12.2	lbs/day	319%	30
Aug-13	84.9	12.2	lbs/day	596%	31
Jul-13	49.7	12.2	lbs/day	307%	31
Jun-13	115.0	12.2	lbs/day	843%	30
May-13	110.3	12.2	lbs/day	804%	31
Apr-13	54.3	12.2	lbs/day	345%	30
Mar-13	88.1	12.2	lbs/day	622%	31
Feb-13	73.9	12.2	lbs/day	506%	28

[26] The Tennessee Water Quality Control Act's enforcement provisions are not comparable to the Act's, and hence a TDEC enforcement order would not satisfy this provision. *Jones v. City of Lakeland*, 224 F.3d 518 (6th Cir. 2000).

[27] Compliance Agreement, at 6; Permit at 36.

Jan-13	70.1	12.2	lbs/day	475%	31
Dec-12	50.1	12.2	lbs/day	311%	31
Nov-12	51.4	12.2	lbs/day	321%	30
Oct-12	57.0	12.2	lbs/day	367%	31
Sep-12	66.1	12.2	lbs/day	442%	30
Aug-12	52.0	12.2	lbs/day	326%	31
Jul-12	47.5	12.2	lbs/day	289%	31
Jun-12	50.9	12.2	lbs/day	317%	30
May-12	62.9	12.2	lbs/day	416%	31
				Total	822

2. BOD EFFLUENT VIOLATIONS AT OUTFALL 020

Biochemical oxygen demand ("BOD") is a measure of the quantity of oxygen used by microorganisms for the oxidation of organic matter in water. BOD5 is a five-day measure of BOD. The excess discharge of BOD in municipal and industrial effluent has the potential to use up the dissolved oxygen in a receiving stream, making it unavailable to support fish and aquatic life. In extreme incidents, such as spills, a sudden large surge of BOD can result in significant fish kills.

Part I.A. of the Permit imposes several BOD5 limits at Outfall 020: a daily maximum limit of 505 pounds per day and a monthly average limit of 188 pounds per day for Tier 1 production, and a daily maximum limit of 489 pounds per day for Tier 2. As detailed below, the HAAP routinely reports exceedances of its daily maximum BOD5 limits:

Month	Discharge	Limit	Units	% Excess	Days of Violation
3/1/2014	652.4	505	lbs/day	29%	1
3/12/2014	583.9	505	lbs/day	16%	1
3/18/2014	562.1	505	lbs/day	11%	1
3/19/2014	523.4	505	lbs/day	4%	1
2/9/2014	2,875.9	505	lbs/day	469%	1
2/13/2014	684.5	505	lbs/day	36%	1
2/14/2014	937.9	505	lbs/day	86%	1
2/15/2014	543.8	505	lbs/day	8%	1
2/19/2014	518.3	505	lbs/day	3%	1
1/25/2014	1,011.4	505	lbs/day	100%	1
1/26/2014	702.3	505	lbs/day	39%	1
11/9/2013	814.2	505	lbs/day	61%	1
11/10/2013	958.1	505	lbs/day	90%	1
Sep-13	1,001.5	505	lbs/day	98%	4
Aug-13	874.6	505	lbs/day	73%	1
Apr-13	591.6	505	lbs/day	17%	1

Mar-13	7,846.2	505	lbs/day	1454%	2
Feb-13	590.8	489	lbs/day	21%	3
Nov-12	744.8	505	lbs/day	47%	1
Sep-12	1,780.8	505	lbs/day	253%	2
Aug-12	715.4	505	lbs/day	42%	1
Apr-12	1,972.0	489	lbs/day	303%	1
May-12	526.5	505	lbs/day	4%	1
Mar-12	605.1	505	lbs/day	20%	1
Nov-11	887.8	505	lbs/day	76%	1
Sep-11	1,715.3	505	lbs/day	240%	2
May-11	817.1	489	lbs/day	67%	1
Mar-11	6,177.6	505	lbs/day	1123%	4
Feb-11	1,346.0	505	lbs/day	167%	1
Dec-10	993.3	505	lbs/day	97%	1
Oct-10	786.6	505	lbs/day	56%	1
Feb-10	514.3	505	lbs/day	2%	2
Jan-10	1,916.3	505	lbs/day	279%	5
				Total	49

Similarly, the HAAP also regularly exceeds its monthly average BOD5 limit:

Month/Year	Discharge	Limit	Units	% Excess	days of violation
Mar-14	271.8	188	lbs/day	45%	31
Feb-14	451.8	188	lbs/day	140%	28
Jan-14	208.8	188	lbs/day	11%	31
Nov-13	258.9	188	lbs/day	38%	31
Sep-13	222.8	188	lbs/day	19%	30
May-13	289.0	188	lbs/day	54%	31
Mar-13	405.1	188	lbs/day	115%	31
Feb-13	213.3	188	lbs/day	13%	28
Mar-11	394.2	188	lbs/day	110%	31
Feb-10	195.3	188	lbs/day	4%	28
Jan-10	329.4	188	lbs/day	75%	31
				Total	331

3. OVERFLOWS, SPILLS, LEAKS, AND BYPASSES

BAE routinely reports overflows, spills, leaks, and bypasses throughout the HAAP facility. While the reporting of these events appears to be prompt and thorough, the frequency indicates an overall failure to properly operate and maintain the treatment and collection system at the HAAP in violation of Part II.A. of the Permit, which provides:

> The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

In addition, releases of pollutants other than from permitted outfalls violate the Permit's prohibition on overflows, Part II.C., which prohibits "the discharge to land or water of wastes from any portion of the collection, transmission, or treatment system other than through permitted outfalls."

