Finding of No Significant Impact

Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

Pursuant to the Council on Environmental Quality regulations (40 *Code of Federal Regulations* [CFR] Parts 1500–1508) for implementing the procedural provisions of the National Environmental Policy Act of 1969 (42 *United States Code* 4321 et seq.) and 32 CFR Part 651 (*Environmental Analysis of Army Actions*), Fort A.P. Hill has prepared a supplemental environmental assessment (SEA) of the potential environmental and socioeconomic effects of the proposed action to relocate three demolition sites at the Explosives Ordnance Disposal (EOD) field training area to an already existing demolition range at Fort A.P. Hill, Virginia. The SEA is incorporated into this finding.

Proposed Action

The Army proposes to relocate three demolition sites (D1, D2, and D3) used for demolitions greater than 1.25 lbs. Net Explosives Weight which were originally planned for the 2,059-acre EOD field training area to a current demolition site (DS) 70A. The purpose of the proposed action is to provide unrestricted access to a future Battle Area Complex (BAX) while allowing unconstrained training for the EOD field training area. These three demolition sites would be used for basic demolition training, energetic tools training, and protective works training. The proposed relocation moves large (25 lb.) demolitions from 3.0 miles to 3.4 miles from Port Royal and 2.9 miles to 5.6 miles from Portobago Bay.

The Army has identified additional reductions in the scope of the proposed action since the SEA process began. All explosives weights for the EOD Facility now fall within a range of 0.25 lbs to 25 lbs Net Explosive Weight (NEW) with the vast majority of blasts being 0.25 lbs to 1.25 lbs (over 90%). The 50 lb NEW demolition charge originally planned for the proposed action will be eliminated. Approximately 1.5% of the total blasts will be of the largest 25 lbs size. The remainder of the blasts will fall between 1.25 lbs and 25 lbs and will also take place on D1, D2 and D3. The Army has also agreed to limit any demolitions associated with the EOD Training Facility closest to the installation's boundary (approximately 1 mile from Route 17) to 0.25 lbs Net Explosive Weight. Lastly, the Army has reduced the limit of the infrequent, nighttime (after 10 p.m.) charges to 0.25 lbs Net Explosive Weight.

Size of Charge (NEW)	Frequency (charges/year)	Usage day vs. night (10 p.m. – 7a.m.)
25 lbs	276	day
50 lbs	0	-
Total	**276**	

Alternatives Considered

The Army considered one alternative to the proposed action. This alternative could have relocated the one demolition site, D1, in direct conflict with the proposed Battle Area Complex (BAX) to Demolition Site 70A within the restricted area at Fort A.P. Hill. Demolition site 2 (D2) and D3 would remain as described in the *Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (July 2008). This alternative was, however, found not feasible and therefore not evaluated in detail in the SEA. Consistent with guidance issued by the Council on Environmental Quality, the SEA also evaluated the no action alternative.

Factors Considered In Determining That an Environmental Impact Statement Is Not Required

The SEA identified and examined potential effects of the proposed action and no action alternative on twelve areas of environmental and socioeconomic consideration: land use, aesthetics and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics, transportation, utilities, and hazardous and toxic materials. The following resource areas are among those discussed in the SEA:

- **Air Quality:** Short- and long-term minor adverse effects on air quality would be expected, primarily from non-road vehicle exhaust and fugitive dust emissions during construction and demolition activities. The proposed action would not cause or contribute to a violation of any federal, state, or local air regulation, nor would it contribute to a violation of Fort A.P. Hill's air operating permit. As per the Virginia Department of Environmental Quality, the EOD project area is located within an ozone attainment area.

- **Noise:** Short-term minor adverse and long-term beneficial effects on the noise environment would be expected with implementation of the proposed action. The short-term minor adverse would be primarily due to heavy equipment noise during construction. The long-term beneficial effects would be primarily due to the relocation of the three demolition sites (D1, D2, and D3) from an area currently without any regular noise producing activities to an already existing and operating demolition range within the interior restricted (impact) area of the installation. Also the three demolition sites would move 3.1 miles to the interior of the Installation away from the boundary.

  Due to public concerns on the effects of noise, the Installation requested that the U.S. Army Public Health Command conduct an Operational Noise Consultation, Explosive Ordnance Disposal Noise Monitoring Study at Fort A.P. Hill (attached 2010 Noise Study). The field data for the study were taken from February 4-12, 2010; the report was completed on March 8, 2010. The study supports the SEA's determination that there will be no significant impact as a result of the proposed action both in terms of noise and potential damage to historic structures.

- **Water Resources:** Short-term minor and long-term negligible and minor adverse effects on water resources would be expected within the proposed project area. Construction and operational activities could increase runoff; increase soil disturbance, erosion, and compaction; and increase sediment and pollutant loads. The proposed facilities would be sited to avoid sensitive environmental areas, including Riparian Protection Areas, to the maximum extent practicable. Wetlands and surface waters would be protected from development impacts or, where unavoidable, Fort A.P. Hill would minimize impacts to the resources by using Virginia-approved Best Management Practices, and, if necessary, adhering to all conditions of permits issued by the U.S. Corps of Engineers and VDEQ. No adverse effects on the Chesapeake Bay or the Virginia Coastal Zone Management Program would be expected. In accordance to VDEQ comments, water quality degradation will be prevented by implementing all associated permit and plan requirements in accordance with all applicable local, state, and federal laws and regulations. The Virginia Department of Health also reviewed the SEA and found that "there is no impact to public drinking water sources due to this project."

- **Biological Resources:** Long-term minor adverse effects on biological resources would be expected from implementation of the proposed action. It is anticipated that of the 42 acres in the proposed EOD demolition site area (Demo Site 70A), about 10 acres of land would be cleared for an access road and for D1 demolition pit and bunker. Sites D2 and D3 are already cleared and operating as live-fire ranges. The clearing at D1 would be expected to increase edge species of vegetation and could create favorable conditions for invasive or exotic species to establish

themselves. The sites would be monitored for invasive and exotic species of concern, however, and overall the effect on the installation's vegetation would be minor.

No population-level effects on any animal species would be expected. Wildlife species would be protected through adherence to the Fort A.P. Hill Integrated Natural Resources Management Plan, protected species management plans, and special area management plans during development and operation of the proposed EOD demolition range area. No effects on sensitive animal or plant species would be expected from implementation of the proposed action. In specific, the Virginia Department of Game and Inland Fisheries commented that state-listed threatened bald eagles in the proposed area will not likely be impacted as a result of the proposed work.

The Virginia Department of Forestry commented that the proposed project will not have a significant impact to the forest resources of the Commonwealth.

- **Cultural Resources:** No adverse effects on historic properties on, or in the vicinity of, Fort A.P. Hill would be expected as a result of implementing the proposed action. Fort A.P. Hill has executed a Programmatic Agreement with Virginia Department of Historic Resources and the Advisory Council on Historic Preservation dealing with BRAC actions at Fort A.P. Hill. This project falls under that agreement and will be handled accordingly. Additionally, the Virginia State Historic Preservation Office has concurred that the proposed action will have no adverse effects to historic properties, beyond those effects previously addressed in the Fort A.P. Hill BRAC Programmatic Agreement.

Due to the reduction of scope of this proposed action there are no new impacts and potentially fewer impacts. This reduction does not constitute new information that would require supplementation of the SEA within the meaning of 32 CFR 651.5(g). The proposed action would be expected to result in a mixture of short- and long-term minor adverse and short- and long-term minor beneficial effects on the subject environmental resources and conditions. The SEA does not identify the need for any mitigation.

Public Comment

Interested parties were invited to review and comment on the SEA and Draft FONSI from July 1, 2009 through January 11, 2010 and Notices of Availability were published on July 1, 2009 and October 8, 2009 in the *Fredericksburg Free Lance-Star* and on July 2, 2009 and October 8, 2009 in the *Caroline Progress*. Comments were also collected during a public meeting held on January 7, 2010 in Port Royal, Virginia.

The SEA and Draft FONSI were made available during the comment period on the World Wide Web at: http://www.aphill.army.mil/sites/directorates/ea.asp

Conclusion

As described above, the Army has made several reductions in scope of the proposed action, most notably that all explosives weights for EOD Training Facility now fall within a range of 0.25 lbs to 25 lbs. The Army has also agreed to limit any demolitions associated with the EOD Training Facility closest to the installation's boundary to 0.25 lbs NEW. Lastly, the Army has reduced the infrequent, nighttime charges to 0.25 lbs. NEW.

The changes described above reduce the amount of noise produced under the proposed action and do not cause any new or unforeseen environmental impacts. Therefore, these are not substantial changes in the proposed action that are relevant to environmental concerns and supplementation is not required under 32 CFR 651.5(g). Based on the SEA, it has been determined that implementation of the proposed action

would have no significant effects on the quality of the human or natural environment. Preparation of an environmental impact statement is not required prior to implementation of the proposed action.

7 May 2010

JOHN W. HAEFNER **DATE**
LTC, EN
Commanding

Comments Submitted by Town of Port Royal Public Meeting Attendees for the Supplemental EA and Responses of US Army, Fort A.P. Hill

BACKGROUND:
A Supplemental EA (SEA) was prepared in July 2009 to relocate three demo sites (D-1, D-2, D-3) to an existing demo site (70A) to facilitate operational unit access to installation ranges. Fort A.P. Hill published notice of *Draft Finding of No Significant Impact (FNSI) Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (EOD SEA) in the Fredericksburg Free-Lance Star on July 1, 2009 and October 8, 2009, and in the Caroline County Progress on July 2, 2009 and October 8, 2009. Publication of the Draft FNSI began the 30-day public comment period for environmental assessments mandated by Army Regulation 200-2, codified in 32 C.F.R. Part 651, which implements Council on Environmental Quality regulations and the National Environmental Policy Act of 1969.

Fort A.P. Hill agreed to extend the period for accepting comments for entry into the official administrative record for the EOD SEA until January 11, 2010. A Public Meeting on the Final Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosive Ordnance Disposal Field Training Area was held on January 7, 2010. The relocation further reduced noise impacts to the surrounding community. Following are the responses from Fort A.P. Hill to comments received.

Ms. Nancy Long, Town of Port Royal, Mayor of Port Royal (Comment #0001): And I had only one comment that I want to make for the record and as a mayor of Port Royal. We have been told by staff that the comments can only be made on the relocation document that is currently out. We stand that that document is part of all of the other documents. They are all part of a whole, and the town will stand on that floor, or on that soap box until we are told otherwise. Because I don't think you can evaluate just one document without looking at the other and change other things.

RESPONSE: The Army's immediate goal is to invite and respond to comments on the current EOD Supplemental Environmental Assessment. That does not mean, however, that the Army is unwilling to engage in a dialogue with the community about broader concerns. It is understand that there are issues related to the earlier decisions that moved EOD training to Fort A.P. Hill.

Mr. John Lampmann, Portobago Bay Homeowner's Association President (PBHOA) (Comment # 0002): Secondly, the BRAC decision to house all of the troops at Fort Lee, Virginia, 70 miles south of here, and bus them here to do the field training has resulted in a gross

economic disparity and the benefits to the two accrued communities. In the Fort Lee area we are talking about an impact -- these are the Army's figures -- of a half billion dollars in additional income. Jobs. We are talking about a billion dollars in additional sales revenue. This is a very good thing for Fort Lee. We don't want to be Fort Lee. We don't want to be Petersburg. We don't want to be Richmond. But the fact is that when you look at what we will get out of this, it's minimal. The largest figure I heard was, we may have 100 jobs. Well, 100 jobs in the great Scheme of things is not what Caroline County will need through time. So that's the second factor.

RESPONSE: Fort A.P. Hill has existed as a year-round military combat training center since 1941. This mission has remained consistent. BRAC 2005 accorded Fort A.P. Hill the highest military value of any Army installation in Virginia, precisely due to its ability to train the joint force. Fort A.P. Hill's value to the nation in this regard is unsurpassed and indeed represents a tremendous asset for the American taxpayer. Fort A.P. Hill is the second largest employer in Caroline County after the county's public school system and the installation's economic impact is growing every year. Fort A.P. Hill also provides many tangible, but often unrecognized, benefits and services to Caroline County. This includes providing professional fire and rescue services via hundreds of mutual aid responses and providing top quality training and live-fire facilities for local law enforcement agencies including the Caroline County Sheriff's Department. Fort A.P. Hill is committed to partnering with its neighboring localities to achieve mutually supportive progress, strengthen relationships, and enhance economic and personal well-being. As operations associated with the EOD School and the Warrior Field Training Exercise reach full capacity at the end of FY11, nearly 140 new, full-time military, civilian and contractor positions, representing an initial payroll of $3.55 million are anticipated at Fort A.P. Hill.

Mr. John Lampmann (Comment #0003, 0004)): The third factor, that raises the whole issue of how we are acquiring residential property rights over a 35,000-acre area. By acquiring those residential rights, we are capping our tax base. Now, land use being what it is, may be the deal snapshot today. That seems fine because it doesn't seem to change it today, but through time that's a serious impact on the county tax base. What that means to us, you and me, is that we would have to either give up something or pay more.

RESPONSE: Preserving open space through programs like ACUB has the long-range benefit of avoiding future costs and minimizing conflict between military operations and residential/incompatible development. Communities and counties are finding that single-family residential tax rates don't cover the costs of municipal services, community infrastructure and local schools. Independent studies show that for every $1.00 collected in taxes, residential development costs localities between $1.04 to $1.67 in services and these costs continue forever, generally increasing over time. Conversely, land preserved as open space has been documented as costing localities fewer than 50 cents in services for every $1.00 collected in taxes. (*Open Space is a Good Investment*, www.anjec.org). Land continues to be taxed at the rate established by localities and properties already in some sort of land use status prior to awarding of a conservation easement typically continue to be taxed at whatever the locality determines to be

the appropriate tax for that type of property. The referenced 35,000 acre area is simply an area where easement purchases may be considered and they are based on existing noise contours. Fort A.P. Hill will continue to evaluate its ACUB program and where emphasis should be provided as it strives to work compatibly with neighboring landowners and localities.

Mr. John Lampmann (Comment #0005,#0006), Vivian McDonald (Comment # 0021), Caroline Ervine (Comment # 0040, #0041), Michael Bohlmann (Comment # 0045.3), Carolyn Ervin (Comment # 0072) : It would be critical for our warriors that the EOD training be open-ended, robust, unfettered, able to move, expand, do whatever it needs to do to make sure our warriors are absolutely getting the best training. Is an explosive ordinance mission, a robust one that can grow and expand through a period of 25 years consistent and compatible with where Caroline County is going? What kind of capability are you going to have? Are you going to need to expand again?

RESPONSE: The EOD Field Training Complex is designed for light demolitions used for Explosives Ordnance Disposal training events. The EOD training mission meshes well with Fort A.P. Hill's mission as a regional training center. Fort A.P. Hill provides dedicated training areas for EOD training; these dedicated training areas provide excellent flexibility for EOD training requirements. Fort A.P. Hill's training range capacity will enable multiple teams and elements to conduct EOD training procedures simultaneously; this will improve training efficiency and effectiveness. Any future proposed expansion of training will be subject to the requirements (including alternatives analysis, public involvement) of the National Environmental Policy Act (NEPA) and its implementing regulations.

Mr. John Lampmann (Comment #0007), Mr. Jim Heimbach (Comment #0008, 0009): Our primary concern comes -- is that we have seen some comment about the smallest explosives. We have seen some analysis of the largest explosives, but for 90 percent of the explosives, 23,000 a year, explosives that will be along our border, there is no analysis after three environmental assessments. There is inconsistency by which the environmental impact analysis regards frequent bursts of noise in the area of 115 or more decibels as insignificant, while in other documents the Army, the Navy, the Marines, the Air Force all agree that noise of only 65 decibels or more is, in their own words, "normally incompatible" with residential land use.

RESPONSE: In the CDNL noise contours for all three NEPA assessments, inputs to the model included existing activity and all proposed EOD detonations. To give further information to the community, the Army chose to also include Peak levels for the largest charges.

The BNOISE noise model was developed to be used at all Army installations. As such, the model is very conservative in that it assumes a slight downwind in all directions. It was not developed to give an exact dBA at one pinpointed location; rather it is used to assess total noise for an area and a comprehensive evaluation. However, the Army also conducted monitoring in response to community concerns**.**

The Army's use of Peak levels (115 and 130 dBP) are in addition to the annual average noise levels that are accepted by the other services. The use of these numbers are correlated with complaint risk under adverse weather conditions. In the NEPA documents, Zone II is 62-70 CDNL and Zone III is >70 CDNL. These Noise Zone levels are in alignment with the other Services. The Army Regulation 200-1 states that noise levels above 62 CDNL are normally not recommended for noise-sensitive land uses. The Army also states that noise-sensitive land uses are NEVER recommended when levels are above 70 CDNL. For the proposed activity, the Zone III stays within Fort A.P. Hill- Zone II extends approximately 1,000 meters beyond the eastern and northern boundary near the proposed project area.

Mr. Jim Heimbach (Comment #0010, 0011, 0012, 0013, 0014, 0015, 0016, 0017, 0018), Town of Port Royal (Comment # 0221): This is all irrelevant for the simple reason that neither I nor the Army has any idea what the noise level in Port Royal or Portobago Bay or across the Rappahannock and King George County is actually going to be, because the Army has been so inattentive to legitimate concerns that it has made no effort to collect the needed information. No actual data on noise propagation from the EOD site at A.P. Hill has been collected, analyzed, or made available to the public. No actual data. No effort was made to adjust generic models to take into account topographical features, type of explosive material, elevation, vegetation, winds, noise at nighttime, and other critically important factors. Does the Army believe that the environmental impact analysis, based on generic models of untested validity at Fort A. P. Hill and including no actual data, complies with legal requirements?

RESPONSE: Fort A.P. Hill completed a noise study in Feb 2010 and several monitors were placed in Port Royal community. Results of the test are available on the Fort A.P. Hill website (www.aphill.army.mil/sites/local/).

Noise modeling is the accepted method of noise analysis used by Federal Agencies for land use planning. The BNOISE noise model was developed and based on empirical data collected at various times of the year and day in order to capture a variety of conditions and is continuously refined. As such, the model is very conservative in that it assumes a slight downwind in all directions. It was not developed to give an exact dBA at one pinpointed location; rather, it is used to assess total noise for an area and provides a comprehensive evaluation. While the Army has confidence in the model, Fort A.P. Hill agreed to and conducted a noise study in response to community concerns.

All of the appropriate type and weights of explosives were entered into the model (BNOISE). The various explosives were calculated using BNOISE to develop DNL noise contours (Zones), including nighttime charges. Actual noise monitoring can only ascertain levels at specific locations under existing propagation conditions. It cannot be used to do a comprehensive analysis of an area. Noise contours cannot be created by monitoring.

Wave lengths for low-frequency sounds are very long. Substantial elevational changes, such as mountains, are needed to generate a noticeable decrease in sound levels. For Army installations where the change in elevation is significant enough to influence the low-frequency sounds,

topographical layers are included. At Fort A.P. Hill, though there may be slight penalties, due to minor topographic variances, the "slight downwind" condition incorporated into model calculations suffices to cover this increase. Elevation changes at Fort A.P. Hill are not significant enough to influence low-frequency detonations.

Mr. Jim Heimbach (Comment # 0019), Mr. Gary Kline (Comment #32, 33), Mr. & Mrs. Marilyn & Michael Newman (Comment # 100), Mr. & Mrs. Donaldson (Comment #0108), Town of Port Royal (Comment # 0113, 0125, 0129): The Army will look even more incompetent if it claims it has fulfilled its public notice requirements. We have had one-day notice for this meeting (January 7, 2010 Public Meeting). The army did not provide effective notice to the Fort A.P. Hill area. Further in soliciting state and federal agency comment for Fort A.P. Hill SCOE field training, it omitted information it knew or should have known was critical to making comment. The notice of the public hearing is extremely short and lacking (one week from publication).

RESPONSE: In reference to the January 7th meeting, a notice announcing the meeting was placed in the Fredericksburg Free-Lance Star on 31 December. All NEPA documents are posted online through the Fort A.P. Hill website and copies were provided to the elected officials of Caroline and Essex County, and the towns of Port Royal and Bowling Green. Under Army Regulation 200-2, codified in 32 C.F.R. Part 651, there is a mandatory 30-day public comment period. Fort A.P. Hill provided notice of the public comment period in the Caroline Progress and the Fredericksburg Free Lance Star. The 30-day comment period is for public comment on the draft finding of no significant impact (FNSI) and the notice may either summarize or attach the EA (32 C.F.R. Sec. 651.35(b)). The meeting notice for the January 7, 2010 public meeting was published in both the Caroline Progress and the Fredericksburg Free Lance Star one week in advance. According to CEQ regulation 1506.6 Public Involvement, in all cases the agency shall mail notices to those who have requested it on an individual action. If you would like to be added to the NEPA mailing list to receive any future notifications of document reviews or meetings please contact the Fort A.P. Hill Environmental Office.

Town of Port Royal (Comment # 0127): FAPH has maliciously broken the "covenant" with Port Royal and its neighbors by providing misleading information and subverting the intent and purpose of Notice as required by NEPA and other laws legislated to protect citizens.

RESPONSE: The Community Covenant program is designed to foster and sustain effective state and community partnerships with the Army to improve the quality of life for Soldiers and their Families, both at their current duty stations and as they transfer to other states. It is a formal commitment of support by state and local communities to Soldiers and Families of the Army - Active, Guard and Reserve. Fort A.P. Hill appreciates the support of neighboring communities in serving our military members and their families and honors this commitment with the community.

Mr. Jim Heimbach (Comment# 0020): We ask that no further steps be taken toward the establishment of the EOD at Fort A. P. Hill until the Army has carried out actual tests of noise propagation to residential areas under realistic conditions, such tests needing to be independently observed and verified. Will the Army be required to begin the notice process over again from the beginning after test shots are completed?

RESPONSE: The Army conducted a noise study and monitoring in February 2010. Results were provided at the public meeting of April 8, 2010. Results of the test are available on the Fort A.P. Hill website (www. aphill.army.mil/sites/local/).

Ms. Vivian McDonald (Comment #0022), Ms. Jane Robinson (Comment #0044), Mr. Bruce McKechnie (Comment # 0049), Mr. Bill Wick (Comment # 0063), Ms. Della Mills (Comment # 0065), and Mr. Larry Irvin (Comment # 0086.1): What structural damage is this going to do? Long wavelength as well as short wavelength effects can affect structures. Those have not really been studied, and we are very concerned with what that will do. What impact is this going to have on our homes in and around Port Royal?

RESPONSE: Proposed EOD operations will not generate levels high enough to cause structural damage. CDNL and Unweighted Peak contours do account for both high and low frequency (wavelength).

The noise levels predicted are common around most military bases; there is no evidence of decrease in home values due to such noise levels. The proposed operations will not generate levels high enough to cause structural damage, nor be high enough to be categorized "high complaint risk". As per model results and field test verification, the Noise Zones (Zone II and III) do not extend into Portobago Bay or Port Royal.

Ms. Vivian McDonald (Comment #0023), Town of Port Royal, (Comment # 0240): Your charts are so inadequate by OSHA rules and everything, that 115 pounds, you know, of, you know, sounds, going off, how often is this going off? Data cited within SEA and EOD documents cites about 23,000 to over 25,000 or more additional explosions a significant number of which are over 25 lbs TNT. Please explain the frequency of the explosions.

RESPONSE: Please see the below table for the correct number of explosive events.

Size of Charge (NEW)	Frequency (charges/year)	Usage day vs. night (10 p.m. – 7a.m.)
25 lbs	276	day
50 lbs	0	-
Total	**276**	

Common OSHA levels are based on continuous A-weighted exposure levels which look at impact when exposures are over 85 dBA, hearing protection is required based on an 8-hour workday. For the Peak levels presented in this analysis, hearing conservation is not a concern until levels reach 140 Peak (dBP). Levels above 140 dBP will not leave Fort A.P. Hill. The CDNL noise zones calculate the number of events in addition to the loudness. The CDNL noise zones (Zone II and III) did not extend into Port Royal.

Ms. Vivian McDonald (Comment # 0024, 0026, 0027), Town of Port Royal (Comment # 0150, 0170, 0171, 0172, 0173): How many seconds apart are these going off? How much time am I going to have to brace myself before the next one comes along? How many pounds of explosive will be used, during what periods, i.e. spring, fall, summer? What type of ordnance will be used? What is the chemical composition of the ordnance, and how does that translate into poundage per season? Are there any "special" types of ordnance to be exploded, using unique substances and/or combinations of substances to create unique substances, and what is the amount?

RESPONSE: The EOD ranges at Fort A.P. Hill are designed to allow concurrent training on multiple sites. As the training is primarily scenario-based, there is no set time when explosions could occur except that they will occur during normal EOD range operating window (7:30 a.m.- 7 p.m. for day time training -- depending on when sunset occurs throughout the year and night training occurring between 7 p.m. and 6 a.m.-- again depending on when sunset and sunrise occurs). Similar training will occur year-round.

The time between detonations will vary due to many factors to ensure training realism and safety. The specific training events evolve to match the current threat and the students' progression through the program of instruction. All explosives weights for the EOD Facility now fall within a range of 0.25 lbs to 25 lbs Net Explosive Weight (NEW) with the vast majority of blasts being 0.25 lbs to 1.25 lbs (over 90%). The 50 lb NEW demolition charge originally planned for the proposed action will be eliminated. Approximately 1.5% of the total blasts will be of the largest 25 lbs size. The remainder of the blasts will fall between 1.25 lbs and 25 lbs and will also take place on D1, D2 and D3. The Army has also agreed to limit any demolitions associated with the EOD Training Facility closest to the installation’s boundary (approximately 1 mile from Route 17) to 0.25 lbs Net Explosive Weight. Lastly, the Army has reduced the limit of the infrequent, nighttime (after 10 p.m.) charges to 0.25 lbs Net Explosive Weight. Generally the type of ordnance used will be standard U.S. military demolition material which includes C4 plastic explosive, PETN based detonation cord, electric and non-electric blasting caps, TNT, time fuze, shock tube, and smokeless powder based dearmer cartridges. There are no “special” types of munitions used for EOD training.
As demonstrated during the February 2010 EOD Operational Noise Test, there is no EOD training blast which will occur at Fort A.P. Hill that would require an individual off post to have to "brace" themselves in preparation for the effects. EOD Training Division will conduct five separate courses of instruction with an estimated total daily student load of 540 Soldiers and an estimated total annual student load of 3,957 personnel. Approximately 30 cadre will be permanently stationed at Fort A.P. Hill consisting of military, civilian, and contractor personnel.

Ms. Vivian McDonald (Comment # 0025), Mr. Boyd Wisdom (#0031), Ms. Caroline Ervin (#0042), Ms. Paula Williams (Comment #0067), Ms. Carolyn Ervin (Comment #0073) … Because the people have brought out claims and they've been kicked around and kicked around to somebody else. And I don't think any of them have been paid yet. I would like to see a proper resolution of those claims. I'm wondering as time goes on if we continue to have damage and this plan goes forth, are people supposed to make it a part of their everyday life to continue to file claims month after month? Are we supposed to file one every quarter, you know, for additional damages? Because this is the response I have gotten. You need a central command point that can receive and settle all property damages in an efficient and timely manner.

RESPONSE: All noise reports are handled through the Fort A.P. Hill Public Affairs Office at: 804-633-8324. The Army claims process is handled through the Fort Belvoir Office of the Staff Judge Advocate. Claims arising from range activities by other military services are handled by those services.

Ms. Vivian McDonald (Comment #0028), Town of Port Royal (Comment # 0209, 0210): So I would like to know how much is this going to bring -- how much more nerve damage is this going to cause to my inner ears to cause me to lose even more of my hearing and my eyesight? What should citizens impacted by the noise do to protect themselves? While the Army plans to provide noise protection for Army personnel who will be exposed for only a few days, it dismisses as insignificant the impact on civilians who will be exposed to years or even decades.

RESPONSE: Noise levels below 140 dB Peak (impulsive) are not a health hazard. The EOD training will not generate these levels off post. Common OSHA levels are based on continuous A-weighted exposure levels which look at impact when exposures are over 85 dBA, hearing protection is required based on an 8-hour workday. For the Peak levels presented in this analysis, hearing conservation is not a concern until levels reach 140 Peak (dBP). Levels above 140 dBP will not leave Fort A.P. Hill.

Ms. Vivian McDonald (Comment #0029), Ms. Jackie George (Comment #0068): Because this is going directly right across the street from my house, and I want to know if any -- if any – how come nobody sat up or put up one of those sound monitors in my front yard? Do you think we could get as residents, a monitor? Let us -- if we have to rent a monitor from you for us to monitor the noise

RESPONSE: Fort AP Hill completed a noise study in February 2010 and a monitor was placed at this property.

Mr. Boyd Wisdom (Comment # 0030), Mr. & Mrs. Marilyn & Michael Newman (Comment # 0101), Town of Port Royal (Comment # 0191, 0213): But there has been mention tonight the use of possibly some berms to redirect the noise and to deaden the noise and

transmission. That's never been in any of the E.P.A. analyses that I read earlier, I mean, the assessments. Because when we asked that question two or three years ago, we were told it was out of the question, not enough money, no funds for it. Fort A.P. Hill does nothing to reduce or even attempt to ameliorate noise or vibration complaints from the public

RESPONSE: Demolition activity generates low-frequency sounds which would not be mitigated by berms. Fort A.P. Hill has an active noise monitoring program which includes identifying weather conditions which may be conducive to noise propagation. Noise levels are also recorded and used in the decision process.

Mr. Rudy Rodriguez (Comment # 0034), Mr. & Mrs. Marilyn & Michael Newman (Comment # 0087): I live in, like I said, Portobago Bay Estates. The community that's located approximately a mile and a half from some of your proposed EOD sites, and we seem to have been in your earlier plans, the ghost community, because we didn't exist on any of your maps. We seem to have been conveniently ignored in any reference to land use adjacent to A. P. Hill that was already platted as residential communities. Why was the Portobago Bay subdivision included in the draft environmental impact study? Why was the Portobago Bay subdivision not included in the approved environmental impact study? Why were there no public hearings with area residents when the environmental impact studies were being developed?

RESPONSE: Portobago Bay was not annotated on the maps because only incorporated localities such as Port Royal and Bowling Green were shown on any area maps. Standard area maps in a GIS format were used as the basis of the EIS/EA maps. Up until the community expressed its desire to be added to maps, only incorporated towns were included. The Portobago Bay community was specifically delineated in the February 2010 noise study. Your concern will be considered in the preparation of future maps. The first public meeting regarding the EIS was October 26, 2006. Public notices were published in the Federal Register, Fredericksburg Free Lance-Star, and Caroline Progress in accordance with CEQ regulation 1506.6 Public Involvement.

Mr. Rudy Rodriguez (Comment #0038): What's the risk of a disastrous situation requiring fire rescue, personnel, health care facilities, if something disastrous were to occur during the transport phase or the training activities at A. P. Hill where the nearest hospital locations are Fredericksburg?

RESPONSE: The risk of a “disastrous” accident occurring is very minimal, however, if one did occur we (Fort A.P. Hill and Caroline County) have signed Mutual Aid agreements in which Fort A.P. Hill Fire & EMS would respond on and off the Installation with fire rescue and ALS EMS resources to include a full HazMat technician team, normal fire trucks, a “special” fire truck which is four wheel drive, pump and roll, has full foam capabilities with roof and bumper turrets, and ambulances that are fully ALS capable with paramedics. There are processes in place which manage air evacuation casualties via Life Evac or AirCare to Mary Washington Hospital (a level 2 trauma center) or to MCV/VCU (a level 1 trauma center). The air evac

helicopters can get to an area in less than ten (10) minutes with a transport time of ten (10) minutes to either hospital. The new hospital in Spotsylvania County is also expected to add new capability that is slightly closer to Fort A.P. Hill.

Mr. Rudy Rodriguez (Comment #0039): Your maps say that when bad weather, extreme situations occur, that training will be canceled. Is that really going to happen or are you going to be faced with the prospect, the need to conduct training even in adverse weather situations? We'd like some guarantees on that aspect of it. That's when the worst noise profiles occur with inversions, nighttime, overcast skies, foggy conditions, dense air. What's the reality of the situation as it pertains to that?

RESPONSE: Restricting training due to weather is a Command responsibility. The Commander must conduct a risk assessment based on a variety of conditions that increase the risks to military members and others training on the installation. Usually in extreme adverse weather training is cancelled because the risk of accident increases beyond the ability to effectively treat and evacuate a Soldier. In a school setting, the educational value of learning and retention of skills decreases in value as the risk and exposure to adverse conditions increase. This is not true in all cases, especially for operational training where units are preparing for deployment into war zones, such as Afghanistan, where training in adverse weather is required for the climate zone.

Fort A.P. Hill has developed additional tools to determine the impact of weather on noise promulgation. These tools will be used to determine when the best times are to detonate larger blasts. When possible, adverse weather conditions will be avoided.

Ms. Mary Grace Dorsey (Comment #0043), Mr. Bruce McKechnie (Comment # 0052), Ms. Crystall Panell for Marian Mahoney (Comment # 0060), Mr. & Mrs. Marilyn & Michael Newman (Comment # 0096, 0102), Town of Port Royal (Comment # 0241): We have eagles nesting around here that are breeding, and, you know, they will be blasted out, and they will not come back. And these eagles are just beautiful; they are wonderful to watch. Their numbers are populating, and I would like to have answers on if anybody has addressed eagles that are nesting and what the bombing will do to them. Another factor to consider is the role of Portobago Bay as a wildlife sanctuary. We are home to many species of birds and animals, including nesting pairs of bald eagles. All of that will disappear if this proposal is adopted. Can the EOD training mission be located in an area where eagles and lots of other forms of wildlife do not roost, live and reproduce? Eagles are currently exposed to demolition noise levels, but at what level? How many explosions per week, month or year?

RESPONSE: Fort A.P. Hill has evaluated the impact to wildlife to include eagles and requested comments from the U.S. Fish & Wildlife Service on all documents associated with the EOD project. As stated in the January 2010 public meeting by a senior representative from the U.S. Fish & Wildlife Service Rappahannock River Valley Refuge, the agency has determined the EOD project will not have a significant impact to fish and wildlife species.

Based on class loads, no more than 17,975 demolitions are projected annually. The vast majority of these, approximately 90 percent, are 1.25 lbs of explosive or smaller. The daily and monthly frequencies of charges are variable and a function of course student loads; as general comment, courses are dispersed fairly evenly throughout the year.

Mr. Scott Hagen, (Comment # 0045), Mr. & Mrs. Les & Karen Bell (Comment # 0086): Fort Lee was designated as a site of the OCNS presumably because that facility and its environment can support such activity. In May 2009 Major General Vincent Bolls described the move from Aberdeen and called Fort Lee a whole new campus for a whole new era. For decades the area around Fort Lee has made physical accommodations for the many varied activities at the Fort. The community benefited fiscally for more than 7,000 service men and women, the families stationed there around Fort Lee. Under this proposal this same economic benefit would not be available to Port Royal or to the Caroline County communities. Is it true that this site was originally planned for Fort Lee near Petersburg, but was moved to A.P. Hill because of the effect of noise on communities located near to Fort Lee?

RESPONSE: According to the Record of Decision for the 2007 *Final Environmental Impact Statement Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia* all Combat Service Support Training will be located at Fort Lee with warrior field training located at Fort A.P. Hill This decision was based on Fort A.P. Hill's proximity to Fort Lee and its suitable training lands and schedule availability. As operations associated with the EOD School and the Warrior Field Training Exercise reach full capacity at the end of FY11, nearly 140 new, full-time military, civilian and contractor positions, representing an initial payroll of $3.55 million are anticipated at Fort A.P. Hill.

Mr. Walt Kiwall (Comment # 0045.1), Ms. Crystal Pannell for Marian Mahoney (Comment #0061), Mr. & Mrs. Stephen & Christine Meehan (Comment # 0079), Mr. & Mrs. Fred & Crystal Pannell (Comment # 0083): The concerns of a lot of people in this room, obviously, it's the quality of life and the noise, but having a significant impact on the major asset owned by nearly everybody in this room, and some of the families have been here for hundreds of years. There needs to be some greater consideration for that quality of life. Most of us have our life savings invested in our homes. If they become worthless, what are we to do? Our property values would plummet, and the structural damage to our homes would be extensive. How are we to be compensated?

RESPONSE: Fort A.P. Hill has existed as a year-round military combat training center since 1941 and has built a reputation for delivering the best training and support to be had anywhere for American military forces.

Portobago Bay would not be in a Noise Zone considered incompatible with residential use. The noise levels predicted are common around military bases and there has been no evidence of

decrease in home values due to this. Home values are depressed throughout the American economy in recent years. Noise levels will not be loud enough to cause damage.

Appropriate processes exist for addressing significant changes in the installation mission, to include detailed noise assessments as well as other environmental factors. The Department of Defense follows a very structured claims process. Claims related to allegations of damage by training of Army units are handled by the Office of the Staff Judge Advocate at Fort Belvoir.

Mr. Michael Bohlmann (Comment 0045.2): You're not taking into account impulse, frequencies. So, I would submit to you that those lines you got there from a common sense engineering perspective are wrong. Because if you can make the curtains in my window blow through and make the treetops move, man, forget the decibels. I'm not going to get into the decibel argument, because I'm not a decibel weenie. I want to get into the impulse and the frequency that's going on. Because, man, you have missed the mark if you think it's only decibels, because it's not.

RESPONSE: The concern in this comment was the shock wave from the MICLIC detonation in February 2009. The proposed EOD actions would not use charge weights above 25 lbs; a MICLIC is equivalent to 350 lbs. Predicted Peak noise levels for EOD activity are significantly lower and do not apply to this proposed action.

Mr. Bruce McKechnie (Comment # 0046): First, the facts as I understand them to be are as follows: Fort A.P. Hill was created before the Portobago Bay subdivision was created. And from and after the time Fort A.P. Hill was created up until the present date there has never been a substantial increase either in the noise levels or frequency of explosions detonated on the Fort.

RESPONSE: Fort A.P. Hill was created in 1941 and the training volume and activity has increased and decreased based on war fighter doctrine, weapons systems and the national defense posture. The current posture as a nation at war and doctrine employed to exploit our agility and mobility has resulted in a great need for Range Modernization based on new weapon systems and training tactics. Static training is no longer sufficient to meet the needs of today's warriors. Fort A.P. hill has traditionally hosted Infantry, Tank, Artillery and Engineer Training Operations. Significant numbers of combat units are stationed in the mid-Atlantic region. This results in the need for an increase in training based on evolving training doctrine and combat related skills which include Urban Warfare and Defeat of Improvised Explosive Devices. Deployment scenarios are also changing. In the past, once a unit deployed they stayed gone for "the duration plus 6 months." Today, combat rotations vary to limit the exposure of today's combat forces, and to allow them time to "reset," which also requires that pre-deployment skills are refreshed prior to going back into combat. This has resulted in a significant increase in training volume and leveling that training year-round over the past 8 years.

Mr. Bruce McKechnie (Comment #0047, 0053, 0054): Fort A. P. Hill knew or should have known about the creation of the Portobago Bay subdivision at the time the subdivision was first

proposed and later approved by Caroline County approximately, I think its 40 years ago. At the time the Portobago Bay subdivision was approved for the construction of high-end, single-family residences, Fort A. P. Hill raised no objection to the subdivision's creation and/or approval. Fort A. P. Hill and the residents of Portobago Bay are subject to an implied contract which the Fort wishes to unilaterally breach. This implied contract has arisen from the actions and omissions of the two parties over the past 40 years. When the subdivision was first proposed during the subdivision approval process with Caroline County, Fort A. P. Hill was given notice and an opportunity to be heard as to whether it would object to the formation of such a subdivision. No such objection was made. To our knowledge, the Fort has been a considerate neighbor these past forty years, so much so that the residents of Portobago Bay are entitled to rely upon the Fort's past relationship to determine the relationship it will have from them in the future. In other words, it was Fort A. P. Hill's responsibility 40 years ago to subject the subdivision to warnings recorded in the land records affecting each and every lot within the subdivision that life may at some time in the future become unbearable because of activities within the Fort. Having not done so in the past, prevents the Fort from now saying that it has the right to unilaterally impose an atmosphere of unbearable noise on the residents of Portobago (Bay).

