

Question 3

3. Please identify each DOD facility where EPA has knowledge that, or has reason to believe that, a constituent of military munitions, including perchlorate, TNT, RDX, HMX, or White Phosphorus has been detected or discovered? For each such facility identify the constituent that has been detected, the levels of contamination discovered, the date the constituent was detected, the media where it was detected, the remedial action, if any, that has been taken and whether the facility is listed on the Superfund NPL. Further, please indicate whether the constituent of military munitions has been detected in the groundwater under an operational range. In addition, indicate whether private or public drinking water wells have been closed, temporarily or otherwise, by contamination from a constituent of military munitions and if so provide the location of the well.

In the interest of providing a response to this data request in a timely manner, EPA initially focused on collecting the above requested information for perchlorate prior to gathering the information for the other munitions constituents listed above. The universe for EPA’s site-specific perchlorate data was significantly smaller and easier to collect than that for TNT, RDX, HMX, and/or White Phosphorous. This is due to the fact perchlorate is a relatively new contaminant in regards to characterization and treatment at DOD facilities whereas EPA and DOD have been addressing TNT, RDX, HMX and White Phosphorous contamination issues for substantially longer amount of time. As a result there are greater number of facilities, and subsequently documents, pertaining to these other constituents which will require an additional amount of time to gather the requested information.

EPA Region	Facility Name	NPL	Contamination Levels	Date of Detection	Contaminated Media	Remedial Action Taken	Op. Range	Closed DW Wells
1	Otis Air National Guard Base (ANGB)/Camp Edwards/Massachusetts Military Reservation	F	500 ppb (gw) 2 ppb (dw)	08/2000	GW DW	No Remedy	Yes	Yes
2	Picatinny Arsenal	F	616 ppb (gw) 500 ppb (soil)	12/27/2000	GW Soil	Army is proposing LUCs and GW & Soil monitoring at 5 Sites	No	No

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EPA Region	Facility Name	NPL	Contamination Levels	Date of Detection	Contaminated Media	Remedial Action Taken	Op. Range	Closed DW Wells
3	Aberdeen Proving Ground/Edgewood	F	12000 ppb (soil) 42 ppb (gw) 5 ppb (At dw supply well) 1 ppb (finished drinking water)	02/03/2001	Soil GW DW	Proposed remedy to perform a soil removal action in conjunction with soil bioremediation research was rejected by the Army. APG is actively monitoring various sites and is monitoring and exchanging information with EPA, MDE and local community	No	City well #9 (shut down periodically) 11 wells supply the City of Aberdeen with drinking water, both the wells and the finished water are monitored closely. Finished water has never exceeded 1 ppb.
3	Naval Surface Warfare Center (NSWC) – Indian Head	F	9 ppb (soil) 2000 ppb (gw)	12/2002 08/2000	Soil GW SW *	No Remedy	No	No
3	Naval Surface Warfare Center (NSWC) – White Oak	N	8 ppb (sw) 798 ppb (gw)	02/2000 10/1999	SW and GW	In situ Enhanced Bioremediation	No	1 off-site res. well closed
3	Ft. Meade	F	70 ppb (isolated)	05/2002	GW	No Remedy	Transf. range	No
3	Allegany Ballistics Lb	F	880 ppb (soil) 2500 ppb (sub) 190 ppb (sed) 400 ppb (sw) 34900 ppb (gw)	1999 - 2001	Soil Subsoil Sediment SW GW	No Remedy	No	No
4	Redstone Army Arsenal (includes NASA Marshall Space Flight Center)	F	220000 ppb (gw) 208,000 ppb (soil) 12200 (sw)	07/2000 04/2002 04/2002	GW Soil SW	No Remedy	No	No
4	Ft. McClellan	N	2.55 ppb (gw) 0.793 mg/kg (soil) 2.66 ppb (sw)	04/2001 12/2000 02/2001	GW Soils SW	No Remedy	No	No
4	Shaw AFB – Poinsett Range	N	19 ppb (gw)	2001	GW	n/a	n/a	n/a