The intentional bypasses of treatment violates the bypass prohibition in Part II.C., which prohibits "the intentional diversion of wastewater away from any portion of a treatment facility" unless three provisions are met: (1) the bypass is "unavoidable to prevent loss of life, personal injury, or severe property damage"; (2) "[t]here are not feasible alternatives to bypass," and (3) the permittee provides timely notice to TDEC. In addition, bypasses must not result in effluent limitation exceedances.

Moreover, discharges that occur via stormwater outfalls are governed by BAE's Tennessee Multisector General Permit, TNR053962 ("TMSP") rather than the individual permit. Part 3.1.1 of the TMSP provides that "[a]ll discharges covered by this permit shall be composed entirely of stormwater." Part 3.1.2 provides that nonstormwater discharges must be in compliance with a separate NPDES permit. Finally, Part 3.2.3 of the TMSP provides, "This permit does not authorize the discharge of hazardous substances or oil resulting from an onsite spill."

From April 2012 to July 2014 BAE has reported at least the following spills, leaks, bypasses, and overflows:

Date	**Report Date**[28]	**Location**	**Brief Description**	**Discharge/Location**
7/15/14	7/17/14	Area B	Accidental discharge of acidic industrial wastewater containing nitric acid due to leak in stormwater conveyance.	Outfall 037 to Arnott Branch.
7/6/14	7/8/14	Area B	Accidental discharge of HMX slurry in boxway behind Building G-5.	
6/30/14	6/30/14	E4	Leak of ~ 400 gallons of "522" (60% acetic acid) at boxway at north end of E4/nitration.	
6/29/14	7/1/14	Area B	Approx. 60,000 gallon industrial wastewater overflow due to 1.3 inch rainfall at IWWTF.	Outfall 161 to Holston River.
6/19/14	6/23/14	Area B	Leak of industrial wastewater containing nitrates near a manhole	Outfall 040.

[28] This is the date of the written report in TDEC's file. In many cases, BAE had properly notified TDEC and/or FUDH verbally prior to this date.

			northwest of the Steam Plant	
6/17/14	6/18/14	Area B	Sanitary wastewater leak adjacent to Building 8.	
	6/5/14	Area B	Leak of ~ 350 gallons of Chemical 522 from an expansion joint in boxway from Building E-6 to Building B-3.	
6/4/14	6/5/14	Area B	Release of RDX to ground beside a manhole near G-7.	
5/31/14	6/4/14	Area A	Sanitary wastewater leak due to a break in the sanitary sewer line adjacent to the Building 7A tank farm.	
5/30/14	6/5/14	Area B	Leak of RDX between Building H-7 and G-7 during transport.	
4/30/14	5/1/14	Area A	Accidental discharge of acidic industrial wastewater	Outfall 127 to the South Fork of the Holston River.
4/7/14	4/9/14	Area B	Industrial wastewater overflow at Building G-4.	Outfall 031 cooling water channel
2/18/14	2/21/14	Area A	Industrial wastewater leak of < 100 gallons near gate 8B.	
2/4/14	2/7/14	Area A	Acetic acid leak in line from Lift Station #36. 10-15 gallons per minute for several hours.	Outfalls 103 and 104 to Madd Branch/South Fork Holston.
1/30/14	2/3/14	Area B	Leak of untreated industrial wastewater in boxway between Building G-10 and Building E-10.	Outfall 026 to the Holston River.
11/26/13	11/27/13	Area B	Intentional bypass of the IWWTF due to hydraulic overloading in a 24-hour, 2.5" rainfall.	Outfall 020 to the Holston River.
10/23/13	10/24/13	Area B	Overflow at the Area B Influent Pit located Northwest of the trickling filter.	
10/17/13	10/18/13	Area B	Leak of industrial wastewater at flanged connection in the line carrying wastewater from Settling Basins 113/114 to pump station #2.	
8/28/13	8/30/13	Area A	Leak from broken industrial wastewater line including acetic acid.	Indirect discharge to Madd Branch.
8/13/13	8/15/13	Area B	Industrial wastewater overflow on the east side of the small aeration basins due to restricted flow to the IWWTF during heavy rain.	Outfall 161.

3/16/13	3/20/13	Area A/Area B	Industrial wastewater leak from the interplant corridor from Area A to Area B near Gat 8C.	
1/14/13	1/18/13	Area B	Industrial wastewater line break on from Pump Station 2 to the IWWTF during heavy rain. Intentional bypass of IWWTF during repair of the line.	Outfall 161 to the Holston.
1/15/13	1/18/13	Area B	Sanitary sewer line break caused by excavation and repair of industrial line break. Bypass of treatment of sanitary sewage at the IWWTF.	Outfall 025.
7/10/12	7/17/12	Area B	IWWTF overflow due to a pump failure during a rain event.	Outfall 031.
4/26/12	4/30/12	IWWTF	Bypass of the trickling filter for ~ 5 hours releasing hexamine/glacial acetic acid due to a gasket failure. Foaming observed in the river.	Outfall 020 to the Holston River and discharge to the sewer. This event appears to be associated with a total estimate kill of 2,503 fish, mostly bluegill.