RESPONSE: At that time, it was not standard practice nor were protocols in place for the Army to be able to formally comment on proposed zoning actions within neighboring localities. Fort A.P. Hill now has an agreement with Caroline County whereby rezoning proposals are provided to the installation for review and comment. The Department of Defense elevated awareness of the issues associated with incompatible development in the late 1990s. It can be stated almost without question that had this awareness been in place at the time of the proposed Portobago Bay zoning the Army would have raised serious concern relative to its location and historic mission activities that have generated noise throughout that region since 1941.

Fort A.P. Hill has no record of being provided an opportunity to comment on the proposal. The current cooperative arrangement has only existed for approximately the past 10 years. Concurrent with the emergence of the partnership between the Installation and Caroline County to address zoning and noise issues, disclosure notices are now required in deeds.

Mr. Bruce McKechnie (Comment # 0048), Ms. Della Mills (Comment #0064): The proposed EOD mission planned for Fort A.P. Hill will increase substantially the noise levels and frequency of explosions detonated at the Fort. What's this going to do to his (grandson) hearing? What I found out is hearing damage starts at 85 decibels. We are looking at 100, 115 for some of these explosions. And how often? So is he going to grow up with damaged hearing from this?

RESPONSE: The EIS recognized there would be a slight adverse impact to the noise environment. However, the increase would not be termed significant using the noise assessment methodology recognized by all federal agencies and also is the methodology recommended by ANSI (American National Standards Institute).

Proposed night activity will not be loud enough to awaken people. For unweighted peak levels as described in NEPA documents, hearing would not be damaged at levels below 140 dBP. This proposed action would not generate continuous noise of 85 dBA which the comments refer to.

Mr. Bruce Mckechnie (Comment #0050, 0051): Given the fact that current explosions have caused house foundations to crack, what assurance do any of the residents have that the increased frequency in decibel levels of such explosions won't adversely affect the water table? It is my understanding that the wells in our subdivision come from water that comes from the Spotsylvania County, and they run directly underneath the Fort. You start off detonating larger – larger bombs and more frequently, you could very well cause these wells to dry up.

RESPONSE: Based on the review by the Virginia Department of Health "there is no impact to public drinking water sources due to this project".

Mr. Guy Mattox (Comment # 0054.1), Mr. Larry Irvin (Comment # 0086.2), Ms. Patricia Posner (Comment # 0107.2): On a Sunday morning in February 2009, a member of our church went to the church building, opened it, set the thermostats for our use that Sunday morning sometime between 8:30 -- excuse me, between 9:30 and 10:00 a.m. There was a blast on the base. The shockwave entered one of our windows, blasted glass into the floor, the shock wave bounced off of our balcony, exited the building, destroyed the window, dropped it into the driveway outside. This was in the wintertime. It was necessary that we make arrangements to replace the window in order to properly heat our building. I called the duty officer, a female, at A. P. Hill military reservation that morning upon discovering the damage. She sent representatives from A. P. Hill to our church building. Within ten days they took photographs, made an investigation. We provided all required paperwork. We learned later that that paperwork was submitted to Fort Belvoir. Fort Belvoir sent representatives to investigate despite the investigation already completed by A. P. Hill. We later learned from Fort Belvoir that the explosive devices were Marine Corps, and therefore, they bumped the paperwork to Quantico. The Marine Corps is a part of the United States Navy. At the current time our paperwork is somewhere in Norfolk. I submit to you gentlemen, that somehow there should be some means to expedite the correction of damage done by your explosives, which are going to increase, according to what you are suggesting. We are concerned about quick compensation by military for damages; Government compensation for loss of property values.

RESPONSE: Navy claims officials have forwarded a proposed settlement agreement and are awaiting a response from Enon Baptist Church. The Department of Defense follows a very structured claims process. Claims against the Army are handled by the Office of the Staff Judge Advocate (SJA) at Fort Belvoir. Fort A.P. Hill has communicated with claims processing officials regarding timelier processing. A clearly defined process is being articulated to facilitate better understanding. To contact the SJA office claims section, call 703.805.4159 or 703.805.4377**.**

Ms. Sylvia Storke (Comment # 0107.3): Concern over potential damage to sensitive laboratory equipment due to vibrations from blasts.

RESPONSE: Proposed EOD operations will not generate levels high enough to cause structural damage. CDNL and Unweighted Peak contours do account for both high and low frequency (wavelength).

The proposed operations will not generate levels high enough to cause structural damage, nor be high enough to be categorized "high complaint risk". As per model results and field test verification, the Noise Zones do not extend into Port Royal.

Mr. & Mrs. Ed Donalson (Comment # 0055, 0056, 0110, 0111): I would like to know how much sunk cost has the Fort put into this activity to date and what's your expected cost this fiscal year? About a year and a half, two years ago when I got some of your reports, I wrote a letter to the Hill asking that I could see your cost of benefit analysis. The answer came back it's classified. I found that pretty amazing given the fact that I -- in a cost of benefit analysis you don't get into performances. Performances are classified in a military sense. Therefore, I request if the cost of benefit analysis was done, what is the classification of the report, the date of the report, the review process of the report, the approval process of the report, the approving authority of the report, the assumptions made in the report, the math models used in the report to support the analysis? Was the math model VB and A?

RESPONSE: Cost Benefit Analysis (CBA) is currently defined within the Training and Doctrine Command (TRADOC) (CASCOM's higher headquarters) as, "A structured methodology that determines the costs and benefits of one or more alternatives and compares them in order to identify the best alternative to achieve a stated goal or objective." A structured process to recommend and make major decisions is a sound business practice. In evaluating the location of the EOD training, just such a structured, deliberate process was used by the leadership of CASCOM when determining its EOD siting recommendation. The CASCOM leadership recommended that the best location for the Ordnance School's EOD training (given the requirements of the BRAC decisions) was clearly Fort A.P. Hill. Costs were considered, but were not the most heavily weighted criteria. As in most training, the Army must consider the effectiveness of the training and the safety of the students and cadre ahead of a purely financial consideration. Approximately 75 percent of the combat casualties in Iraq and Afghanistan are as a result of IEDs, which makes the effectiveness of the EOD Soldier's training paramount. One of the most important aspects of the EOD training program is having a large enough training area to properly and safely conduct EOD training. Fort A.P. Hill provides the necessary space to execute an effective training program with a wide variety of training scenarios (which are routinely updated to meet current threats in theater). Fort Pickett was evaluated as an option to Fort A.P. Hill. However, due to its priority of supporting National Guard units, it could not dedicate the necessary training areas to adequately support the year-round training mission of the Ordnance School's EOD training department.

Mr. Ed Donalson (Comment #0057): My last point is your maps. I would like to see a map that is complete and good enough for a layman to read. Show Caroline County, the lines of Caroline County, the routes, 17, 301, and on those show the areas that you already purchased from people, their agreement not to develop their land, which basically extends your boundaries. And on those -- I heard the number 35,000 acres. Those plots of land around the Fort, it would be nice to know how much you have paid for those already.

RESPONSE: Future maps will include an aerial view with main transportation routes highlighted. The conservation easements purchased via the ACUB program do not extend the Installation boundary because the land is not owned by the Army. The land still belongs to the land owner. The price for ACUB parcels can be found in the tax records at either the Caroline or Essex Courthouses.

Mr. Ed Donalson (Comment #0058, 0059), Town of Port Royal (Comment # 0169, 0179, 0190, 0194): I realize these curves might be arbitrary, but why don't you put, instead of 25- and 50-pound circles, also put the 100-pound circle on there? But just for comparison what would a blast circle from 100-pound detonation look like relative to how you developed the 25 and 50? The M110 NZIII noise contour stands in direct contrast to the Noise Contours presented in the EA's and EIS. No explanation or formula provided to properly understand the term CDNL. CDNL contours for the combined activities, noise zone III would not extend beyond the borders of the installation. Figures 3-3 and 3-4 clearly illustrate noise of 115db extending beyond Fort A.P. Hill.

RESPONSE: The noise modeling included all existing and proposed activities in the development of the Noise Zones. The 25 and 50 lb were depicted because they were representative of the proposed operations. The EOD SEA moves the proposed operations more internal to the installation, to existing Demolition Site 70A, a location that has often supported up to 100-pound detonations.

The M110 noise contours referred to another EA for an unrelated project and were based on 6,000 day and 6,000 night artillery simulators. Though the charge weight of the simulators is small, because DNL calculation penalizes nighttime activity by 10 dB, the 6,000 nighttime simulators are calculated as if there were 60,000 daytime simulators for a total of 66,000. The simulators, like the ones mentioned above, will not be used in the SEA proposed action.

DNL- In simple terms, it is the day-night average sound level. It takes into account all operations (large caliber weapons firing and impact noise and demolition) and then calculates in a 10 dB penalty for night time (10 pm-7am) activity. The day-night level (DNL) is computed from the equivalent sound levels (LEQ) for the period by combining the acoustic energy during the daytime period and nighttime periods. Ten decibels is added to each nighttime LEQ before summing. The total acoustic energy is divided by the number of LEQs to obtain the 'average' level. The logarithm of this 'average' level is multiplied by 10 to obtain the DNL. This process is shown with the following equations.

DNL = 10 log10 (1/N)(10(L1/10) + 10(L2/10) + ... + 10(La+10)/10 + 10(Lb+10)/10 + ... + 10(LN+10)/10)

Figures 3-3 and 3-4 are depictions of the individual Peak levels, not CDNL, for the detonations that are being proposed to move to Range 70A. Since the number of 25 and 50 lb charges that were proposed were only a small portion of the total Net Explosive Weight for the proposed EOD training, the change in the CDNL contours would have been very hard to distinguish. It was hoped that by depicting the Peak levels in Figure 3-3 and 3-4, the decrease in levels that would be received in Portobago Bay from the 25 and 50 lb charges would be easier to distinguish.

Ms. Crystall Panell for Marian Mahoney (Comment # 0062), Mr. & Mrs. Fred & Crystal Pannell (Comment #0085), Mr. Larry Irvin (Comment # 0086.3), Preservation Virginia & National Trust for Historic Preservation Southern Field Office (Comment # 0107.1), Elizabeth S. Wolf (Comment # 0111.1): Have you also considered the impact on the charming village of Port Royal? This unique town is on the National Register of Historic Places with many homes and buildings dated to the 17th and 18th centuries. We are concerned about the lifestyle and historic fabric of Port Royal. We request for additional and careful study.

RESPONSE: No physical damage to historic structures will result from EOD Training as all sound pressure levels from EOD training that may affect the Historic District and other historic structures will fall below federally accepted noise/vibration levels associated with such damage.

Additional documentation relative to Port Royal and other historic properties in the vicinity of the proposed EOD area has been submitted to the Virginia Department of Historic Resources. The EOD training will have no adverse effects on the lifestyle and historic fabric of Port Royal as much of the town was built after the establishment of Fort A.P. Hill. Roughly 75-percent of the structures in the Town of Port Royal were constructed between 1941 and present, including many 1940s and 1950s motels, commercial buildings, and residences, and numerous late twentieth-century houses and mobile/trailer homes. Port Royal was established as an active commercial port and has historically experienced much higher noise levels than the worst-case EOD-related noise levels that may result in the area. Specifically, the worst-case noise levels that may result from the EOD training will fall within the current allowable limits of the Caroline County noise ordinance and are historically insignificant in light of the commercial activities associated with Port Royal (such as wagon traffic on the corduroy Rolling Road, steamboat traffic on the Rappahannock River, and extensive truck and car traffic on U.S. Routes 17 and 301 and local roads) and the military activities that have been conducted at Fort A.P. Hill since 1941 (including previous engineer and demolition training at the currently proposed EOD training area).

Mr. John Davis (Comment # 0066): But I think the challenge is, is this so important to the Army that we create an ongoing battle between this community and Fort A. P. Hill when we do have places that are more suited for it?

RESPONSE: The Army evaluated potential training destinations in proximity to the source school at Fort Lee and determined Fort A.P. Hill to be the best suited to accomplish this mission. Fort A.P. Hill is committed to partnering with its neighboring localities to achieve mutually supportive progress, strengthen relationships, and enhance economic and personal well-being. The Army looks forward to productive, constructive dialogue and partnerships.

Mr. Alex Long, Town of Port Royal (Comment #0069, 0130, 0148), Mr. Ed Donalson (Comment # 0109): This is the document that was signed by the eight Commissioners and the chairman of the commission. And I shall read from the title, Commission Findings. "The commission found the capacity of Fort Lee sufficient to meet the new training requirements created by consolidating four schools onto the installation except for insufficient land and space available to conduct warrior training involving heavy weapons and explosives. The commission determined that the shortfall can be successfully mitigated by the use of nearby training sites at Fort Pickett which has sufficient acreage to support all requirements." Fact: The BRAC Commission Report states EOD field training will be held at Fort Pickett.

RESPONSE: "Commission Findings" such as the Fort Pickett "finding," do not have the force of law, unlike "Commission Recommendations," which are approved by Congress.

Fort Pickett was an active Army installation that BRAC closed in 1995, but was transferred to the Virginia National Guard. Fort Pickett was evaluated and compared against Fort A.P. Hill. Fort A.P. Hill's BRAC evaluation results were superior in all aspects. Although Fort Pickett is indicated in the findings portion of the BRAC 2005 Commission Report as a potential location for the EOD training, the installation was deemed not suitable for the EOD training requirement.

Training Doctrine Command initiated the process of reviewing sites for the EOD training. This extensive process culminated with a recommendation to use Fort A.P. Hill as the EOD training site.

Analysis determined that due to its status as a multi-use training area operated by the Commonwealth of Virginia with priorities to support National Guard training, Fort Pickett was not a suitable training site because it could not dedicate adequate training areas and ranges to EOD training requirements.

Based on Fort Pickett's established training priorities, the EOD School's training would fall after other training requirements. Specifically,

1) mobilized troops pre-deployment training for National Guard Soldiers on pre-deployment orders
2) National Guard units on Annual Training receiving an external evaluation
3) National Guard units on Annual Training cycle and
4) National Guard Inactive Duty Training Units.

Fort A.P. Hill provides the necessary training infrastructure to support the Ordnance School's EOD training mission.

Mr. Tom Ball (Comment #0070, 0071): My concern is with the southbound, on the road that leads from Smoots to White Lake. They have built ranges there that are within 100 feet of the highway. They have cleared all of the buffers down. You ride down the road and actually look at the servicemen training. When you get the north wind blowing, the Sulfur from the ammunition, it has a certain amount of Sulfur in it, and it gets in your eyes, and it makes breathing real difficult. I wish they would send some engineers or somebody like that to look at it, and get the dead trees up that's fallen in the barrier. That's supposed to be a fire lane.

RESPONSE: Thank you for bringing this to our attention. Fort A.P. Hill is looking into improving the buffer around portions of South Range Road.

Ms. Crystal Pannell for Marian Mahoney (Comment #0061), Ms. Carolyn Ervin (Comment # 0074), Mr. & Mrs Marilyn & Michael Newman (Comment # 0090, 0099): Most of us have our life savings invested in our homes. If they become worthless, what are we to do? Be forthright-does Fort A.P. Hill the US Army and/or any military, governmental, or government contractor organization plan to break the residents down as their homes and way of life are destroyed with the intent to use imminent domain to take possession of Portobago Bay subdivision properties after a period of time when property values are destroyed? What is the plan?

RESPONSE: The SEA contains the entire proposed federal action at Fort A.P. Hill, as required by NEPA. There are no other proposed actions related to EOD training at Fort A.P. Hill. The Army has conducted extensive review of community concerns raised during the public comment period and revised the proposed action to address those concerns. There is no plan to acquire property using eminent domain. Noise levels will not be loud enough to cause damage.

Mr. & Mrs. Stephen & Christine Meehan (Comment # 0075): Given that ramped up changes have occurred in the mission(s) of Fort A.P. Hill, that new proposals are being made constantly and that we have no guarantee the end of mission add ons/new missions has been reached, there is no supportable evidence that this mission will not have significant Impact when taken as a part of "actuated", "proposed", "under consideration mission" and "yet to be known ramp ups". Even if any one mission could be believed to have NO SIGNIFICANT IMPACT, the aggregate of all missions is necessary background to seek determination of NO SIGNIFICANT IMPACT.

RESPONSE: As required under NEPA and implementing regulations, Fort A.P. Hill considers cumulative effects, which are the impact on the environment resulting from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions. This analysis includes consideration of the effects of past, present,

and reasonably foreseeable future actions by federal and non-federal agencies, and private parties.

Mr. & Mrs. Stephen & Christine Meehan (Comment #0076): Please provide a list of all noise generating missions:

a. Added to Fort A.P. Hills tasks over the last five years
b. New and supposedly changed noise generating missions currently under consideration
c. Long range planning of other new and/or modified missions having proposal dates beyond the current planning, i.e. out one, two three and continuing over the next ten years.

RESPONSE: The Fort A.P. Hill website contains NEPA analyses (environmental assessments) for ongoing missions that are currently being implemented at Fort A.P. Hill. At the appropriate time, Fort A.P. Hill will prepare additional NEPA analyses for any future missions that may be assigned to it by higher headquarters. Through that scope noise modeling is completed for cumulative effects for both current and future operations. Fort A. P. Hill NEPA documents can be accessed at the following website: http://www.aphill.army.mil/sites/directorates/ea.asp.

Mr. & Mrs. Stephen & Christine Meehan (Comment # 0077): Why are our names included on Agencies and Individuals Consulted list?

RESPONSE: On October 5th, 2008, Stephan and Christie Meehan attended the public meeting regarding the expansion of the proposed 2,059 acre EOD field training area. At this meeting the request was made by the Meehan's to be added to the Fort A.P. Hill Mailing List. A draft and final copy of the Supplemental Environmental Assessment for the Relocation of three demolition sites were sent directly to the Meehans seeking comments.

Mr. & Mrs. Stephen & Christine Meehan (Comment # 0078): We cannot understand how the use of the term "no significant impact" regarding noise/vibrations is justifiable when neighbors have currently reported broken windows, pictures falling off walls, etc. If a piece of glass were to harm a child or adult or a picture falls on a person that is significant impact.

RESPONSE: While it is possible for some current training operations under rare/focusing/extreme weather conditions to cause damage, the proposed action related to the EOD training will not generate noise levels high enough to cause damage. It is important to remember that the 2010 SEA is looking at moving activities further away from the installation boundary.

Mr. & Mrs. Stephen & Christine Meehan (Comment # 0080): If No Significant Impact, then why ACUB?

RESPONSE: The ACUB is not relevant to the significance (or lack thereof) of environmental impacts of actions at and around a military installation. A primary purpose of ACUB is to protect military activities from encroachment by incompatible (nonmilitary) uses, e.g., commercial and residential development. [10 U.S.C. Sec. 2684a provides authority for ACUB].

Mr. & Mrs. Fred & Crystal Pannell (Comment # 0081, 0084): Why was the decision made to put an Explosives Ordnance Disposal training site a mile and a half from a residential community? The impact would be devastating to all. Why not move the EOD training site to an area that would be less invasive to the Port Royal Area human and animal Population???

RESPONSE: The proposed action would move the training sites to an existing demolition site within Fort A.P. Hill and further away from the installation boundary.

Mr. & Mrs. Fred & Crystal Pannell (Comment # 0082): Has the physical and mental development of the young children been considered?

RESPONSE: Please see Page 3-32, Section 3.9.1.4 titled Protection of Children.

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0088, 0091): Army purchased development rights of area farmers. Why? How does that affect Portobago Bay home owner's properties? Since development rights are purchase, what does the US Army have in store for the Portobago Bay properties? What are the logical, sensible, and cost-effective reasons for buying up these development rights?

RESPONSE: To address the encroachment concerns, Fort A.P. Hill formalized and implemented a comprehensive Army Compatible Use Buffer program to prevent incompatible development on lands adjacent to or within close proximity to Fort A.P. Hill. Implementation of this plan prevents encroachment that would disrupt, limit, or diminish training capabilities or flexibility and protect key natural habitats, ecological systems, and the associated flora and fauna. The conservation easements would prohibit incompatible development in perpetuity, while keeping the fee interest in land in private ownership and allowing for traditional land uses such as farming and forestry. Under the authority provided in Section 2811, National Defense Authorization Act of 2003, codified at 10 United States Code Sec. 2684a, Fort A.P. Hill has Cooperative Agreements with three partners, The Conservation Fund, the Trust for Public Land and The Nature Conservancy. For more information on the ACUB program, including information specific to Fort A.P. Hill, please visit the U.S. Army Environmental Center website: http://aec.army.mil/usaec/acub/index.html.

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0089): Additionally, recently US Army training was conducted on the Rappahannock River and its banks. This is a new occurrence. Why is the US Army training on the banks of the Rappahannock River?

RESPONSE: The Installation leases a boat landing on the Rappahannock River for use by military units for Engineer Float Bridging Operations for River Crossing Activities. Independent of Fort A.P. Hill approval, the U.S. Navy conducts Riverine training on the river in coordination with private landowners and local law enforcement departments. Both types of training events are required for units to conduct their wartime mission (River Operations are conducted in both Iraq & Afghanistan). The EOD School is not conducting River Operations as a part of their training.

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0092, 0093): Can the EOD training mission be located at another Army or other military base or existing explosives testing facilities that is already equipped to do large scale explosives testing and training? Why? Why not? What are the logical and sensible EOD mission related reasons why Fort A.P. Hill was selected?

RESPONSE: The 2007 BRAC EIS states in Section 1.1: "…the Army proposes use of Fort A.P. Hill to conduct combat or field and technical training, on the basis of its proximity to Fort Lee, its suitable lands, and its schedule availability."

As per the EIS **"**The BRAC Commission's recommendations realign Fort Lee by relocating specified organizations and activities to the post. The BRAC Commission made six recommendations concerning Fort Lee (see section ES.3). The BRAC Commission found the capacity of Fort Lee sufficient to meet the new training requirements, except for insufficient land and space available to conduct major field training exercises (FTX), to include the Warrior Training FTX. The Army proposes to use Fort A.P. Hill to conduct FTX and Explosive Ordnance Disposal (EOD) training, on the basis of its proximity to Fort Lee, its suitable lands, and its schedule availability. The final environmental impact statement (EIS) analyzes and documents environmental effects associated with the Army's proposals at Fort Lee and Fort A.P. Hill."

Because this decision was made in 2007, there is no effort currently under way to study locations other than Fort A.P. Hill.

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0095): Why is the US Army going into the hotel business at Fort Lee? How does this fit into BRAC and/or wise use of tax dollars, especially in today's economy? This does not protect our troops. It presents a sitting duck target for terrorism with a large number of trained troops and troops in training located in one huge location. Does this make sense?

RESPONSE: This question is outside the scope of the current SEA. The Fort Lee PAO can provide specific information on the proposed Fort Lee Lodging Facility.

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0097): Can the EOD training mission be located in an area that does not affect water quality of the Port Royal and other area water tables, multiple creeks, Portobago Bay, and the Rappahannock River?

RESPONSE: Water quality degradation will be prevented by implementing all associated permit and plan requirements in accordance with all applicable local, state, and federal laws and regulations.

Fort A.P. Hill evaluates the potential of a release or a substantial threat of a release of munitions constituents to migrate from range areas to off-range areas, at levels that may pose an unacceptable risk to human health or the environment. Qualitative and quantitative analysis protocols were developed by U.S. Center for Health Promotion and Preventive Medicine (CHPPM) and U.S. Army Corps of Engineers using the U.S. Environmental Protection Agency (EPA) systematic planning or Data Quality Objective process. Surface water, sediment, and groundwater samples are analyzed using USEPA approved methods along with Health Risk Assessment screening criteria.

Fort A.P. Hill also has a monitoring program to evaluate the water quality of the streams, ponds, and lakes within the installation. Water quality parameters that are routinely measured are dissolved oxygen, pH, conductivity, salinity, and turbidity. Fish collected from waters at Fort A.P. Hill are used as bio-indicators and are inspected for any anomalies that would indicate poor water quality. Electro-fishing surveys conducted from 1998 - present indicate water quality within lakes, ponds, and streams at Fort A.P. Hill are sufficient for supporting and sustaining aquatic life.

Water quality data for the lower Rappahannock River indicate that the watershed encompassing Caroline County meets the goals of the Clean Water Act (USACE Mobile District 2007). Mill Creek and Peumansend Creek, and their associated tributaries, are located adjacent to the proposed EOD area. Neither area identified on Virginia's 2006 303(d) list of impaired waters as having violated Virginia water quality standards (VDEQ 2008b). The VDEQ surface water quality monitoring stations closest to the proposed EOD area is on Mill Creek, near its mouth and north of U.S. Route 17 outside the installation (VDEQ 2008a).

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0098): Can the EOD training mission be located in an area that does not affect air quality or present fire danger caused by debris/sparks/etc. floating through the air into wooded subdivisions and settlements as a result of explosions into the air?

RESPONSE: The proposed EOD demolition site area is classified entirely as range land use. The area of Fort A.P. Hill with respect to the proposed action is a combined 42-acre tract of land in and around the existing DS 70A range. Since the area is currently managed as a range, mitigation and management measures such as prescribed burning, mowing, etc., are used to

minimize fire risks on the perimeters. All detonations will be conducted in a manner to minimize any potential collateral damage; explosive limits are calculated to ensure all debris is contained within the training area.

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0103, 0104, 0106), Mr. & Mrs. Fred & Crystal Pannell (Comment # 0083): Provide financial compensation for human and animal/pet physical and mental health problems caused by adverse effects from any and all EOD missions carried out on Fort A.P. Hill. Provide ways for area residents and citizens to apply for financial compensation for damages. Provide financial compensation for the destruction of a peaceful way of life. How will this be done?

RESPONSE: Fort A.P. Hill like other Army Installations would research any damage claim and would refer potential claimants to the Fort Belvoir Office of the Staff Judge Advocate Claims Section. Under statutory authority in the Federal Tort Claims Act, the Army has a formal process to adjudicate claims for compensation for property damage.

Portobago Bay would not be in a Noise Zone that is considered incompatible with residential use. The noise levels predicted are common around military bases and there has been no evidence of decrease in home values due to this. The operations proposed for EOD training are not any louder than those that have been conducted at Fort A.P. Hill since its inception.

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0105): Agree not to test at night b/w 11pm to 8 am on all days of the week and not to test at all on Sundays.

RESPONSE: In order to meet the high training demand of student and unit throughput necessary to support current and future military operations and to maintain minimum training realism standards, training iterations will have to continue to be conducted at all hours and all days of the week. However, live demolition procedures at night and weekends are reduced in number from those conducted during daylight hours and weekdays and explosive limits have recently been reduced to just 0.25 lbs for operations between 10 p.m. and 7 a.m. Furthermore, EOD training has significantly reduced the size of its blasts (in general terms, the reductions are approximately 1/2 of the original planned sizes).

Mr. & Mrs. Marilyn & Michael Newman (Comment # 0107): Make Portobago Bay subdivision a no fly zone. How will this be done?

RESPONSE: Airspace is managed by the Federal Aviation Administration. However, the FAA has designated the area South and East of RT 17 & 301 within the Installation Boundaries as Restricted Airspace (R-6601) up to 5000 feet for the vertical hazards associated with live fire and explosive training. This does not preclude air traffic from flying in the area but it is coordinated closely. Aviators often transit around R-6601 without Fort A.P. Hill knowledge by using RT 301, 17 and the river as navigation features. All aircraft are expected to maintain

1500 foot elevation above ground level in accordance with FAA regulation unless they are on an approach or departure glide path.

Ms. Deborah Clarke-Hall (Comment # 0111.2): We are concerned due to toxic impact on the environment; negative impact on human lives; negative impact to wildlife; potential damage to homes.

RESPONSE: Fort A.P. Hill coordinated with the U.S. Fish &Wildlife Service on all documents associated with the EOD project. As per analysis conducted in the SEA, "No effects on sensitive animal and plants species would be expected ..." In addition no effects would be expected from hazardous waste disposal. Based on noise analysis the proposed EOD activity would not damage homes.

Ms. Deborah Clarke-Hall (Comment # 0112): All documents dealing with EOD should be open for review and comment.

RESPONSE: In accordance with CEQ regulation 1505.6 (b), public notice and comment periods were open to the public.

Town of Port Royal (Comment # 0114, 0128): The EOD site is within 1,000 ft. of Port Royal, US 17 and the National Wildlife Refuge, 1,500 ft of 301 and 2,000 ft of John Wilkes Booth Site. The 130db NEW contour for 50 lbs actually goes across 301 and the site where John Wilkes Booth was shot and died (a national historic site).

RESPONSE: See response to Comment # 107.1 relative to Port Royal. The John Wilkes Booth Site does not include any features that may be affected by noise and lacks integrity of setting owing to its location within the median of U.S. Route 301 and the historic boundary of Fort A.P. Hill.

Town of Port Royal (Comment #0115, 0140, 0145, 0159): Throughout the report, information is either lacking specificity, missing altogether, and/or inaccurate. Analysis is poorly constructed and constructs are either absent or misplaced.

RESPONSE: All NEPA documents regarding EOD related actions are incorporated by reference and can be found on the Fort A.P. Hill website**, www.aphill.army.mil/sites/directorates/ea.asp.** In accordance with CEQ regulation 1502.21 "Incorporation by reference" states: Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action."

Mr. Rudy Rodriguez (Comment # 0035, 0036, 0037) Mr. & Mrs. Marilyn & Michael Newman (Comment # 0094), Town of Port Royal (Comment # 0116, 0117, 0118, 0119, 0123): Has there been any studies on the safety aspect of multiple buses daily coming up route 95 into our communities? What's the impact on our infrastructure, requirements, roads, traffic, and outcomes of busing this number of people to our local area? Why was Fort Pickett abandoned and Fort A.P. Hill pursued? Who initiated the change from Pickett to Fort A.P. Hill? What is the name of the attorney who approved this change? Where is a copy of the document authorizing the change? Was this a unilateral decision [abandon Pickett for pursuit of Fort A.P. Hill] made without study or documentation?

RESPONSE: On May 16, 2005, the Secretary of Defense announced the BRAC recommendations which included a recommendation to move the Ordnance School at Redstone Arsenal (RSA), Alabama, to Fort Lee. The Ordnance School at RSA is one of several schools under the Combined Arms Support Command (CASCOM) directed to consolidate at Fort Lee. The BRAC Commission found that Fort Lee had the capacity to meet the training requirements created by consolidating these four schools except for heavy weapons and explosives training. Starting in July 2005, CASCOM initiated the process of reviewing sites for the EOD training. This extensive process culminated with a recommendation to use Fort A.P. Hill as the EOD training site. CASCOM's recommendation was approved and validated by TRADOC and the Department of the Army; funding for construction was subsequently approved in 2007. Although Fort Pickett is indicated in the findings portion of the BRAC 2005 Commission Report as a potential location for the EOD training, the installation was deemed not suitable for the EOD training requirement. Analysis determined that due to its status as a multi-use training area operated by the Commonwealth of Virginia with priorities to support National Guard training, Fort Pickett was not a suitable training site. During the analysis, it was made clear to CASCOM that Fort Pickett could not dedicate adequate training areas and ranges to EOD training requirements. Based on Fort Pickett's established training priorities, the EOD School's training would fall after other training requirements. Specifically, 1) mobilized troops pre-deployment training for National Guard Soldiers on pre-deployment orders 2) National Guard units on Annual Training receiving an external evaluation 3) National Guard units on Annual Training cycle and 4) National Guard Inactive Duty Training Units. The EOD School's training mission is continuous in order to meet the combat requirement, and the EOD mission requires dedicated training area access. Fort A.P. Hill provides the necessary training infrastructure to support the Ordnance School's EOD training mission.

Transporting Soldiers from Fort Lee to any other site away from Fort Lee would be a recurring cost to the Army. Time and distance factors were considered when evaluating Fort Pickett, Fort A.P. Hill and any other possible alternatives (which there are not within a reasonable commuting distance). The time spent on a bus moving to and from Fort A.P. Hill will not negatively impact Soldier morale. Furthermore, approximately one half of EOD students will attend the training at Fort A.P. Hill in a Temporary Duty Status in which they will provide their own transportation and likely reside in nearby hotels.

Note: "Commission Findings" like the Fort Pickett indication do not have the force of law as do "Commission Recommendations," which are approved by Congress and The President. The

Army has met the requirements pursuant to the Council of Environmental Quality Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) for implementing the procedural provisions of the National Policy Act of 1969 and 32 CFR Part 651(Environmental Analysis of Army Actions).

Town of Port Royal (Comment # 0120): How does a lawyer have the authority to unilaterally overturn BRAC?

RESPONSE: As indicated above, the BRAC Commission finding concerning Fort Pickett was not an approved BRAC recommendation and therefore not binding on the Army. Army review determined that Fort Pickett was not a suitable training site and that Fort A.P. Hill met Army requirements for EOD training (2007 BRAC EIS).

Town of Port Royal (Comment # 0121, 124, 0126, 0216): What other alternatives were studied and given consideration? The Army did not consider alternative locations for the SCOE field training of 23,000 warriors annually. Bias found in the EIS, EA and other documents and failure to fully examine Alternatives borders upon the criminal.

RESPONSE: In the 2007 BRAC EIS, the Army considered two alternatives to using Fort A.P. Hill for EOD training: the use of Fort Pickett and the No Action alternative. The Army rejected both alternatives as they did not meet the Army's needs. As stated in Section 1.1 of the BRAC EIS, "Accordingly, the Army proposes use of Fort A.P. Hill to conduct combat or field and technical training, on the basis of its proximity to Fort Lee, its suitable lands, and its schedule availability."

Town of Port Royal (Comment # 0122, 0152, 0162, 0163, 0203, 0204, 0217): Where are the documents detailing meeting the stand of proof of "effectiveness and efficiency"? Important information referenced in the FONSI and EIS documents, as opposed to being set out in this document. Absent a summary chart and description of the AWG and NSWECE how is the reader of SEA to establish any independent perspective of the correlation of actions proposed in SEA and the AWG and NSWECE? No charts and narratives explaining the cumulative impacts and/or other vital data for the EOD proposed events. No information from the July 2008 EA is summarized in the DEAROD. The July 2008 EA cannot be found online. The NEPA document website is inaccurate.

RESPONSE: CEQ reg. 1502.21 "Incorporation by reference" states: Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. Both documents regarding the AWG and NSWECE are referenced in Section 5.0 References. Both documents can also be found on the Fort A.P. Hill website at:
http://www.aphill.army.mil/sites/directorates/ea.asp

Cumulative Impacts are clearly described in Section 3.0 on pages 3-1 through 3-43. And, again summarized in Section 4.0 "Conclusions" on pages 4-1 through 4-6. The EIS was completed in February 2007. The July 2008 EA was completed in July 2008 therefore the information could not have been incorporated. The NEPA document was misplaced, but corrected soon after and the public comment period was reopened and extended double the amount of time required under NEPA. The July 2008 EA can be found at: http://www.aphill.army.mil/sites/directorates/inc/Final%20EA%20of%20Constructing%20and%20Operating%20an%20Explosive%20Ordnance%20Disposal%20Field%20Training%20Area%20at%20Fort%20AP%20Hil%20VA.pdf.

Town of Port Royal (Comment # 0131, 0134, 0149, 0164, 0192, 0193, 0220.1): Terms are not identified or presented in spatial geographic format (e.g. TA 26, 27 & 28; demo site 70A). Maps are required to properly evaluate the proposed SEA actions. No map or info on AWG, or NSWECE.

RESPONSE: A map can be provided upon request showing the "terms" requested. See Figures 2-1, 2-2, 3-1, 3-2, 3-3, 3-4, 3-5, and 3-6 for maps. Information regarding the AWG mission can be found at www.awg.army.mil. Noise contours depicted in Figure 3-2 include activities proposed by AWG. Information regarding the NSWECE mission can be found on the Fort A.P. Hill website. Noise contours depicted in Figure 3-2 include activities proposed by NSWECE. A topographic map of the proposed EOD project area covered in the SEA will be provided upon request.

Town of Port Royal (Comment # 0132, 0155, 0156): The No Action Alternative is not fully detailed and lacks specificity. A far wider range of alternatives, not involving Fort A.P. Hill at all should have been considered.

RESPONSE: The Army has already decided to use Fort A.P. Hill for EOD training. An alternative to locate EOD training at a site other than Fort A.P. Hill would therefore be beyond the scope of the Supplemental EOD EA (SEA). The 2008 EOD EA and the SEA appropriately both consider siting alternatives for EOD training within Fort A.P. Hill. As stated above, in the 2007 BRAC EIS, the Army considered two alternatives to using Fort A.P. Hill for EOD training: the use of Fort Pickett and the No Action alternative. The Army rejected both alternatives as they did not meet the Army's needs. As stated in Section 1.1 of the BRAC EIS, "Accordingly, the Army proposes use of Fort A.P. Hill to conduct combat or field and technical training, on the basis of its proximity to Fort Lee, its suitable lands, and its schedule availability." This is the Executive Summary Section, for more information, please see page 2-5, Section 2.4 No Action Alternative.

The no action alternative would keep the EOD training on the ranges proposed for construction on about 2,059 acres in the eastern portion of the installation in Training Area 26, 27 and 28. This action involves the rearrangement of EOD activities on Fort A.P. Hill. CEQ Regulation 1502.14(a) states: Rigorously explore and objectively evaluate all reasonable alternatives, and

for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

Town of Port Royal (Comment # 0133): The failure to identify a need for any mitigation efforts reflects an unbelievable twisting of the plain facts.

RESPONSE: The proposed action in the SEA would downsize the 2008 proposed action, which would result in reduced noise impacts; therefore mitigation would not be required. In addition, the proposed action was adjusted to eliminate some types of explosives.

Town of Port Royal (Comment # 0135): Exactly how would the "training mission" experience negative impacts? What are the numbers in terms of operations, scope of operations? What alternatives were examined?

RESPONSE: The facility conflict between the EOD Training Complex and the Proposed Battle Area Complex (BAX), envisioned for 2016, the negative impact to training would have been the use of Garnet Road. This was one of the primary reasons for relocating the D1, D2 and D3 sites with the secondary effect of mitigating some of the noise the large demo sites originally located closer to the Installation Boundary.

Town of Port Royal (Comment # 0136, 0137): Has the alternative of concurrent used by forces been fully explored? Have you considered separation of forces and/or operation per time allocations; e.g. allocation of days?

RESPONSE: The alternative for concurrent use was fully explored, but due to EOD's specified annual training requirements to meet the Army's operational requirements, this is not feasible. EOD training requires dedicated training ranges, and Fort A.P. Hill can provide these. There are several factors that were considered in the training analysis of alternatives for the training location and concurrent use of existing facilities was excluded for the three primary reason: 1) By regulation "Operational" and "Institutional" training must be segregated because Institutional training is directed toward individual skill advancement vs. Operational Training which is collective unit training in order to train the way the unit will be employed in combat. 2) Institutional Training is managed by a Fixed Program of Instruction and volume of training. Operational Training is based on readiness and the unit's Mission Essential Tasks for a directed mission. In this case, the EOD School's training requirement for the type and frequency of training is prohibitive of support operational training on the same facility (competing training priorities by volume). 3) Safety - Not all explosives training is equal. Demolitions training vary by type of explosive, net explosive weight and application (or purpose). Each has various safety applications that preclude training in close proximity due to missile hazards associated with fragmentation which can cause injury or fatality within specified surface danger areas.

Town of Port Royal (Comment # 0138, 0153): Other alternatives not specified in document but could be developed given more information. The idea that "…an already existing range…" could be equated as being acceptable for a further build-up of EOD operations is not valid. An "already existing range" exists at Site 70A, the No Action Alternative.

RESPONSE: There was no "further build-up of EOD operations" proposed as part of the SEA. Operations were to remain the same, only a location change was proposed.

Town of Port Royal (Comment # 0139): Personnel from Redstone Arsenal lack any connection to the Port Royal area or Caroline, Essex, or King George Counties and hence have no motivation to pursue other alternatives. Their comments are biased towards only what it expedient to the army.