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EPA Region	Facility Name	NPL	Contamination Levels	Date of Detection	Contaminated Media	Remedial Action Taken	Op. Range	Closed DW Wells
5	Sangamo Electric Dump/Crab Orchard National Wildlife Refuge	F	1200 ppb (gw)	04/2000	GW	No Remedy	No	No
5	Chanute AFB	P	5 ppb (sw)	02/2004	SW	No Remedy	No	No
5	Twin Cities Army Ammunition Plant	F	.081 ppb (gw)	12/2003	GW	No Remedy	No	No
5	Savanna Army Depot Activity	F	12 ppb (gw)	08/2003	GW	No Remedy	No	No
5	U.S. Army Jefferson Proving Ground	N	100 ppb (soil)	02/2002	Soil	No Remedy. Army is assessing with its range assessment program	No	No
5	Wright-Patterson AFB	F	17 ppb (dw)	02/2004	Drinking Water	No Remedy	No	No
6	Cannon AFB	N	46 ppb (gw & dw) 6.1 ppb (sw)	12/2000	GW DW SW * Soil *	No Remedy	No	No – AF states that no one is drinking water in contam wells
6	Ft. Wingate Depot	N	2860 (gw) 2790 (soil)	07/2000 09/2000	GW Soil	No Remedy	No	No
6	Holloman AFB	N	40 ppb (gw) 16000 ppb (sw) 90 ppb (soil)	03/1999	GW Seasonal SW sample Soil	No Remedy	No	No
6	Kirtland AFB	N	50500 ppb (soil)	02/2001	Soil	No Remedy	No	No
6	Melrose AFB	N	41 (gw & dw)	04/2001	GW & DW	No Remedy	No	No – AF states that no one is drinking water from contam wells
6	White Sands Missile Range	N	21000 ppb (gw)	04/1999	GW	No Remedy	No	No
6	McAlester Army Ammunition Plant	N	1 unvalidated detection at 0.6 ppb out of 26 samples	n/a	SW *	n/a	n/a	n/a

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EPA Region	Facility Name	NPL	Contamination Levels	Date of Detection	Contaminated Media	Remedial Action Taken	Op. Range	Closed DW Wells
6	Lone Star Ammunition Plant	F	157 ppb (soil) 5.8 ppb (sw) 186 ppb (sed) 23 ppb (gw)	07/2001	Soil SW Sediments GW	No Remedy	No	No
6	Longhorn Army Ammunition Plant	F	203000 ppb (gw) 163000 ppb (soil) 11000 ppb (sw)	02/1998	GW Soil SW	Perchlorate treatment at LHAAP GW treatment plant and numerous field pilot studies including in situ bioremediation and phytoremediation	No	No
6	McGregor Naval Weapons Industrial Reserve Plant	N	91000 ppb (gw)	05/1998	GW SW * Soil	Fluidized Bed Reactor	No	No
6	Red River Army Depot	N	7 ppb (gw) 417 ppb (st.w) 160 ppb (soil)	11/1999	GW Storm Water Soil	No Remedy	No	No
6	Camp Bullis	N	345 ppb (gw)-DOD 424 ppb (gw)-TCEQ	08/2001	GW *	n/a	n/a	n/a
7	Lake City Army Ammunition Plant	F	70 ppb (gw)	02/2002	GW	No Remedy	No	No
7	Iowa Army Ammunition Plant	F	9 ppb (gw)	11/2000	GW	No Remedy	No	No
8	Pueblo Army Depot	N	180ppb (gw)	11/2002	GW	n/a	n/a	n/a
8	Rocky Mountain Arsenal	F	14 ppb (gw)	08/2003	GW	No Remedy	No	No
8	Badlands Bombing Range	N	1 ppb	05/2003	GW	No Remedy	n/a	n/a
8	Hill AFB	F	70 ppb (gw)	05/1998	GW DW * Soil *	No Remedy	n/a	n/a
8	Wendover Air Field	N	1200 ppb (soil)	02/2004	Soil	No Remedy	n/a	No
9	Mather AFB	F	1800 ppb (gw) 120 ppb (dw)	03/1997	GW DW	No Remedy	No	Yes – 3 of 4 on-site supply wells

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EPA Region	Facility Name	NPL	Contamination Levels	Date of Detection	Contaminated Media	Remedial Action Taken	Op. Range	Closed DW Wells
								were shut down in 1997
9	Edwards AFB/JPL	F	160000 ppb (gw)	10/1997	GW Soil *	The AF is currently installing a full scale treatability study for groundwater extraction and treatment with Ion Exchange.	No	No
9	Edwards AFB/Dryden Flight Research Center	F	300	n/a	GW Soil	No Remedy	No	No
9	Edwards AFB/Air Force Research Laboratory	F	4550	n/a	GW	No Remedy	No	No
9	El Toro MCAS	F	380 ppb (gw)	10/1998	GW	The perchlorate plume beneath a former EOD range has not yet fully delineated however a treatability study is planned for later in 2004.	No	No
9	Camp Navajo	N	39 ppb	n/a	GW * SW	Monitoring storm water under NPDES permit	n/a	n/a
9	Davis Monthan AFB	N	n/a	03/2000	Soil	n/a	n/a	n/a
9	Yuma Marine Corps Air Station (MCAS)	F	4 ppb (gw) 5 ppb (sw)	n/a	GW * SW *	n/a	n/a	n/a
9	Yuma Proving Ground	N	5 ppb (sw)	04/21/1999	SW	No Remedy	No	No