4. IMPROPER SAMPLING, TESTING, AND REPORTING

Part II.A. of the Permit requires proper operation and maintenance, which "also includes adequate laboratory and process controls and appropriate quality assurance procedures." TDEC files reveal a troubling pattern of BAE failing to properly conduct and report sampling and laboratory analyses in compliance with permit requirements. Each time BAE fails to comply with these requirements constitutes a violation of the Act.

Sampling problems at the plant have been noted by TDEC during its routine compliance inspections in 2007 & 2009, and include:[29]

- A May 2007 compliance inspection found a number of deficiencies with BOD5 analysis in violation of permit conditions.[30]
- A June 16, 2009 through July 2, 2009 compliance inspection revealed numerous violations of the Permit's sampling requirements, including a failure to properly calibrate flow meters at Outfalls 020 & 025.[31]
- The same 2009 inspection found deficiencies in reporting under the TMSP, noting that "Although some monitoring results exceeded benchmark concentrations, the

[29] These predate the 5-year statute of limitations, and are included for background only.

[30] Notice of Violation (July 17, 2007).

[31] Notice of Violation (Sept. 10, 2009), at 2.

requirements of Sector L section 5.1.2 were not met. Also, the analytical methods noted in laboratory reports for aluminum, iron, and magnesium were not methods approved for use in Title 40 CFR § 136 as required by section 7.14.4. of the general permit."[32]

- The same inspection noted, "Part I A. of the facility NPDES permit requires continuous flow measurement and collection of composite BOD5 samples for Internal Monitoring Point (IMP) 025A. Examination of records and discussion with facility representatives during the inspection. revealed that only instantaneous flow was being reported to the division and that only grab samples were collected."[33]
- This inspection also found, "some laboratory bench sheets were found to show analytical method codes that were no longer approved for use in Title 40 CFR § 136, and some sheets did not list an applicable method code in accordance with permit requirements."[34]
- Finally, the 2009 inspection found that BAE was not complying with the minimum required detection levels "for a number of parameters, including several metals and organic chemicals" at Outfall 020.[35]

Despite these detailed notices, BAE continues to have problems with its sampling protocols. TDEC personal inspected the facility's compliance with its individual and stormwater permits from June 10-June 17 2013. The many deficiencies are detailed in a Compliance Evaluation Inspection letter dated July 8, 2013, which is attached hereto and incorporated by reference as if fully set forth herein. In sum, TDEC found "periodic data quality issues" throughout the HAAP's discharge monitoring reports for 2012 and 2013, such as:

- BAE failed to use required preservatives for volatile organic samples;
- Outfall 020 acrylonitrile samples were conducted using the wrong EPA method;
- Required preservatives were not added to Outfall 020 cyanide samples;
- The January 16, 2013 Outfall 020 effluent was allowed to exceed temperature limits prior to reaching the laboratory for analysis;
- Outfall 020 effluent loads are sometimes calculated using instantaneous flow at the time the sample is taken and sometimes based on the total 24-hour flow to calculate loading;
- BOD5 at Outfall 020 "often show signs of possible toxicity" but may be underreported;
- The Outfall 020 COD sample for 1/12/13 was excluded from the DMR for quality control without proper documentation;
- The drying oven at the B-235 laboratory was kept at too low a temperature.
- Review of January 2013 records revealed numerous transcription errors from lab sheets to discharge monitoring reports.[36]

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[32] *Id.* at 4.

[33] *Id.*

[34] *Id.* at 4-5.

[35] *Id.* at 5.

[36] This also violates the Permit's monitoring and reporting requirements. Part I.B.

PERSONS RESPONSIBLE FOR VIOLATIONS

BAE Systems Ordnance Systems, Inc. is the NPDES permittee and the operator of the HAAP. It is a global defense, security and aerospace corporation with multiple contracts with the U.S. military. BAE is a contractor to the U.S. Army at the HAAP. BAE is a Delaware corporation doing business in Tennessee. Its registered agent in Tennessee is CT Corporation System in Knoxville. BAE is responsible for all violations alleged herein.

Although the U.S. Army is not a named permittee, it owns the HAAP and is closely involved in decision-making regarding production levels and wastewater treatment. The Army contracts with BAE for its day-to-day operations at the HAAP. The Army has funded the wastewater treatment plant upgrades to date, through contracts with BAE. The Army has communicated directly with TDEC regarding its plans for RDX treatment, and has indicated these plans are subject to the availability of future appropriations and the Anti-deficiency Act.[37] Further, the U.S. Department of the Army was named in the "Compliance Agreement" with TDEC in addition to BAE. Accordingly, the Army is also responsible for the violations alleged herein.