RESPONSE: The Army always strives to be good neighbors with all the communities surrounding its training areas. Cadre from the EOD School will live in local communities and desire to develop lasting, positive relationships working with the communities to address their concerns. Once operations have moved from Redstone Arsenal to Fort A.P. Hill, a very close connection with surrounding communities will occur almost immediately as most of the instructional and support staff will also become residents. In addition to the military members stationed at Fort A.P. Hill for 2-3 years, a large percentage of the staff will be civilian/contractor personnel that will live within the community, buy groceries, attend schools, pay taxes, etc. possibly for years or decades to come. Several current staff members, both civilian and contractor are planning to relocate in order to ensure the quality of training doesn't suffer because of the move and will be active contributors to the overall community. Most EOD operators, even when separated or retired from service, remain passionate about their job and their civilian community no matter where it's located.

Town of Port Royal (Comment # 0141, 0142): The intent, substance and purposes of the NEPA of 1969 have been circumvented and violated. The SEA and by extension other documents are incomplete, inaccurate and must be voided. The SEA is not sufficient for absorption by the general public, affected minority, low-income, disadvantaged and Native American groups or public agencies. Public involvement has been circumvented and thwarted by deficiencies in the SEA and EIS/EA documents.

RESPONSE: According to Supplemental Environmental Assessment Section 3.9.2.1 "No effects would be expected. The proposed training and construction activities at Fort A.P. Hill are not actions that have the potential to substantially affect human health or the environment by excluding persons, denying persons' benefits, or subjecting persons to discrimination because of their race, color, national origin, or income level."

Town of Port Royal (Comment # 0143): Who are the actual authors?

RESPONSE: As stated on the cover page of the document, the SEA was prepared by Fort A.P Hill staff.

Town of Port Royal (Comment # 0144, 0146, 0147): There is a lack of transparency as to vendor selection. Was there vendor selection to prevent bias? There is no elaboration of the credentials of the authors, or as noted, identities of the authors.

RESPONSE: There were no outside vendors involved in the preparation of the SEA. As stated on the cover page of the document, the SEA was prepared by Fort A.P. Hill, Virginia.

Town of Port Royal (Comment # 0151, 153, 188, 0201, 0214): "These three sites would be near the center of the EOD area to minimize noise impacts outside the installation" fails to note that the EOD area itself is located near the boundary of the Fort A.P. Hill. Moving D1, D2, & D3 enables more activity upon the 2,059 acre EOD range. No mentions are made of locating these operations to other area of Fort A.P. Hill, or to locations other than Fort A.P. Hill.

RESPONSE: The language quoted actually states, "These three demolition sites would be used for basic demolition training, energetic tools training, and protective works training." The three sites referenced in the SEA would not be relocated within the EOD site, but would be relocated to an already-existing demolition range within the restricted area of the installation.

The SEA does not concentrate on the location of the EOD field training area, because that action was covered under a separate document. There was no "further build-up of EOD operations" proposed as part of the SEA. Operations were to remain the same, only a location change was proposed.

Please see section 2.3 on Page 2-5 for a discussion on Alternatives.

Town of Port Royal (Comment # 0168): Adding the figures from the first EIS proposing a 1,049 acre EOD facility to the later EIS proposing to ADD to that operation to create a 2,059 acre EOD operations results in the following (See chart p. 189 of Final SEA Comments).

RESPONSE: The correct number of shots and their weights can be found on page 3-16, Table 3-7 of the July 2008 EA. The shots from the EIS to the EA are not cumulative.

Town of Port Royal (Comment # 0154): Why is it ok to transport students up from Fort Lee to Fort A.P. Hill, but not ok to transport students from EOD training area to a separate D1 site as described in alternative?

RESPONSE: The alternative eluded to in the above comment was found to be not feasible because from an operational standpoint, all three demolition sites need to be in close

proximity to maximize military training time and coordination efforts. Transportation from EOD field training area to the proposed D1, D2, D3, is not an issue.

Town of Port Royal (Comment # 0157, 0158): Port Royal is a town, not a settlement. SEA fails to recognize that a portion of Port Royal is occupied by mobile homes.

RESPONSE: The Town of Port Royal designation will be corrected on any future documents. Please see Page 3-31, Section 3.9.1.3 Environmental Justice. This section correctly states that "No low income or minority populations exist on the installation or immediately adjacent to the proposed EOD demolition site".

Town of Port Royal (Comment # 0160, 0230): Noise contours trespass upon the Wildlife Refuge. If there is a conflict b/w USFWS and/or the Refuge executing its responsibilities and duties to uphold all laws USFWS is charges, as to the well being of the Refuge and its entire flora and fauna, and the Partnership b/w Fort A.P. Hill, it is expected that many laws and historical record of stewardship will prevails over the Partnerships.

RESPONSE: As stated in Appendix A of the SEA, the U.S. Fish & Wildlife Service (USFWS) was consulted on this and all previous documents. The agency stated no objection to the project. Fort A.P. Hill requested comments from the USFWS on all documents associated with the EOD project. As stated in the January 7, 2010 public meeting, and according to Appendix A of the SEA, by the senior USFWS representative for the Rappahannock River Valley Refuge, the agency believes the project will not have a significant impact to fish and wildlife species. The USFWS was consulted on this document and all previous documents. No objection or written comment was received from the USFWS.

Town of Port Royal (Comment # 0161, 0226, 0227, 0228): Negative externalities from air and water pollution will invariably exist and the degree to which these externalities will trespass upon the neighboring community is unknown b/c data and proper analysis are absent in SEA and other reports. Implication is that: There is a capacity of the Rappahannock watershed to absorb pollution until a tipping point is reached. Degrading water quality is not permissible at any point.

Alleging use of BMPs is not sufficient: What exactly are the storm water management (i) structures proposed, (ii) monitoring systems, (iii) organizational controls subjected to outside monitoring, control and accountability?

RESPONSE: There are no wetland or Chesapeake Bay Resource Protection Area (RPA) impacts associated with the current project design. All land disturbing activities will be in accordance with all applicable local, state, and federal laws and regulations.

Degrading water quality will be prevented by implementing all associated permit and plan requirements in accordance with all applicable local, state, and federal laws and regulations. All non-point source discharges will be in compliance with all local, state, and federal laws and regulations.

There are no permanent stormwater management facilities associated with the design of this project. Stormwater runoff from the construction site will be managed in accordance with applicable permits and the approved Erosion & Sediment Control Plan and Stormwater Pollution Prevention Plan. All temporary BMP's will be constructed and monitored in accordance with Virginia's laws and regulations.

There will be no additional sources of permitted air emissions as a result of the proposed EOD site. Fugitive dust from construction and road traffic will be minimized in accordance with Virginia Regulations for the Control & Abatement of Air Pollution.

Town of Port Royal (Comment # 0218, 0229): If operations remain, there would be less clearing b/c the areas would not be absorbed into the 2,059 acre EOD. Creation of a second EOD facility requires more land disturbance, org problems in terms of construction of water management facilities and the control, maintenance, monitoring and accountability of those structures and holding to high standards.

RESPONSE: The land disturbance statement is incorrect. The ranges would still be constructed, whether at the proposed action location, or within the original 2,059-acre EOD field training area. Moving to an already existing demolition site would require less clearing because the ranges are already developed, whereas if they remain in the EOD field training area, previously undisturbed areas would be developed.

Town of Port Royal (Comment # 0165): Actions proposed in SEA only help further the actions of Fort Lee EOD operations, and others, thereby exacerbating more negative externalities trespassing upon Port Royal and its neighbors.

RESPONSE: The proposed SEA does relieve some potential internal conflicts with EOD and current operations, but it also moves the large demolition charges to an internal existing demolition site with neutral impact to Port Royal and positive impact to Portobago Bay.

Town of Port Royal (Comment # 0166): The actions proposed in the SEA will only enable greater use of the 2,049 acre EOD range proposed.

RESPONSE: This is an incorrect statement. The correct acreage of the EOD field training range is 2,059 acres and as clearly stated on page 2-1, Section 2.2, "the land dedicated for the EOD field training area will remain unchanged, only the use will change."

Town of Port Royal (Comment # 0167, 0182): No known noise contour for "Mine Clearing" negative impacts was provided to illustrate impacts from the proposed sites. At 100 pounds, the effects are similar to "mine clearing charges".

RESPONSE: This statement is correct, see Table 3-7. The "Mine Clearing" noise contours were not included because they are not included as part of the proposed action. No Mine Clearing charges will be fired on the EOD field training area ranges. Detonations will range in size from 0.25 to 25 lbs.

Town of Port Royal (Comment # 0174, 0184, 0185, 0186, 0197, 0198, 0199, 0200): What organizational control exists to (i) monitor (ii) control (iii) accept responsibility? What reassurances do citizens have that they will be informed and that responsibility and control are properly exercised? Where is accountability? There is no guarantee in terms of number of frequency of shots, or size. What law, agreement, or other binding instrument would limit the number of detonations specified? Frequency is stated per year. What is the frequency on a monthly or weekly basis? What about detonations or other activity under 25 pounds TNT equivalent?

RESPONSE: The maximum blast size and the annual maximum number of charges are as indicated in the detailed NEPA documentation and these limits will be reflected in range operating procedures. Demolition plans and range training schedules are required to be submitted and approved by Fort A.P. Hill range control before any training event. As in all Army missions, the chain of command is responsible and accountable for enforcement of these range operating procedures as they relate to EOD training. All training is planned, conducted, and supervised by qualified senior Non-Commissioned Officers and Officers to ensure these approved plans are followed. Detonations will range in size from 0.25 to 25 lbs. The daily and monthly frequencies of charges are variable and a function of course student loads; as general comment, courses are dispersed fairly evenly throughout the year. Referenced detonation information is only applicable to activity conducted by EOD Training Division; does not include other activity performed by other units or organizations on other areas of Fort A.P. Hill.

Town of Port Royal (Comment # 0175, 0176, 0177, 0178): Air quality monitoring stations in Henrico County are a geographic slap in the face to citizens of the Town of PR and its neighbors. Use of such air monitoring stations is disingenuous at best. Data provided in Table 3-2 are abstruse and irrelevant. What systems are proposed to monitor and systems to control such impacts (air)?

RESPONSE: Please refer to Table 3-1 in the SEA. The data represents the closest locality to the Fort A.P. Hill area that has the MAXIMUM recorded average data. Since Henrico County exceeded the Caroline County monitoring site for the Ozone 3-year standard, the Henrico County data was used for worst-case scenario. Henrico County is the closest location that has a PM 2.5 monitor, accounting for its selection. Caroline County does not have a PM 2.5 monitoring site because Caroline County is still in Attainment for Ozone; Henrico County is in a

Maintenance area for Ozone. It is understood that a project of this limited size and scope would not interfere with the attainment status of the region.

Documenting the existing regulated sources of air pollution at Fort A.P. Hill is not irrelevant. There will be no additional sources of regulated air emissions as a result of the proposed EOD site. Fort A.P. Hill's annual emissions are far below State permit limitations, and will remain a minor source of criteria air pollutants. Further, Fort A.P. Hill has taken additional, proactive measures to reduce or eliminate sources of air pollution, such as converting fuel burning equipment to heat pumps, and converting emissions sources to cleaner burning fuels.

Please refer to section 3.3.2.1 in the Final EA for an evaluation of air impacts of the proposed action. As stated, there would be limited fugitive dust emissions from construction, open burning of land clearing debris, and minimal impact from small emergency generators. Best management practices for minimizing fugitive dust emissions from construction would be utilized. No cumulative adverse effects are expected from this project.

Town of Port Royal (Comment # 0180): A summary of ENMP is necessary to understand its impacts or lack of impacts upon proposed actions.

RESPONSE: The update of the environmental noise management plan (ENMP) has not been finalized yet since there are still ongoing NEPA actions. Once all NEPA actions are completed, a comprehensive plan will be developed with noise contours reflecting all existing and future range activity. This final plan will be shared with the county and community.

Town of Port Royal (Comment # 0181): The Navy wrote that, "The DoD and other Federal Agencies have determined that noise exposure below 65 dB DNL (or 65 dB CNEL) is generally compatible with residential development…Residential use is discouraged in DNL 65-69 and strongly discouraged in DNL 70-74."

RESPONSE: Both Navy and Army use Day-night Levels (DNL) to assess significance. For aircraft, all Services use 65 ADNL as Zone II and 75 ADNL as Zone III. For blast noise, the limit is lowered by a few decibels with Zone II being 62 CDNL and Zone III as 70 CDNL.

Town of Port Royal (Comment # 0183, 0187): There is no statement of how many charges and at what frequency on a daily, weekly, monthly or yearly basis. There is no information on night maneuver or prohibition.

RESPONSE: See Table 3-7 on Page 3-15 for description of activities planned at night.

Town of Port Royal (Comment #0189): The site 70A is not designated an impact area, or if so, the information is not contained within the SEA.

RESPONSE: Demolition 70A is a live-fire range.

Town of Port Royal (Comment # 0195, 0196, 0202): What data are used to generate the weighted average? What formulae are applied? Why was that approach used? What data support the noise contours as found at Figures 3-3 and Figures 3-4? What formulae were applied? What about cumulative effects? What about the DCNL model? Can a contrast of the modeling peak event and DCNL be performed?

RESPONSE: DNL was used because it is the accepted standard by Federal agencies as well as recommended by the American National Standards Institute (ANSI). We used range firing records and info supplied by Redstone EOD regarding what future operations would entail.

Figures 3-3 and 3-4 are depictions of the individual Peak levels for the detonations that are being proposed to move to Range 70A. Since the number of 25 and 50 lb charges that were proposed were only a small portion of the total Net Explosive Weight for the proposed EOD training, the change in the CDNL contours would have been very hard to distinguish. Peak and cumulative level are different metrics and cannot be compared.

The movement of the larger charges to 70A would lower the size of the charges, and therefore lower the peak levels, for the activity that would still be contained within the original EOD footprint. The activities that would be left in the original footprint are not predicted to generate levels above 115 dBP (moderate risk of complaints).

Town of Port Royal (Comment # 0205, 0206): Logic is defiled and reason torn asunder to assert moving the detonations closer to the Town of Port Royal would have a neutral effect. Also it is an incongruity that moving more activity near Peumansend Creek Regional Jail would result in no change.

RESPONSE: There would be a neutral effect on the Town of Port Royal because the noise contours near the town would not change. Moving the Detonations did not change peak contours in Port Royal because distance remains similar. The proposed action would move the large EOD demo to an existing demo site and would not negatively impact the Jail since they are already experiencing similar levels of noise. In addition, prevailing winds are not typically from the northeast (in the direction of the jail) which would help to propagate the noise impact.

Town of Port Royal (Comment # 0207): Complaints from the prison population would have to be addressed, as opposed to writing off an irrelevancy.

RESPONSE: The Regional Jail was asked to comment on the SEA. No comment or opposition was received for this proposed action. Also, any noise reports received from the Jail community would be processed accordingly. In addition, noise monitors were placed at the jail

during the 2010 February EOD Operational Noise Test and the results confirmed that there would be no adverse impact.

Town of Port Royal (Comment # 0208): What about the indigenous civilian population?

RESPONSE: There is no known indigenous civilian population currently residing on the proposed relocation area.

Town of Port Royal (Comment # 0211): What are the negative impacts to Fort A.P. Hill achieving its original missions?

RESPONSE: Fort A.P. Hill will still be able to conduct all mission activities. Fort A.P. Hill's mission to provide training for the Army.

Town of Port Royal (Comment # 0212): It is grossly offensive that the Army sees its "Best Management Practices" as educating the adversely affected citizens and as establishing a "comprehensive, proactive noise-complaint management program". In other words, there is no interest in avoiding the activity that produces the complaints, but only in "managing" the complaints when they result.

RESPONSE: Best management practices include review of training activities and an assessment of weather conditions which may assist noise propagation. Monitoring of noise is also done in order to better understand noise propagation. Finally, all best management procedures and analysis are balanced against the importance and urgency of the training. Noise –complaint management involves determining the cause and may result in adjustments to Army training to lessen impacts.

Town of Port Royal (Comment # 0215): Why can't Fort A.P. Hill clean up impact areas so EOD range can be sited interior?

RESPONSE: Fort A.P. Hill has considered numerous alternative sites interior to the installation including locations in the close proximity to the Live Fire Impact Areas. These areas were excluded not because of unexploded ordnance (UXO) but because they would conflict with the direct fire weapons training. Impact Areas are designated for delivery of ordnance that must be fired into impact areas and direct fire weapons systems firing ballistic ammunition in order to avoid hazards to personnel within the surface danger zones (SDZs) which increase in width as the down-range distance increases.

Town of Port Royal (Comment # 0219): Are the impacts of heavy equipment of that great a concern? They are short term and have a terminus, which the noise from EOD does not.

RESPONSE: Heavy equipment impacts will be a short-term minor adverse impact, but still an impact. Impacts of construction noise were addressed in all NEPA documents. During construction activities Virginia recommended Best Management Practices will be implemented.

Town of Port Royal (Comment # 0220): Noise over 100db is considered to be damaging to buildings and humans.

RESPONSE: A-weighted noise levels will not be generated above 100 dB. As per the 2010 February EOD Operational Noise Test, A-weighted noise levels measured were far below the 95 dBA, which is the maximum specified for compatible with residential land use. For unweighted Peak levels (dBP), hearing may be affected above 140 dBP. Buildings are not affected below 134 dBP.

Town of Port Royal (Comment #0222, 0223, 0224): Are the soils friable and prone to become airborne? What are the impacts of these particular soils being blown up repeatedly? Are the elements of the soils prone to becoming airborne? If dry, with wind, how much of this material would become airborne? And how far would the material travel? Are there any wind-sock models illustrating these issues? Do the sub-soils have a propensity, inclination, or ability to transect or become a medium for seismic vibrations? Are the clay sub-soils prone to transmit shock waves or to magnify shock waves?

RESPONSE: The significant sandy component at depths in excess of six feet indicates that these soil types are generally friable and are not conducive to transport seismic vibration. Studies have shown that ground borne vibrations dissipate much faster than airborne sound waves as distances increase from the detonation site. The proposed action would not result in ground borne vibrations off the installation.

Repeated surface detonations may be expected to cause local soil displacement and some tendency for minor soil loss by wind-borne transport. Although there are no Fort A.P. Hill-specific models or analyses for this issue, monitoring is conducted where feasible to identify occurrences and potential for erosion and sedimentation.

Town of Port Royal (Comment # 0225, 0231, 0232, 0233, 0242): Effects of airborne soils on Port Royal Historic District and the Rappahannock Wildlife Refuge. If public entry such as hiking is barred, what will USFWS do about the noise at 115 or more decibels trespassing upon the Refuge? What about loud noise and vibrations caused by trespass upon the Refuge, but the constant repetition of noises of lesser decibels? What court cases exist where USFWS has attempted to constrain, stop or change noise patterns trespassing upon sensitive lands? Please summarize and give a point of reference to access the Cooperative agreements b/w Fort A.P. Hill and the USFWS. What are the dates, specifically and identify the surveys such that the documents can be obtained and reviewed (for fish). The SEA site proposed would impact a

protected avian site within less than 1,000 ft. and the noise contours of 115 to 130 db would roll over a number of other protected avian sites.

RESPONSE: As stated in the January 7, 2010 public meeting by a USFWS representative, the agency believes that the project will not have a significant impact to fish and wildlife species. The "protected avian site" is not within 1,000 feet of the proposed SEA sites. The "protected avian site" is approximately 1,370 yards (approximately 4,110 feet) from the proposed SEA sites.

Boat electro-fishing surveys were completed on selected impoundments in 1999 - 2001, 2006, and 2008. Warmwater stream backpack electro-fishing surveys were completed throughout the Installation in 1991 and 2005. A total of 40 fish species have been documented at Fort A.P. Hill. None of the documented fish species are threatened or endangered.

Town of Port Royal (Comment # 0228.1): Are any elements, compounds, or substances subject to CERCLA, regulated by EPA, and/or recognized as hazardous to health introduced to the environment as a consequence of DEAROD and/or the proposed 2,059 acre facility?

RESPONSE: EOD ranges at Fort A.P. Hill are required to meet the same environmental requirements as similar active ranges in the United States.

Town of Port Royal (Comment # 0234): Please provide the name and contact info of installation biologists who signed the report and accountable for contents.

RESPONSE: Report is titled Field Survey for Threatened and Endangered Plants Proposed Project: Relocate EOD Demolition Sites D1, D2 & D3. Survey conducted by USFWS recognized biologist for small whorled pogonia and swamp pink. Kristine Brown, CMNRP & AWB and Jason Applegate CE & CF. Contact information is the Fort A.P. Hill Environmental Division Office. Methodology used is standard literature review and intensive field survey.

Town of Port Royal (Comment # 0235): What exactly constitutes the Areas?

RESPONSE: Areas are the proposed project sites D1, D2 & D3 as depicted in Figure 2-2 of the SEA.

Town of Port Royal (Comment # 0236, 0237, 0238): Why were only threatened and endangered plants surveyed? Who authored the study? What are the data collected and methodologies applied to the study? Who has signed the study and can be held accountable for its veracity and conclusions? Please provide contact information for the individuals and a copy of the study. Please provide a copy of the study, the data, methodologies applied, date of the study,

authors, contact information, persons who signed off on the study and can be held accountable for the veracity and conclusions of the study.

RESPONSE: According to the 10-year re-inventory of the installation conducted in 2005-2009 by the Virginia Division of Natural Heritage, the only known Federally listed species found on Fort A.P. Hill are two plants, the Small Whorled Pogonia and Swamp Pink. Please contact the Virginia Division of Natural Heritage regarding the study, as they were the authors. The Army is required to look at impacts to threatened and endangered species under section seven of the Endangered Species Act. The Army also investigated many other natural resources in the studies.

Town of Port Royal (Comment # 0239): What are the baseline data for DS 70A in terms of noise generation? Is it one explosion of half pound TNT every other month?

RESPONSE: Historical data from DS70A shows that it was used as a demo site limited to 100 lbs and routinely used up to levels similar in intensity to proposed EOD training projected activity. The frequency DS 70A was used varied because the training varied by mission essential requirements for different types of events and unit operations.

Town of Port Royal (Comment # 0239.1): What exactly is the difference of the before and after impacts of the proposed SEARDS and other actions? No data are provided. Only conclusions drawn.

RESPONSE: The proposed action is to relocate three demolition sites (D1, D2, and D3) used for demolitions greater than 1.25 lbs. Net Explosives Weight originally planned for the 2,059-acre EOD field training area to a current demolition site (DS) 70A. The proposed relocation moves large (25 lb.) demolitions from 3.0 miles to 3.4 miles from Port Royal and 2.9 miles to 5.6 miles from Portobago Bay. The Army has made several reductions in scope of the proposed action, most notably that all explosives weights for EOD school now fall within a range of 0.25 lbs to 25 lbs. The Army has also agreed to limit any demolitions associated with the EOD Training Facility closes to the installation's boundary to 0.25 lbs Net Explosive Weight. Lastly, the Army has reduced the infrequent, nighttime charges to 0.25 lbs. Net Explosive Weight.

The changes described above reduce the amount of noise produced under the proposed action and do not cause any new or unforeseen environmental impacts.

Town of Port Royal (Comment # 0243): How could Fort A.P. Hill make a statement of "no impact" to biological resources be made?

RESPONSE: Fort A.P. Hill has evaluated the impact to wildlife to include eagles and requested comments from the USFWS on all documents associated with the EOD project. As

stated in the January 2010 public meeting by a USFWS representative, the agency has made the determination that the EOD project will not have a significant impact to fish and wildlife species.

Town of Port Royal (Comment # 0244): What is the conclusion or statement or action proposed in the PA?

RESPONSE: The Programmatic Agreement establishes a legal alternative to the standard processes of Section 106 of the National Historic Preservation Act, and sets out the steps that Fort A.P. Hill has taken and must take to mitigate adverse effects to historic properties. The process does not necessarily include a conclusion.

Town of Port Royal (Comment # 0245): There is no agreement by and b/w the SHPO and Fort A.P. Hill that can cupplant, erode or in any way countermand law prescribing or proscribing actions or methodologies to the contrary of any agreement Fort A.P. Hill might have achieved. What are the terms of the agreement?

RESPONSE: The Programmatic Agreement establishes a legal alternative to the standard processes of Section 106 of the National Historic Preservation Act, and sets out the steps that Fort A.P. Hill has taken and must take to mitigate adverse effects to historic properties.

Town of Port Royal (Comment # 0246, 0247): There is no statement of a phase one completed on the other lands comprising the new 2,059 acre EOD site. There is no statement of any phase one assessment on the lands comprising the SEA. Please define methodology applied to the Phase One. Please cite names of those who accomplished the phase one with contact information. Please provide name and contact info for the persons who can be held accountable for the conclusions of any archaeological assessment and conclusions presented.

RESPONSE: Investigations of the expanded EOD area were completed and reviewed by the VDHR. VDHR concurred that no historic properties will be affected in the expanded area. Additional investigations of the EOD area were conducted by Fort A.P. Hill Environmental Division staff and by contractors with the Louis Berger Group, Inc. All investigations were conducted in accordance with the Secretary of the Interior's Standards for Archaeology and Historic Properties and the VDHR's Guidelines for Conducting Cultural Resource Surveys in Virginia. Questions can be addressed to the Fort A.P. Hill Cultural Resource Manager**.**

Town of Port Royal (Comment # 0248): The statement that the active range cannot be surveyed b/c of danger is very much at variance with other statements, e.g. that "about 10 acres of land would be cleared for an access road and for D1 demolition pit and bunker."

RESPONSE: The active demolition site is located on a a live-fire range with the potential for unexploded ordnance. No field investigations were authorized in this area owing to health and safety concerns. The area will need to be cleared of unexploded ordnance prior to construction. The 10-acres of land to be cleared is an estimate from aerial photography.

Town of Port Royal (Comment # 0249): There are no known resources on Fort A.P. Hill that are considered of traditional importance to any tribe. Have all the tribes been formally and actually consulted?

RESPONSE: Formal consultation with federal tribes that may have lived in the area of Fort A.P. Hill, or had social networks with tribes in the area, determined that no federal tribes claim any sites of religious or cultural significance at Fort A.P. Hill. Notwithstanding, the United Keetoowah Band of Cherokee Indians in Oklahoma have chosen to participate in the Programmatic Agreement to ensure that tribal rights are properly considered. Additionally, with the assistance of the Virginia Council on Indians, state-recognized tribes have been consulted directly and indirectly. The Rappahannock Tribe is a consulting party to the Programmatic Agreement.

Town of Port Royal (Comment # 0250): Cumulative effects of proposed actions outlined in SEA and EOD documents would have both direct and indirect negative impacts upon the GPRHD and its component contributing resources

RESPONSE: See responses to Comments # 85 and # 107.1. Additionally, the period of significance for the Greater Port Royal Rural Historic District includes the 1940s and 1950s, when noise levels from artillery and demolition training in the currently proposed location for the EOD school exceeded any projected noise levels for the EOD school.

DEPARTMENT OF THE ARMY
US ARMY PUBLIC HEALTH COMMAND (PROVISIONAL)
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MD 21010-5403

08 MAR 2010

MCHB-TS-EON

MEMORANDUM FOR Directorate of Public Works (ANAP-PWE/Mr. Sergio Sergi), 19952 N. Range Road, Fort A.P. Hill, VA 22427

SUBJECT: Operational Noise Consultation, No. 52-EN-0CVT-10, Explosive Ordnance Disposal Noise Monitoring Study, Fort AP Hill, Virginia; 4 – 12 February 2010

1. We are enclosing 2 copies of the consultation.

2. Please contact us if this consultation or any of our services did not meet your needs or expectations.

3. The point of contact is Ms. Catherine Stewart, Program Manager, Operational Noise, US Army Public Health Command (Provisional) [USAPHC (Prov)] [formerly US Army Center for Health Promotion and Preventive Medicine (USACHPPM)], at DSN 584-3829, Commercial (410) 436-3829, or email: catherine.stewart@us.army.mil.

FOR THE COMMANDER:

William J. Bettin

WILLIAM J. BETTIN
LTC, MS
Director, Environmental Health Engineering

Encl

U.S. Army Public Health Command (Provisional)

USAPHC

OPERATIONAL NOISE CONSULTATION
NO. 52-EN-0CVT-10
EXPLOSIVE ORDNANCE DISPOSAL
NOISE MONITORING STUDY
FORT AP HILL, VIRGINIA
4 – 12 FEBRUARY 2010

Approved for public release; distribution unlimited.

Preventive Medicine Survey: 40-5f1

PCH FORM 433-E (MCHB-CS-IP), NOV 09

DEPARTMENT OF THE ARMY
US ARMY PUBLIC HEALTH COMMAND (PROVISIONAL)
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MD 21010-5403

MCHB-TS-EON

EXECUTIVE SUMMARY
OPERATIONAL NOISE CONSULTATION
NO. 52-EN-0CVT-10
EXPLOSIVE ORDNANCE DISPOSAL
NOISE MONITORING STUDY
FORT AP HILL, VIRGINIA
4 – 12 FEBRUARY 2010

1. PURPOSE. To provide Fort A.P. Hill (FAPH) the results from the noise monitoring study of the proposed Explosive Ordnance Disposal (EOD) activity which was conducted 4 – 12 February 2010.

2. FINDINGS. The levels reported in this consultation reflect predicted and measured sound levels for proposed EOD activity. The predicted levels are lower than those presented in previous National Environmental Policy Act documents since they account for the mitigation measures that have been agreed to since the original assessments. The mitigated explosive charge weights were used to develop the monitoring plan. Additionally, since the sites chosen for the detonations in the study were those in closest proximity to the communities, it should be noted that if the decision is made to implement the proposed EOD activity, many of the 1.25 lb and 0.25 lb charges would be detonated at sites located further from the communities than those used in the study.

a. The sound level meters located at the 8 community monitoring sites recorded a total of 1,386 events related to the proposed EOD school. The 1,386 events included 0.25 lb, 1.25 lb, and 25 lb detonations. At community sites, no levels high enough to cause building damage (above 136.5 decibel Peak [dBP]) were recorded. No levels correlated with high complaint risk (above 130 dBP) were recorded. Two events (0.14 percent) registered levels correlated with moderate complaint risk (115 -130 dBP). There were 134 events (9.67 percent) recorded ranging from 100 to 114 dBP. There were 358 readings (25.83 percent) below 100 dBP which were classified as blast events. The sound levels for the remaining 892 events (64.36 percent) were indistinguishable from ambient sound levels.

b. The current Supplemental Environmental Assessment proposes moving the larger demolitions from the original EOD footprint to the existing Demolition Site (DS) 70A. The sound levels generated by the 25 lb detonations at DS-70A did not exceed 115 dBP at the 8 community monitoring sites.

3. CONCLUSIONS.

a. Recorded noise levels in the community were not high enough to damage structures.

b. No levels were recorded which correlate with a high complaint risk (>130 dBP).

c. Less than one percent (0.14 percent) of events exceeded 115 dBP. Levels below 115 dBP are classified as low complaint risk.

4. RECOMMENDATIONS

a. Though useful information was gathered from locating monitors on FAPH and detonating explosives at DS-13 and Training Area 13/18, decisions regarding the proposed EOD activity should focus on levels received in the community (Sites 5-12) which were generated only by activity at proposed EOD sites. The additional levels reported in this consultation for demolition activity at existing FAPH ranges may be used for future noise assessments.

b. Although no Federal Law prohibits the Department of Defense training and testing activities from making noise, the Services have always tried to be good neighbors. Fort A.P. Hill should continue their operational noise management and outreach programs, to inform the public of possible noise from training.

Operational Noise Consultation, 52-EN-0CVT-10, EOD Monitoring Study, FAPH, VA: Feb 10

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NO. 52-EN-0CVT-10
EXPLOSIVE ORDNANCE DISPOSAL
NOISE MONITORING STUDY
FORT AP HILL, VIRGINIA
4 – 12 FEBRUARY 2010

1. REFERENCES. A list of the references used in this consultation is in Appendix A. A glossary of terms and abbreviations used are in Appendix B.

2. AUTHORITY. Fort A.P. Hill, Department of Public Works, Environmental Division funded this work.

3. PURPOSE. To provide Fort A.P. Hill (FAPH) results from the noise monitoring study of the proposed Explosive Ordnance Disposal (EOD) activity which was conducted 4 – 12 February 2010.

4. GENERAL.

a. The study followed a test plan which was submitted to FAPH in January 2010. A copy of the test plan is contained in Appendix C. As outlined in the test plan, the monitoring study had three objectives.

(1) Demonstrate that monitored Peak levels are in agreement with the range of values presented in the National Environmental Policy Act (NEPA) documents related to the proposed Explosive Ordnance Disposal (EOD) activities at FAPH.

(2) Offer the opportunity for the community to make their own subjective judgments regarding the audibility of the proposed operations.

(3) Afford the opportunity to measure noise levels at other FAPH demolition sites and training areas.

b. The test plan did not use explosive weights presented in the FAPH Supplementary Environmental Assessment (SEA) because the Army has already taken steps to mitigate noise levels by lowering of the explosive weights that would be used by the EOD school. These modifications include eliminating the 0.5 lb, 2.5 lb, and 50 lb charges. The change in weights will be reflected in the final NEPA documents. Additionally, by eliminating the 0.5 lb charges, the largest charge now proposed for overnight hours is 0.25 lb.

c. The schedule and expenditure of detonations presented in the EOD test plan was modified due to inclement weather. Appendix D contains the actual detonation schedule and expenditure which was used during the monitoring study.

d. In recognition of community comments received regarding the test plan, additional 0.25 lb charges were detonated at 2 a.m. (0200 hrs) on 12 February which were not in the original test plan.

e. Appendix E contains both general and FAPH vicinity specific information regarding environmental factors which may influence sound levels.

f. Appendix F contains information regarding vibration and damage risk criteria.

5. NOISE MONITORING PROCEDURES.

a. Monitored Activities. Sound levels were monitored from 4 – 5 February 2010 and 8 – 12 February 2010. The detonation sites included proposed EOD locations (MS-8, MS-10, MS-12, Site7 [MS-07]), two existing demolition sites (DS-13 and DS-70A), and an existing training area (TA13/18). Table 1 summarizes the detonation events. Appendix D contains a detailed record of the detonation expenditure.

TABLE 1. DETONATION EVENTS DURING MONITORING STUDY.

DEMO SITE NAME	WEIGHT	EXPLOSIVE TYPE	NUMBER OF DETONATIONS
DS-13	0.25	C-4	20
DS-13	1.25	C-4	20
DS-13	25	TNT	12
DS-70A	25	TNT	16
MS-08	1.25	C-4	40
MS-10	0.25	C-4	42
MS-12	1.25	C-4	40
Site 7	0.25	C-4	42
TA13/TA18	0.25	C-4	20
TA13/TA18	1.25	C-4	20
TA13/TA18	25	TNT	8

Note: DS = Demolition Site, MS = MOUT Site, TA = Training Area
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

b. Monitoring Locations. Noise monitoring was conducted at 12 sites. Four of the sites were located on FAPH and 8 were in the surrounding communities. Figure 1 depicts the locations of the detonation sites and the monitoring sites utilized. Tables 2-3 list the distance between each detonation and monitoring site.

c. Methodology.

(1) The sound levels were monitored at 12 locations using the instrumentation set-up described in Appendix G.

(2) In addition to automated monitoring, personnel from FAPH and the Operational Noise Program were present at various times at monitoring sites throughout the study to take notes on the audibility of the detonations. The notes were later used to assist with picking out events from the background noise data acquired from the Larson Davis 824 and 870 Sound Level Meters (SLMs).

6. NOISE MONITORING RESULTS

a. For the same activity, noise levels can vary greatly even over the course of a day. The monitoring study was designed with the goal to capture noise levels under varied propagation conditions. The study design replicated actual proposed training, but it also was designed to attain levels that were in the higher range of predicted values. Given that the study took place in February, monitored noise levels overall would tend to be higher than if the study took place in the summer. Typically, clear skies with billowy cloud formations, especially during warm periods of the year will generate the lowest levels. Some of the highest levels can be found on cold mornings, or when there are high barometer readings with low temperatures. Additionally, detonations were scheduled to include the times of day that typically favor sound propagation (sunrise and after sunset).

b. Monitoring results will also vary dependant on the location of the monitoring site in relation to the noise source. At FAPH, the 5-year cumulative wind rose indicates that winds are primarily from the NNW or from the SSW (depicted in Appendix E). During the monitoring period study, the dominant wind direction was from the NNW. This explains why at Site 5 (Essex) some of levels recorded approximate the top 15 percent of what would be expected over the course of a year.

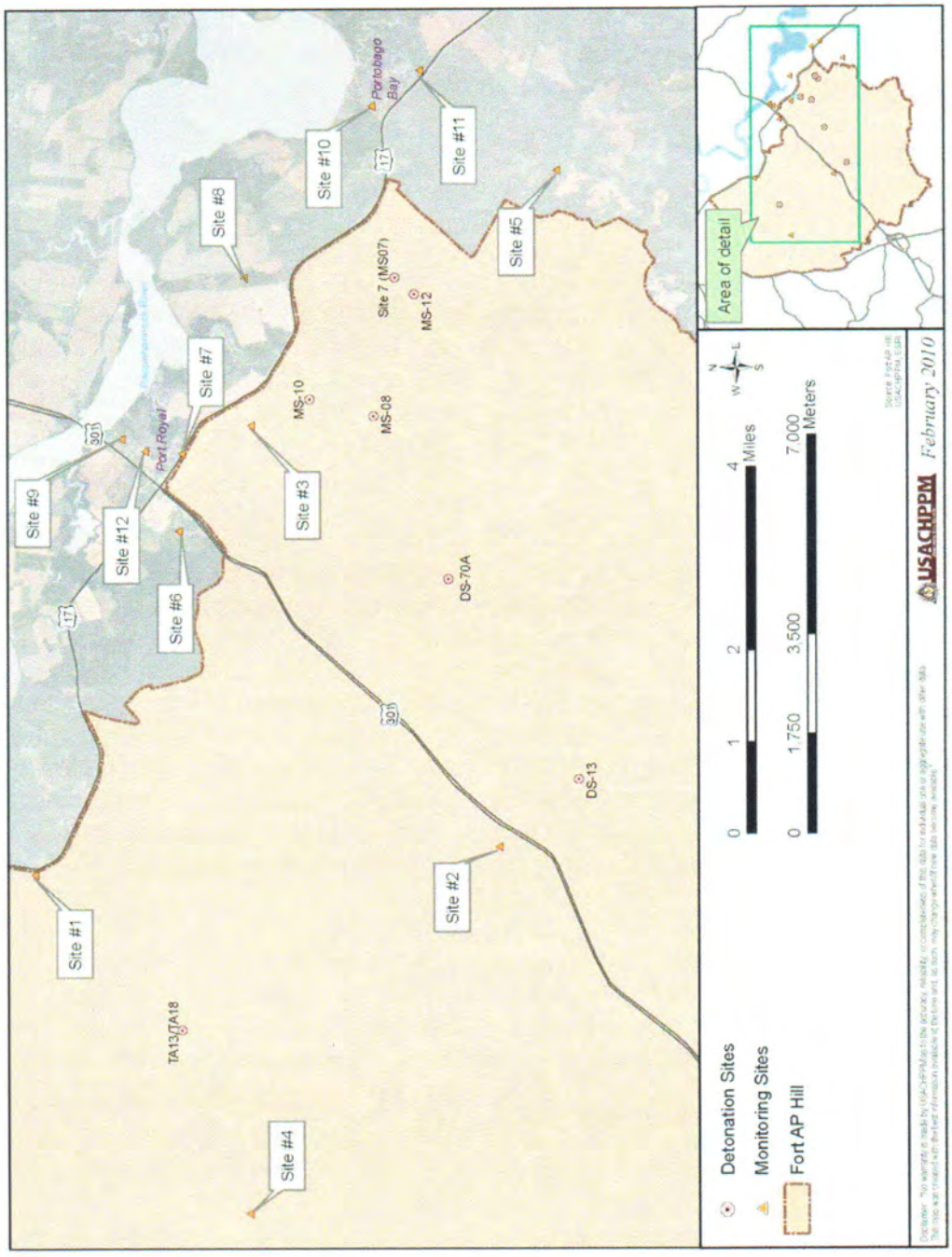

FIGURE 1. FORT AP HILL DETONATION AND MONITORING SITES.