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EPA Region	Facility Name	NPL	Contamination Levels	Date of Detection	Contaminated Media	Remedial Action Taken	Op. Range	Closed DW Wells
9	Beale AFB	N	n/a	n/a	GW *	n/a	n/a	n/a
9	Nike 14 Launcher Area (FUDS)	N	n/a	n/a	GW *	n/a	n/a	n/a
9	Travis AFB	F	n/a	n/a	GW *	n/a	n/a	n/a
9	U.S. Navy Firing Range	N	16 ppb (dw)	09/23/1998	DW	No Remedy	n/a	n/a
9	Vandenburg AFB	N	517 ppb (gw)	n/a	GW Soil *	n/a	n/a	n/a
9	Concord Naval Weapons Station	F	2 ppb (gw)	06/2003	GW	No Remedy	No	No
10	Umatilla Army Depot	F	10 ppb (gw)	05/2001	GW	No Remedy	No	No
10	Camp Bonneville	N	250 ppb (gw)	2001	GW Soil	No Remedy	No	No
10	Navy Boardman Bombing Range	N	4 ppb (gw)	06/2003	GW	No Remedy	No	No

* - Data was obtained from a DOD response to inquiries from Senators Boxer and Feinstein. In these cases only a “Yes” was used to indicate that perchlorate had been detected in the specified media without providing the actual levels of contamination. In addition, the DOD response did not provide the date perchlorate was detected, the remedial action, if any, that has been taken, whether the constituent of military munitions has been detected in the groundwater under an operational range, whether private or public drinking water wells have been closed, temporarily or otherwise, by contamination from perchlorate or the location of the well(s).

GW – Groundwater
 DW – Drinking Water
 SW – Surface Water

5. The name and location of DOD facilities where perchlorate contamination has been discovered was provided in EPA's response on June 27, 2003, to our letter of April 30, 2003. The Agency, however, was unable at that time to provide the dates when the perchlorate contamination was first detected but stated that the "date of detects will be coming as soon as possible." More than six months has elapsed and no such information has been forthcoming. Please provide the date of detection for the perchlorate contamination at each DOD facility.

Known DOD Perchlorate Releases in the U.S. - March 25, 2004

Legend:	BRAC = Base Realignment and Closure N (in BRAC Column) = Site is not a BRAC Facility Y (in BRAC Column) = Site is a BRAC Facility NPL = National Priorities List N (in NPL Column) = Site is not on the NPL F (in NPL Column) = Site is on the Final NPL DW Conc = Drinking Water Concentration GW Conc = Groundwater Concentration	SW Conc = Surface Water Contamination Soil Contam = Soil Contamination ppb = parts per billion Y (in Soil Contam Column) = Perchlorate has been detected in soil -- = denotes EPA is not aware that perchlorate has been detected in that particular medium at that specific facility [] = Data was obtained from DOD response to inquiries from Sens. Boxer & Feinstein
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State	Facility/Site Name	City	BRAC	NPL	DW Conc (ppb)	GW Conc (ppb)	SW Conc (ppb)	Soil Contam	Initial Detection Date *
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DOD FACILITIES									
AL	Ft. McClellan	Anniston	F	N	--	3	3	Y	12/2000
AL	U.S. Army/NASA RedStone Arsenal -Aviation & Missile Command; Thiokol-Huntsville(former) ²	Huntsville	N	F	--	220000	12200	208000	07/2000
AZ	Camp Navajo ³	Bellemont	N	N	--	[Y]	--	--	n/a
AZ	Davis Monthan Air Force Base	Tucson	N	N	--	--	--	Y	03/2000
AZ	Yuma MCAS ³	Yuma	N	F	--	[4]	[5]	--	n/a
AZ	Yuma Proving Ground	Yuma	N	N	--	--	5	--	04/21/1999
CA	Beale AFB ³	Marysville	N	N	--	[Y]	--	--	n/a
CA	Concord Naval Weapons Station	Concord	F	N	2	--	--	--	06/2003
CA	Edwards AFB/Air Force Research Laboratory	Edwards	N	F	--	4550	--	--	n/a
CA	Edwards AFB/Dryden Flight Research Center ²	Edwards	N	F	--	300	--	Y	n/a
CA	Edwards AFB/Jet Propulsion Laboratory	Edwards	N	F	--	160000	--	[Y]	07/1997
CA	El Toro MCAS	El Toro	Y	F	--	380	--	--	10/1998
CA	Mather AFB ¹	Rancho	Y	F	120	1800	--	--	03/1997
CA	Nike 14 Launcher Area (FUDS) ³		N	N	--	[Y]	--	--	n/a