PERSONS GIVING NOTICE

The Tennessee Clean Water Network is a Tennessee nonprofit corporation. TCWN empowers Tennesseans to exercise their right to clean water and healthy communities by fostering civic engagement, building coalitions, advancing, and when necessary, enforcing water policy for a sustainable future. TCWN is a membership organization and has members who are injured by the violations described herein. The name, address, and phone number of the person giving notice are:

Renée Victoria Hoyos
Executive Director
Tennessee Clean Water Network
P.O. Box 1521
Knoxville, TN 37901
865-522-7007

TCWN is willing to consider a negotiated settlement of these violations, codified through a consent decree in federal court. However, if we are unable to reach an enforceable settlement agreement that includes significant penalties for continued noncompliance and timely injunctive relief to quickly improve drinking water quality at FUDH, TCWN is prepared to file suit in the United States District Court for the Eastern District of Tennessee pursuant to Section 505(a)(1) of the Act, 33 U.S.C. § 1365(a)(1), after sixty days. This lawsuit would seek injunctive relief, an appropriate monetary penalty, fees & costs of litigation, and such other relief as the Court deems appropriate.

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[37] *See, e.g.*, Letter from Joseph R. Kennedy, Commander's Representative, Department of the Army to Dr. Shari Meghreblian, Deputy Commissioner of TDEC (July 15, 2014); Letter from Joseph R. Kennedy, Commander's Representative, Department of the Army to Dr. Shari Meghreblian, Deputy Commissioner of TDEC (July 9, 2014).

If you believe any of the above information is in error, or if you would like to discuss the issues raised in this letter, please contact me at 865-522-7007 x 102.

Thank you for your prompt attention to this matter.

Sincerely,

Stephanie Durman Matheny

Stephanie Durman Matheny
Attorney

Additional Legal Counsel:

Gary A. Davis and James S. Whitlock
Davis & Whitlock, P.C.
21 Battery Park Avenue
Suite 206
Asheville, North Carolina 28801
(828) 622-0044

cc: (by certified mail, return receipt requested)

Attorney General Eric Holder
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001
Tracking #7011-2970-0001-6807-8636

Gina McCarthy, Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460
Tracking #7011-2970-0001-6807-8643

Heather McTeer Toney, Regional Administrator
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-3104
Tracking #7011-2970-0001-6807-8650

Commissioner Robert Martineau
Tennessee Department of Environment and Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 2nd Floor
Nashville, TN 37243
Tracking #7011-2970-0001-6807-8667

CT Corporation System Tracking #7011-2970-0001-6807-8674
Registered Agent for BAE Systems Ordnance Systems, Inc.
Suite 2021
800 S. Gay St.
Knoxville, TN 37929-9710

cc: (by U.S. Mail)

Col. Chadwick T. Bauld
U.S. Army Holston Army Ammunitions Plant
4509 W. Stone Dr.
Kingsport, TN 37660

cc: (by electronic mail)

Tisha Calabrese Benton, Director, TDEC Division of Water Resources
Patrick Parker, TDEC, Office of General Counsel
Vojin Janjić, TDEC, Manager of Water-Based Permitting

CERTIFIED MAIL #7012 3460 0000 4174 3730
RETURN RECEIPT REQUESTED

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
JOHNSON CITY ENVIRONMENTAL FIELD OFFICE
2305 SILVERDALE ROAD
JOHNSON CITY, TENNESSEE 37601-2162
(423) 854-5400 STATEWIDE 1-888-891-8332 FAX (423) 854-5401

July 8, 2013

Mr. Todd D. Hayes
Vice President Operations
BAE Systems Ordnance Systems Inc.
4509 West Stone Drive
Kingsport, TN 37660-9982

RE: Compliance Evaluation Inspection (CEI)
BAE Systems Ordnance Systems Inc. – Holston Army Ammunition Plant
NPDES Permit TN0003671
Hawkins & Sullivan Counties

Storm Water Non-Construction Non-Sampling Inspection
BAE Systems Ordnance Systems Inc. – Holston Army Ammunition Plant
TMSP TNR053962
Hawkins & Sullivan Counties

Dear Mr. Hayes:

During the period from June 10, 2013, through June 17, 2013, Tennessee Department of Environment and Conservation, Division of Water Resources personnel performed routine inspections at the above referenced facilities. During the inspections, facility compliance with NPDES permit TN0003671 and Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP) TNR053962 was evaluated. The division thanks BAE Systems and U.S. Army personnel for their assistance during the inspections. In addition to the items below, also see the enclosed Water Compliance Inspection Reports and outfall observations for additional information.

1. As further discussed below, various concerns were noted during review of laboratory reports from ESC Lab Sciences and TestAmerica Laboratories, Inc. detailing analyses performed by these contract laboratories.
    a. Review of selected reports from 2012 and 2013 revealed periodic data quality issues, including problems with standard results and sample preservation, accompanying the data. All applicable data quality flags should be reported on monthly Discharge Monitoring Reports (DMRs) submitted to the division. Such data quality flags may impact the acceptability of such data for use in regulatory reporting.
    b. Pollutants not detected at or above established reporting levels are currently reported as below detection limit (BDL) on monthly DMRs in accordance with division guidance. Detection limits for pollutants reported as BDL should be included with the DMRs for reference. Note that laboratory detection limits must satisfy the requirements of state rule 1200-4-3-.05(8) as discussed in NPDES permit TN0003671 Part I A.