Operational Noise Consultation, 52-EN-0CVT-10, EOD Monitoring Study, FAPH, VA: Feb 10

TABLE 2. DISTANCE BETWEEN PROPOSED EOD DETONATION AND MONITORING SITES.

	DISTANCE IN METERS				
	SITE 7	MS-08	MS-10	MS-12	DS-70A
Site 1	12,100	9,900	9,500	12,100	8,800
Site 2	10,100	7,900	8,500	9,800	4,700
Site 3	3,500	2,100	1,100	3,600	4,300
Site 4	16,600	14,100	14,300	16,400	11,600
Site 5	3,400	5,400	5,900	3,300	7,500
Site 6	5,800	3,900	3,200	5,800	4,600
Site 7	4,800	3,300	2,400	4,900	5,000
Site 8	2,600	3,200	2,400	2,900	6,300
Site 9	5,500	4,300	3,300	5,600	6,100
Site 10	3,000	5,400	5,300	3,300	8,400
Site 11	3,600	6,000	6,000	3,900	8,900
Site 12	5,300	4,000	3,000	5,400	5,600

Note: DS = Demolition Site, MS = MOUT Site

TABLE 3. DISTANCE BETWEEN OTHER DETONATION AND MONITORING SITES.

	DISTANCE IN METERS	
	DS-13	TA13/TA18
Site 1	9,500	3,700
Site 2	1,700	6,400
Site 3	8,400	10,700
Site 4	9,500	3,400
Site 5	10,700	16,400
Site 6	8,100	8,700
Site 7	8,900	10,100
Site 8	10,500	13,200
Site 9	9,900	10,400
Site 10	12,300	16,500
Site 11	12,700	17,200
Site 12	9,400	10,100

Note: DS = Demolition Site, TA = Training Area

c. Though the winds were primarily from the NNW, there was enough variation in weather and wind conditions during the study to allow a wide range of propagation conditions to be included. As an example, Site 5 and Site 10 (Portobago Bay) are both 3,300 meters from MS-12 (1.25 lb site). Over the course of the study, the levels recorded at Sites 5 and 10 for the detonations at MS-12 varied by over 30 dB. Additionally, it was not always the same site with the higher levels. On 4 February, the 1.25 lb detonation registered 112.8 dBP at Site 5 and 85.6 dBP at Site 10. However, on 11 February, this same activity did not generate a level above the threshold at Site 5, but did register 104.3 dBP at Site 10.

d. The monitoring results are an analysis of Peak levels for each individual detonation. In addition to a tabular listing of the levels, the results will be graphically presented with the results categorized based on audibility and complaint risk. One category will be for events registering Peak levels below 100 dBP. Often levels this low are not included in monitoring reports since it is usually difficult to determine if the reading was a true event, or just part of the ambient environment which can often register levels of 100 dBP due to traffic, neighborhood sounds, and wind. When permanent monitors are located in communities, thresholds are usually set to ignore anything below 105 dBP. However, since the FAPH monitoring plan was designed with specific times and locations of events recorded, readings were able to be pulled out of the data that often would be grouped under background noise. Levels below 100 dBP will not be heard indoors and often will not be noticed while outside unless one is "listening" for them.

e. The other categories that results will be grouped into are tied to complaint risk. In 1976, Pater investigated noise complaints at the Naval Surface Weapons Center, Dahlgren, VA and found a correlation between Peak noise levels and complaint risk (Table 4). These complaint risk guidelines have been successfully incorporated into noise management programs at military installations. At Aberdeen Proving Ground, MD, testing is delayed; mission permitting, when off-post noise levels exceed 130 dBP.

TABLE 4. COMPLAINT RISK GUIDELINES. (Pater, 1976).

Predicted Linear Peak Level (dBP)	Risk of Noise Complaints
<115	Low risk of complaints
115-130	Moderate risk of complaints
130-140	High risk of complaints
>140	Threshold for permanent physiological damage to unprotected ears. High risk of physiological and structural damage claims.

7. EXPLANATION OF MONITORING RESULTS.

a. To provide a clear understanding of the monitoring data presented in this consultation, a sample of the monitoring data tables and figures are explained in detail below. The monitoring data is presented in two bar graphs and then in a tabular format. The first bar graph for each activity will have the recorded Peak (dBP) levels categorized as described above. The second graph will depict the predicted PK15 levels that were generated using the BNOISE2 model coupled with the highest level recorded at each of the monitoring sites for the individual activity. The tabular format will present the raw data that was used to create the first bar graph, with the highest level that was used to create the second graph highlighted. This will allow the reader to see which days the highest levels were realized at each monitoring site.

b. Each explosive weight at each detonation site are presented separately in the tables and figures.

c. Figures 2 & 3 and Table 5 presented in this section are provided as a sample and are based on the monitoring data for the 0.25 lb C-4 detonations at MS-10.

(1) Figure 2 depicts the number of detonations at MS-10 compared to the number of events recorded by the Sound Level Meters (SLMs). At MS-10, 42 (0.25 lb) charges of C-4 were detonated during the study. Figure 2 also indicates the range of Peak levels recorded by the SLMs. Reading the data for Site 3, one sees that of the 42 detonations, Site 3 recorded 32 events. Of these 32 events, 14 events were below the threshold; 15 events were less than 100 dBP; 3 events were between 100 and 114 dBP; and 0 events exceeded 115 dBP. During the 42 detonations, the unit at Site 3 was down for 10 of the events.

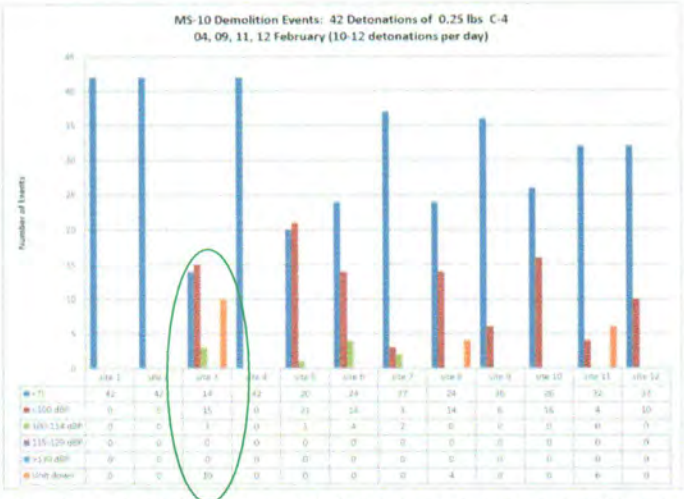

FIGURE 2. SAMPLE OF EVENTS BASED MONITORING DATA.

(2) Figure 3 depicts the BNOISE2 predicted PK15 levels compared with the highest Peak (dBP) levels recorded for the 0.25 lb C-4 detonations at MS-10. At Site 3, the maximum Peak level recorded was 105.9. The PK15 metric indicates that only 15 percent of events should fall above the value assuming that operations take place at all times and under all weather conditions without procedures in place to avoid adverse conditions. In other words, in the case below, the BNOISE2 model predicted that 85 percent of the time, the Peak level would be 126.0 dBP or below.

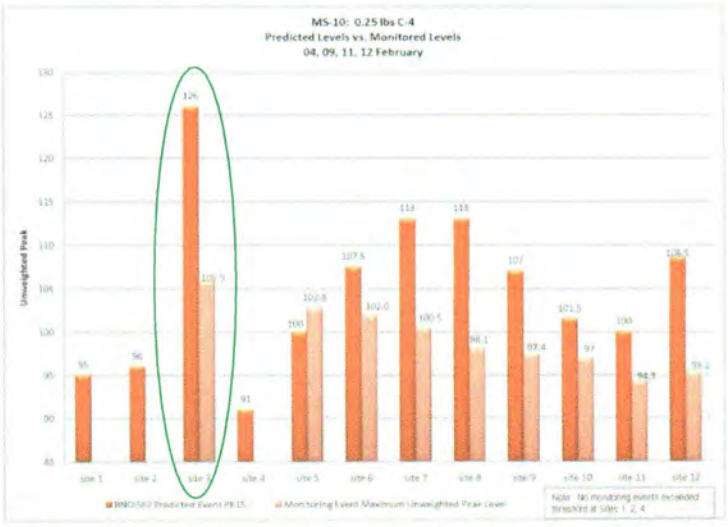

FIGURE 3. SAMPLE OF PREDICTED AND MONITORED LEVELS.

(3) Table 5 lists the Peak sound levels recorded at each site. Using records made at each of the detonation sites regarding the time each charge was detonated, events were cross matched to the automated levels recorded by the SLMs. Table 5 reflects the results.

(a) If the sound levels recorded by the SLM during the event was indistinguishable from the ambient background level, a "<TL" (less than threshold) is annotated on the table.

(b) If the table indicates "unit down", the SLM was not actively recording data during the event. The "unit down" status may have been caused by the following: battery failure, windscreen covered in ice, or equipment malfunction. Of the possible events monitored at community sites, units were down for recording 3.1 percent of the 25 lb events, 4.4 percent of the 1.25 lb events, and 3.3 percent of the .25 lb events.

(c) The highest level received at each monitoring site is highlighted.

TABLE 5. SAMPLE OF MONITORING DATA.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
4-Feb-10	0701	<TL	<TL	Unit down	<TL	102.8	80.6	<TL	86	<TL	83.4	90.5	<TL
	0707	<TL	<TL	Unit down	<TL	97.4	82.5	<TL	87.3	<TL	80.9	92.6	<TL
	0712	<TL	<TL	Unit down	<TL	89.5	84.4	<TL	89.5	<TL	85.6	<TL	<TL
	0717	<TL	<TL	Unit down	<TL	95.9	82.1	<TL	90.2	<TL	82.3	<TL	<TL
	1221	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1226	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1821	<TL	<TL	Unit down	<TL	88.2	88.1	<TL	89.9	<TL	<TL	<TL	88.1
	1826	<TL	<TL	Unit down	<TL	90.2	90.7	<TL	94.4	<TL	<TL	<TL	91.8
	1831	<TL	<TL	Unit down	<TL	89.7	90	<TL	95.3	<TL	<TL	<TL	91.9
	1836	<TL	<TL	Unit down	<TL	83	91.1	<TL	98.1	<TL	<TL	<TL	91.9
9-Feb-10	0717	<TL	<TL	105.9	<TL	90.7	100.1	100.2	93.7	97.4	<TL	<TL	<TL
	0720	<TL	<TL	102	<TL	87.6	100	98.8	92.1	92.2	<TL	<TL	<TL
	0722	<TL	<TL	97.6	<TL	87.5	100.1	97.1	91.1	88.7	<TL	<TL	<TL
	0725	<TL	<TL	99	<TL	89.1	99.2	93.9	93.5	95.3	<TL	<TL	<TL
	1201	<TL	<TL	92.9	<TL	<TL	92	100.5	<TL	96.1	<TL	<TL	90.6
	1205	<TL	<TL	91.5	<TL	<TL	91.8	<TL	<TL	96.3	<TL	<TL	92.7
	1917	<TL	<TL	98.5	<TL	<TL	92.5	<TL	<TL	<TL	<TL	<TL	89.4
	1919	<TL	<TL	93.9	<TL	<TL	92	<TL	<TL	<TL	<TL	<TL	86.4
	1922	<TL	<TL	97.9	<TL	<TL	98.3	<TL	<TL	<TL	<TL	<TL	89.3
	1925	<TL	<TL	100.9	<TL	<TL	102	<TL	<TL	<TL	<TL	<TL	95.2
11-Feb-10	0702	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0704	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0707	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0710	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1202	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1205	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1823	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	89.6	<TL	<TL
	1825	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	88.2	<TL	<TL
	1828	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	91.6	<TL	<TL
	1831	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	87.4	<TL	<TL

8. DETONATION ACTIVITY AT THE PROPOSED EOD SITE.

a. General.

(1) The monitoring data for each explosive weight at each detonation site are presented separately in the following tables and figures.

(2) In accordance with objective one, the EOD team conducted the smaller detonations (0.25 and 1.25 lb.) in the proposed EOD Field Training Area footprint. The detonation sites utilized within the proposed EOD footprint are those which are closest to the boundary, the Town of Port Royal and the Portabago Bay community. The explosive weight utilized at each site is the maximum weight that has been agreed to by the EOD school. The larger explosives (25 lb) were detonated at the proposed interior site (DS-70A).

b. Detonation Activity. Table 6 lists the total number of detonations at the proposed EOD Sites.

TABLE 6. DETONATIONS AT PROPOSED EOD SITES.

DEMO SITE NAME	WEIGHT	EXPLOSIVE TYPE	NUMBER OF DETONATIONS
MS-10	0.25 lbs	C-4	42
Site 7	0.25 lbs	C-4	42
MS-08	1.25 lbs	C-4	40
MS-12	1.25 lbs	C-4	40
DS-70A	25 lbs	TNT	16

Note: DS = Demolition Site, MS = MOUT Site
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

c. MS-10: 0.25 lbs C-4. Figures 4 & 5 and Table 7 summarize the monitoring data for the 0.25 lb C-4 detonations at MS-10. Detonation site MS-10 was utilized 4 days with a total of 42 events of 0.25 lb of C-4. The majority of the events from MS-10 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but one event was below the predicted PK15 level.

(1) Figure 4 depicts the range of dBP levels recorded by the SLMs at each monitoring site from the 0.25 lb C-4 detonations at MS-10. Of the events recorded, 77 percent were below the threshold; 21 percent were less than 100 dBP; and 2 percent were between 100 and 114 dBP. No events exceeded 115 dBP.

(2) Figure 5 depicts the BNOISE2 predicted PK15 levels vs. the maximum Peak level recorded at each monitoring site from the 0.25 lb C-4 detonations at MS-10.

(a) At one site, a single event exceeded the BNOISE2 model PK15 prediction.

(b) The maximum Peak level recorded at Site 5 was 102.8 dBP. The BNOISE2 model predicted that 85 percent of the time, the dBP level would be 100 dBP and below. The higher monitored level at Site 5 was within 3 percent of the predicted PK15 value.

(3) Table 7 lists the recorded Peak sound levels. The highest level received at each monitoring site is highlighted.

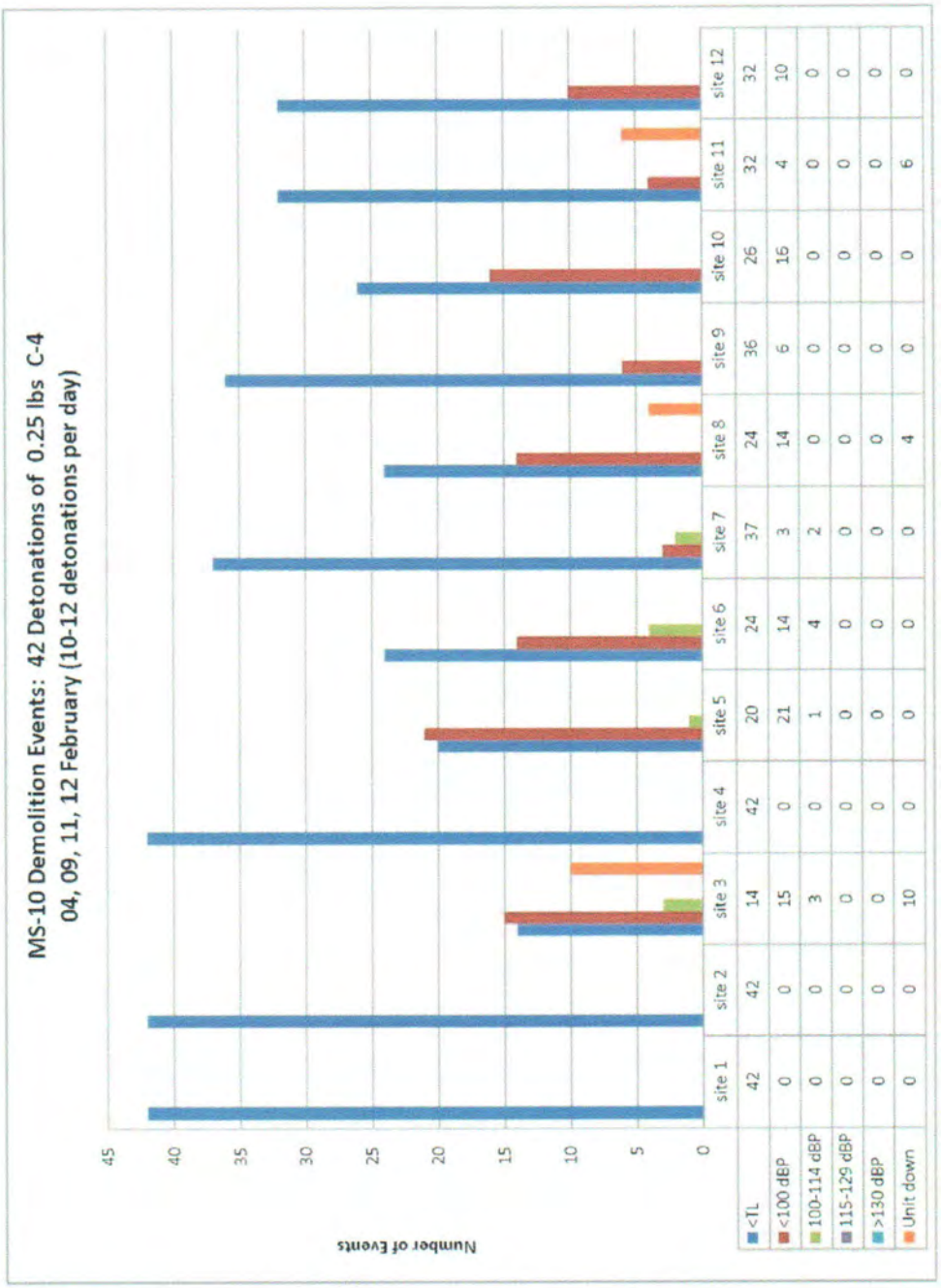

FIGURE 4. MS-10: 0.25 LBS C-4, MONITORING EVENTS.

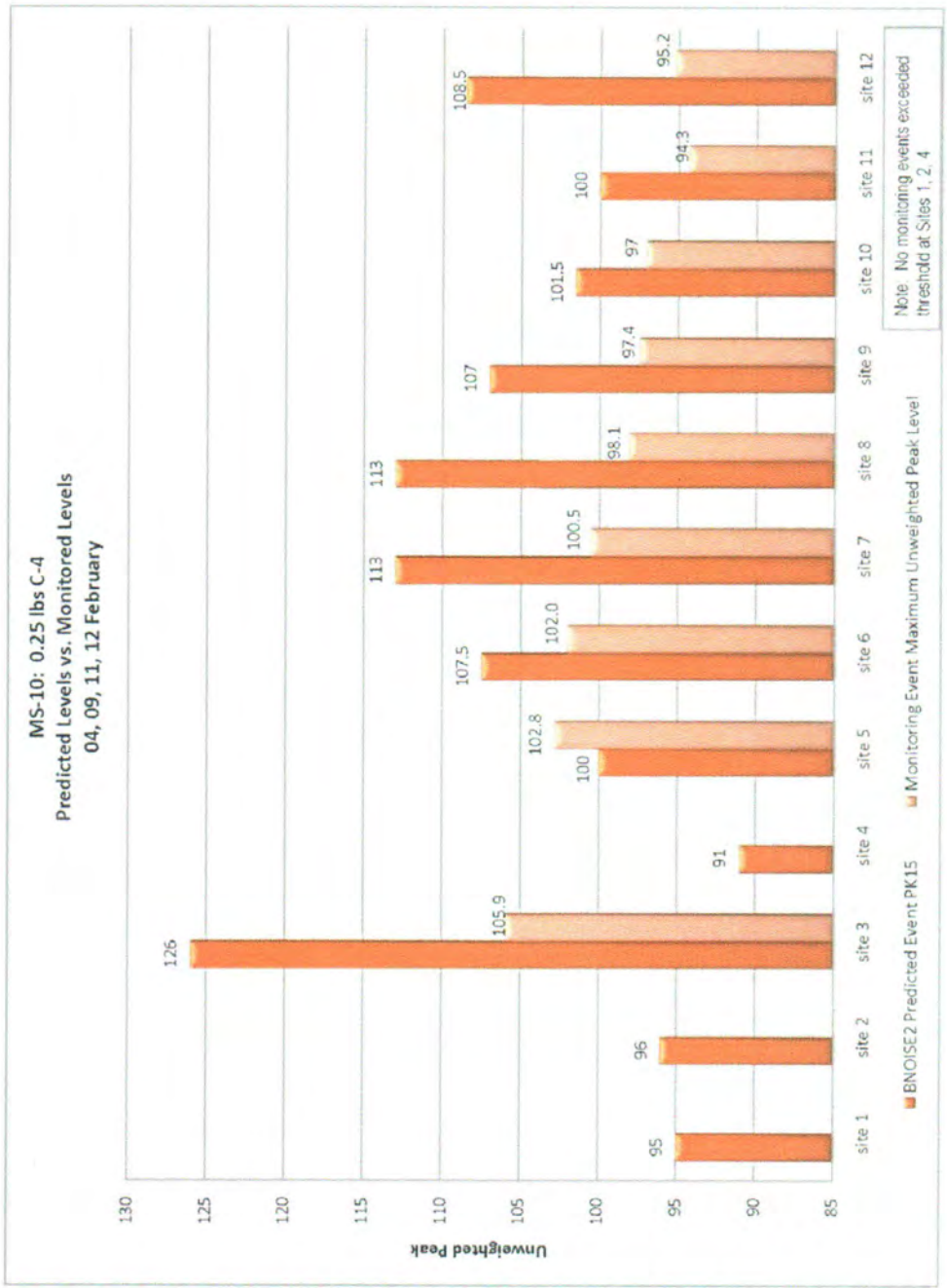

FIGURE 5. MS-10: 0.25 LBS C-4, PREDICTED AND MONITORED LEVELS

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
4-Feb-10	0701	<TL	<TL	Unit down	<TL	102.8	80.6	<TL	86	<TL	83.4	90.5	<TL
	0707	<TL	<TL	Unit down	<TL	97.4	82.5	<TL	87.3	<TL	80.9	92.6	<TL
	0712	<TL	<TL	Unit down	<TL	89.5	84.4	<TL	89.5	<TL	85.6	<TL	<TL
	0717	<TL	<TL	Unit down	<TL	95.9	82.1	<TL	90.2	<TL	82.3	<TL	<TL
	1221	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1226	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1821	<TL	<TL	Unit down	<TL	88.2	88.1	<TL	89.9	<TL	<TL	<TL	88.1
	1826	<TL	<TL	Unit down	<TL	90.2	90.7	<TL	94.4	<TL	<TL	<TL	91.8
	1831	<TL	<TL	Unit down	<TL	89.7	90	<TL	95.3	<TL	<TL	<TL	91.9
	1836	<TL	<TL	Unit down	<TL	83	91.1	<TL	98.1	<TL	<TL	<TL	91.9
9-Feb-10	0717	<TL	<TL	105.9	<TL	90.7	100.1	100.2	93.7	97.4	<TL	<TL	<TL
	0720	<TL	<TL	102	<TL	87.6	100	96.8	92.1	92.2	<TL	<TL	<TL
	0722	<TL	<TL	97.6	<TL	87.5	100.1	97.1	91.1	88.7	<TL	<TL	<TL
	0725	<TL	<TL	99	<TL	89.1	99.2	93.9	93.5	95.3	<TL	<TL	<TL
	1201	<TL	<TL	92.9	<TL	<TL	92	100.5	<TL	96.1	<TL	<TL	90.6
	1205	<TL	<TL	91.5	<TL	<TL	91.8	<TL	<TL	96.3	<TL	<TL	92.7
	1917	<TL	<TL	98.5	<TL	<TL	92.5	<TL	<TL	<TL	<TL	<TL	89.4
	1919	<TL	<TL	93.9	<TL	<TL	92	<TL	<TL	<TL	<TL	<TL	86.4
	1922	<TL	<TL	97.9	<TL	<TL	98.3	<TL	<TL	<TL	<TL	<TL	89.3
	1925	<TL	<TL	100.9	<TL	<TL	102	<TL	<TL	<TL	<TL	<TL	95.2
11-Feb-10	0702	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0704	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0707	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0710	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1202	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1205	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1823	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	89.6	<TL	<TL
	1825	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	88.2	<TL	<TL
	1828	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	91.6	<TL	<TL
	1831	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	87.4	<TL	<TL

TABLE 7. MS-10: 0.25 LBS OF C-4, MONITORING DATA.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
12-Feb-10	0201	<TL	<TL	<TL	<TL	88.8	<TL	<TL	95.1	<TL	84.3	<TL	<TL
	0204	<TL	<TL	<TL	<TL	87.1	<TL	<TL	95.5	<TL	80.1	<TL	<TL
	0704	<TL	<TL	84	<TL	88	<TL	<TL	<TL	<TL	97	<TL	<TL
	0707	<TL	<TL	88.4	<TL	90.6	<TL	<TL	<TL	<TL	84.3	<TL	<TL
	0710	<TL	<TL	90.6	<TL	92.4	<TL	<TL	<TL	<TL	85.5	94.3	<TL
	0712	<TL	<TL	85.8	<TL	94.6	<TL	<TL	<TL	<TL	85.9	86.7	<TL
	1202	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	85.9	Unit down	<TL
	1205	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	94.5	Unit down	<TL
	1800	<TL	<TL	91.3	<TL	89.9	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1802	<TL	<TL	87.3	<TL	85.8	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1805	<TL	<TL	87.5	<TL	78.9	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1808	<TL	<TL	84.6	<TL	79.4	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL

TABLE 7. MS-10: 0.25 LBS C-4, MONITORING DATA, cont'd.

d. Site 7: 0.25 lbs C-4. Figures 6 & 7 and Table 8 summarize the monitoring data for the 0.25 lb C-4 detonations at Site 7. Detonation Site 7 was utilized 4 days with a total of 42 events of 0.25 lb of C-4. The majority of the events from Site 7 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but one event was below the predicted PK15 level.

(1) Figure 6 depicts the range of Peak levels recorded at each monitoring site from the 0.25 lb C-4 detonations at Site 7. Of the events recorded, 83 percent were below the threshold; 15 percent were less than 100 dBP; and 2 percent were between 100 and 114 dBP. No events exceeded 115 dBP.

(2) Figure 7 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site for the 0.25 lb C-4 detonations at Site 7.

(a) At one site, a single event exceeded the BNOISE2 model PK15 prediction.

(b) The maximum Peak level recorded at Site 5 was 107.1 dBP. The BNOISE2 model predicted that 85 percent of the time, the Peak level would be 106.5 and below. The higher monitored level at Site 5 was within 1 percent of the predicted PK15 value.

(3) Table 8 lists the Peak sound levels. The highest level received at each monitoring site is highlighted.

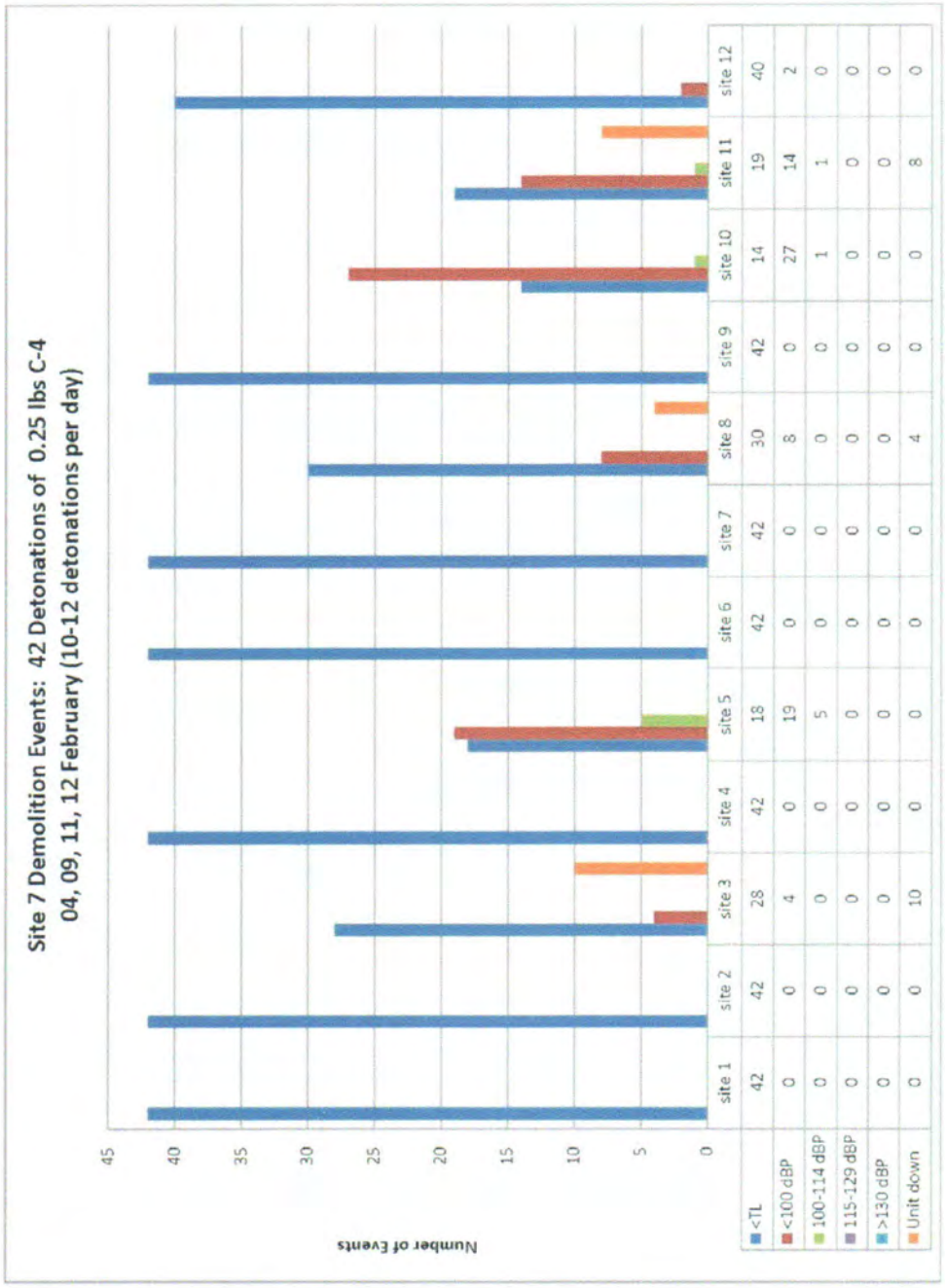

FIGURE 6. SITE 7: 0.25 LBS C-4, MONITORING EVENTS.

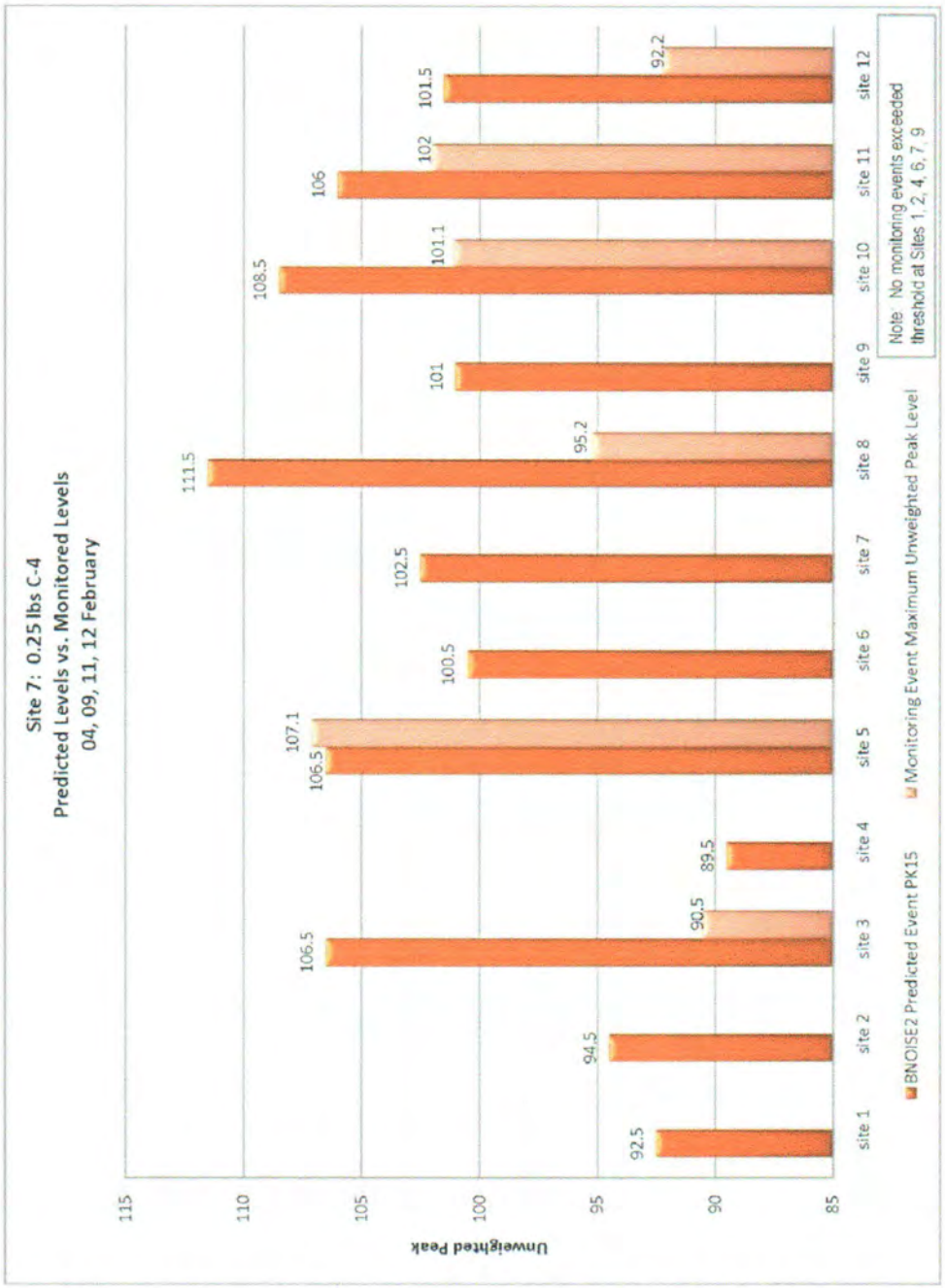

FIGURE 7. SITE 7: 0.25 LBS C-4, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Levels (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
4-Feb-10	0720	<TL	<TL	Unit down	<TL	107.1	<TL	<TL	<TL	<TL	81.2	91.6	<TL
	0725	<TL	<TL	Unit down	<TL	105.7	<TL	<TL	<TL	<TL	83	93.6	<TL
	0730	<TL	<TL	Unit down	<TL	101.6	<TL	<TL	<TL	<TL	81.4	96.7	<TL
	0735	<TL	<TL	Unit down	<TL	96	<TL	<TL	<TL	<TL	80.5	<TL	<TL
	1231	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1236	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1800	<TL	<TL	Unit down	<TL	90.9	<TL	<TL	86.7	<TL	88	<TL	<TL
	1805	<TL	<TL	Unit down	<TL	91.7	<TL	<TL	86.8	<TL	87.5	<TL	<TL
	1810	<TL	<TL	Unit down	<TL	88.7	<TL	<TL	84.1	<TL	89.5	<TL	<TL
	1815	<TL	<TL	Unit down	<TL	88.2	<TL	<TL	84.5	<TL	89.8	<TL	<TL
9-Feb-10	0730	<TL	<TL	89	<TL	99.5	<TL	<TL	95.2	<TL	80.6	<TL	<TL
	0733	<TL	<TL	90.5	<TL	100.5	<TL	<TL	93.1	<TL	79.3	<TL	<TL
	0735	<TL	<TL	87.3	<TL	88.7	<TL	<TL	90.5	<TL	80.8	<TL	<TL
	0738	<TL	<TL	89.8	<TL	97.9	<TL	<TL	93.7	<TL	79.3	<TL	<TL
	1208	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1211	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1851	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1854	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1857	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	92.2
	1900	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	86.7
11-Feb-10	0713	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	90.3	87.3	<TL
	0716	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	96.4	92.4	<TL
	0718	<TL	<TL	<TL	<TL	94.9	<TL	<TL	<TL	<TL	101.1	95.9	<TL
	0721	<TL	<TL	<TL	<TL	95.4	<TL	<TL	<TL	<TL	97.8	90.6	<TL
	1208	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1211	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1835	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	96.2	87.1	<TL
	1838	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	91.5	90.8	<TL
	1841	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	84	95	<TL
	1843	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	87.8	102	<TL

TABLE 8. SITE 7: 0.25 LBS C-4, MONITORING DATA.

		Unweighted Peak Levels (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
12-Feb-10	0207	<TL	<TL	<TL	<TL	95.1	<TL	<TL	<TL	<TL	94.9	85	<TL
	0210	<TL	<TL	<TL	<TL	95.8	<TL	<TL	<TL	<TL	99.9	86.7	<TL
	0716	<TL	<TL	<TL	<TL	96	<TL	<TL	<TL	<TL	92.2	93.2	<TL
	0719	<TL	<TL	<TL	<TL	95.5	<TL	<TL	<TL	<TL	85	91.6	<TL
	0721	<TL	<TL	<TL	<TL	92.4	<TL	<TL	<TL	<TL	91.3	Unit down	<TL
	0724	<TL	<TL	<TL	<TL	89.9	<TL	<TL	<TL	<TL	93.2	Unit down	<TL
	1208	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	91.2	Unit down	<TL
	1211	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	89.5	Unit down	<TL
	1811	<TL	<TL	<TL	<TL	102.3	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1814	<TL	<TL	<TL	<TL	93.1	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1816	<TL	<TL	<TL	<TL	98.2	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1819	<TL	<TL	<TL	<TL	92.9	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL

TABLE 8. SITE 7: 0.25 LBS C-4, MONITORING DATA, cont'd.

e. MS-08: 1.25 lbs C-4. Figures 8 & 9 and Table 9 summarize the monitoring data for the 1.25 lb C-4 detonations at MS-08. At detonation site MS-08, 40 charges of 1.25 lb of C-4 were detonated. The majority of the events from MS-08 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but one event was below the predicted PK15 level.

(1) Figure 8 depicts the range of Peak levels recorded at each monitoring site from the 1.25 lb C-4 detonations at MS-08. Of the events recorded, 68 percent were below the threshold; 23 percent were less than 100 dBP; and 9 percent were between 100 and 114 dBP. No events exceeded 115 dBP.

(2) Figure 9 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site for the 1.25 lb C-4 detonations at MS-08.

(a) At one site, a single event exceeded the BNOISE2 model PK15 prediction.

(b) The maximum Peak level recorded at Site 2 was 105.2 dBP. The BNOISE2 model predicted that 85 percent of the time, the Peak level would be 103 and below. The higher monitored level at Site 2 was within 2 percent of the predicted PK15 value.

(3) Table 9 lists the Peak sound levels. The highest level received at each monitoring site is highlighted.