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State	Facility/Site Name	City	BRAC	NPL	DW Conc (ppb)	GW Conc (ppb)	SW Conc (ppb)	Soil Contam	Initial Detection Date *
CA	Travis AFB ³	Fairfield	N	F	--	[Y]	--	--	n/a
CA	U.S. Navy Firing Range	San Nicolas Isl.	N	N	16	--	--	--	09/23/1998
CA	Vandenberg AFB ³	Lompoc	N	N	--	517	--	[Y]	n/a
CO	Pueblo Chemical Depot	Pueblo	Y	N	--	180	--	--	11/2002
CO	Rocky Mountain Arsenal	Adams	N	Y	--	14	--	--	08/2003
IA	Iowa Army Ammunition Plant	Middletown	N	F	--	9	--	--	11/2000
IL	Chanute AFB	Rantoul	Y	P	--	5	--	--	02/2004
IL	Sangamo Electric Dump/Crab Orchard National Wildlife Refuge	Carterville	N	F	--	1200	--	--	04/2000
IL	Savanna Army Depot Activity	Savanna	Y	F	--	12	--	--	08/2003
IN	US Army Jefferson Proving Ground	Madison	Y	N	--	--	--	100	02/2002
MA	Massachussets Military Reservation	Bourne	N	F	2	500	--	--	08/2000
MD	Aberdeen Proving Ground ²	Aberdeen	N	F	5	42	--	15000	02/03/2001
MD	Ft. Meade ³	Odenton	Y	F	--	70	--	--	05/2002
MD	Naval Surface Warfare Center, Indian Head Division ^{2, 3}	Indian Head	N	F	--	2000	[Y]	9	08/2000
MD	Naval Surface Warfare Center, White Oak	Silver Springs	Y	N	--	798	8	--	10/1999
MN	Twin Cities Army Ammunition Plant	New Brighton	Y	F	--	0.081	--	--	12/2003
MO	Lake City Army Ammunition Plant	Independence	N	F	--	70	--	--	02/2002
NJ	Picatinny Arsenal ²	Picatinny Ars.	N	F	--	627	--	--	12/27/2000
NM	Cannon AFB	Clovis	N	N	46	46	[6.1]	[Y]	12/2000
NM	Ft. Wingate Depot	Gallup	Y	N	--	2860	--	2790	07/2000
NM	Holloman AFB	Alamogordo	N	N	--	40	16000	Y	03/1999
NM	Kirtland AFB	Albuquerque	N	N	--	--	--	50500	02/2001
NM	Melrose AF Bombing Range	Clovis	N	N	41	41	--	--	04/2001
NM	White Sands Missile Range (USArmy) ²	Las Cruces	N	N	--	21000	--	--	04/1999
OH	Wright-Patterson AFB (UCMR)	Dayton	N	F	17	--	--	--	02/2004
OK	McAlester Army Ammunition Plant ^{3, 4}	McAlester	N	N	--	--	[Y]	--	08/2002

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State	Facility/Site Name	City	BRAC	NPL	DW Conc (ppb)	GW Conc (ppb)	SW Conc (ppb)	Soil Contam	Initial Detection Date *
OR	Navy Boardman Bombing Range	Boardman	N	N	--	4	--	--	06/2003
OR	Umatilla Ammunition Demolition Area	Hermiston	Y	F	--	10	--	--	05/2001
SC	Shaw AFB - Poinsett Range ³	Sumter	N	N	--	[8.4]	--	--	2001
SD	Badlands Bombing Range	Pine Ridge	N	N	--	1	--	--	05/2003
TX	Lone Star Army Ammunition Plant	Texarkana	N	F	--	23	6	157 (soil) 186 (sed)	07/2001
TX	Longhorn Army Ammunition Plant ²	Karnack	N	F	--	203000	11000	163000	02/1998
TX	McGregor Naval Weapons Industrial Reserve Plant (NWIRP) ³	McGregor	N	N	--	91000	[Y]	Y	05/1998
TX	Red River Army Depot ³	Texarkana	Y	N	--	7	417	160	11/1999
TX	Camp Bullis ^{3,5}	San Antonio	N	N	--	345 - DOD 424 - TCEQ	--	--	08/2001
UT	Hill AFB ³	Ogden	N	F	[Y]	70	--	[Y]	05/1998
UT	Wendover Air Field	Wendover	N	N	--	--	--	1200	02/2004
WA	Camp Bonneville	Vancouver	Y	N	--	250	--	Y	2001
WV	Alliant Tech; Naval Ordnance, Allegheny Ballistics Lab. ²	Rocket Center	N	F	--	34900	400	880 (soil) 2500 (subsoil) 190 (sed)	1999

* - EPA was not able to obtain detection for several facilities as is denoted by the "n/a." All of the detection dates for these facilities were obtained from a DOD response to inquiries from Senators Boxer and Feinstein as is denoted by a "[]" and detailed in the legend above.