c. No preservative chemicals are currently added to volatile organic samples collected for analysis. NPDES permit TN0003671 Part I B.3. requires that pollutant parameters be determined in accordance with methods prescribed in Title 40 CFR Part 136. Part 136.3 Table II details necessary sample preservation requirements, including addition of 0.008% $Na_2S_2O_3$ to most organic samples when oxidants are present. The laboratory records examined during this inspection did not detail any testing for the absence of oxidants. In accordance with guidance received during division discussions with EPA Region 4, documentation must be available to demonstrate that samples are oxidant-free if addition of $Na_2S_2O_3$ as a preservative is to be omitted.

d. According to available laboratory reports, outfall 020 effluent analyses for acrylonitrile are performed using EPA Method 624. Footnote 4 of Table IC in Title 40 CFR Part 136.3 specifies that such analyses must satisfy the quality control (QC) acceptance criteria from EPA Method 603. Method 603 specifies a 71-135% recovery acceptance range for Quality Control (QC) check samples, which are represented by the laboratory control sample (LCS) in results from ESC, and discussion with EPA Region 4 confirms this is a fixed acceptance limit applicable to these samples. The current recovery range used by ESC for laboratory control samples is 53-153%, and thus does not satisfy the requirements of Part 136.

e. Part 136.3 Table II details necessary sample preservation requirements, including addition of reducing agent to cyanide samples when oxidants are present. According to laboratory records evaluated during this inspection, no reducing agent is added as a preservative to outfall 020 cyanide samples, and no evidence is presented to demonstrate the absence of oxidants.

f. TestAmerica chain-of-custody information for the January 16, 2013, outfall 020 effluent RDX sample indicates the sample was not received by the laboratory until January 21, 2013, at which time the sample temperature was noted as 8.6°C. This is not in accordance with the ≤6°C sample preservation requirement specified in SW-846 Method 8330A, which is used by TestAmerica to analyze the samples.

g. A February 2013 laboratory report from ESC reported outfall 020 effluent 1,3-dichloropropene concentration as two different isomers, with the result for each shown as not detected. Calculation of the load reported for this pollutant on the discharge monitoring report (DMR) submitted to the division was based only on the detection limit for one isomer. Since NPDES permit TN0003671 does not differentiate between isomers for this pollutant, the sum of the two isomers should be reported.

h. Records examined during this inspection revealed that some outfall 020 effluent loads (*e.g.*, total ammonia nitrogen and cyanide) are calculated using instantaneous discharge flow at the time of sample collection. Other outfall 020 loads (*e.g.*, metals and organics) are calculated using totalized 24-hour discharge flow. There does not appear to be a consistent correlation between the flow used for calculation and the sample type. For consistency, the division recommends BAE Systems standardize calculations of load to use totalized 24-hour discharge flow corresponding to the sampling period for composite samples and instantaneous flow at the time of sample collection for grab samples.

2. Evaluation of records associated with onsite laboratory analyses revealed issues as noted below.

a. Records for 5-day biochemical oxygen demand (BOD_5) analyses revealed frequent glucose-glutamic acid standard results below the acceptable range specified by Standard Method 5210 B-2001. Such low results for standards may also indicate underreporting of actual effluent BOD_5. BAE Systems representatives indicated they are investigating

possible issues with consistent seed material strength as a cause for the low standard results.

b. BOD_5 analyses for outfall 020 effluent often show signs of possible toxicity as indicated by higher results for more dilute samples. Since more concentrated samples generally yield lower results and are often the only dilutions satisfying method quality control criteria, this creates some concern of underreporting of actual effluent BOD_5.

c. The January 16, 2013, nitrate (as N) sample for outfall 020 exhibited unacceptable matrix spike recovery, but the data was reported as is, with no data qualifiers. Also, the October 28, 2012, outfall 020 nitrate (as N) sample result was above the instrument calibration range, but the data was reported rather than reanalyzing the sample after dilution or instrument recalibration. Sample results outside of calibration range or with deficiencies in supporting quality control data should be reanalyzed, reported with appropriate data quality flags, and/or removed from reporting as discussed in NPDES permit TN0003671 Part I E., as appropriate.

d. Laboratory records indicated that the January 12, 2013, outfall 020 effluent chemical oxygen demand (COD) sample was omitted from reporting because of quality control (QC) standard issues, but the QC standard results were not documented. Records for the June 3, 2013, outfall 020 effluent nitrate (as N) sample indicated that the sample was diluted to bring the result within calibration range; however, no documentation such as an initial, undiluted sample result was available to demonstrate how the analyst determined that dilution was necessary. Documentation of original sample results and any quality control issues must be maintained.

e. The thermometer (ID #A28831) located in the B-235 laboratory sample refrigerator was tagged with a correction factor of -0.4°C. However, this correction was not taken into account in readings recorded on the daily refrigerator temperature log sheet, nor was the correction factor noted on the log sheet.

f. At the time of inspection, the drying oven used for total suspended solids analyses performed in the B-235 laboratory was at a temperature of 101°C. The approved analytical method used for these analyses, Standard Method 2540 D-1997, specifies a required oven temperature range of 103-105°C. BAE Systems personnel indicated this was a new drying oven, and adjustments were still being made to stabilize the temperature within the required range. Drying oven temperature must be maintained within the required range while sample analysis is underway.