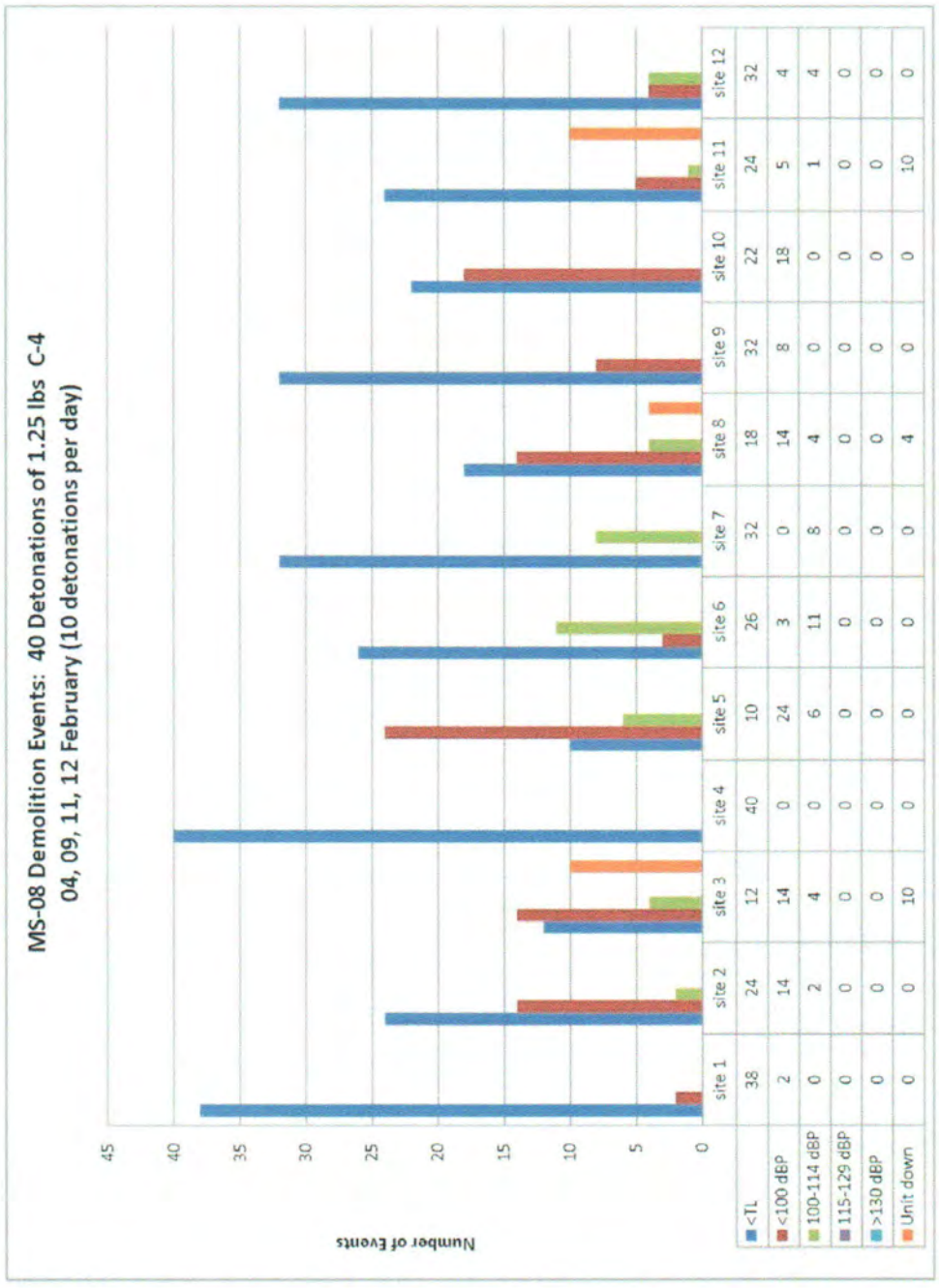

FIGURE 8. MS-08: 1.25 LBS C-4, MONITORING EVENTS.

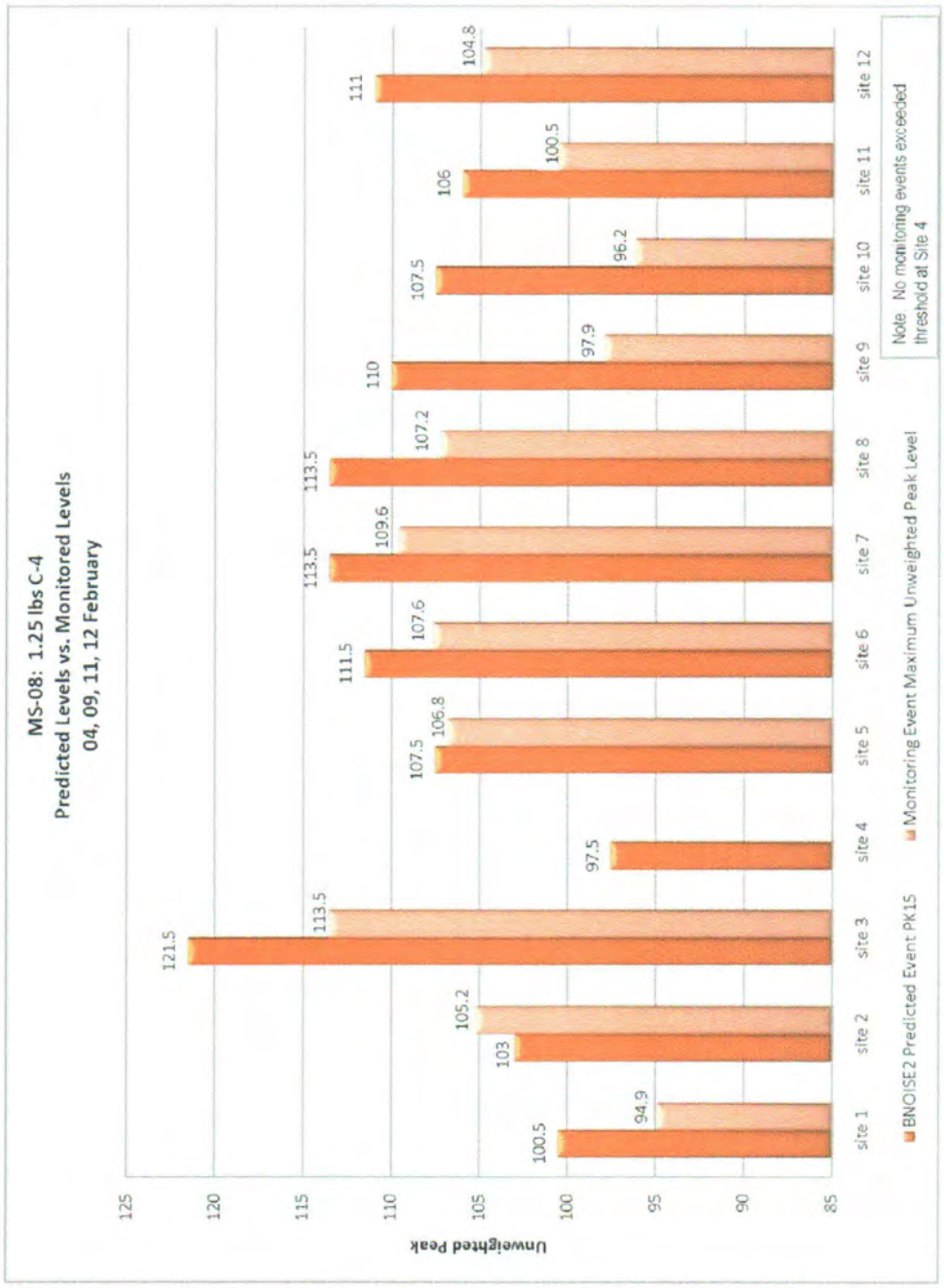

FIGURE 9. MS-08: 1.25 LBS C-4, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Levels (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
4-Feb-10	0601	<TL	93.2	Unit down	<TL	106.8	<TL	<TL	95.4	<TL	82.7	<TL	<TL
	0606	<TL	90.2	Unit down	<TL	104.9	<TL	<TL	95.3	<TL	86.2	<TL	<TL
	0611	<TL	94	Unit down	<TL	96.9	<TL	<TL	94.3	<TL	81.8	<TL	<TL
	0616	<TL	90.4	Unit down	<TL	98.4	<TL	<TL	94.1	<TL	86.6	<TL	<TL
	1249	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	98.1	<TL	<TL	<TL	<TL
	1254	<TL	<TL	Unit down	<TL	<TL	<TL	<TL	97.9	<TL	<TL	<TL	<TL
	1918	<TL	<TL	Unit down	<TL	93.7	106.8	109.3	107.2	96.5	86.4	92.7	103.7
	1923	<TL	<TL	Unit down	<TL	86.7	105.7	109.6	103	97.7	94.3	91.1	104.7
	1929	<TL	<TL	Unit down	<TL	93.6	107.6	107.3	102.1	97.8	89.7	92.2	104.7
	1934	<TL	<TL	Unit down	<TL	95.8	106.8	108.5	104.9	97.9	91.6	94.9	104.8
9-Feb-10	0754	<TL	82.6	108.8	<TL	92.3	104	105.1	99.2	89.5	<TL	<TL	92.5
	0757	<TL	82.3	109.5	<TL	90.2	100.8	107.5	91.6	88.3	<TL	<TL	92.3
	0800	<TL	82.9	112.7	<TL	92.9	100.7	103.3	99	91.7	<TL	<TL	95.7
	0803	<TL	82.2	113.5	<TL	93.6	101.3	105.5	98.7	91.5	<TL	<TL	94.8
	1227	94.9	<TL	94.1	<TL	<TL	92	<TL	<TL	<TL	<TL	<TL	<TL
	1230	89.8	<TL	99.8	<TL	<TL	95.1	<TL	<TL	<TL	<TL	<TL	<TL
	1956	<TL	<TL	96.5	<TL	<TL	100.6	<TL	<TL	<TL	<TL	<TL	<TL
	1959	<TL	<TL	97.1	<TL	<TL	102.6	<TL	<TL	<TL	<TL	<TL	<TL
	2002	<TL	<TL	96.3	<TL	<TL	99.7	<TL	<TL	<TL	<TL	<TL	<TL
	2005	<TL	<TL	94.8	<TL	<TL	100	<TL	<TL	<TL	<TL	<TL	<TL
11-Feb-10	0743	<TL	<TL	<TL	<TL	96.9	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0745	<TL	<TL	<TL	<TL	100.2	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0748	<TL	<TL	<TL	<TL	95.9	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0750	<TL	<TL	<TL	<TL	99.4	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1228	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	100.5	<TL
	1232	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	99.7	<TL
	1902	<TL	88.9	<TL	<TL	93.7	<TL	<TL	<TL	<TL	96.2	<TL	<TL
	1906	<TL	96.8	<TL	<TL	99.4	<TL	<TL	<TL	<TL	89.7	<TL	<TL
	1909	<TL	102.6	<TL	<TL	93.2	<TL	<TL	<TL	<TL	86.1	<TL	<TL
	1911	<TL	105.2	<TL	<TL	101.2	<TL	<TL	<TL	<TL	86.6	<TL	<TL

TABLE 9. MS-08: 1.25 LBS C-4, MONITORING DATA.

		Unweighted Peak Levels (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
12-Feb-10	0749	<TL	84.1	92.8	<TL	101.4	<TL	<TL	88.5	<TL	87.7	Unit down	<TL
	0751	<TL	81.6	91.9	<TL	97.1	<TL	<TL	88.9	<TL	88.7	Unit down	<TL
	0754	<TL	82.3	91.8	<TL	101.1	<TL	<TL	87.4	<TL	89.6	Unit down	<TL
	0757	<TL	84.1	93.1	<TL	99.7	<TL	<TL	88.9	<TL	89.6	Unit down	<TL
	1226	<TL	<TL	<TL	<TL	88.7	<TL	<TL	<TL	<TL	93.7	Unit down	<TL
	1229	<TL	<TL	<TL	<TL	90.5	<TL	<TL	<TL	<TL	85.3	Unit down	<TL
	1838	<TL	<TL	89.4	<TL	90.7	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1841	<TL	<TL	87.1	<TL	88.1	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1844	<TL	<TL	89.2	<TL	89.8	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL
	1847	<TL	<TL	85.6	<TL	84.4	<TL	<TL	Unit down	<TL	<TL	Unit down	<TL

TABLE 9. MS-08: 1.25 LBS C-4, MONITORING DATA, cont'd.

f. MS-12: 1.25 lbs C-4. Figures 10 & 11 and Table 10 summarize the monitoring data for the 1.25 lb C-4 detonations at MS-12. Detonation site MS-12 was utilized 4 days with a total of 40 events of 1.25 lb of C-4. The majority of the events from MS-12 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but three events were below the predicted PK15 levels.

(1) Figure 10 depicts the range of Peak levels recorded at each monitoring site from the 1.25 lb C-4 detonations at MS-12. Of the events recorded, 67 percent were below the threshold; 23 percent were less than 100 dBP; 10 percent were between 100 and 114 dBP, and less than 1percent were between 115 and 130 dBP. No events exceeded 130 dBP.

(2) Figure 11 depicts the BNOISE2 predicted PK15 levels compared to the maximum Peak level recorded at each monitoring site from the 1.25 lb C-4 detonations at MS-12.

(a) Three events exceeded the BNOISE2 model PK15 levels prediction.

(b) The maximum Peak level recorded at Site 2 was 106.8 dBP. The BNOISE2 model predicted that 85 percent of the time, the Peak level would be 101 and below. The higher monitored level at Site 2 was within 6 percent of the predicted PK15 value.

(c) The maximum Peak level recorded at Site 5 was 116.6 dBP. The BNOISE2 model predicted that 85 percent of the time the Peak level would be 113.5 and below. The higher monitored level at Site 5 was within 3 percent of the predicted PK15 value.

(3) Table 10 lists the Peak sound levels for each site. The highest level received at each monitoring site is highlighted.

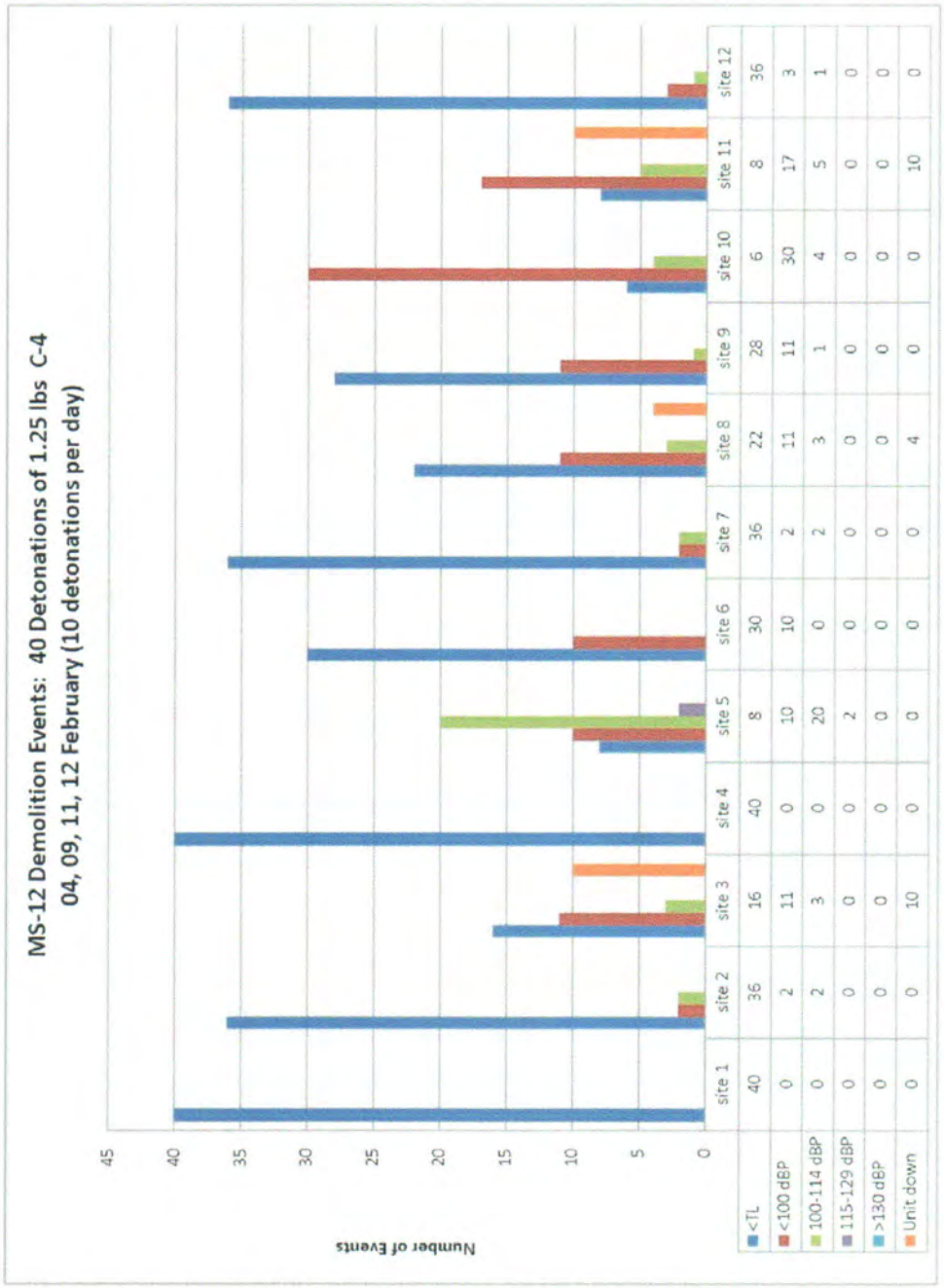

FIGURE 10. MS-12: 1.25 LBS C-4, MONITORING EVENTS.

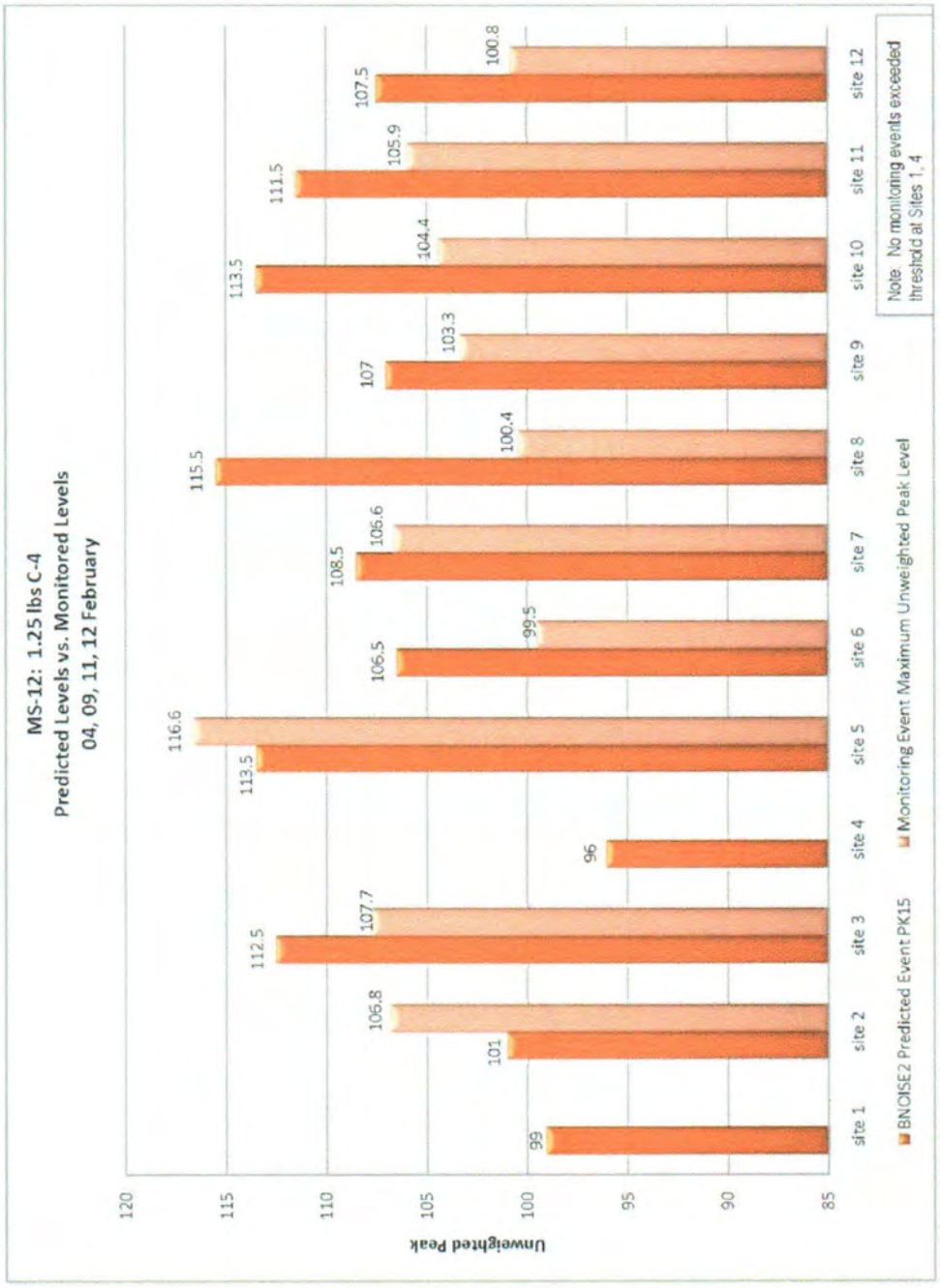

FIGURE 11. MS-12: 1.25 LBS C-4, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
4-Feb-10	0821	<TL	<TL	Unit down	<TL	112.8	<TL	<TL	93	<TL	85.6	<TL	<TL
	0826	<TL	<TL	Unit down	<TL	109.8	<TL	<TL	97	<TL	85.4	<TL	<TL
	0831	<TL	<TL	Unit down	<TL	111.9	<TL	<TL	94	<TL	84.9	91.9	<TL
	0836	<TL	<TL	Unit down	<TL	99.3	<TL	<TL	94.6	<TL	84.8	92.3	<TL
	1259	<TL	<TL	Unit down	<TL	99.9	<TL	<TL	92.2	<TL	87	94.5	<TL
	1329	<TL	<TL	Unit down	<TL	102.3	<TL	<TL	93	<TL	90.2	96.5	<TL
	1857	<TL	<TL	Unit down	<TL	96	<TL	<TL	100	85.1	88	95.5	<TL
	1902	<TL	<TL	Unit down	<TL	92.7	<TL	<TL	100.3	94.6	87.5	93.8	<TL
	1907	<TL	<TL	Unit down	<TL	92.6	<TL	<TL	99.2	83.5	89.5	94.5	<TL
	1912	<TL	<TL	Unit down	<TL	91.6	<TL	<TL	100.4	84.4	89.8	94.4	<TL
9-Feb-10	0806	<TL	<TL	92.5	<TL	99.6	87.3	<TL	94.1	80.3	97.4	94.4	<TL
	0809	<TL	<TL	92.6	<TL	106.5	92.2	<TL	97.4	84.6	91.3	88.3	<TL
	0812	<TL	<TL	91.9	<TL	107.6	90.7	<TL	96.3	85.6	90	88.7	<TL
	0814	<TL	<TL	90.1	<TL	103	91.9	<TL	97.1	86.2	96.6	88.9	<TL
	1233	<TL	<TL	89.1	<TL	<TL	89.9	<TL	<TL	<TL	<TL	<TL	<TL
	1236	<TL	<TL	95.8	<TL	<TL	89.9	<TL	<TL	<TL	<TL	<TL	<TL
	1934	<TL	<TL	107.7	<TL	<TL	95.4	106.6	<TL	97.8	<TL	<TL	100.8
	1937	<TL	<TL	103.2	<TL	<TL	90.2	100.7	<TL	96.9	<TL	<TL	97.4
	1940	<TL	<TL	97.5	<TL	<TL	97	97.9	<TL	99.3	<TL	<TL	90
	1942	<TL	<TL	103.4	<TL	<TL	99.5	98.3	<TL	103.3	<TL	<TL	99.4
11-Feb-10	0754	<TL	<TL	<TL	<TL	100.9	<TL	<TL	<TL	<TL	98.5	95.1	<TL
	0757	<TL	<TL	<TL	<TL	109.6	<TL	<TL	<TL	<TL	102.5	105.9	<TL
	0759	<TL	<TL	<TL	<TL	98.6	<TL	<TL	<TL	<TL	104.4	95.5	<TL
	0802	<TL	<TL	<TL	<TL	100.2	<TL	<TL	<TL	<TL	96.8	95.9	<TL
	1235	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	104.3	103.9	<TL
	1238	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	99.2	100.6	<TL
	1915	<TL	92.7	<TL	<TL	110.1	<TL	<TL	<TL	<TL	99.7	104.6	<TL
	1918	<TL	99.3	<TL	<TL	105.8	<TL	<TL	<TL	<TL	91.4	93.5	<TL
	1921	<TL	106.8	<TL	<TL	100.1	<TL	<TL	<TL	<TL	98.6	101.3	<TL
	1932	<TL	103.6	<TL	<TL	111.7	<TL	<TL	<TL	<TL	102.4	94.4	<TL

TABLE 10. MS-12: 1.25 LBS C-4, MONITORING DATA.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
12-Feb-10	0801	<TL	<TL	<TL	<TL	107	<TL	<TL	<TL	<TL	94.7	Unit down	<TL
	0803	<TL	<TL	<TL	<TL	115.9	<TL	<TL	<TL	<TL	97.1	Unit down	<TL
	0806	<TL	<TL	<TL	<TL	112.6	<TL	<TL	<TL	<TL	93.4	Unit down	<TL
	809	<TL	<TL	<TL	<TL	116.6	<TL	<TL	<TL	<TL	98.9	Unit down	<TL
	1233	<TL	<TL	<TL	<TL	101.1	<TL	<TL	<TL	<TL	96.7	Unit down	<TL
	1236	<TL	<TL	<TL	<TL	94.2	<TL	<TL	<TL	<TL	88.9	Unit down	<TL
	1850	<TL	<TL	84.5	<TL	101.7	<TL	<TL	Unit down	<TL	86.1	Unit down	<TL
	1853	<TL	<TL	82.5	<TL	101.7	<TL	<TL	Unit down	<TL	84.3	Unit down	<TL
	1856	<TL	<TL	84.8	<TL	106.8	<TL	<TL	Unit down	<TL	87.3	Unit down	<TL
	1926	<TL	<TL	90.3	<TL	99.2	<TL	<TL	Unit down	<TL	88	Unit down	<TL

TABLE 10. MS-12: 1.25 LBS C-4, MONITORING DATA, cont'd.

g. DS-70A: 25 lbs TNT. Figures 12 & 13 and Table 11 summarize the monitoring data for the 25 lbs TNT detonations at DS-70A. Detonation site DS-70A was utilized 4 days with a total of 16 detonations of 25 lbs of TNT. Approximately half of the events from DS-70A were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all events were below the predicted PK15 levels.

(1) Figure 12 depicts the range of Peak levels recorded at each monitoring site for the 25 lb TNT detonations at DS-70A. Of the events recorded, 41 percent were below the threshold; 18 percent were less than 100 dBP; and 41 percent were between 100 and 114 dBP. No events exceeded 115 dBP.

(2) Figure 13 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site for the 25 lb TNT detonations at DS-70A.

(3) Table 11 lists the Peak sound levels recorded for each site. The highest level received at each monitoring site is highlighted.

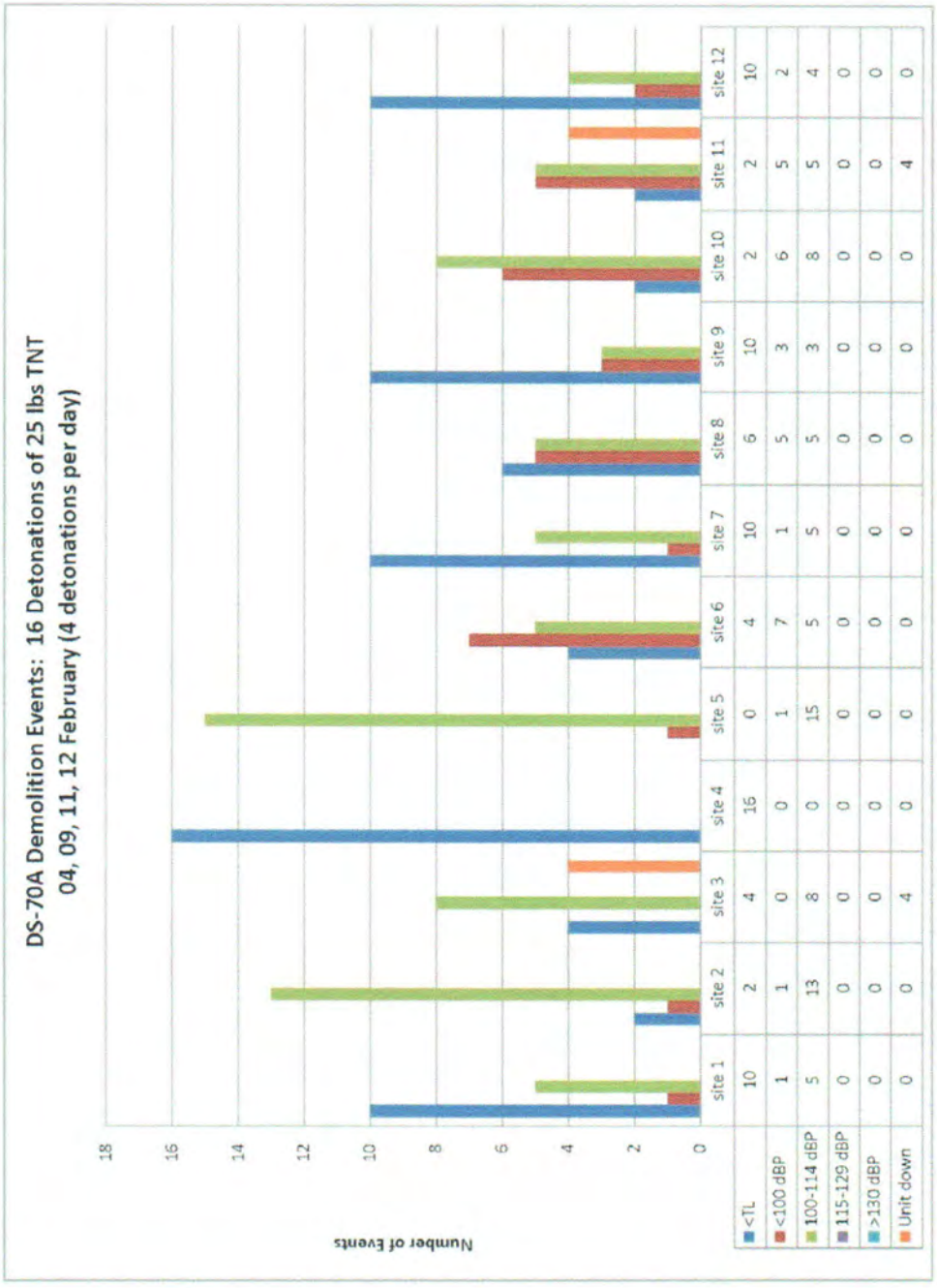

FIGURE 12. DS-70A: 25 LBS TNT, MONITORING EVENTS.

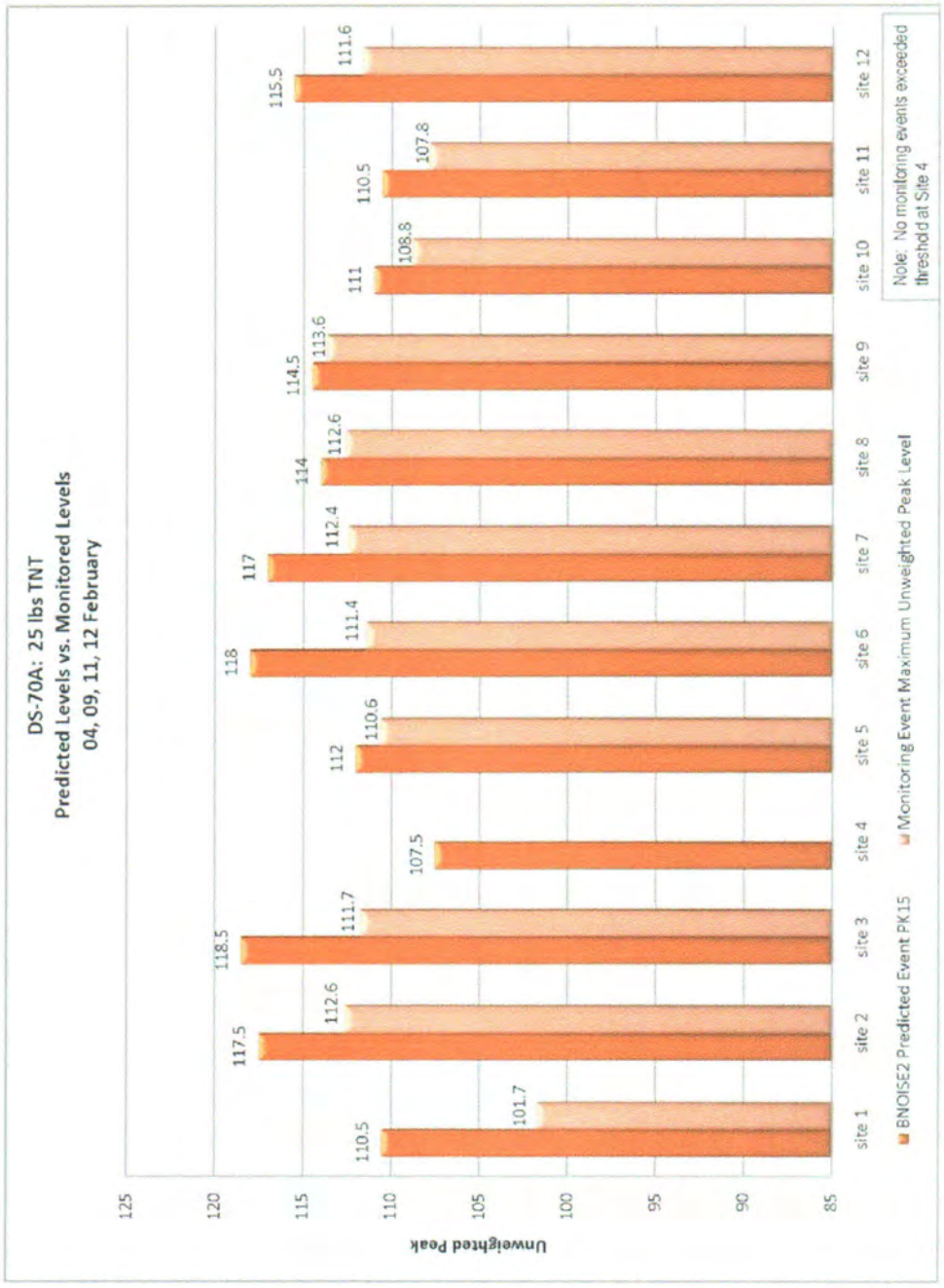

FIGURE 13. DS-70A: 25 LBS TNT, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Levels (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
4-Feb-10	0906	<TL	108.1	Unit down	<TL	106.8	88	<TL	91.9	<TL	94.7	102.4	<TL
	0911	<TL	107.7	Unit down	<TL	105.8	89.6	<TL	89.6	<TL	89.8	105	<TL
	1336	<TL	108.9	Unit down	<TL	104.4	93.3	<TL	102.6	<TL	87	95.6	<TL
	1341	<TL	109.6	Unit down	<TL	105.8	96.6	<TL	102.6	<TL	89.6	95	<TL
9-Feb-10	0842	101.1	108	100.8	<TL	101.1	100.7	102.9	95.6	99.7	105.2	101.2	100.2
	0845	101.7	112.6	100.5	<TL	101.6	100.3	102	102.6	103	108.8	101.1	102.7
	1310	100.9	105.2	111.2	<TL	100.3	108.5	111.7	108	113.6	104.1	97.1	111.5
	1313	100.3	107.2	111.7	<TL	98.6	111.4	112.4	112.6	112.1	101.6	96.4	111.6
11-Feb-10	0833	101.3	97.2	<TL	<TL	106.7	<TL	<TL	<TL	<TL	102.8	96.5	<TL
	0836	96.2	101.7	<TL	<TL	110.6	<TL	<TL	<TL	<TL	106.2	107.8	<TL
	1309	<TL	<TL	<TL	<TL	105.8	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1312	<TL	<TL	<TL	<TL	100.4	<TL	<TL	<TL	<TL	<TL	<TL	<TL
12-Feb-10	0842	<TL	102.7	100.6	<TL	110	96.2	<TL	98.4	92	99.7	Unit down	96
	0845	<TL	103	101.9	<TL	109.3	99	<TL	99.5	93.4	99.2	Unit down	96.8
	1301	<TL	105.4	103.6	<TL	107.6	102.4	99.1	<TL	<TL	102.7	Unit down	<TL
	1304	<TL	107.9	102.7	<TL	104.2	99.2	102.1	<TL	<TL	101.9	Unit down	<TL

TABLE 11. DS-70A: 25 LBS TNT, MONITORING DATA.

h. Findings For EOD Site Activity.

(1) During the study, the 12 monitors recorded a combined total of 2,062 events from the proposed EOD operations which correlated with a known blast event time. The 12 monitors recorded 1,878 events for the 0.25 lb and 1.25 lb C-4 and 184 events of the 25 lb TNT detonations.

(2) Of the recorded 0.25 lb and 1.25 lb C-4 events, in the proposed EOD Field Training Area, 1,388 (71 percent) were indistinguishable from the ambient background level. Of the recorded 25 lb TNT detonations, at DS-70A, 76 (41 percent) were indistinguishable from the ambient background level.

(3) Of the 598 recordings that were correlated with a blast event time and exceeded background levels, all but 5 events were below the predicted PK15 levels.

(4) At the 8 sites in the community, only two events generated by detonations at the proposed EOD sites were recorded that exceeded 115 dBP. Both of these occurred at Site 5 (Essex) and were only slightly above 115 (115.9 and 116.6 dBP). No events were recorded during the study that registered over 130 dBP (high complaint risk).

9. DETONATION ACTIVITY AT OTHER DEMOLITION AND TRAINING SITES.

a. General. In addition to the proposed EOD sites, FAPH selected two additional detonation sites to evaluate during the monitoring period. The detonation site TA13/TA18 is located in the northern area of FAPH. Demolition Site 13 is in the central portion of FAPH, just south of Route 301.

b. Detonation Activity. Table 12 lists the number of and charge weights of the detonations that were conducted at DS-13 and TA13/TA18.

TABLE 12. EVENTS AT OTHER FAPH DEMOLITION AND TRAINING SITES.

DEMO SITE NAME	WEIGHT	EXPLOSIVE TYPE	NUMBER OF DETONATIONS
DS-13	0.25 lbs	C-4	20
DS-13	1.25 lbs	C-4	20
DS-13	25 lbs	TNT	12
TA13/TA18	0.25 lbs	C-4	20
TA13/TA18	1.25 lbs	C-4	20
TA13/TA18	25 lbs	TNT	8

Note: DS = Demolition Site, TA = Training Area
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

c. DS-13: 0.25 lbs C-4. Figures 14 & 15 and Table 13 summarize the monitoring data for the 0.25 lb C-4 detonations at DS-13. Detonation site DS-13 was utilized 3 days with a total of 20 detonations of 0.25 lb of C-4. The majority of the events from DS-13 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but one event was below predicted PK15 levels.

(1) Figure 14 depicts the range of Peak levels recorded at each monitoring site from the 0.25 lb C-4 detonations at DS-13. Of the events recorded, 93 percent were below the threshold; 5 percent were less than 100 dBP; and 2 percent were between 100 and 114 dBP. No events exceeded 115 dBP.

(2) Figure 15 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site from the 0.25 lb C-4 detonations at DS-13.

(a) One event occurred that exceeded the BNOISE2 model PK15 prediction.

(b) The maximum Peak level recorded at the on-post Site 4 was 96.8 dBP. The BNOISE2 model predicted that 85 percent of the time, the Peak level would be 95 and below. The higher monitored level at Site 4 was within 2 percent of the predicted PK15 level.

(3) Table 13 lists the Peak sound levels recorded for each site. The highest level received at each monitoring site is highlighted.