Footnotes:	1 - Source of contamination believed to have originated from adjacent Boeing Test Site at Rancho Cordova
	2 = 1998 Department of Defense Information Request

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State	Facility/Site Name	City	BRAC	NPL	DW Conc (ppb)	GW Conc (ppb)	SW Conc (ppb)	Soil Contam	Initial Detection Date *
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3 = Site info. was obtained from a DOD response to inquiries from Senators Boxer, Feinstein and Reid sent on 10/7/03

4 =Perchlorate was detected at McAlester in one sample at 0.6 ppb. However, this detection was a "J" value, meaning it was an unvalidated sample.

5 = TCEQ - Texas Commission on Environmental Quality

Sources:	I. Region 9 Memo, May 1998; Kerr McGee's 104(e) Response II. American Pacific Non -CBI 104(e) response III. U.S. EPA Regions 1, 3, 4, 6, 7, 9, 10 IV. California Department of Health Services V. Arizona Department of Environmental Quality VI. New Mexico Environmental Department VII. Texas Commission of Environmental Quality VIII. Utah Department of Environmental Quality IX. West Virginia Division of Environmental Protection X. Suffolk County, New York, Department of Health Services XI. US Department of Energy XII. UCMR
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Question 6

6. Is the EPA aware of any states that are seeking to take samples at DOD facilities for perchlorate or requesting that DOD take such samples? If so, please identify the state and facility.

EPA Region	State	Facility Name	Nature of Request
2	NJ	Picatinny Arsenal	The New Jersey Department of Environmental Protection (NJDEP) has requested that Picatinny Arsenal sample for perchlorate in groundwater on several occasions. Picatinny is sampling at 5 sites and is engaged with NJDEP.
2	PR	Atlantic Fleet Weapons Training Facility - Vieques	Discussions between technical staff from EPA and the Environmental Quality Board of Puerto Rico have discussed the need for perchlorate sampling once the site is placed on the NPL and the remedial investigation has begun.
3	MD	Aberdeen Proving Ground/Edgewood	Sampling has been requested by MDE. APG is conducting sampling above and beyond what MDE and EPA Region 3 have requested. APG is sharing information with EPA, MDE and local stakeholders.
4	AL	Redstone Army Arsenal	In 2003, the Alabama Dept. of Environmental Management (ADEM) and Redstone Arsenal representatives discussed various ADEM proposals for perchlorate sampling beyond that which is being conducted under the Redstone Installation Restoration Program. No agreements were reached between the State and the Army. Redstone continues to conduct perchlorate sampling and treatability studies under EPA approved work plans.
4	AL	NASA Marshall Space Flight Center (at Redstone)	In 2001, ADEM requested that NASA MSFC sample for perchlorate in groundwater at selected locations. In response, MSFC sampled for perchlorate in the fall of 2003 and has pledged to conduct semi-annual groundwater monitoring at selected locations to be negotiated with EPA and ADEM at the Tier I partnering team level.
4	AL	Anniston Army Depot	Currently ADEM is requesting perchlorate samples from locations to be determined at the Tier I partnering team level.
8	UT	Tooele Army Depot	The State of Utah has requested one sample from Tooele Army Depot North near an open burning/open detonation are. The Army plans to conduct sampling related to this area sometime in the spring of 2004.
8	UT	Hill AFB	The State of Utah submitted a letter to Hill AFB in 2003 requesting further perchlorate sampling at appropriate areas throughout the Base.

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EPA Region	State	Facility Name	Nature of Request
10	OR	Navy Boardman Bombing Range	Oregon DEQ has requested the Navy sample 11 existing on-range wells for perchlorate, due to the off-site detection of perchlorate in 3 groundwater wells by Oregon DEQ in June 2003.

Question 7

7. Is the EPA seeking to take samples itself at any DOD facility or asking DOD to sample at any facility for perchlorate or other constituents of military munitions? If so, please identify the facility and the circumstances.