g. At the time of inspection, the incubator used for *E. coli* analyses performed in the B-216 laboratory was at a temperature of 36°C. The approved analytical method used for these analyses, IDEXX Laboratories, Inc. Colilert® using QuantiTray®/2000, specifies a required incubator temperature range of 35±0.5°C. BAE Systems personnel indicated that samples were recently placed in the incubator, and made adjustments to the incubator typically required after sample placement. Incubator temperature must be maintained within the required range while sample analysis is underway.

h. Review of records for January 2013 revealed instances of transcription errors between laboratory bench sheets, values entered into the internal database used for compliance reporting, and final values reported on DMRs submitted to the division. For example, the January 16, 2013, outfall 025 effluent settleable solids value of 0.3 mL/L was not accurately conveyed to the DMR, which specified <0.2 mL/L, and the January 27, 2013, outfall 020 effluent dissolved oxygen value of 10.82 mg/L was transcribed into the internal database for NPDES reporting as 10.80 mg/L.

3. TMSP TNR053962 contains coverage for discharges from numerous storm water outfalls. A subset of these outfalls was observed as part of the inspection. These observations revealed some issues as detailed below.
    a. Observation of outfall 169 during this inspection revealed the discharge had a red tint. Division personnel requested the discharge from this outfall be sampled and tested for nitrates. Please provide the division with a copy of these results.
    b. Observation of outfall 184 revealed a cloudy, gray discharge not typical for this outfall. The source of the turbidity and discoloration was unclear at the time of inspection.
4. TMSP TNR053962 contains requirements for a storm water pollution prevention plan (SWPPP) and associated records. Review of the facility SWPPP and records revealed deficiencies as detailed below.
    a. Section 6.1 of the facility SWPPP references the EPA industrial storm water permit and a one-year record retention period. TMSP part 7.14.2. requires records be retained for a period of at least three years
    b. Records of quarterly visual examinations of storm water quality revealed that such samples were not always collected within the first 30 minutes, not to exceed one hour, of when the discharge began as required by TMSP parts 11.C.5.3.3 and 11.L.5.3. Also note that annual monitoring samples required by TMSP Sector L must be collected within this time frame as required by TMSP part 11.L.5.1.2.
    c. Reports related to the SWPPP, such as the inspections required by TMSP parts 11.C.3.2.3.4 and 11.L.3.2.3.4 and Quarterly Visual Examinations of Storm Water Quality required by 11.C.5.3.3 and 11.L.5.3 must be signed and certified in accordance with the requirements of TMSP part 7.7. A number of reports on file with the SWPPP (*e.g.*, monthly Areas of Concern inspections, semi-annual facility site inspections, annual storm water outfall structural inspections, and weekly/monthly/quarterly landfill inspections) were signed by various BAE Systems personnel, rather than a corporate official, and did not contain the required certification statement. No written authorization for signature by other individuals, as discussed in TMSP part 7.7.2., was available.
5. In 2011, BAE Systems began a project to rehabilitate and upgrade the anoxic treatment cells at the industrial wastewater treatment plant at Holston Army Ammunition Plant. After completion of work to cells 1 through 3, operational problems were noted with the facility upgrades and work on cell 4 was postponed. Since that time, additional study has been completed in order to determine how best to revise the proposed upgrades to yield desired results, but the anoxic cell upgrades have yet to be completed. The division requests an update on the status of the anoxic cell upgrade project, including anticipated time frames for completion.
6. Observation of the Holston Army Ammunition Plant industrial wastewater treatment plant during this inspection revealed continuing leakage around the trickling filter center hub and maintenance needs for the clarifiers. These issues should be repaired and maintenance performed in order to ensure proper treatment unit function.
7. Outfall 020 effluent RDX loading continues to exceed the 12.2 lb/day monthly average maximum discussed in NPDES permit TN0003671 Part III H. and the permit Rationale. To date, a reverse osmosis treatment system has been installed to remove RDX prior to treatment in the onsite industrial wastewater treatment plant, but problems with biological fouling and other factors have prevented adequate treatment of all applicable waste streams. The division requests an update on the RDX removal project, including proposed time frames, detailing actions planned to achieve compliance with the proposed 12.2 lb/day limitation.

Compliance with NPDES permit requirements helps ensure discharges that are protective of downstream fish and aquatic life and water quality. The division requests that you develop and submit a detailed action plan and proposed implementation schedule addressing the points discussed above within 30 days of receipt of this correspondence. Thank you for your efforts to ensure permit compliance and to protect state water quality. If I may be of assistance in matters concerning this report, please contact me at (423) 854-5456.

Sincerely,

Bryan B. Carter
Environmental Protection Specialist
Division of Water Resources
Johnson City Environmental Field Office

BBC/150113190

Enclosures

cc: Mr. Jeff Horton, DWR, Johnson City EFO
DWR Enforcement and Compliance Section, Nashville
File Copy, DWR, Johnson City EFO

September 24, 2014

ROUTING AND TRANSMITTAL SLIP		
TO:	**Initials**	**Date**
1. Pat Bullock		
2.		
3.		
4.		