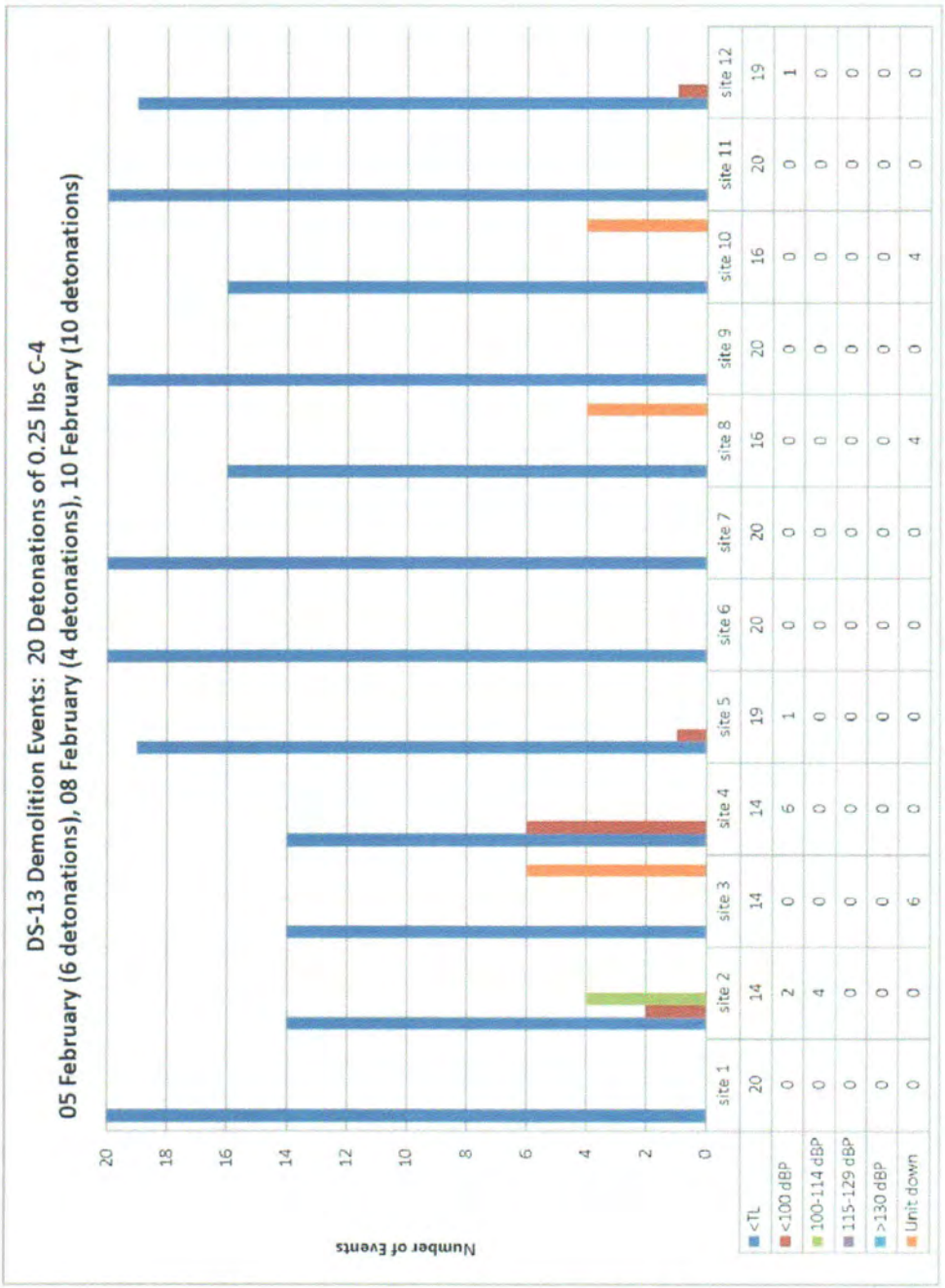

FIGURE 14. DS-13: 0.25 LBS C-4, MONITORING EVENTS.

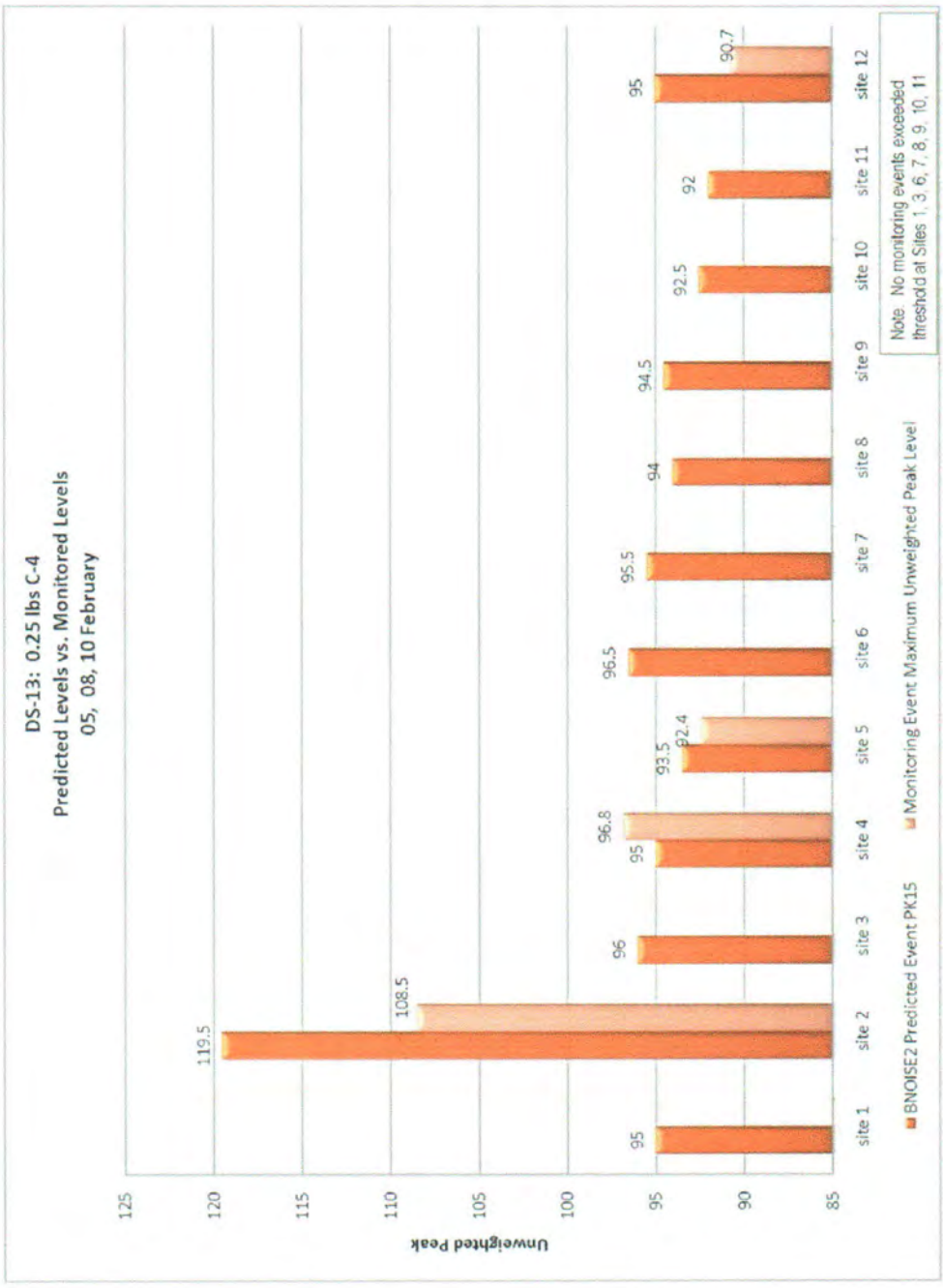

FIGURE 15. DS-13: 0.25 LBS C-4, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
5-Feb-10	0731	<TL	106.4	unit down	94.6	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0733	<TL	106.7	unit down	94.7	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0736	<TL	108.5	unit down	96.8	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0739	<TL	103.7	unit down	91.1	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1217	<TL	97	unit down	90.1	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1220	<TL	94.9	unit down	90.8	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
8-Feb-10	1813	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1816	<TL	<TL	<TL	<TL	92.4	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1819	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1821	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	90.7
10-Feb-10	0717	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0720	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0722	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0725	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	1212	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1214	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1813	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1816	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1818	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1821	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL

TABLE 13. DS-13 0.25 LBS C-4, MONITORING DATA.

d. DS-13: 1.25 lbs C-4. Figures 16 & 17 and Table 14 summarize the monitoring data for the 1.25 lb C-4 detonations at DS-13. Detonation site DS-13 was utilized 3 days with a total of 20 events of 1.25 lb of C-4. The majority of the events from DS-13 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but one event was below the predicted PK15 level.

(1) Figure 16 depicts the range of Peak levels recorded at each monitoring site from the 1.25 lb C-4 detonations at DS-13. Of the events recorded, 90 percent were below the threshold; 7 percent were less than 100 dBP; and 3 percent were between 100 and 114 dBP. No events exceeded 115 dBP.

(2) Figure 17 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site for the 1.25 lb C-4 detonations at DS-13.

(a) One event occurred that exceeded the BNOISE2 model PK15 prediction.

(b) The maximum Peak level recorded at Site 4 was 108.6 dBP. The BNOISE2 model predicted that 85 percent of the time the Peak level would be 95 and below. The higher monitored level at Site 4 was within 14 percent of the predicted value.

(c) The higher than the predicted value occurred mid-day on 5 February. The most likely cause of the higher sound level was the approaching snow front which provided a lower level cloud cover.

(3) Table 14 lists the dBP sound levels recorded by the SLM. The highest level received at each monitoring site is highlighted.

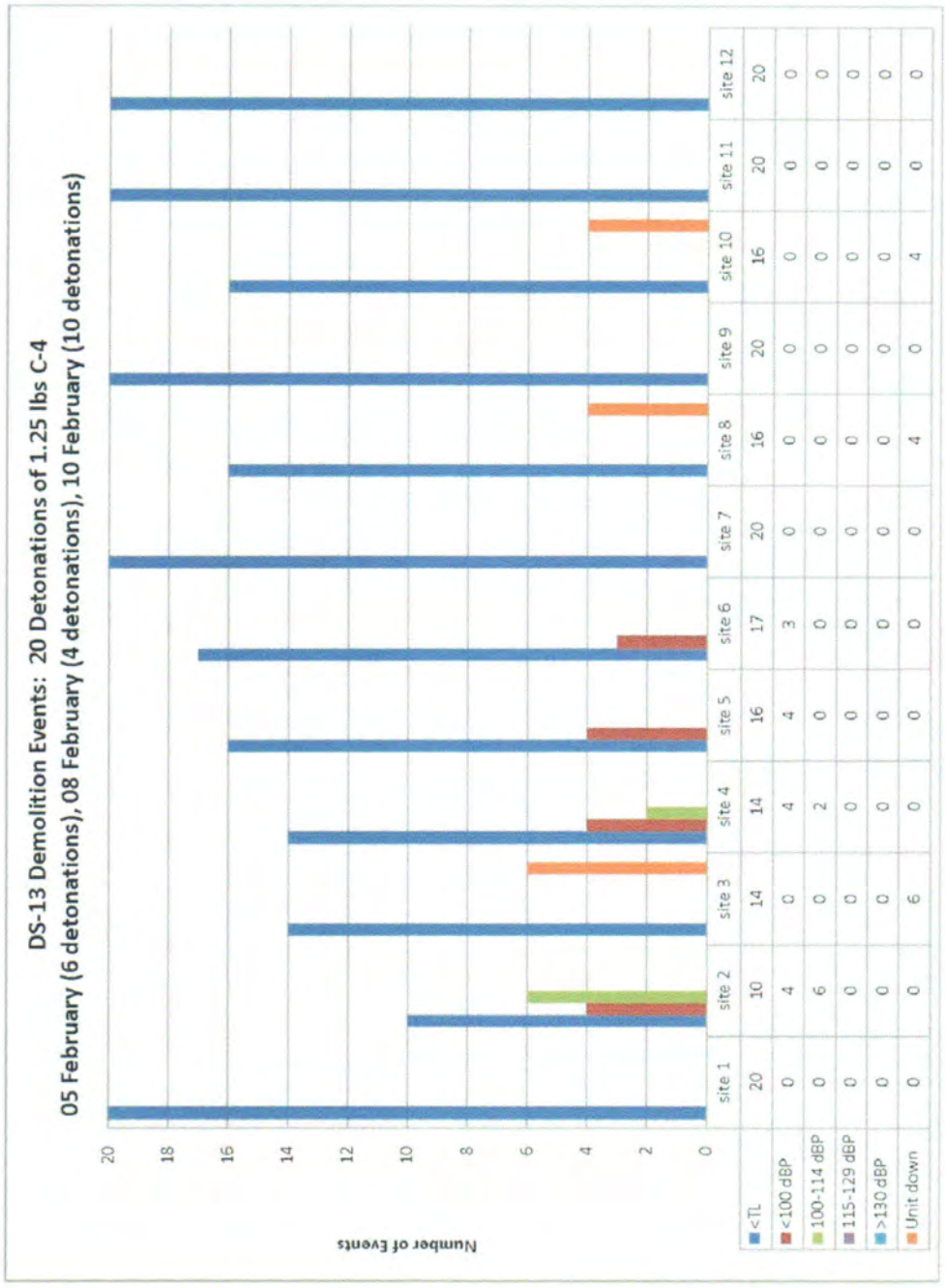

FIGURE 16. DS-13: 1.25 LBS C-4, MONITORING EVENTS.

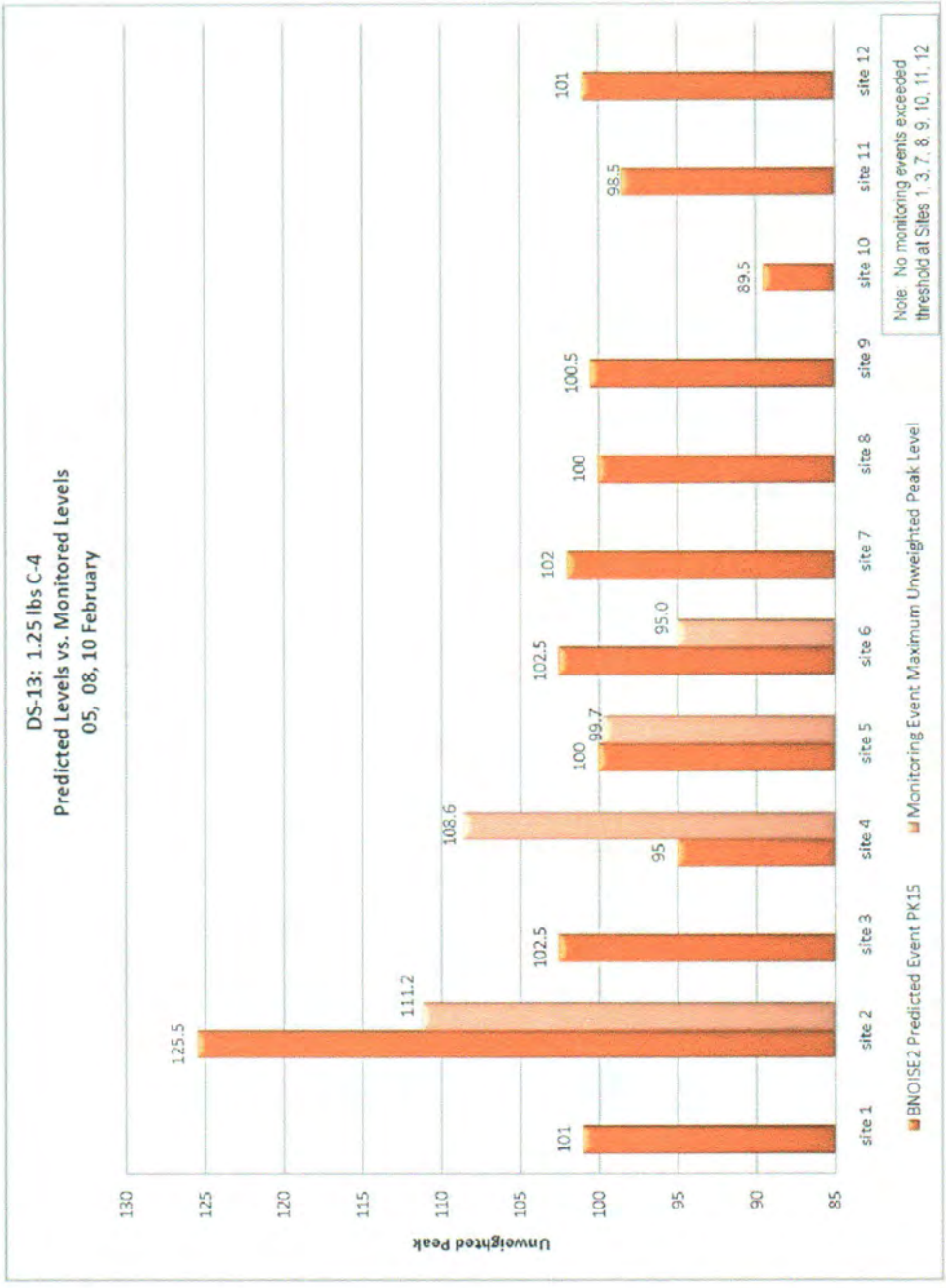

FIGURE 17. DS-13: 1.25 LBS C-4, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
5-Feb-10	0805	<TL	110.7	unit down	97.7	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0808	<TL	111.2	unit down	96	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0810	<TL	108.4	unit down	96.4	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0813	<TL	108	unit down	92.1	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1232	<TL	104.3	unit down	108.6	<TL	92.1	<TL	<TL	<TL	<TL	<TL	<TL
	1234	<TL	103.1	unit down	100.4	<TL	95	<TL	<TL	<TL	<TL	<TL	<TL
8-Feb-10	1850	<TL	95	<TL	<TL	91.2	91.3	<TL	<TL	<TL	unit down	<TL	<TL
	1853	<TL	94.1	<TL	<TL	90.2	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1855	<TL	89.1	<TL	<TL	89.5	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1858	<TL	93.1	<TL	<TL	99.7	<TL	<TL	<TL	<TL	unit down	<TL	<TL
10-Feb-10	0751	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0754	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0757	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0800	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	1220	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1224	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1845	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1848	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1850	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1858	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL

TABLE 14. DS-13: 1.25 LBS C-4, MONITORING DATA.

e. DS-13: 25 lbs TNT. Figures 18 & 19 and Table 15 summarize the monitoring data for the 25 lb TNT detonations at DS-13. Detonation site DS-13 was utilized 3 days with a total of 12 events of 25 lbs of TNT. The majority of the events from DS-13 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but four events were below the predicted PK15 level.

(1) Figure 18 depicts the range of Peak levels recorded at each monitoring site from the 25 lb TNT detonations at DS-13. Of the events recorded, 60 percent were below the threshold; 18 percent were less than 100 dBP; 13 percent were between 100 and 114 dBP; and 9 percent were between 115 and 129 dBP. No events exceeded 130 dBP.

(2) Figure 19 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site from the 25 lb TNT detonations at DS-13.

(a) Four events occurred that exceeded the BNOISE2 model PK15 prediction.

(b) The readings that were higher than the predicted PK15 values occurred mid-day on 5 February. The likely cause of the higher sound levels was the approaching snow front which provided a lower level cloud cover and would be likely to generate extremely high readings.

(3) Table 15 lists the Peak sound levels recorded at each site. The highest level received at each monitoring site is highlighted.

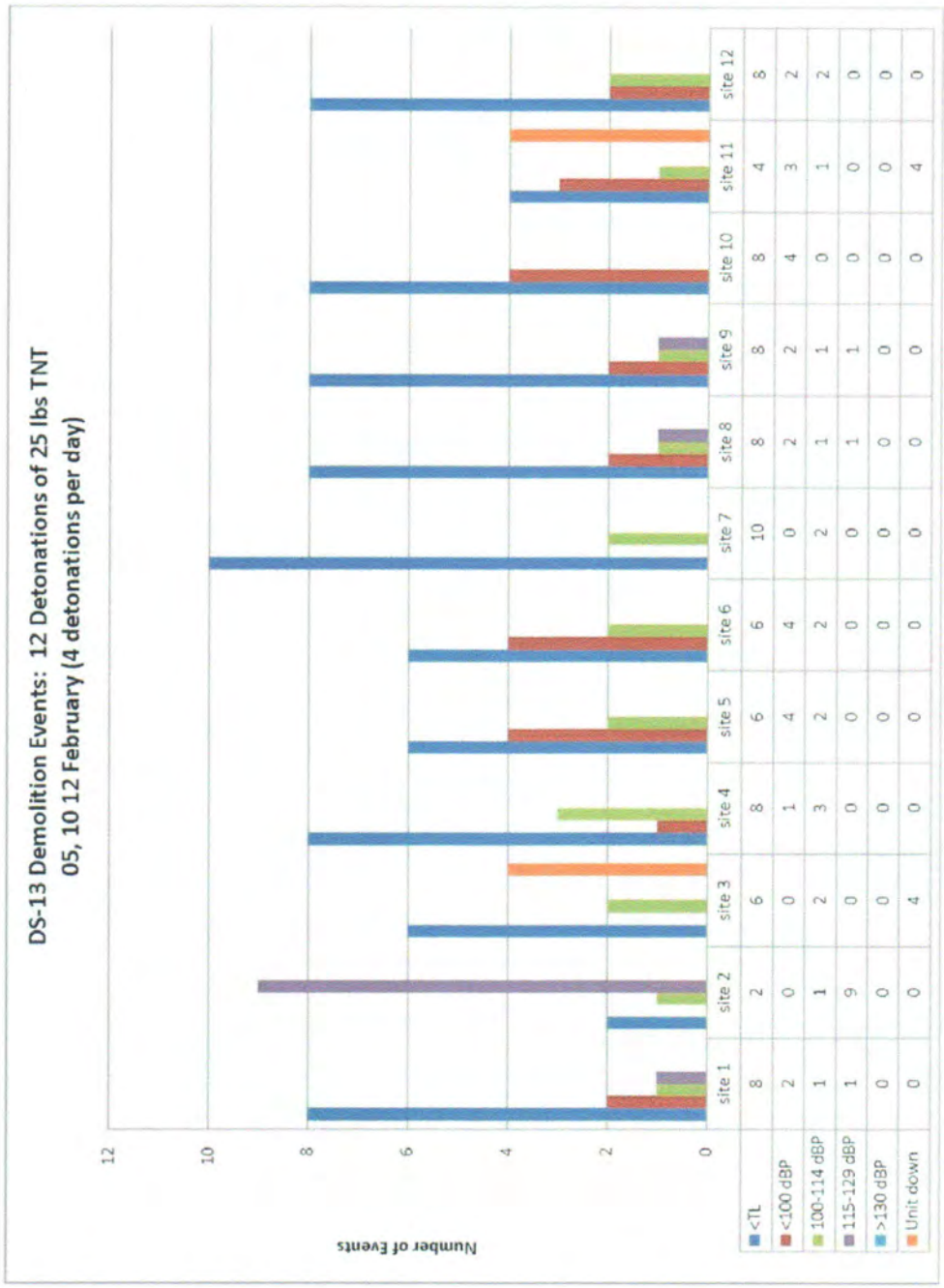

FIGURE 18. DS-13: 25 LBS TNT, MONITORING EVENTS.

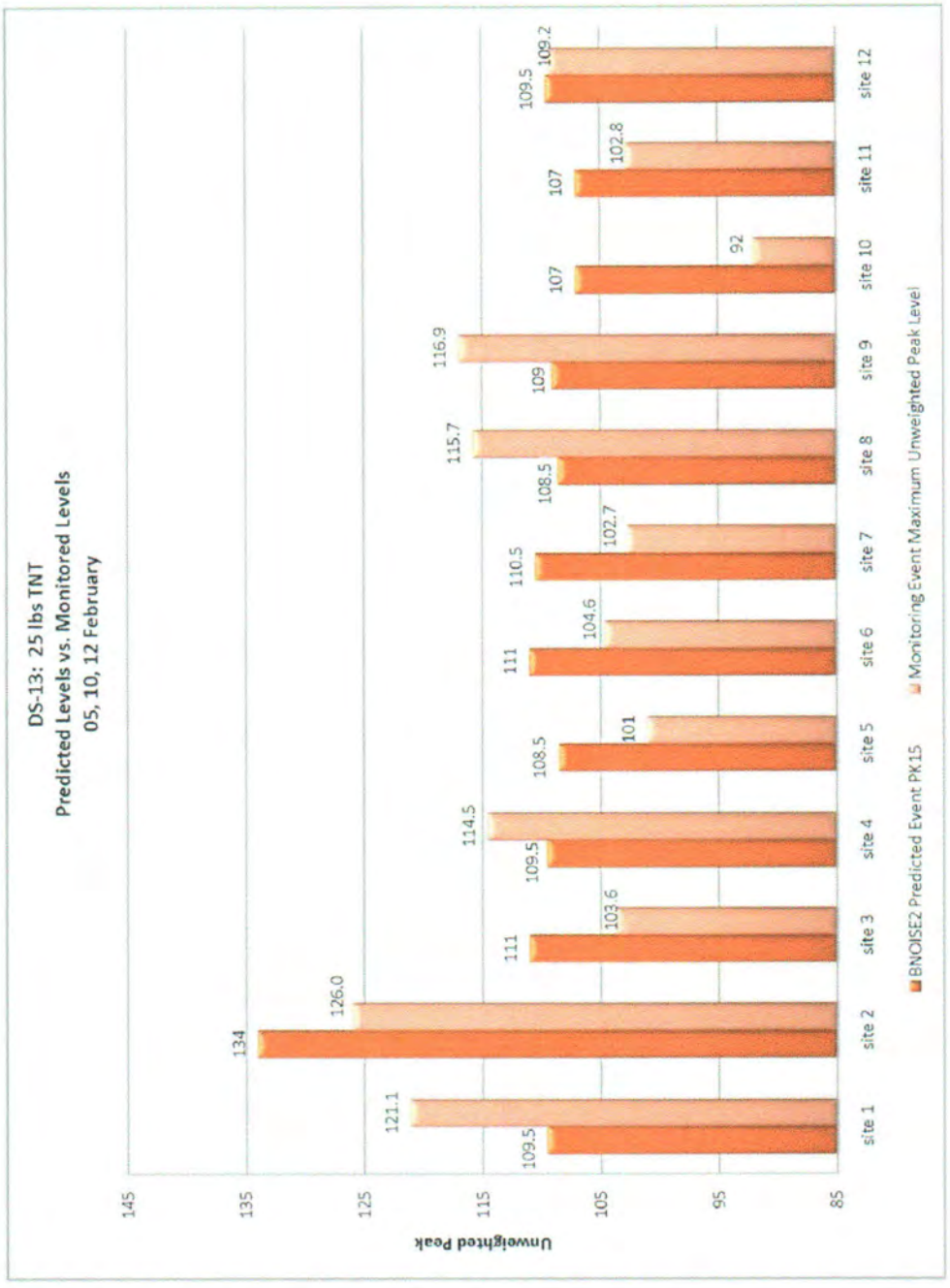

FIGURE 19. DS-13: 25 LBS TNT, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
5-Feb-10	0842	97.5	122.8	unit down	110.6	<TL	99.4	<TL	91.7	92.1	<TL	92.6	98.4
	0845	99.6	124	unit down	114.5	<TL	99.1	<TL	91.6	92.6	<TL	92.3	96.9
	1258	114.7	126	unit down	102.8	101	104.6	100.6	111.1	106.7	91.2	102.8	103.1
	1347	121.1	124	unit down	99.4	100.1	102.4	102.7	115.7	116.9	<TL	97.7	109.2
10-Feb-10	0821	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0824	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1232	<TL	118.8	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1235	<TL	113.7	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
12-Feb-10	0850	<TL	121.2	103.6	<TL	97.1	<TL	<TL	<TL	<TL	91.4	unit down	<TL
	0853	<TL	121.1	102.7	<TL	97.7	<TL	<TL	<TL	<TL	92	unit down	<TL
	1327	<TL	119.8	<TL	<TL	92.4	89	<TL	<TL	<TL	<TL	unit down	<TL
	1406	<TL	123.5	<TL	<TL	97.6	90	<TL	<TL	<TL	67	unit down	<TL

TABLE 15. DS-13: 25 LBS TNT, MONITORING DATA.

f. TA13/TA18: 0.25 lbs C-4. Figures 20 & 21 and Table 16 summarize the monitoring data for the 0.25 lb C-4 detonations at TA13/18. Detonation site TA13/TA18 was utilized 3 days with a total of 20 events of 0.25 lb of C-4. The majority of the events from TA13/18 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all events were below the predicted PK15 level.

(1) Figure 20 depicts the range of Peak levels recorded at each monitoring site from the 0.25 lb C-4 detonations at TA13/TA18. Of the events recorded, 98 percent were below the threshold and 2 percent were less than 100 dBP. No events exceeded 100 dBP.

(2) Figure 21 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site from the 0.25 lb C-4 detonations at TA13/TA18.

(3) Table 16 lists the Peak sound levels recorded at each site. The highest level received at each monitoring site is highlighted.

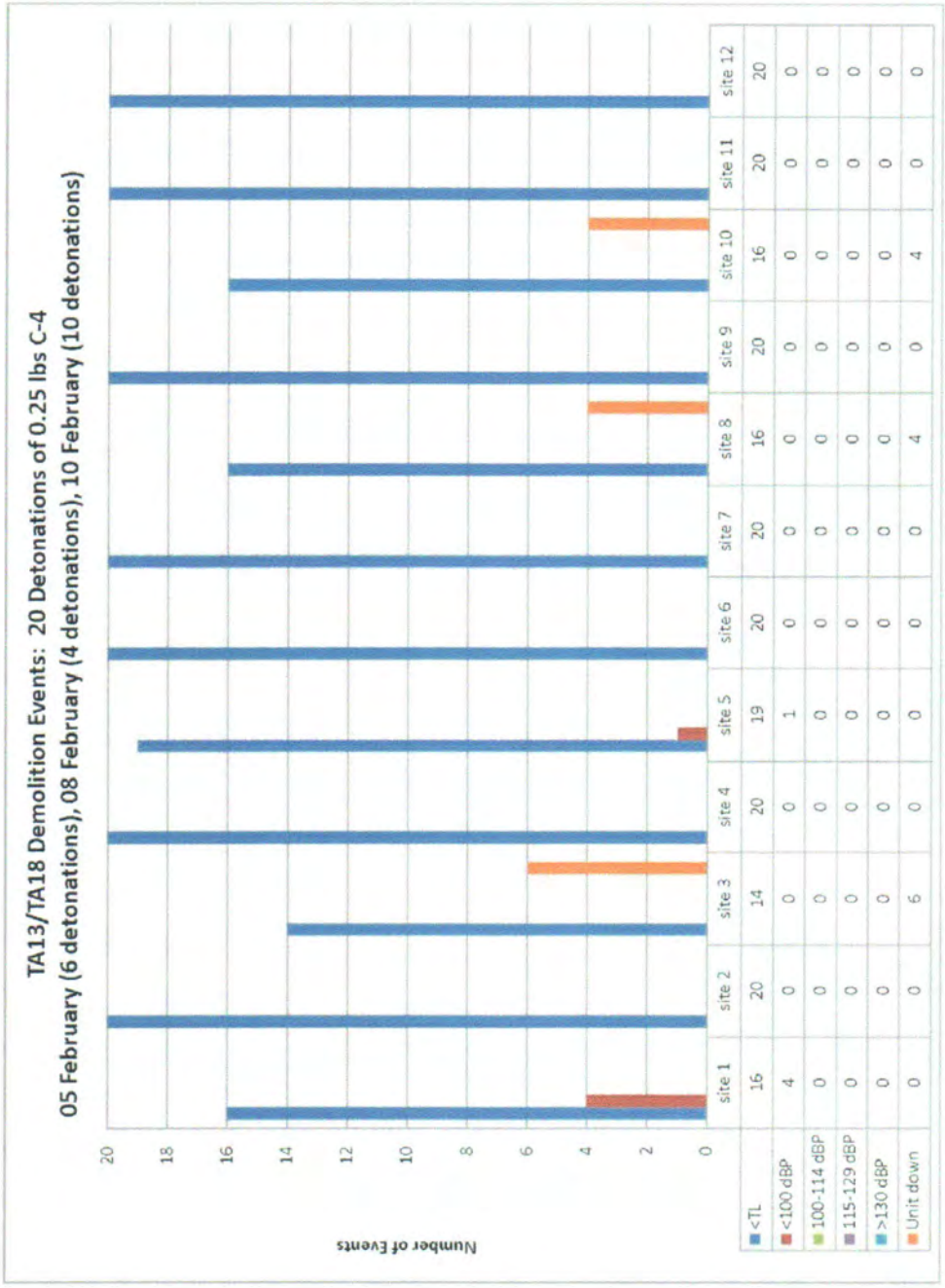

FIGURE 20. TA13/TA18: 0.25 LBS C-4, MONITORING EVENTS.

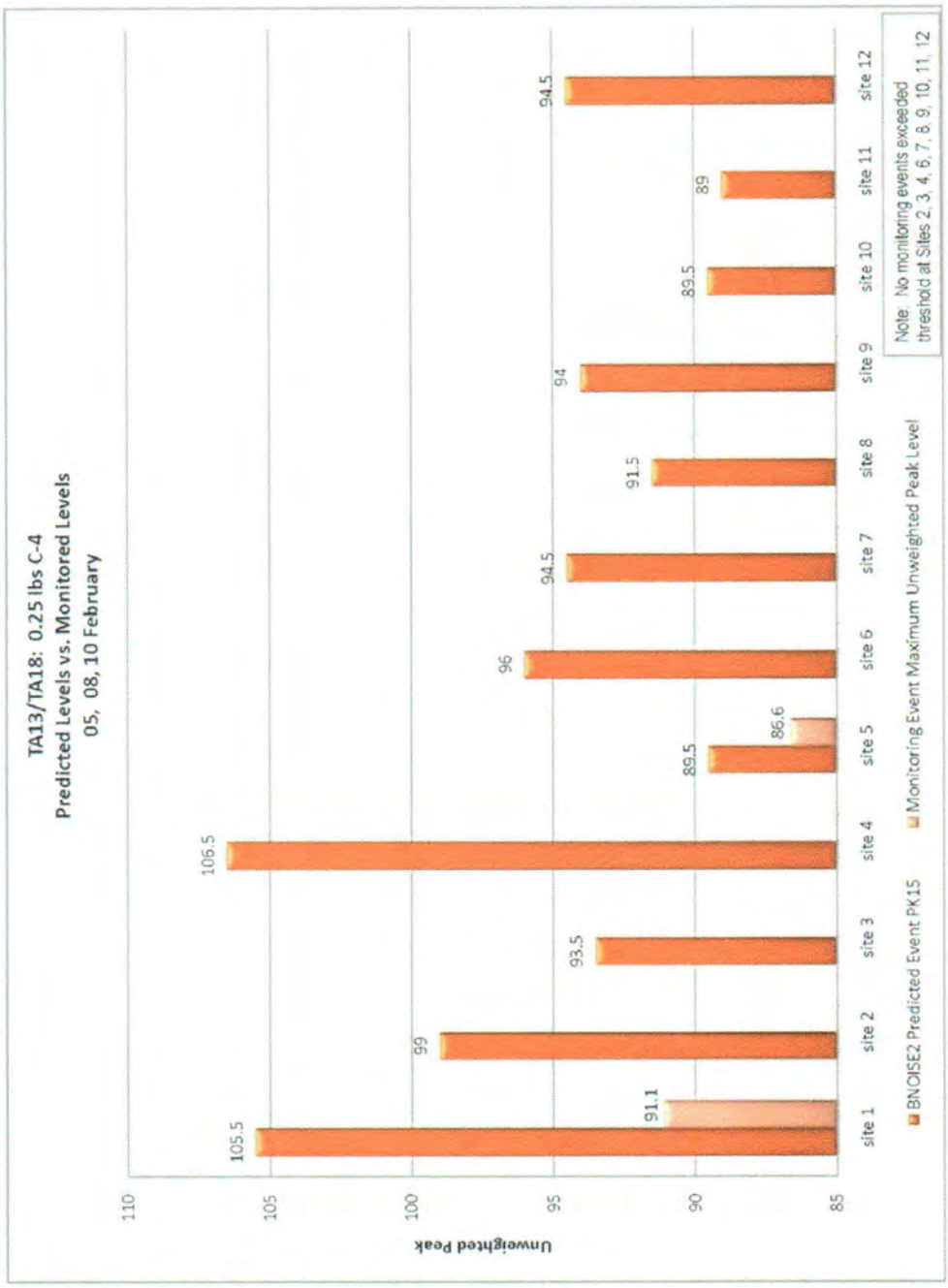

FIGURE 21. TA13/TA18: 0.25 LBS C-4, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
5-Feb-10	0700	89.6	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0703	87.6	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0705	91.1	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0708	88.3	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1200	<TL	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1202	<TL	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
8-Feb-10	1759	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1801	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1804	<TL	<TL	<TL	<TL	86.6	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1807	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
10-Feb-10	0703	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0707	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0710	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0713	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	1206	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1208	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1801	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1804	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1807	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1810	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL

TABLE 16. TA13/TA18: 0.25 LBS C-4, MONITORING DATA.

g. TA13/TA18: 1.25 lbs C-4. Figures 22 & 23 and Table 17 summarize the monitoring data for the 1.25 lb C-4 detonations at TA13/TA18. Detonation site TA13/TA18 was utilized 3 days with a total of 20 events of 1.25 lb of C-4. The majority of the events from TA13/TA18 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all events were below the predicted PK15 level.

(1) Figure 22 depicts the range of Peak levels recorded at each monitoring site from the 1.25 lb C-4 detonations at TA13/TA18. Of the events recorded, 95 percent were below the threshold; 3 percent were less than 100 dBP; and 2 percent were between 100 and 114 dBP. No events exceeded 115 dBP.

(2) Figure 23 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site from the 1.25 lb C-4 detonations at TA13/TA18.

(3) Table 17 lists the Peak sound levels recorded at each site. The highest level received at each monitoring site is highlighted.

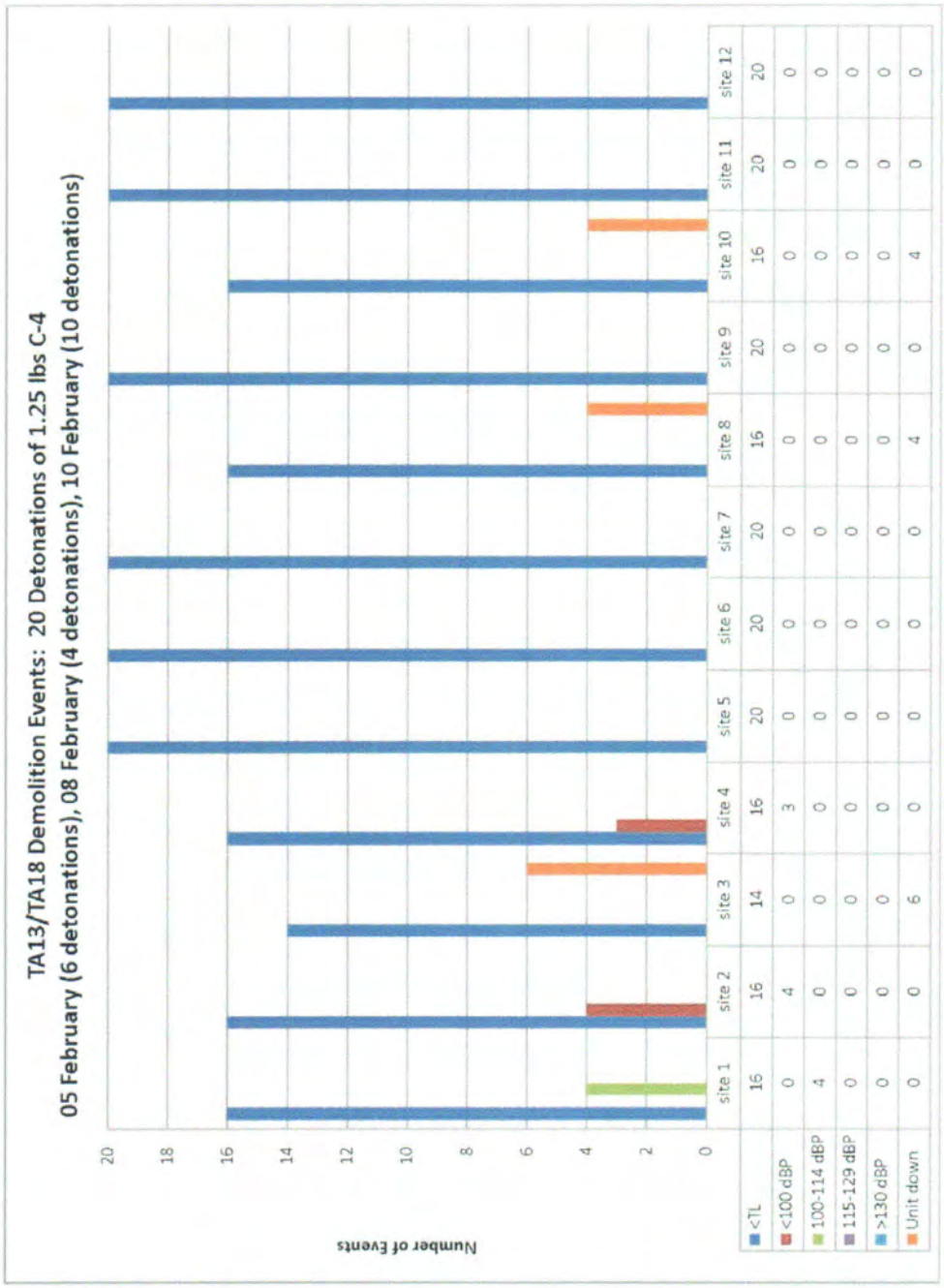

FIGURE 22. TA13/TA18: 1.25 LBS C-4, MONITORING EVENTS.