The DOD Components are implementing DOD’s November 2003 Perchlorate Sampling Guidance which recognizes the need to identify perchlorate occurrences. EPA has also been informed that the Army and the Formerly Used Defense Sites (FUDS) programs, through the Army Environmental Center (AEC), are developing comprehensive accounts of when perchlorate first came to be used by the military and in which munitions. The Services are generally coordinating with the regulatory agencies on sampling activities. Where there have been disagreements, issues have been resolved or are in the process of being resolved.

EPA Region	Facility Name	Nature of Request
2	Picatinny Arsenal, NJ	EPA has requested that Picatinny sample for perchlorate and other relevant explosive constituents at facilities where the compounds were used. Picatinny is in the process of sampling at 5 sites in coordination with EPA, NJDEP and local stakeholders.
2	Atlantic Fleet Weapons Training Facility – Vieques, PR	Once the site is listed on the NPL and the Operable Units are all identified, EPA will determine the sites where perchlorate will be sampled.
3	Aberdeen Proving Ground/Edgewood, MD	EPA is seeking samples at APG. APG is collecting samples at various sites and is engaging EPA Region 3, MDE and local stakeholders
4	Redstone Army Arsenal, AL	EPA is continuing to request perchlorate sampling, Redstone continues to comply with these requests.
4	NASA Marshall Space Flight Center, AL	EPA is continuing to request perchlorate sampling, NASA MSFC continues to comply with these requests.
5	Sangamo Electric Dump/Crab Orchard National Wildlife Refuge, IL	Under the terms of an Administrative Order by Consent signed between General Dynamics Ordnance and Tactical Systems Inc. (GDOTS), U.S. EPA, DOI and Illinois EPA, GDOTS, as the respondent, is in the process of conducting a Remedial Investigation/Feasibility study at the Crab Orchard Site. This investigation includes taking samples at the site for perchlorate contamination.
5	Chanute AFB , IL	EPA Region 5 is continuing to work with Air Force Real Property Agency (AFRPA) to have the AF collect samples as part of the ongoing Remedial Investigation of the site.
5	Savanna Army Depot Activity (SVDA), IL	EPA Region 5 supports and encourages further sampling for perchlorate at the SVDA site by the US. Army.
5	Jefferson Proving Ground (JPG), IN	EPA Region 5 has asked the Army to sample for perchlorate at JPG on several occasions. The Army’s response to this request was “No sampling for perchlorate will be performed at this time. DOD’s current policy pertaining to perchlorate is that unless

Question 7

EPA Region	Facility Name	Nature of Request
		there is a reasonable basis to suspect both a potential presence of perchlorate and a pathway on [an installation] where it could threaten public health then no perchlorate sampling will be done.” JPG has sampled for perchlorate under the Army’s range assessment program – as such JPG will be used to study perchlorate migration, loading, etc. The Army claims that there is no current pathway for humane exposure from perchlorate exists at JPG.
5	Wright-Patterson AFB (WPAFB), OH	EPA Region 5 recently requested that WPAFB include perchlorate as a sampling parameter in its updated Quality Assurance Project Plan (QAPP) and Contract Laboratory Procedures Scope of Work (CLP SOW) regarding Site Investigation for Building 79/95.
6	Former Oklahoma Ordnance Works, OK	EPA is planning to sample this FUDS for perchlorate.
6	Muskogee High Energy Fuel Plant, OK	EPA is planning to sample this FUDS for perchlorate.
7	Offutt AFB, OK	The area at Offutt AFB requested for perchlorate sampling was used as an open burning/open demolition area for explosives. Materials documented as having been burned/detonated in this area include: off-spec/old small arms ammunition, dynamite which had begun to “sweat”, picric acid and aircraft “starter cartridges”. However there is no complete inventory of materials burned or detonated in this area. EPA Region 7 requested a sample from one well located immediately downgradient of the OB/OD area. After initially refusing, the Air Force did conduct sampling whose results were non-detect. On this basis, EPA believes the issue has been resolved.
8	Wendover Air Force Auxiliary Air Field, UT	EPA requested that the US Army Corps of Engineers sample for perchlorate at this FUDS site which they refused to do. Records indicate that bombs, incendiary compounds, rockets, fuses, spotting charges, signals and flares were also at least stored at the site. Also, since closure of the site, the military has used the site for numerous exercises which possibly could have led to the use of similar materials during training. Sampling was recently conducted by EPA and the preliminary results indicate that perchlorate is present in the soil. These results are being forwarded to the State of Utah. The Corps has recently informed EPA and Utah that if Utah wants the Corps to sample for perchlorate, the Corps will do so.
8	Hill AFB, UT	EPA has requested further sampling at the OU5 area where perchlorate was first detected. Future sampling of select monitoring wells located off base in the city of Sunset will be conducted to confirm the distribution of perchlorate.