ACTION REQUESTED: One (1) NOI for Processing and Tracking

Holston Army Ammunitions Plant

Thanks,
Nancy

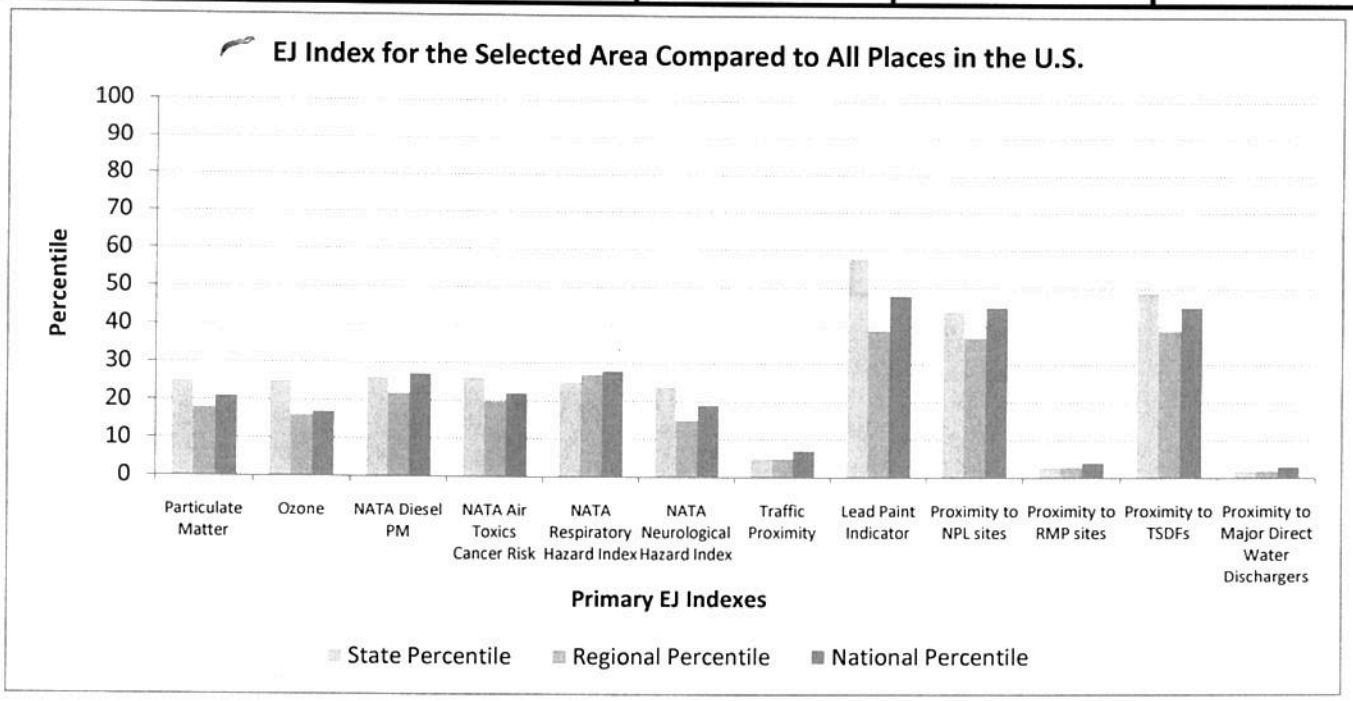
FROM: **NANCY L. TOMMELLEO** **DEPUTY REGIONAL COUNSEL**	x2- **9571**

United States Environmental Protection Agency

EJScreen Report for 1 Mile Ring Centered at 36.533 N, -82.630 W, Tennessee
Approximate Population: 340

09/25/14

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
Primary EJ Indexes			
Particulate Matter	25	18	21
Ozone	25	16	17
NATA Diesel PM	26	22	27
NATA Air Toxics Cancer Risk	26	20	22
NATA Respiratory Hazard Index	25	27	28
NATA Neurological Hazard Index	24	15	19
Traffic Proximity	5	5	7
Lead Paint Indicator	58	39	48
Proximity to NPL sites	44	37	45
Proximity to RMP sites	3	3	4
Proximity to TSDFs	49	39	45
Proximity to Major Direct Water Dischargers	2	2	3



This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators.

United States Environmental Protection Agency

EJScreen Report for 1 Mile Ring Centered at 36.533 N, -82.630 W, Tennessee
Approximate Population: 340