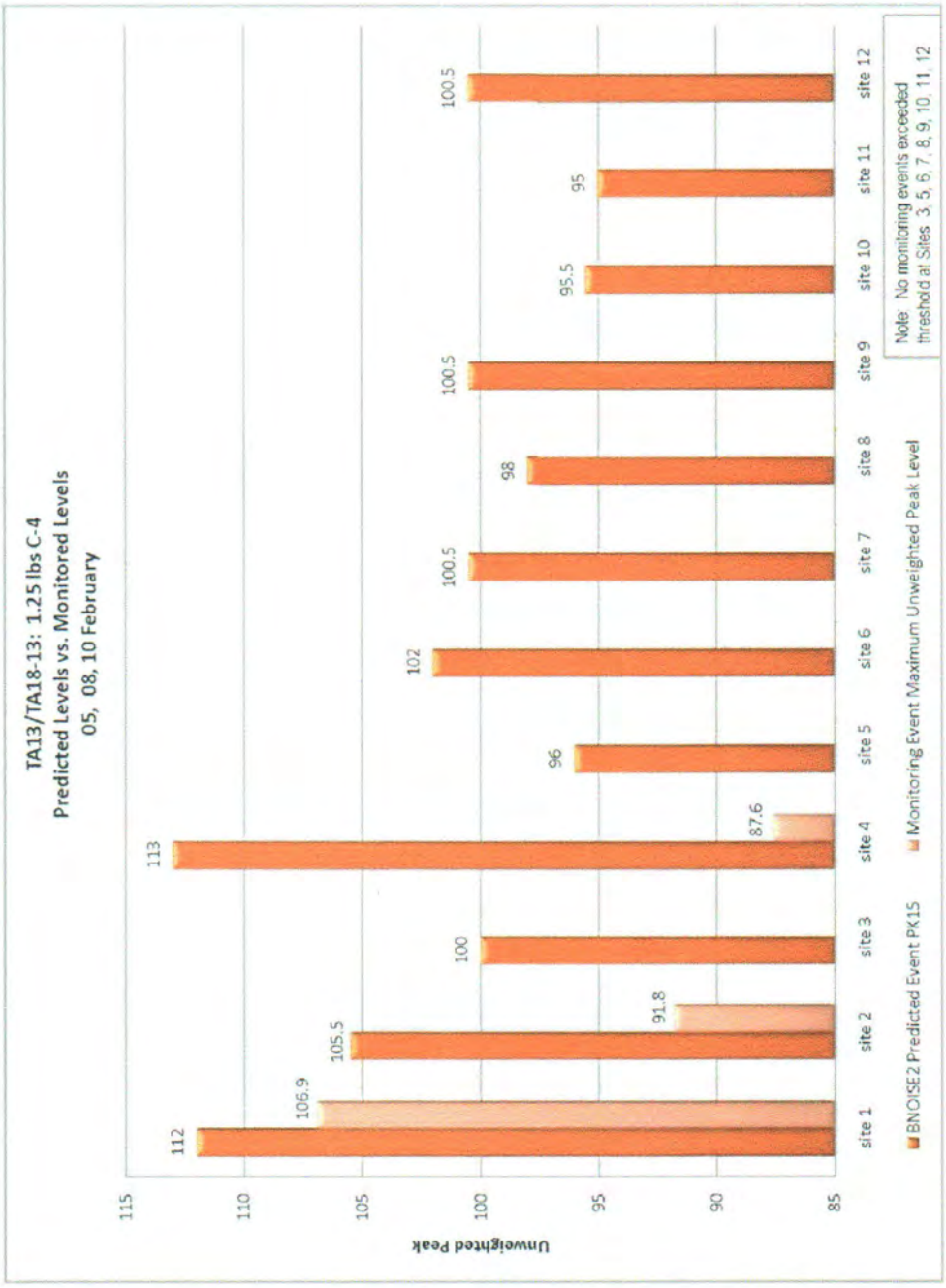

FIGURE 23. TA13/TA18: 1.25 LBS C-4, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
5-Feb-10	0744	104.9	87.9	unit down	85.8	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0747	104.4	87.4	unit down	83.5	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0749	106.9	89.5	unit down	87.6	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0752	106.9	91.8	unit down	86.9	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1227	<TL	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1230	<TL	<TL	unit down	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
8-Feb-10	1830	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1833	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1836	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
	1839	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL
10-Feb-10	0733	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0736	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0739	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	0743	<TL	<TL	<TL	<TL	<TL	<TL	<TL	unit down	<TL	<TL	<TL	<TL
	1216	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1218	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1831	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1834	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1837	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1840	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL

TABLE 17. TA13/T18: 1.25 LBS C-4, MONITORING DATA.

h. TA13/TA18: 25 lbs TNT. Figures 24 & 25 and Table 18 summarize the monitoring data for the 25 lb TNT detonations at TA13/TA18. Detonation site TA13/TA18 was utilized 2 days with a total of 8 events of 25 lbs of TNT. The majority of the events from TA13/TA18 were indistinguishable from the ambient background level. Of the recordings that were correlated with a blast event time and exceeded background levels, all but two events were below the predicted PK15 level.

(1) Figure 24 depicts the range of Peak levels recorded at each monitoring site from the 25 lb TNT detonations at TA13/TA18. Of the events recorded, 70 percent were below the threshold; 13 percent were less than 100 dBP; 13 percent were between 100 and 114 dBP; and 4 percent were between 115 and 129 dBP. No events exceeded 130 dBP. All levels recorded between 115 and 129 dBP were at on-post monitoring sites.

(2) Figure 25 depicts the BNOISE2 predicted PK15 levels compared with the maximum Peak level recorded at each monitoring site from the 25 lb TNT detonations at TA13/TA18.

(a) Two events occurred that exceeded the BNOISE2 model PK15 prediction.

(b) The maximum Peak level recorded at Site 1 was 121.6 dBP. The BNOISE2 model predicted that 85 percent of the time the dBP level would be 120.5 and below. The higher monitored level at Site 1 was within 1 percent of the predicted PK15 value.

(c) The maximum Peak level recorded at Site 4 was 122.9 dBP. The BNOISE2 model predicted that 85 percent of the time the dBP level would be 121.5 and below. The higher monitored level at Site 4 was within 1 percent of the predicted PK15 value.

(3) Table 18 lists the Peak sound levels recorded at each site. The highest level received at each monitoring site is highlighted.

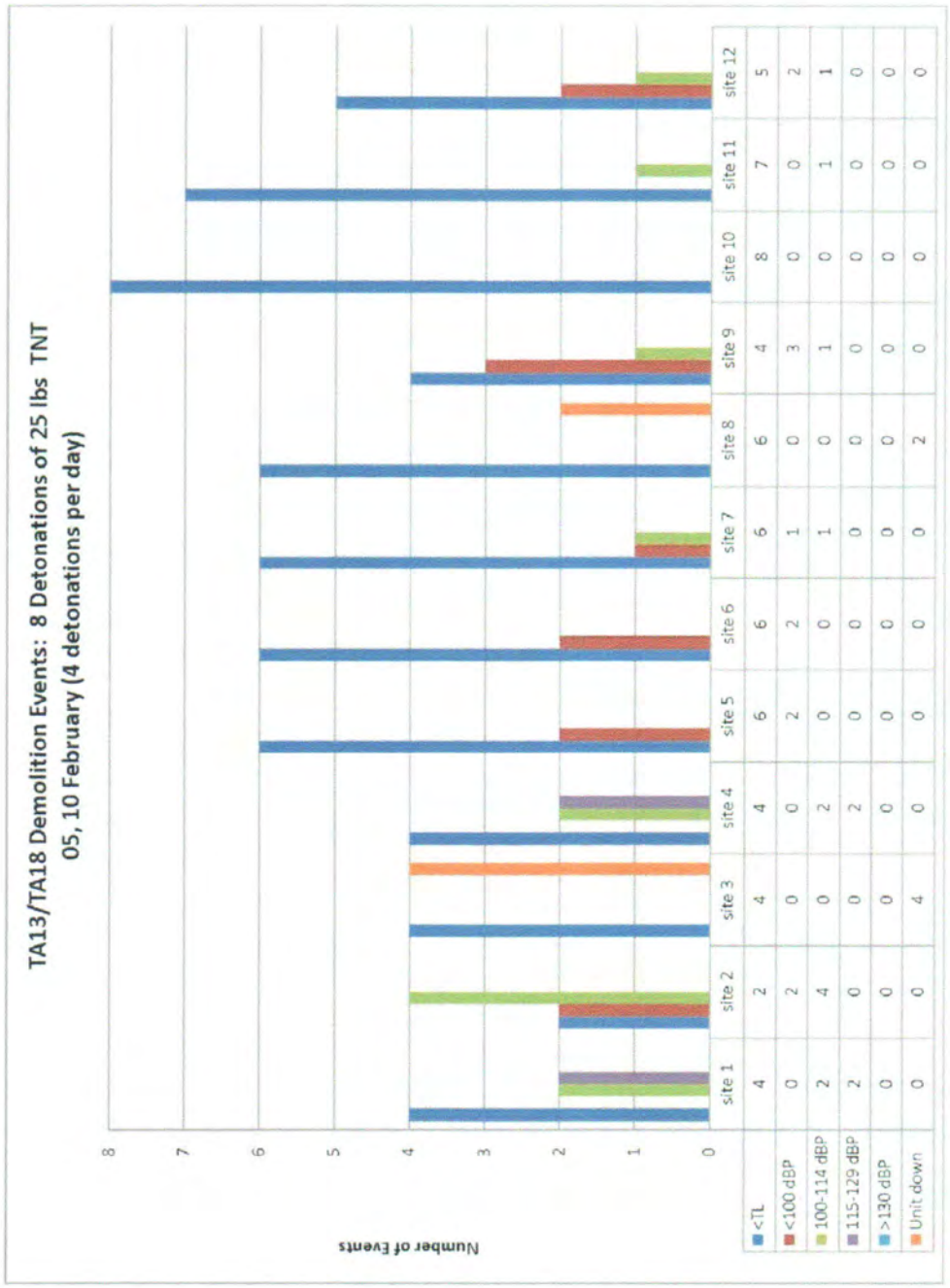

FIGURE 24. TA13/TA18: 25 LBS TNT, MONITORING EVENTS.

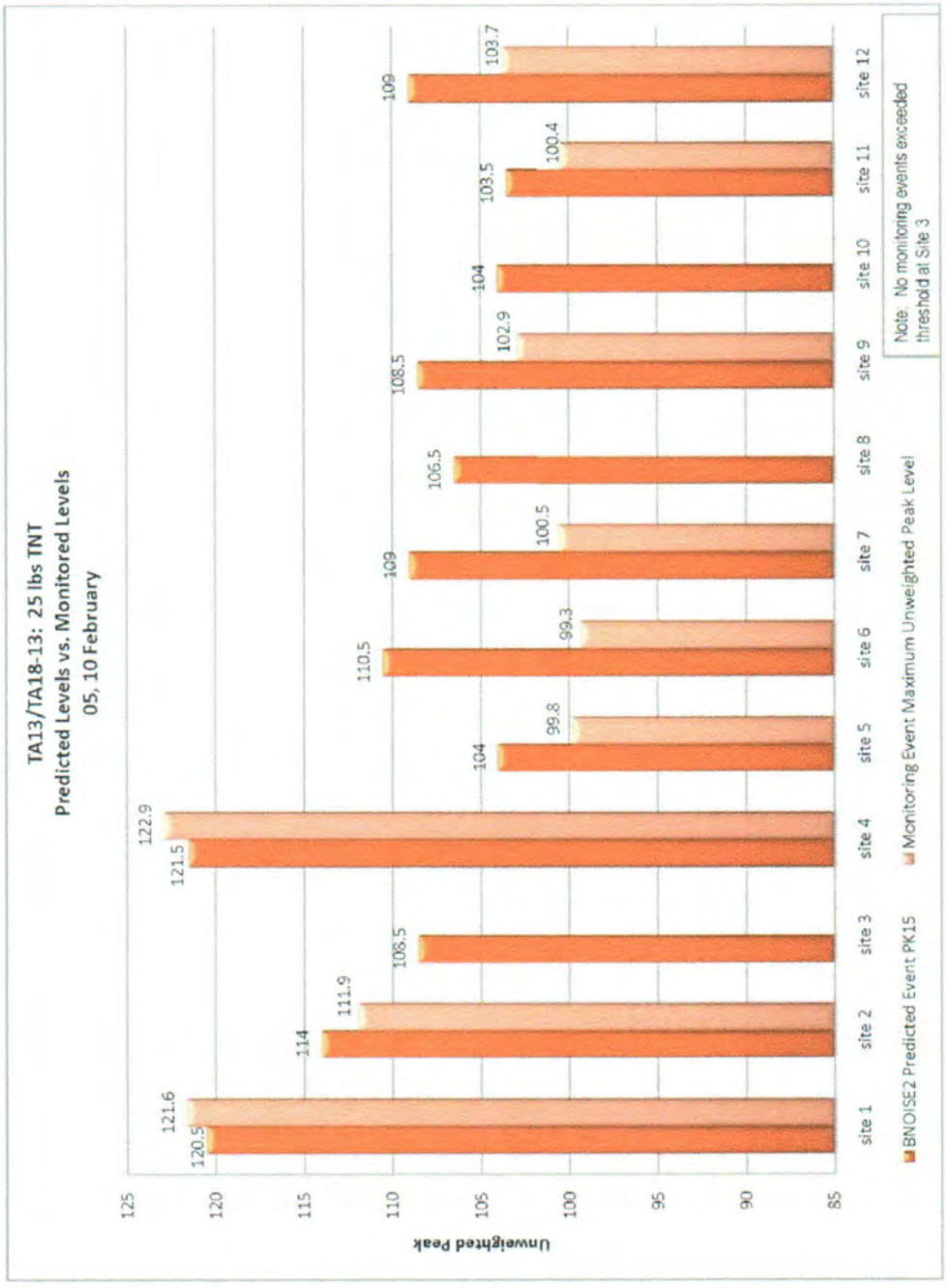

FIGURE 25. TA13/TA18: 25 LBS TNT, PREDICTED AND MONITORED LEVELS.

		Unweighted Peak Sound Level (dBP)											
DATE	TIME	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12
5-Feb-10	0836	116.1	100.6	unit down	103.7	<TL	<TL	<TL	<TL	90.3	<TL	<TL	90.1
	0839	121.6	105.3	unit down	109.7	<TL	<TL	<TL	<TL	91.9	<TL	<TL	91.6
	1240	104.4	94.6	unit down	122.9	94.7	90.2	97	<TL	102.9	<TL	<TL	103.7
	1253	104.6	90.6	unit down	120.5	99.8	99.3	100.5	<TL	93	<TL	100.4	<TL
10-Feb-10	0805	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	0809	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1226	<TL	111.9	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL
	1229	<TL	108.8	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL	<TL

TABLE 18. TA13/T18: 25 LBS TNT, MONITORING DATA.

i. Findings for DS-13 and TA13/TA18.

(1) DS-13 Detonation Site.

(a) During the study, the 12 monitors recorded a combined total of 588 events which correlated with a known blast events. The 12 monitors recorded 452 events for the 0.25 lb and 1.25 lb C-4 and 136 events of the 25 lb TNT detonations.

(b) Of the recorded 0.25 lb and 1.25 lb C-4 events from the DS-13 site, 414 (92 percent) were indistinguishable from the ambient background level. Of the recorded 25 lb TNT detonations, at DS-13, 82 (60 percent) were indistinguishable from the ambient background level.

(c) Of the 92 recordings that were correlated with a blast event time and exceeded background levels, all but 6 events were below the predicted PK15 level.

(2) TA13/TA18 Detonation Site.

(a) During the study, the 12 monitors recorded a combined total of 541 events which correlated with a known blast events. The 12 monitors recorded 451 events for the 0.25 lb and 1.25 lb C-4 and 90 events of the 25 lb TNT detonations.

(b) Of the recorded 0.25 lb and 1.25 lb C-4 events from the TA13/TA18 site, 433 (96 percent) were indistinguishable from the ambient background level. Of the recorded 25 lb TNT detonations, at TA13/TA18, 62 (69 percent) were indistinguishable from the ambient background level.

(c) Of the 46 recordings that were correlated with a blast event time and exceeded background levels, all but 2 events were below the predicted PK15 level.

10. A-WEIGHTED SOUND LEVELS.

a. On the website, the Caroline County Code states that the measurement of sound or noise shall be made with a sound-level meter and octave-band analyzer meeting the standards prescribed by the American Standards Association. The instruments shall be maintained in calibration and good working order. Octave-band corrections may be employed in meeting the response specification. A calibration check shall be made of the system at the time of any noise measurement. Measurements recorded shall be taken so as to provide a proper representation of the noise source. The microphone, during measurement, shall be positioned so as not to create any unnatural enhancement or diminution of the measured noise. A windscreen for the microphone shall be used when required. Traffic, aircraft and other transportation noise sources and other background noises shall not be considered in taking measurements except where such background noise interferes with the primary noise being measured. The slow meter response of the sound-level meter shall be used in order to best determine that the average amplitude has not exceeded the limiting noise.

b. It should be noted that A-weighting is not an appropriate metric for explosive sounds because it neglects to capture the dominant low-frequency component of impulsive sounds and thereby underestimates or ignores the energy that is responsible for rattles and vibrations associated with the events.

c. Per the Caroline County Code, the impulsive sounds generated by the EOD activity should not exceed 95 dBA in residential areas. Though the focus of the monitoring study was unweighted Peak levels which account for the low-frequency sounds, A-weighted data was also collected at the monitoring sites to see if the activity would be above or below the ordinance levels.

(1) Due to the volume of data recorded, only the A-weighted levels for the loudest event recorded at each community monitoring site is presented in the Table below.

(2) Table 19 lists the A-weighted maximum sound levels. At all sites, the A-weighted levels were far below the 95 dBA maximum specified for compatibility with residential land use.

TABLE 19. MAXIMUM A-WEIGHTED SOUND LEVELS RECORDED AT EACH SITE.

	Date	Time	Charge Weight	A-weighted (A-Max slow)
Site 5	12 Feb	0809	1.25	77.3
Site 6	09 Feb	1310	25	61.1
Site 7	09 Feb	1310	25	73.6
Site 8	04 Feb	1918	1.25	68.8
Site 9	09 Feb	1310	25	70.7
Site 10	09 Feb	0845	25	63.1
Site 11	11 Feb	0759	1.25	65.3
Site 12	09 Feb	1313	25	58.2

11. FINDINGS.

a. In agreement with BNOISE2 model predictions, less than 15 percent of recorded events exceeded the predicted PK15 levels. During the study, the 12 monitors recorded a combined total of 2,062 events from the EOD Field Training Area Sites. Of the recorded events, 1,464 (71 percent) were indistinguishable from the ambient background level. Of the 598 recordings that were correlated with a blast event time and exceeded background levels, 0.8 percent were above the predicted PK15 level.

b. When removing the levels from on-post monitoring sites from analysis, the sound level meters located at the 8 community monitoring sites recorded a total of 1,386 events related to the proposed EOD School. The 1,386 events included 0.25 lb, 1.25 lb, and 25 lb detonations. At community sites, no levels high enough to cause building damage (above 136.5 dBP) were recorded. No levels correlated with high complaint risk (> 130 dBP) were recorded. Two events (0.14 percent) registered levels correlated with moderate complaint risk (115 -130 dBP). There were 134 events (9.67 percent) recorded ranging from 100 to 114 dBP. There were 358 readings (25.83 percent) below 100 dBP which were classified as blast events. The sound levels for the remaining 892 events (64.36 percent) were indistinguishable from ambient sound levels.

c. The current SEA proposes moving the larger demolitions from the original EOD footprint to the existing range DS-70A. The sound levels generated by the 25 lb detonations at DS-70A did not exceed 115 dBP at the 8 community monitoring sites.

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12. CONCLUSIONS.

a. Recorded noise levels in the community were not high enough to damage structures.

b. No levels were recorded which correlate with a high complaint risk (>130 dBP).

c. Less than one percent (0.14 percent) of events exceeded 115 dBP. Levels below 115 dBP are classified as low complaint risk.

13. RECOMMENDATIONS

a. Though useful information was gathered from locating monitors on FAPH and detonating explosives at DS-13 and TA13/18, decisions regarding the proposed EOD activity should focus on levels received in the community (Sites 5-12) which were generated only by activity at proposed EOD sites. The additional levels reported in this consultation for demolition activity at existing FAPH ranges may used for future noise assessments.

b. Although no Federal Law prohibits the Department of Defense training and testing activities from making noise, the Services have always tried to be good neighbors. Fort A.P. Hill should continue their operational noise management and outreach programs, to inform the public of possible noise from training.

CATHERINE STEWART
Program Manager
Operational Noise

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APPENDIX A

REFERENCES

1. Caroline County Code. Chapter 68-6. Noise Limits. [website; www.ecode360.com/ecode3-back/getSimple.jsp?custId=CA1335&guid=9728137]; [Accessed February 2010].

2. Pater, 1976. "Noise Abatement Program for Explosive Operations at NSWC/DL," Presented at the 17th Explosives Safety Seminar of the DOD Explosives Safety Board.

APPENDIX B

GLOSSARY OF TERMS, ACRONYMS & ABBREVIATIONS

B-1. GLOSSARY OF TERMS.

A-Weighted Sound Level – a sound level (in decibels) that has been weighted to correspond with the non-linear sensitivity of the human ear. A-weighting discriminates against the lower frequencies.

Ambient Noise – the background noise that is usually present at a particular location; anything from cars on a highway, to insects in the woods.

Atmospheric Refraction – the bending and/or focusing of sound waves by the varying layers and densities of the earth's atmosphere.

C-Weighted Sound Level – like A-weighting, this is another sound level weighting technique that is used to normalize the low, impulsive sounds to the range of human hearing. It is used when measuring low frequency sound such as those from large arms, demolitions, and sonic booms.

Community – those individuals, organizations, or special interest groups affected by or interested in decisions affecting towns, cities, or unincorporated areas near or adjoining a military installation, and officials of local, state, and Federal governments, and Native American tribal councils responsible for the decision making and administration of programs affecting those communities.

Day-Night Average Sound Level (DNL) – the 24-hour average frequency-weighted sound level, in decibels, from midnight to midnight, obtained after the addition of 10 decibel "penalties" to sound levels between midnight and 7 a.m. and 10 p.m. to midnight (0000 to 0700 hours and 2200 to 2400 hours). A-weighting (ADNL) is understood unless otherwise specified, but C-weighting (CDNL) is also common and is used for blast noise. For active installations, this average is calculated over a "year," or about 250 training days.

Decibels (dB) – a logarithmic sound pressure unit of measure.

Frequency – the number of complete oscillation cycles per unit of time. The unit of frequency is the Hertz.

Frequency Weighting – the process of factoring in certain frequencies more or less heavily in order to bring the sound measurement more in line with the characteristics of the receiver (and thus make the numbers more meaningful to the task at hand). Example: A- or C-weighting to specifically parallel the sensitivity of the human ear.

Hertz – the unit of frequency equal to once cycle per second.

Impulse (or Impulsive) Noise – noise of short duration (typically less than one second), high intensity, abrupt onset and rapid decay, and often rapidly changing spectral composition. Impulsive noise is characteristically associated with such sources as explosions, impacts, the discharge of forearms, the passage of supersonic aircraft (creating sonic booms), and many industrial processes.

Noise – any sound without value.

PK15(Met) – peak sound level, without frequency weighting and accounting for the statistical variation cause by weather, expected to be exceeded by 15 percent of all events that might occur.

Wind Speed/Direction- Wind speed is the measure motion of the air with respect to the surface of the earth covering a unit distance over a unit time. Wind direction is an indicator of the direction that the wind is coming from. For example, a northerly wind is coming from the north and blowing toward the south.

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B-2. GLOSSARY OF ACRONYMS AND ABBREVIATIONS.

C-4	Composition 4
dB	Decibels
dBA	Decibels, A-weighted
dBP	Decibels, Unweighted Peak
DS	Demolition Site
EOD	Explosive Ordnance Disposal
FAPH	Fort A.P. Hill
lbs	pounds
MS	MOUT Site
NEPA	National Environmental Policy Act
SEA	Supplemental Environmental Assessment
TA	Training Area
TNT	Trinitrotoluene
USAPHC	US Army Public Health Command

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APPENDIX C

EOD MONITORING PROPOSAL

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DEPARTMENT OF THE ARMY
US ARMY PUBLIC HEALTH COMMAND (PROVISIONAL)
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

January 26, 2010

FROM:
Operational Noise Program
US Army Public Health Command (Provisional)
[formerly US Army Center for Health Promotion and Preventive Medicine]
Aberdeen Proving Ground, MD

TO:
Environmental Division
Fort AP Hill, VA

SUBJECT: Explosive Ordnance Disposal (EOD) Monitoring Proposal

1. Purpose. Fort A.P. Hill (FAPH) has requested the U.S. Army Public Health Command (Provisional) Operational Noise Program (ONP) to assist in conducting a monitoring study at locations in the vicinity of FAPH. The monitoring study will have three objectives. First, the study will demonstrate that monitored Peak levels are in agreement with the range of values presented in the National Environmental Policy Act (NEPA) documents related to the proposed EOD activities at FAPH. Second, the monitoring study will offer the opportunity for the community to make their own subjective judgments regarding the audibility of the proposed operations. Last, the monitoring study will also afford the opportunity to measure noise levels at other FAPH demolition sites and training areas.

2. Noise Monitoring Plan. Noise levels from low-frequency sounds, such as demolition activity, can vary greatly from day-to-day or even hour-to-hour depending on propagation conditions. However, propagation conditions that favor the higher noise levels generally correspond with certain weather conditions or times of day. A simplified technique has been developed by the Explosives Research Group (ERG) to predict atmospheric refraction conditions (University of Utah 1958). The ERG technique summarizes the results of this research into a series of "good" and "bad" firing times. These guidelines are summarized in the table below.

"Good" Firing Conditions	"Bad" Firing Conditions
Clear skies with billowy cloud formations, especially during warm periods of the year. A rising barometer immediately following a storm.	Days of steady winds (5-10 mph) with gusts of greater velocities (above 20 mph) in the direction of nearby residences. Clear days on which "layering" of smoke or fog are observed. Cold, hazy, or foggy mornings. Days following a day when large extremes of temperature (about 36°F) between day and night are observed. Generally high barometer readings with low temperatures.

University of Utah Criteria for "Good" and "Bad" Firing Conditions

The monitoring study for FAPH has been designed with the goal to capture noise levels under varied propagation conditions. Given that the study is taking place in February, monitored noise levels should tend to be higher than if the study was conducted year round. Detonations will also be scheduled to include the times of day that typically favor sound propagation (sunrise and after sunset).

To further achieve the goal of monitoring during varied conditions, the monitoring will be spread out over a seven-day period. The first day, and then alternate days thereafter (Proposed Days 1,3,5,7), will be used to detonate explosives at the sites presented in the Supplemental EA for relocation of the larger demolition sites (FAPH, July 2009). This will include monitoring the larger detonations at the proposed interior site (Demo Site 70A) in addition to monitoring the smaller charges that would still take place in the original EOD footprint (FAPH, July 2008). The shot plan below was designed to utilize the sites that are closest to the boundary, the Town of Port Royal and the Portabago Bay community. Additionally, the monitoring will include both the smallest (0.25 lb) and largest (1.25 lb- C4) detonations that are proposed for each of these locations.

Proposed Days
1,3,5,7

(Feb 4,6,8,10)

			Number of Charges per Day					
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000	NEW Utilized per Day	Based on 3 days of Monitoring NEW Utilized per Area	Based on 4 days of Monitoring NEW Utilized per Area
MS10	C4	0.25	4	2	4	2.5	x	10
MS 8	C4	1.25	4	2	4	12.5	x	50
Site 7	C4	0.25	4	2	4	2.5	x	10
MS 12	C4	1.25	4	2	4	12.5	x	50
D1 or D2* (DS70A)	TNT	25	2	2	0	100	x	400
Proposed Days 2,4,6 (Feb 5,7,9)								
TA13/TA18A	C4	0.25	4	2	4	2.5	7.5	x
TA13/TA18A	C4	1.25	4	2	4	12.5	37.5	x
TA13/TA18A	TNT	25	2	2	0	100	300	x
DS13	C4	0.25	4	2	4	2.5	7.5	x
DS13	C4	1.25	4	2	4	12.5	37.5	x
DS13	TNT	25	2	2	0	100	300	x
							690	520

*D2 is preferred as it is closer to the boundary
*two EOD teams required

TOTAL NEW
1210

The intervening days (Proposed Days 2,4,6) will be used to monitor noise levels at additional demolition sites within FAPH. The attached figure depicts all the demolition sites that will be used during the noise monitoring study, including all noise monitoring points. A total of 44 to 48 shots are planned each consecutive test day. An overall total of 320 shots are planned during the entire test period with a total Net Explosive Weight (NEW) of 1210 lbs. Fort A.P. Hill will acquire the explosives required for the shot plan above. To detonate all charges in the above shot plan, two Explosive Ordnance Disposal (EOD) teams will be sent from Redstone Arsenal, Alabama to assist in the study. The two teams will work concurrently on all days, with detonations starting soon after sunrise and concluding after sunset.

a. Sampling Periods.

The daily time periods were chosen to account for the variability of weather conditions that occur during a typical day. There is an increased likelihood of enhanced propagation (higher sound levels) during the sunrise and sunset periods. However, to capture the variability over the course of the day rather than only worst case, detonations will also be scheduled during "good" times in the mid-day. Early Feb sunrise time ~0710 and sunset time ~1735. Early morning events NLT 0900. Evening events between 1800-2000.

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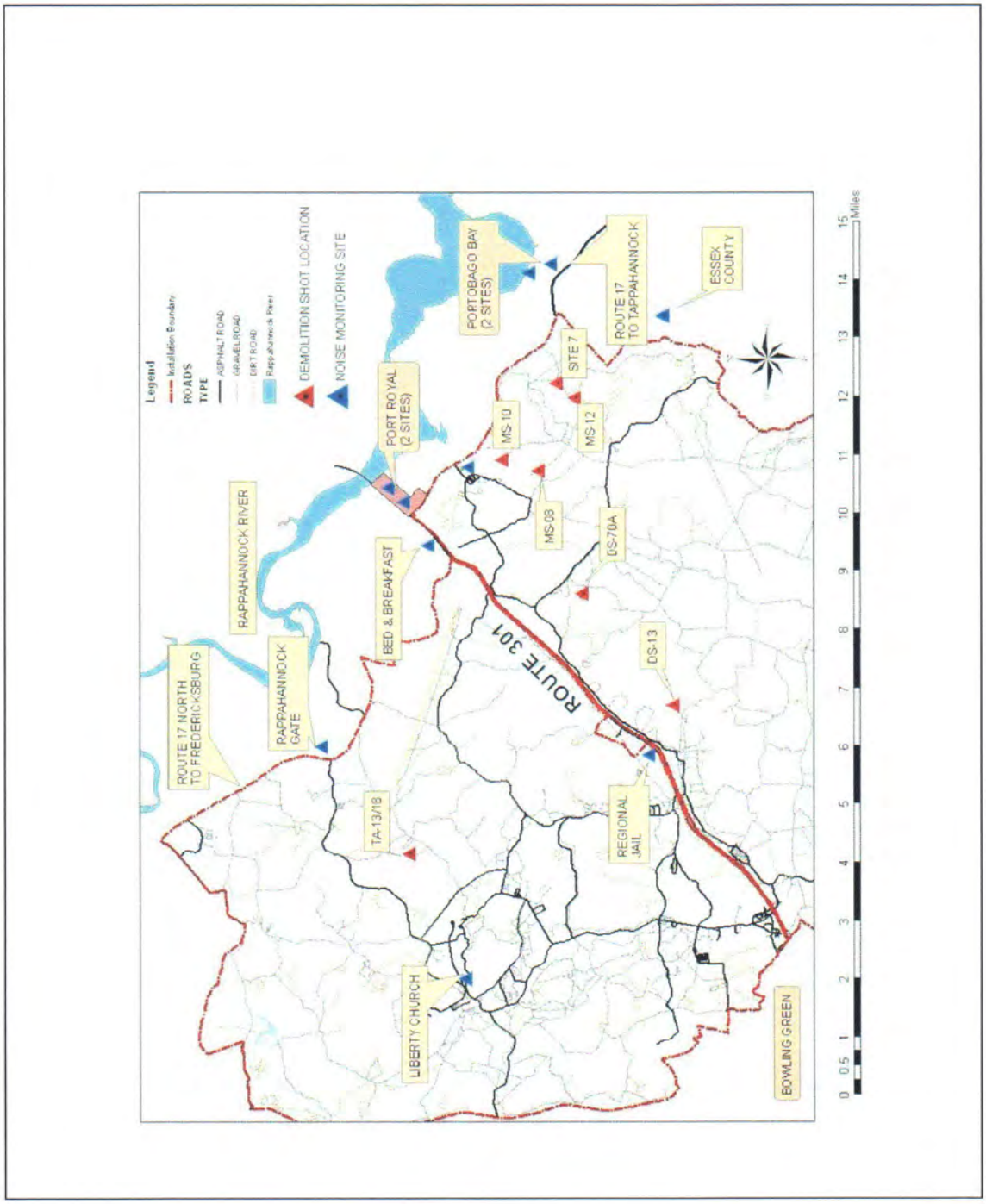

b. Monitoring Sites.

Preliminary monitoring sites which were suggested by Fort AP Hill are listed below. Community input will be necessary to finalize monitoring sites. Final sites selected must have the ability for the monitoring equipment to be secured (chained) to a fixed object.

Site 1	Fort AP Hill; Rappahannock Gate & Route 17		Site 6	Portabago Bay Community
Site 2	Peumansend Regional Jail Area		Site 7	Portabago Bay Community
Site 3	B&B in Port Royal		Site 8	Town of Port Royal
Site 4	Fort AP Hill; farm house in Cooke Camp		Site 9	Town of Port Royal
Site 5	Essex County		Site 10	Fort AP Hill; Liberty Church

c. Data Collection.

Noise monitoring will utilize Larson Davis Sound Level Meters model 870 (type I) with Larson Davis Condenser Microphones (model 2541) and Preamplifiers (model 900B). All instrumentation is regularly laboratory calibrated by Army Test Measurement Diagnostic Equipment using standards traceable to the National Institute of Standards and Technology.

The day prior to the start of the monitoring study, the sound level meters will be placed at the monitoring locations. Before being set to run, each sound level meter will be calibrated onsite with a Metrosonics model 304 calibrator. Data will be downloaded from the monitors on a daily basis, monitors will be recalibrated, and set again to run. Additionally, though the monitors are set up to be unmanned, ONP employees will be present at a sampling of the monitoring sites to take notes on the audibility of the events.

The sound level meters will be programmed at each site to record:

- unweighted peak (dBP)
- C-weighted peak (LCPeak)
- C-weighted Sound Exposure Level (CSEL)
- A-weighted max (slow)

It should be noted that A-weighting is not an appropriate metric for explosive sounds because it neglects to capture the dominant low-frequency component of impulsive

sounds and thereby underestimates or ignores the energy that is responsible for rattles and vibrations associated with the events.

A-weighting is appropriate for continuous sounds, which are perceived by the ear. Impulsive sounds are perceived by more than just the ear. When experienced indoors, there can be secondary noise from rattling of the building. Vibrations may also be felt. For single-event, high-energy impulsive environmental sounds, the fundamental descriptor is C-weighted sound exposure level with the use of Peak levels being an appropriate choice for evaluating complaint risk (ANSI S12.9-2005/Part 4).

Other details related to data collection:

- The microphones will be elevated to approximately 1.2 meters (~ 5 feet), stationary with windscreen, pointing upwards (site allowing).
- Weather data will be obtained for each monitoring period from local weather stations. At a minimum the temperature, wind speed, wind direction, and cloud cover for each sample period.
- Time delay between each round will be no shorter than 2 minutes. The minimum delay to be determined after coordination with EOD.
- The order of detonation sites and charge weights to be determined after coordination with EOD.

3. Background.

This section will give a short background summary of the methodology and assumptions used by the U.S. Army and other Federal Agencies when conducting noise assessments in support of NEPA. Also, the write-up will attempt to explain and differentiate the two types of noise analyses- annual average "Noise Zones" and Peak levels- that have been included in FAPH's NEPA documents.

Noise Modeling. Noise modeling is the accepted methodology for assessing noise impacts by all Department of Defense (DoD) services, in addition to the Federal Aviation Administration and Federal Highway Administration. Noise modeling is generally preferable over monitoring since it can assess results over a wide area rather than only at specific locations. Additionally, modeling can better account for the statistical variation that is inherent to noise levels due to weather/propagation conditions. Occasionally, monitoring may supplement a noise analysis, but this is typically done only when the noise source is not in the model database or the proposed action is highly controversial.

The noise models utilized by federal agencies were developed based on empirical data. The propagation algorithms used by the Army's blast noise model, BNOISE2, are based on measurements of over 11,000 detonations being taken year-round during all hours of the day at logarithmic distances from the detonation (Schomer et. al, 1978). These

measurements were used to develop the statistical propagation algorithms (how noise levels will decay with distance) that are used in the BNOISE2 calculation engine. The propagation algorithms are applied to the other information in the model database to come up with predicted levels. For explosive detonations, the information includes charge weight and also adjustments for the type of explosive. For weapons, such as artillery, the database accounts for directionality of the weapon's noise signature, type of rounds used (inert or explosive), and amount of propellant. When a new weapon system is added to the DoD inventory, controlled noise measurements are taken to attain source data to be added to the models.

Accepted Noise Metrics for Land Use Compatibility (Noise Zones).

Under the Noise Control Act of 1972 (PL 92-574 1972), the U.S. Environmental Protection Agency (EPA) recommended the adoption of the Day-Night Average Sound Level (DNL). In recommending the DNL, the EPA noted that most noise environments are characterized by repetitive behavior from day-to-day, with some variation imposed by differences between weekday and weekend activity, and seasonal fluctuations. Consequently, the DNL's annual average accounts for this variation and complements the fact that annoyance is generally caused by long-term dissatisfaction with the noise environment.

In June 1980, an ad hoc Federal Interagency Committee on Urban Noise published guidelines (FICUN 1980) relating Day-Night Average Sound Levels to compatible land uses. This committee was composed of representatives from the United States Departments of Defense, Transportation, and Housing and Urban Development; the Environmental Protection Agency; and the Veterans Administration. Since the issuance of these guidelines, federal agencies, including the Army, have generally adopted these guidelines for their noise analyses.