Question 7

EPA Region	Facility Name	Nature of Request
9	Mather AFB, CA	The AF has asked the PRP at Mather, AFB to sample several wells for perchlorate.
10	McChord AFB , WA	<p>Ft. Lewis recently provided EPA with data regarding perchlorate in munitions for 2002, EPA is currently researching historical information for Ft. Lewis due to its 100 year operational history</p> <p>Fort Lewis did conduct perchlorate sampling in the Fall of 2002. All 20 samples collected in ground water and surface water and sediments were non-detect.</p> <p>In response to EPA questions regarding past perchlorate sampling at McChord AFB, the AF stated that it "... has not tested for perchlorate at McChord AFB and has no reason to suspect that perchlorate is present in soil or groundwater as a result of DOD activities. Therefore, no sampling or testing is contemplated at this time."</p>
10	Ft. Lewis, WA	Due to the discovery of perchlorate in Lakewood, WA, EPA, the Washington Dept. of Ecology, Washington Dept. of Health and Lakewood Water District are currently developing a sampling plan for groundwater in the area. Ft. Lewis, McChord AFB and the Lakewood Water District are all within the footprint of the "Central Pierce County Aquifer." The Air Force will allow the regulators site access to conduct sampling activities.

Question 8

8. Is the EPA aware of any perchlorate contamination or contamination from other constituents of military munitions in public or private drinking water wells where a DOD facility is a possible or likely source of the contamination? If so, please identify each such circumstance.

EPA Region	Facility Name	Nature of Contamination
1	Otis ANGB/Camp Edwards/Massachusetts Military Reservation	<p>Two municipal supply wells in the Monument Beach well field in Bourne have had detections of perchlorate below 1 ppb. These wells have been taken off-line voluntarily by the water district. The Corps of Engineers has extended a water pipeline from Bourne to a previously completed regional water pipeline system to replace water from the off-line wells.</p> <p>Two private residential wells just off of the northwest corner of MMR have had perchlorate detected in them. One well has had sporadic detections below 1 ppb. The other well has had consistent detections of perchlorate at approximately 2 ppb. The Commonwealth of Massachusetts has provided bottled water to this residence since this concentration is above the advice level of 1 ppb that the Commonwealth provided to the Town of Bourne in relation to perchlorate detected in the Monument Beach supply wells.</p> <p>A community supply well (supplies a condominium complex of approximately 90 people) also just north of the Northwest Corner of MMR has been found to contain RDX contamination at a level of 0.28 ppb. This well has contained RDX above the method detection limit, but below the reporting limit for a number of years. Perchlorate was also detected in this well at a level of 0.4 ppb in August 2003. A subsequent sample indicated a level of non-detect (ND).</p>
2	Picatinny Arsenal	<p>In the early 90's the Army sampled private domestic wells located immediately beyond the southern boundary of Picatinny Arsenal. A very low level of RDX (less than 1 ppb) was detected during one round of sampling and could not be duplicated in subsequent sampling. Nevertheless, the Army extended a municipal drinking water line to the affected residences. Otherwise, perchlorate has not been detected in any drinking water wells on-site or off-site attributable to Picatinny Arsenal.</p>

Question 8

EPA Region	Facility Name	Nature of Contamination
3	Aberdeen Proving Ground/Edgewood	Perchlorate was detected in the city of Aberdeen’s Well #9 at 4.3 ppb. The Army and the City of Aberdeen have been monitoring the supply wells and the finished drinking water. Finished drinking water has never exceeded 1 ppb and is often non-detect.
3	Naval Surface Warfare Center – White Oak	One off-site residential well has been closed and placed on put on public water due to perchlorate contamination.
5	Twin Cities Army Ammunition Plant (TCAAP)	As a result of some uncertain, low levels of perchlorate measured in nearby municipal wells by the Minnesota Department of Public Health, the Minnesota Pollution Control Agency (MPCA) collected and analyzed samples from several wells on and in the vicinity of TCAAP in December 2003. That sampling effort resulted in two low level J-qualified (estimated) hits (0.060 and 0.081 ppb) at two out of a total of nine sampling locations. The 0.060 ppb hit came from one of the TCAAP boundary extraction wells. The 0.08 ppb hit came from a monitoring well at the 135 Primer/Tracer Area. MPCA will again collect samples in the spring/early summer to see if these very low values are reproduced.
6	Longhorn Army Ammunition Plant	Shreveport, LA. Unregulated Contaminant Monitoring Rule (UCMR) Detection (10 ppb, January 2001). Public Drinking Water System. Unknown source at this time. Initially, the source was believed to be from the Texas side of Caddo Lake and more specifically Longhorn Army Ammunition Plant (LHAAP) in Texas. Caddo Lake serves as a surface water supply to six Louisiana Public water supply systems. Longhorn had been using an air-stripper to remediate groundwater contaminated with organic solvents and discharging the treated groundwater into Caddo Lake. Since the treated groundwater had high levels of perchlorate (14,000 ppb), Longhorn installed a system (fluidized bed reactor) to treat the perchlorate in their discharged groundwater. Since March 2001, their discharge had been non-detect for perchlorate at 4 ppb. The Public Water System in Shreveport has not been re-sampled.
6	Deming, NM	Deming, NM. UCMR Detection (20 ppb in 2003). Public Water Supply Well. Fertilizer believed to be the source, however FUDS in the area have not been ruled out.