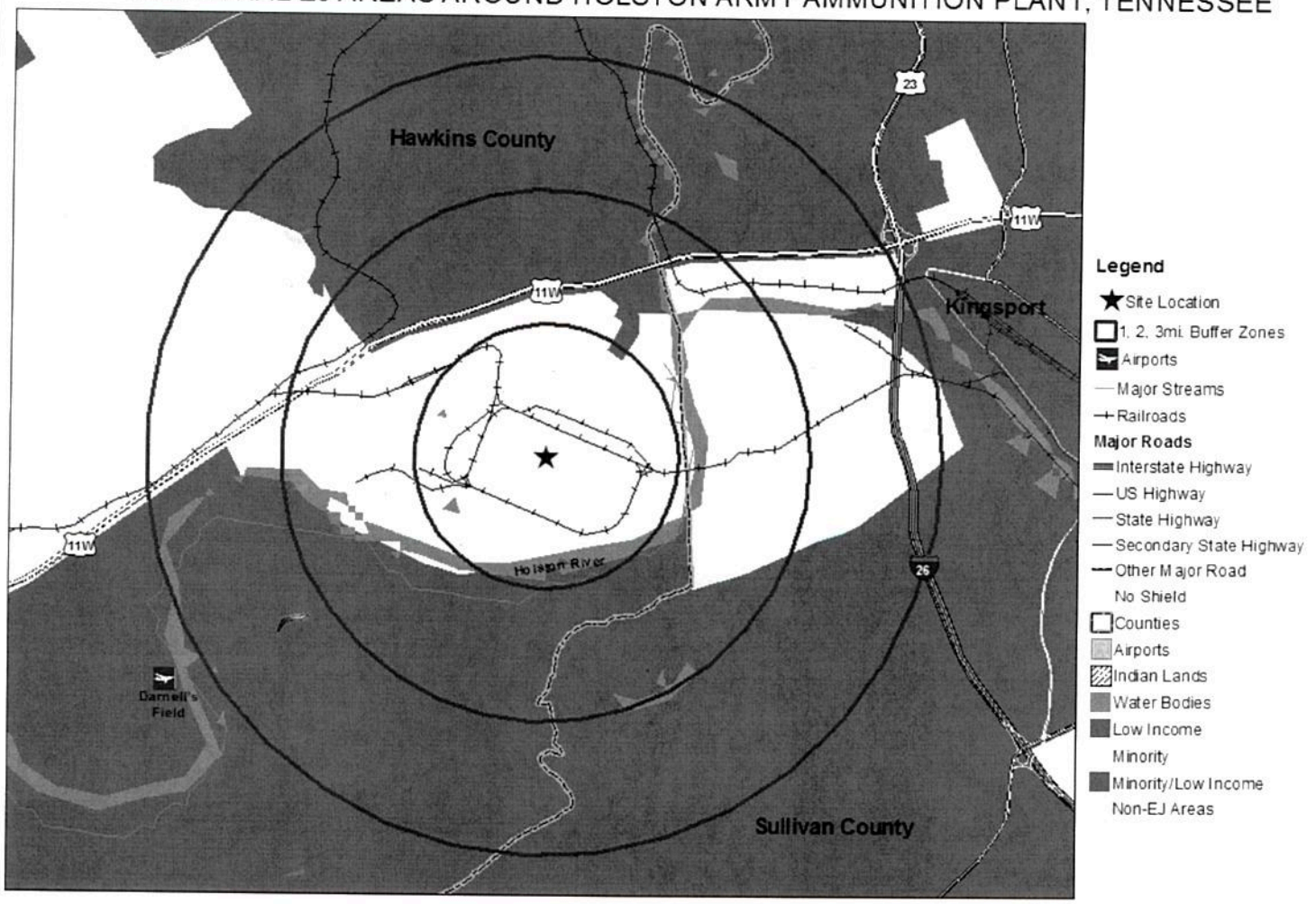
09/25/14

Selected Variables	Raw Data	State Avg.	State %ile	EPA Region Avg.	EPA Region %ile	USA Avg.	USA %ile
Environmental Factors							
Particulate Matter (PM 2.5 in µg/m^3)	10.7	10.6	53	10.1	58	10.7	50
Ozone (ppb)	51.7	51.2	66	44.8	78	46	82
NATA Diesel PM (µg/m^3)	0.302	0.5490	47	0.53	47	0.8250	37
NATA Air Toxics Cancer Risk (risk per MM)	51	57	43	56	38	61	40
NATA Respiratory Hazard Index	1.6	1.9	49	2.7	24	3.1	30
NATA Neurological Hazard Index	0.05	0.0770	47	0.0520	65	0.0630	52
Traffic Proximity (daily traffic count/distance to road)	110	68	85	85	82	110	76
Lead Paint Indicator (% Pre-1960s Housing)	0.016	0.21	12	0.17	22	0.31	15
Proximity to NPL sites (facility count/km distance)	0.011	0.0480	7	0.07	16	0.0960	9
Proximity to RMP sites (facility count/km distance)	0.6	0.27	89	0.26	89	0.31	86
Proximity to TSDFs (facility count/km distance)	0.0058	0.0360	6	0.0350	5	0.0660	7
Proximity to Major Direct Dischargers (count/km)	0.65	0.16	97	0.19	95	0.25	92
Primary Demographic Index	6%	31%	4	36%	2	34%	4
Minority Population	2%	24%	16	35%	8	35%	9
Low Income Population	10%	37%	9	36%	9	32%	16
Linguistically Isolated Population	null	2%	0	4%	0	5%	0
Population With Less Than High School Education	5%	18%	15	17%	17	15%	23
Population Under 5 years of age	3%	7%	16	7%	17	7%	16
Population over 64 years of age	33%	13%	98	14%	95	13%	97

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

POTENTIAL EJ AREAS AROUND HOLSTON ARMY AMMUNITION PLANT, TENNESSEE



N

0 0.3 0.6 1.2 1.8 2.4 Miles

U.S. EPA REGION 4
OFFICE OF ENVIRONMENTAL ACCOUNTABILITY