Question 8

EPA Region	Facility Name	Nature of Contamination
10	Ft. Lewis	Based on the currently available information, EPA believes that a former ordnance OB/OD site at McChord AFB is a possible or likely source for the perchlorate detections in the Lakewood Water District drinking water production wells, as it appears to be nearly upgradient of the Lakewood well detections. Previous detections of perchlorate were reported under the UCMR Drinking Water program in several of the Lakewood production wells at a level of 4 to 6 parts per billion in May 2002. Ft. Lewis, McChord AFB, and Lakewood Water District are within the footprint of the “Central Pierce County Aquifer” Sole Source Aquifer (SSA) designation under the Safe Drinking Water Act (SDWA). In the fall 2002, Fort Lewis collected 20 perchlorate samples in groundwater, surface water and sediments. All samples came back non-detect.
10	McChord AFB	

9. Does the EPA believe that McChord Air Force Base or Ft. Lewis, Washington, are the possible or likely sources of the perchlorate contamination detected at the Lake View Water District in Pierce County, Washington? Has the EPA submitted information requests or data surveys to McChord AFB or Ft. Lewis, Washington, in an attempt to identify the source and, if so, have McCord AFB and Ft. Lewis fully complied with and answered the information requests or data surveys?

Based on the currently available information, EPA believes that a former ordnance Open Burn/Open Detonation (OB/OD) site at McChord AFB is a possible or likely source for the perchlorate detections in the Lakewood Water District drinking water production wells, as it appears to be nearly up-gradient of the Lakewood well detections. Previous detections of perchlorate were reported under the UCMR Drinking Water program in several of the Lakewood production wells at a level of 4 to 6 parts per billion in May 2002. Ft. Lewis, McChord AFB, and Lakewood Water District are within the footprint of the "Central Pierce County Aquifer" Sole Source Aquifer (SSA) designation under the Safe Drinking Water Act (SDWA).

In October 2003, EPA sent information request letters to Ft. Lewis and McChord AFB to gain additional information on the Army's and Air Force's past use and disposal of perchlorate containing munitions and pyrotechnics. EPA has received an initial response from Ft. Lewis and McChord AFB, and we believe that additional follow up information is needed. Ft. Lewis collected perchlorate samples in groundwater, surface water and sediments in the Fall of 2002, all of which showed non-detects.

Ft. Lewis provided EPA perchlorate amounts in munitions expended in 2002, which identified 228 kilograms of perchlorate in the hundreds of thousands of munitions expended during training. Perchlorate was first tested for use in munitions in the late 1940's with widespread DOD use beginning in the 1950's. As Ft. Lewis has been in existence for about 100 years, additional information is needed related to potential perchlorate use at the facility. That information is being developed by the Army. Fort Lewis did conduct sampling in fall 2002 and all 20 perchlorate samples in ground water and surface water were non-detect.

The Air Force's response to EPA's question "Have you ever sampled for perchlorate in groundwater, soil, and/or surface water at your facility?" was: "The Air Force has not tested for perchlorate at McChord AFB and has no reason to suspect that perchlorate is present in soil or groundwater as a result of DOD activities. Therefore, no sampling or testing is contemplated at this time."

Due to concerns about the perchlorate detected in Lakewood, Washington, on January 29, 2004 the EPA Site Assessment program met with representatives of the Washington Department of Ecology, Washington Department of Health, and Lakewood Water District to develop an expanded sampling effort for perchlorate in groundwater in the area. This sampling effort will re-analyze production wells with perchlorate detections, and add additional available wells in the vicinity of the previous detections. The Air Force will support EPA's request for site access to sample as part of the EPA PA/SI effort. This sampling would be conducted in Spring of 2004.