In addition to Federal agencies, the annoyance/long-term average noise assessment method approach of using DNL has been adopted internationally for virtually all types of noise, including high-energy impulsive noise, as described in American National Standards Institute (ANSI) 12.9Pt.4 and International Organization for Standardization (ISO) 1996.

It should be noted that there are two different weightings that can be applied to DNL. A-weighting is appropriate for continuous sounds, which are perceived by the ear. Impulsive sounds, such as explosive detonations and large caliber weapons firing, are perceived by more than just the ear. When experienced indoors, there can be secondary noise from rattling of the building. Vibrations may also be felt. C-weighting (ANSI 1988) is applied to such sounds.

This method, applied to blast noise (Committee on Hearing, Bioacoustics and Biomechanics [CHABA] 1981) and later modified (CHABA 1996), became official Army policy as described in Chapter 7 of Army Regulation 200-1, version dated 1997 and in the 2007 update of the regulation. An average noise level of 62 dB C-weighted Day-

Night Level (CDNL) was deemed acceptable for all land uses including schools, hospitals, and residences. The limit of 62 CDNL is slightly different than the 65 ADNL that was set for other types of noise, such as aircraft and transportation. The 3 dB variation between the A-weighted and C-weighted thresholds is due to research that indicated that there had to be an adjustment in DNL levels to have the same annoyance levels when comparing A-weighting and C-weighting values. Therefore, whereas Federal agencies have adopted 65 ADNL as a common threshold for incompatibility with noise-sensitive land uses, when assessing impulsive sounds, the threshold is lowered to 62 CDNL. Similarly, the designation of 75 ADNL as highly noise impacted is equated to 70 CDNL. The Noise Zone limits used by the Army are contained in the table below.

Noise Limits for Impulsive Noise Zones (Army Regulation 200-1, 2007)

Noise Zone	Noise Limits Impulsive CDNL	Noise-Sensitive Land Uses
I	< 62	Compatible
II	62 - 70	Normally not recommended
III	> 70	Never recommended

Legend
CDNL = c-weighted day-night levels
< = less than
> = greater than

In the NEPA documents for the proposed EOD sites, the DNL Noise Zones were generated in accordance with accepted methodology and evaluated based on guidance above. As depicted in Figure 3-6 of the July 2008 Environmental Assessment and recreated below, the Noise Zones for proposed EOD activities at FAPH resulted in Zone III (> 70 CDNL) being contained within the boundary of FAPH. Zone II (62-70 CDNL), would extend off-post for up to approximately 1,000 meters in the area of Route 17. Areas not contained within either Noise Zone III and II are within Noise Zone I and are considered compatible with noise-sensitive land uses based on DNL criteria.

In the 2009 Supplemental EA, the only proposed change was moving the larger explosives further interior to post to the vicinity of Demo Site (DS)70A. The modeling indicated that there would be a very slight decrease in the extension of Zone II levels off the eastern boundary (a positive effect), but the change would be so slight that it would be hard to ascertain by using the C-weighted Day-night Level (CDNL) contours. Therefore, graphics were included in the EA which depicted the Peak15 (PK15) levels for the larger charges (see section below for peak noise explanation), showing the proposed movement of their locations from original sites to the proposed DS70A locations.

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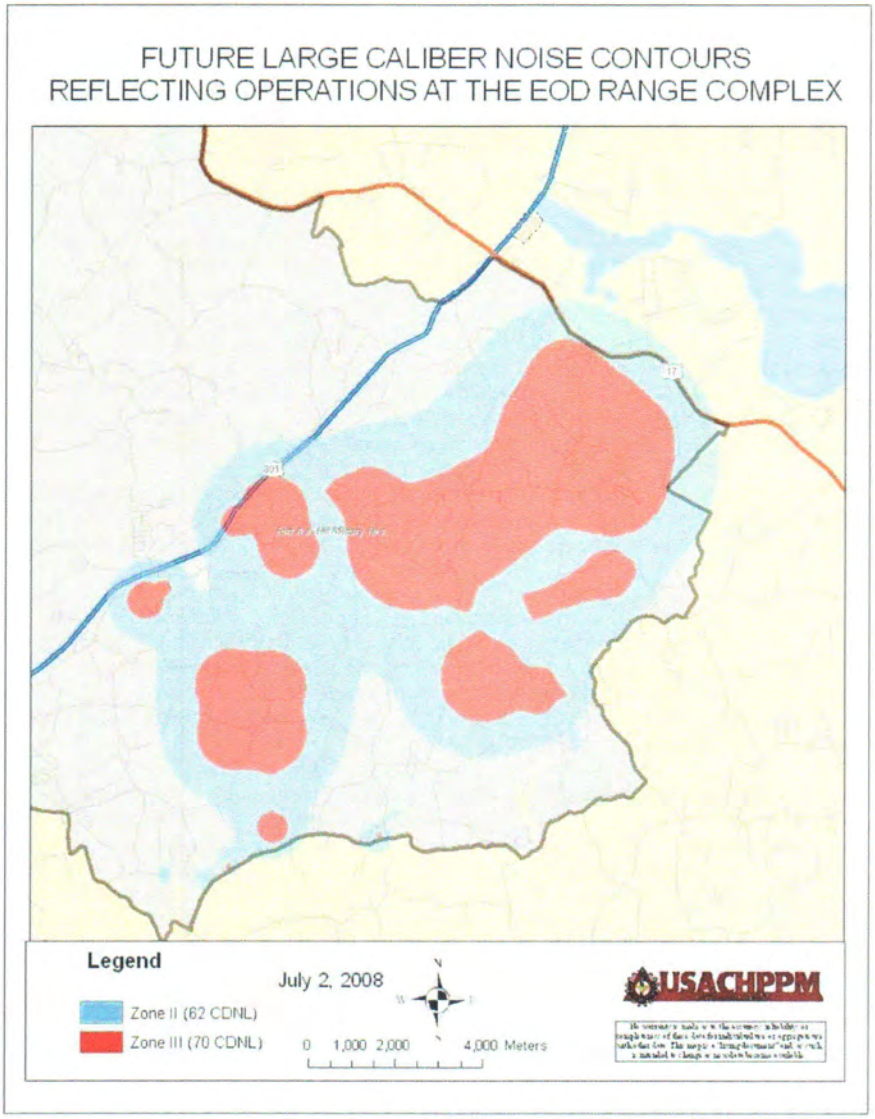

Peak Noise Levels versus Continuous Noise Levels. The NEPA documents for FAPH contained maps depicting two different approaches to noise analysis. The first, the DNL Noise Zones previously described, are used to determine land use compatibility with the noise environment. The second types of maps contained in the documents depicted predicted Peak noise levels. The Peak noise levels depicted were those that would be expected to be reached only under unfavorable weather conditions.

The Peak noise levels in the documents should not be confused with the Noise Zones. Additionally, when people hear the word "decibel", they usually assume that it is referring to the most common A-weighted levels that are used to describe everyday noise sources dB(A). The Peak levels predicted in the NEPA documents cannot be compared to A-weighted levels. A rock concert may generate continuous A-weighted level of 115 db(A) near a speaker, but this level can NOT be compared to a Peak level of 115 dB(P). The speaker generates a continuous sound whereas the instantaneous Peak level from the detonation lasts approximately 35 milliseconds. Another important difference between A-weighted and Peak levels is the risk of hearing damage. Whereas hearing damage becomes a concern when people are exposed to 85 db(A) for 8 hours per day, hearing damage risk is not a concern until levels reach 140 db (P).

The decision by FAPH to include the Peak levels in the NEPA analysis was not done to fulfill a legal or Army requirement. The use of Peak levels as a supplemental analysis was included to be transparent in the fact that neighbors outside of the noise zones may hear operations.

The Peak levels are correlated with complaint risk. At most Army installations, Peak levels of 115 dBP are routinely generated off post. At Aberdeen Proving Ground, MD a Standard Operating Procedure is in place which halts testing if levels at off-post monitors exceed 130 dBP. At that time, the Commander must decide if the mission importance is such that testing should continue, or if the activity should be halted until weather conditions improve.

The peak BNOISE2 model results depicted in Army documents (PK15) are based on predictions of noise levels which would be expected under weather conditions that favor sound propagation. The Army has found the PK15 contours a useful tool for conveying to the public that they may hear training at times, even if they are outside of the Noise Zones. Studies have shown that when Peak levels exceed 115 dBP, there starts to be a risk of complaints. Above 130 dBP, the risk of complaints is characterized as high. Additionally, since Peak levels are highly correlated with and can be used to predict vibration levels, modeling the Peak levels for the proposed EOD operations also enabled the determination that noise levels would not be high enough to cause building damage. However, the Peak contours are based on the loudest events and do not account for frequency of operations. If the loud events were going to be frequent enough as to be considered incompatible with residential land use, those results would be reflected in the size of the CDNL Noise Zones.

4. References.

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Schomer, P.D., et al., Statistics of amplitude and spectrum of blasts propagated in the atmosphere, Journal Acoustical Society of America, 63(5), May 1978, pp. 1431-1443.

University of Utah, 1958, Explosives Research Group Report No. 12, Measurement of Air and Ground Shock Disturbances Arising from Demolition Activities at Letterkenny Ordnance Depot.

APPENDIX D

MONITORING STUDY ACTUAL SCHEDULE AND EXPENDITURE

D-1. Figure D summarized the detonations sites utilized during the monitoring study.

February 2010

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4 LOCATION: EOD Site EVENTS: Morning, Mid-day, Evening	5 LOCATION: DS-13 & TA-13 EVENTS: Morning, Mid-day (Evening events cancelled due to snow)	6 No Activity SNOW
7 No Activity SNOW	8 LOCATION: DS-13 & TA-13 EVENTS: Evening only (completion of activity from 05 Feb)	9 LOCATION: EOD Site EVENTS: Morning, Mid-day, Evening	10 LOCATION: DS-13 & TA-13 EVENTS: Morning, Mid-day, Evening	11 LOCATION: EOD Site EVENTS: Morning, Mid-day, Evening	12 LOCATION: EOD Site EVENTS: Middle of Night, Morning, Mid-day, Evening LOCATION: DS-13 EVENTS: Morning, Mid-day (25 lbs only)	13

FIGURE D. MONITORING STUDY DATES.

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D-2. Tables D-1 through D-8 list the explosive utilization by detonation site for each active day of the monitoring study.

TABLE D-1. DETONATION EVENTS 04 FEBRUARY 2010.

			Number of Charges per Day		
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000
MS-10	C-4	0.25	4	2	4
MS-08	C-4	1.25	4	2	4
Site 7	C-4	0.25	4	2	4
MS-12	C-4	1.25	4	2	4
DS-70A	TNT	25	2	2	0

Note: DS = Demolition Site, MS = MOUT Site
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

TABLE D-2. DETONATION EVENTS 05 FEBRUARY 2010.

			Number of Charges per Day		
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000
TA13/TA18	C-4	0.25	4	2	0
TA13/TA18	C-4	1.25	4	2	0
TA13/TA18	TNT	25	2	2	0
DS-13	C-4	0.25	4	2	0
DS-13	C-4	1.25	4	2	0
DS-13	TNT	25	2	2	0

Note: DS = Demolition Site, TA = Training Area
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

TABLE D-3. DETONATION EVENTS 08 FEBRUARY 2010.

			Number of Charges per Day		
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000
TA13/TA18	C-4	0.25	0	0	4
TA13/TA18	C-4	1.25	0	0	4
DS-13	C-4	0.25	0	0	4
DS-13	C-4	1.25	0	0	4

Note: DS = Demolition Site, TA = Training Area
C-4 = Composition 4, lbs = pounds

TABLE D-4. DETONATION EVENTS 09 FEBRUARY 2010.

			Number of Charges per Day		
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000
MS-10	C-4	0.25	4	2	4
MS-08	C-4	1.25	4	2	4
Site 7	C-4	0.25	4	2	4
MS-12	C-4	1.25	4	2	4
DS-70A	TNT	25	2	2	0

Note: DS = Demolition Site, MS = MOUT Site
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

TABLE D-5. DETONATION EVENTS 10 FEBRUARY 2010.

			Number of Charges per Day		
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000
TA13/TA18	C-4	0.25	4	2	4
TA13/TA18	C-4	1.25	4	2	4
TA13/TA18	TNT	25	2	2	0
DS-13	C-4	0.25	4	2	4
DS-13	C-4	1.25	4	2	4
DS-13	TNT	25	2	2	0

Note: DS = Demolition Site, TA = Training Area
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

TABLE D-6. DETONATION EVENTS 11 FEBRUARY 2010.

			Number of Charges per Day		
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000
MS-10	C-4	0.25	4	2	4
MS-08	C-4	1.25	4	2	4
Site 7	C-4	0.25	4	2	4
MS-12	C-4	1.25	4	2	4
DS-70A	TNT	25	2	2	0

Note: DS = Demolition Site, MS = MOUT Site
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

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TABLE D-7. DETONATION EVENTS 12 FEBRUARY 2010.

			Number of Charges per Day		
Location	Type of Explosive	Weight (lbs)	Within 2 hours of sunrise (7-9)	Midday 1200-1500	after sunset 1800-2000
MS-10	C-4	0.25	4	2	4
MS-08	C-4	1.25	4	2	4
Site 7	C-4	0.25	4	2	4
MS-12	C-4	1.25	4	2	4
DS-70A	TNT	25	2	2	0
DS-13	TNT	25	2	2	0

Note: DS = Demolition Site, MS = MOUT Site
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

TABLE D-8. ADDITIONAL DETONATION EVENTS 12 FEBRUARY 2010.

Location	Type of Explosive	Weight (lbs)	"Middle of the Night" (0200)
MS-10	C-4	0.25	2
Site 7	C-4	0.25	2

Note: MS = MOUT Site
C-4 = Composition 4, TNT = trinitrotoluene, lbs = pounds

APPENDIX E

ENVIRONMENTAL VARIABLES AFFECTING SOUND PROPAGATION

E-1. REFERENCES.

a. Answers, 2010. Atmospheric Acoustics. [website; www.answers.com/topic/atmospheric-acoustics]; [Accessed February 2010].

b. U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory, 2010. Snow Acoustics (and Seismic Waves in Snow). [website; http://snow.usace.army.mil/Snow_acoustics/#experts]; [Accessed February 2010].

E-2. GENERAL. Many factors go in to influencing sound as it travels from the source to a receiver. These include variables on the surface and in the atmosphere. However, refraction by the atmosphere is the most important influence on long-range sound propagation. This is the key item that determines where the sound will go and where the loud spots will be. Though often loosely referred to as "weather" or "wind", the atmospheric conditions most important are the vertical temperature profiles and the wind speed variations with altitude. In general, noise is louder downwind from the source, but the effects of refraction by temperature and wind are additive and produce rather complex sound speed profiles in the atmosphere.

E-3. EFFECTS OF THE GROUND COVER ON SOUND LEVELS.

a. When the sound source and receiver are above a large flat ground surface in a homogeneous atmosphere, sound reaches the receiver via two paths. There is the direct path from source to receiver and the path reflected from the ground surface. Most naturally occurring ground surfaces are porous to some degree, and their acoustical property can be represented by an acoustic impedance. The acoustic impedance of the ground is in turn associated with a reflection coefficient that is typically less than unity. In simple terms, the sound field reflected from the ground surface suffers a reduction in amplitude and a phase change (Answers, 2010).

b. When the source and receiver are both relatively near the ground and are a large distance apart, the direct and reflected fields become nearly equal and cancel each other (Answers, 2010).

c. The information above agrees with the research conducted by the Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL). The CRREL studied the effect that a snow-covered surface would have on the propagation of sound levels to gather information to be used in sensor detection development. Early research involving measurements at close distances to the source showed reduction in noise levels within a few hundred meters of the source (CRREL, 2010).

(1) The reduction in near field levels led to the hypothesis that there might be a 5 dB reduction in sound levels in communities surrounding military training if there was a snow-covered surface. However, in further research, results agreed with information above- at large distances (>500 meters), the influence of ground impedance is overshadowed by influences of meteorological conditions. Theoretically, there still could be a reduction in sound levels at far distances by a factor of two (3 dB) with a snow covered surface, but this has not yet been proven (personal communication Dr. Donald Albert, CRREL, 26 February 2010).

(2) Given that the meteorological factors can influence levels by a factor of 30, the results of the FAPH monitoring have not been adjusted for the theoretical 3 dB reduction. The BNOISE2 model database results are based on statistical values which were developed incorporating a large variation in weather, time of day/year, and surface conditions in the database. One would not be able to separate out the less important surface conditions from the atmospheric conditions which were present when the propagation algorithms used in the BNOISE2 model were developed.

E-4. WEATHER CONDITIONS DURING THE MONITORING STUDY.

a. Figure E-1 summarizes the weather conditions during the monitoring study.

b. As discussed earlier, wind direction influences sound propagation with higher levels typically being found downwind of the source. Current weather and historical climatic data was supplied by the U.S. Army Atmospheric Sciences Branch which has weather monitoring facilities located on FAPH in support of a tenant activity.

(1) Figure E-2 is a cumulative 5-year Wind Rose for FAPH. Predominant winds FAPH are from the NNW and the SSW.

(2) Figure E-3 depicts the Wind Rose for the 4-12 February 2010. Though wind speed and direction will vary during the course of the day, and other atmospheric conditions will influence sound levels, in general higher sound levels would have been

expected to the southeast of the demolition sites during the monitoring period. This seemed to be true during this study where Site 5 (Essex) registered events close to, or in two cases, exceeding predicted PK15 levels from detonations directly NW of the site at MS-12. However, even at the Essex Site, the highest recorded was 116.6 dB. This is just slightly above the category associated with a moderate risk of complaints (115- 130 dBP).

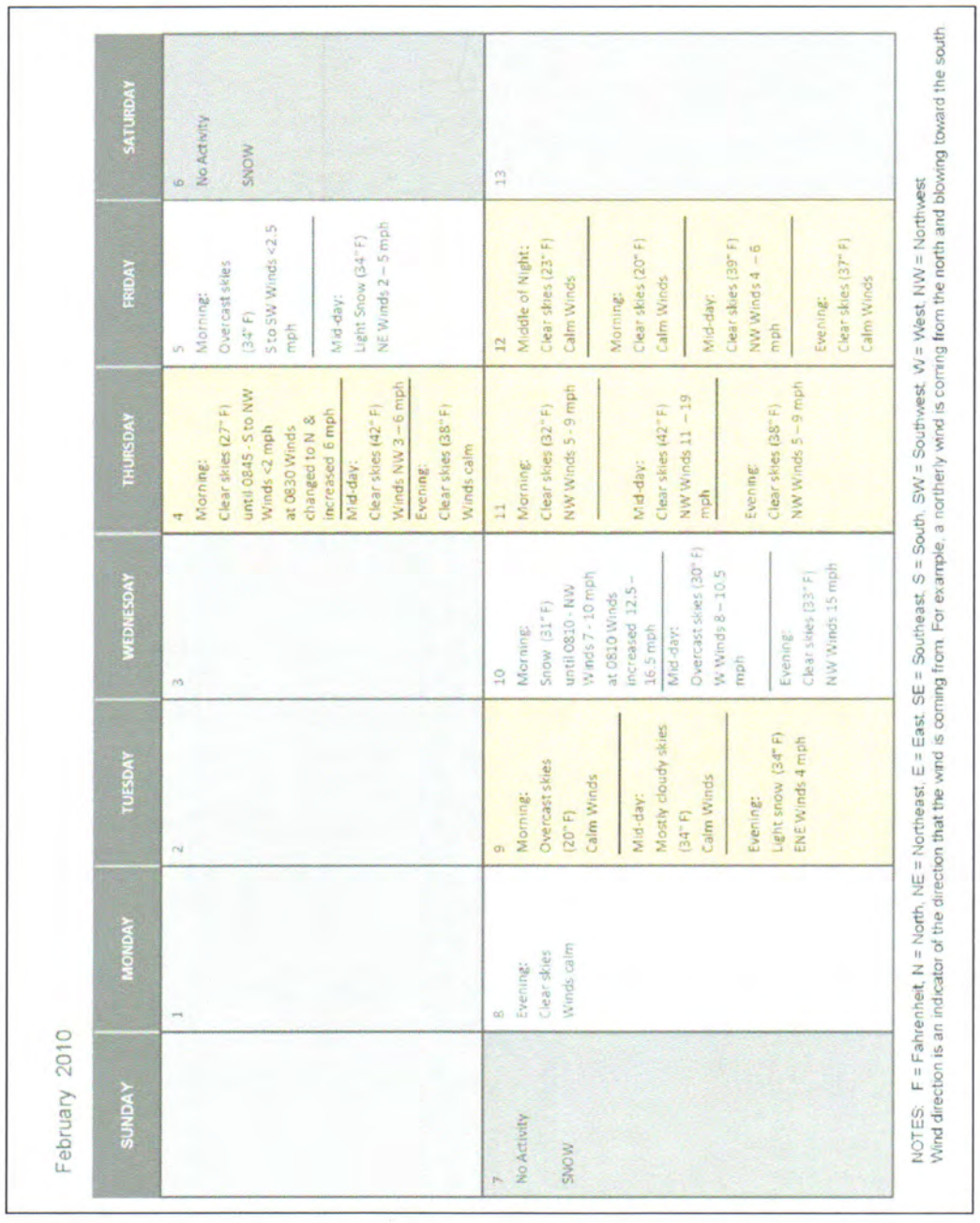

FIGURE E-1. WEATHER CONDITIONS DURING THE MONITORING STUDY.

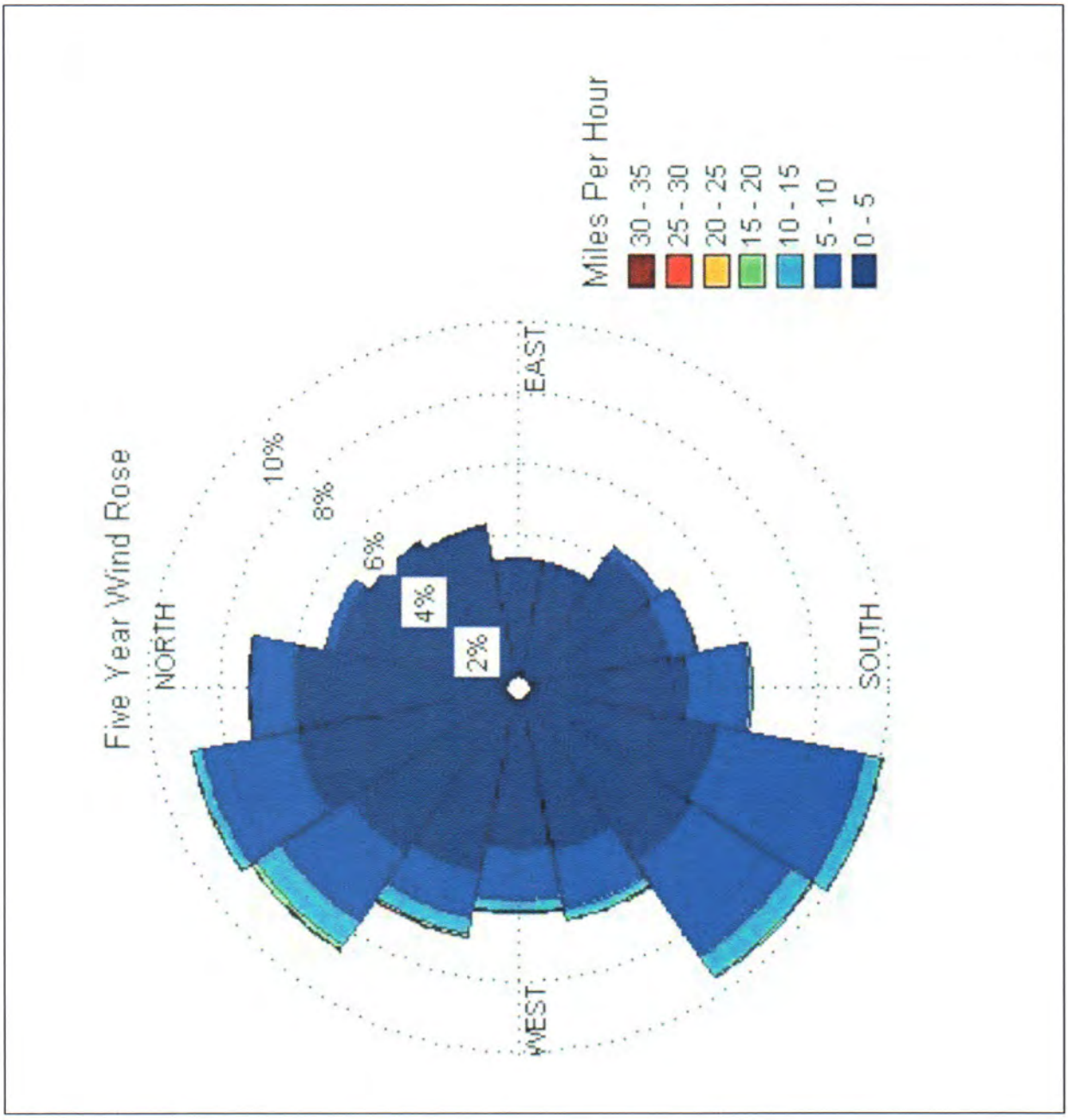

FIGURE E-2. FIVE YEAR WIND ROSE – FORT AP HILL

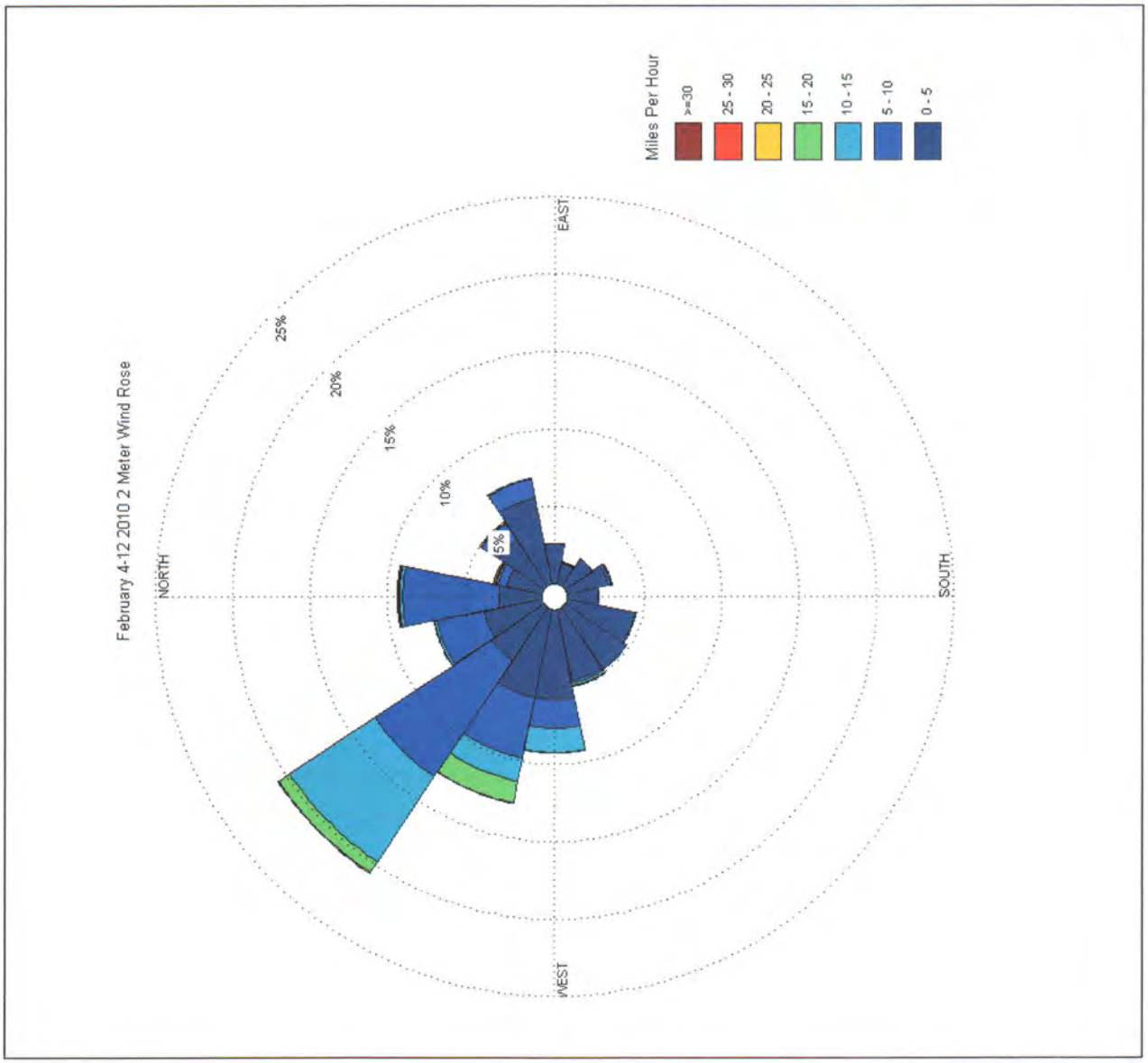

FIGURE E-3. WIND ROSE 04-12 FEBRUARY 2010 – FORT AP HILL

APPENDIX F

VIBRATION AND DAMAGE RISK CRITERIA

F-1. REFERENCES. The references used in this Appendix are listed in the Annex.

F-2. GENERAL. Large caliber weapons firing and demolition activity are common activities at military installations. Unlike many everyday sounds, these activities produce a higher proportion of low-frequency energy. Though the vibrations that often accompany military activity is less frequent and damaging than other environmental influences, people are concerned that homes or belongings are being damaged when they "feel" and "hear" the event.

F-3. GROUND-BORNE VIBRATION.

a. House shaking is commonly blamed on ground-borne vibration. Studies of vibration caused by coalmine detonations (Northwestern University 1981) indicate that the ground-borne vibration dominates house vibration at scaled distances of less than 50. At scaled distances greater than 50, the airborne vibration dominates. That is, for a 100-pound charge, the ground-borne vibration is the dominant cause of house vibration if the house is located less than 500 feet from the detonation point. At distances greater than 500 feet, the airborne sound wave is the dominant cause of the vibration. Since the largest proposed detonation at the EOD School is 25 lb, and there are no residences within 500 feet of the sites, this indicates that vibrations of concerns to neighbors would be airborne rather than ground-borne. However, for information purposes, further details pertaining to ground-borne vibration are included below.

b. Humans can typically perceive ground-borne vibrations as low as 0.08 to 0.20 inches per second (Argonne 1993). A summary of typical vibration levels is listed in Table F-1.

TABLE F-1. TYPICAL VIBRATION LEVELS. (Argonne 1993).

Response	Ground Vibration (inches per second)
Human:	
Perceptible	0.08
Noticeable	0.20
Unpleasant	0.38
Disturbing	0.80
Objectionable	1.30
Structure:	
Minor Damage (fine cracks in plaster)	5.40
Major Damage	7.60

c. The maximum ground-borne vibration level recommended by the U.S. Bureau of Mines (Bureau of Mines 1980a) to prevent threshold damage is 0.5 inches per second. The threshold level at which minor structural damage may begin to occur in 0.01 percent of structures is set at 2.0 inches per second.

d. Using the models developed in the above study, the maximum predicted ground vibration at 2 (1.25 miles), 4 (2.5 miles), and 8 (5 miles) kilometers for a 155-mm howitzer round detonating in the impact area is 0.0014, 0.00052, and 0.00019 inches per second, respectively. For a 500-pound bomb, the maximum ground vibration is 0.00926, 0.00333, and 0.00119 inches per second. These statistics indicate that ground-borne vibration would not be of concern for proposed EOD activity.

F-4. AIRBORNE VIBRATION.

a. Airborne vibration is the dominant cause of vibration of structures off the installation. Most of the studies of airborne vibration and the damage guidelines derived from these studies used sonic booms as the source. The vibration from artillery and tank main gun firing is similar to the vibration from sonic booms.

b. Structural shaking or window rattling by airborne vibration can annoy the occupants and cause possible structural damage, e.g. glass and plaster cracks. The vibration levels and corresponding unweighted-peak- sound-pressure levels for annoyance and damage (Siskind 1989) are listed in Table F-2.

TABLE F-2. AIRBORNE VIBRATION LEVELS. (Siskind 1989).

Response	Vibration Level (inches per second)	Peak Sound Level (dBP)
Concern by Homeowners about Structural Rattling and Possible Damage	0.1	120
Glass and Plaster Cracks Worst Case*	0.5	134
Structural Damage to Lightweight Superstructure	>2.0	175
Damage to Concrete	>4.0	185
** Worst case = poorly fitted loose window glass and stressed plaster walls.*		

F-5. VIBRATION DAMAGE GUIDELINES.

a. Structures exposed to high energy-impulsive noise can crack for a variety of reasons that have nothing to do with the vibration and noise environment. Considerable knowledge exists on natural forces and mechanisms that cause structural damage (U.S. Air Force 1990). These natural forces and mechanisms include:

- Ratio of inside to outside surface and air temperatures.
- Range of inside and outside humidity. Temperature and humidity influence the amount of shrinking of wood frame members that is a major source of cracking of interior surfaces.
- Intensity, duration and direction of wind.
- Uneven settling of building foundation.
- Room volume, wall and ceiling area (high walls and cathedral ceilings). The larger the surface area of a wall or ceiling, the more likely it is to crack from expansion and shrinkage.
- Orientation and partial shading of wall from sunlight (uneven heating causes uneven expansion of walls).
- Type of skin, frame, exterior materials, and interior finish.
- History of patching.
- Presence of water leaking from or condensing on interior pipes and from external sources into building structure.

b. Recently, Northwestern University has investigated effects of weather and blasting on homes (Northwestern University, 2010). The weather effects, measured two to three times daily, appeared as a continuous function. Blasting events occurred on average less than once per day. During the eight months of observation, the greatest blast-induced vibration during the study period was 0.75 in/sec. Despite the significant vibration level, they found that the induced crack displacement was a good deal less than the average change produced by the passage of a significant weather front. The maximum weather induced deformation was some 3.5 times that of the maximum produced by blasting.

(1) Thus, approximately once a week this house was naturally subjected by changes in the weather to deformations that produce crack displacements equal to those produced by ground motions of at least 0.5 in/sec. Every week, season by season, houses deform significantly more than they would from a typical blast. The difference between environmental and vibration phenomena is that the weather effect occurs slowly and without noise. It is therefore undetectable by the home owners and neighbors.

(2) Also observed during research reported by Northwestern University was that uncracked joint and panel also respond to events like lightning strikes that cause a forceful air overpressure. They found that the drywall joint responds 282 μ-in, much more than during any blast. Also, they noted that the air overpressure from the thunder clap (0.01 psi) is ten times greater than any blast that was observed in the study period.

(3) The strength of many materials can reduce after repeated events. This reduction of strength is known as fatigue. However, the effect of fatigue on damage prediction is negligible because of the following:

- Use of conservative estimates of damage threshold levels for materials in order to compensate for weakening by fatigue on material strength.
- Brittle materials, such as glass, show little reduction in strength due to fatigue.
- Fatigue in ductile materials, such as most metals and wood, requires approximately one million events to reduce the strength of the material by 50 percent.
- Normal preventive maintenance on a structure will negate the effect of fatigue.

c. The most common form of structural damage from vibration caused by artillery and tank-main gun firing is window breakage. There have been several studies of the probability of window breakage. The results from one study (FAA 1976) are summarized in Table F-3.

TABLE F-3. PROBABILITY OF WINDOW BREAKAGE.

Pressure, pounds per square foot	Sound Pressure Level, dBP	Probability of Breakage, panes per million pane-events*
1	128	0.28
10	148	5,000
100	168	380,000

* *Number of windowpanes per million windowpanes broken for each event.*

d. The threshold level used to evaluate window damage claims against the Army (U.S. Army 1994a) is 136.5 unweighted peak decibels (dBP). This level is more conservative than the 140 dBP used by the U.S. Bureau of Mines (Bureau of Mines 1980b).

F-6. VIBRATION STUDIES.

a. An extensive study of vibration in the homes of eight concerned residents caused by impulsive sound pressure was performed by USACHPPM (U.S. Army 1994b). A typical wood-frame building close to the firing points was used as a control site. Even though this building was exposed to levels several times higher than the threshold level, no damage occurred.

b. At the eight homes, only two of the over 10,000 vibration measurements exceeded the known damage thresholds. At the Aberdeen Proving Ground (APG) wood-frame building, the majority of the measurements of the blast noise exceeded these thresholds. The only damage that has occurred to this structure since it was built in 1986 is minor plasterboard cracking at high stress points. The data from this study are summarized in Table F-4.

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TABLE F-4. SUMMARY OF DATA FROM APG VIBRATION STUDY.

Site	Noise, dBP		Vibration, inches per second					
			Windows		Wall		Corner	
	Mean	Max	Mean	Max	Mean	Max	Mean	Max
1	111.7	132.4	0.643	3.318	0.189	1.124	0.041	0.570
2	108.4	124.8	0.506	2.605	0.127	0.701	0.019	0.100
3	106.6	127.8	0.289	0.991	0.085	0.336	0.016	0.178
4	110.5	134.7	0.440	2.200	0.173	1.450	0.057	0.224
5	109.4	128.1	0.464	2.093	0.108	0.662	0.017	0.116
6	109.8	125.9	0.232	0.883	0.157	0.693	0.022	0.336
7	106.8	126.0	0.269	0.843	0.106	0.328	0.016	0.100
8	111.2	131.3	0.798	7.012	0.307	3.356	0.020	0.340
APG	127.2	149.8	2.070	8.930	1.245	5.834	0.219	6.550

c. Further analyses of these noise and vibration data showed an excellent correlation between the unweighted peak sound pressure (Pascals) and the peak vibration (inches per second). For a sample of 523 data sets, the correlation between the sound and window vibration is 0.936, sound and midwall 0.932, and sound and corner 0.918. These show that the unweighted peak sound level is an excellent predictor of the damage potential caused by airborne vibration.

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ANNEX

REFERENCES

1. Argonne National Laboratory, 1993, Ground Vibrations at Harris Farm, Kent County, Maryland from Test Firings on 13 September 1993 at Aberdeen Proving Grounds.

2. Bureau of Mines, 1980a, Report No. RI 8485, Structure Response and Damage Produced by Airblast From Surface Mining.

3. Bureau of Mines, 1980b, Report No. RI 8507, Structure Response and Damage Produced by Ground Vibration From Surface Mine Blasting.

4. Federal Aviation Administration, 1976, Report No. FAA-RD-76-87, Statistical Model of Sonic Boom Structural Damage.

5. Northwestern University, 1981, Center for the Interdisciplinary Study of Science and Technology Report, Social, Economic and Legal Consequences of Blasting in Strip Mines and Quarries.

6. Northwestern University, 2010. Measure the Crack Instead of Construction Vibrations. [website; www.iti.northwestern.edu/acm/articles/geostrata.html]; [Accessed February 2010].

7. Siskind, David E., 1989, Vibrations and Airblast Impacts on Structures from Munitions Disposal Blasts, Proceedings, Inter-Noise 89, G.C. Maling, Jr, editor, pp. 573-576.

8. The U.S. Air Force, 1990, Noise and Sonic Boom Impact Technology Report No. HSD-TR-90-021, Evaluation of Potential Damage to Unconventional Structures by Sonic Booms.

9. The U.S. Army, 1994a, Army Research Laboratory Report ARL-MR-131, Army Blast Claims Evaluation Procedures.

10. The U.S. Army, 1994b, Center for Health Promotion and Preventive Medicine, Environmental Noise Study No. 52-34-QK33-95, Results of Eastern Shore Vibration Monitoring, Aberdeen Proving Ground, Maryland, September 1993 – November 1994.

APPENDIX G

NOISE MONITORING INSTRUMENTATION

G-1. MONITORING LOCATIONS. Sound levels were monitored at Fort A.P. Hill from 04 – 05 February 2010 and 08 – 12 February 2010 using automated Larson Davis (LD) sound level meters (SLM) (models 824 and 870). Monitoring sites 1, 3, and 4 were equipped with the LD 870 SLM and sites 2, 5, 6, 7, 8, 9, 10, 11, and 12 were equipped with the LD 824 and 870 SLMs. The SLM's recorded all events including detonation events, environmental, ambient, and random sounds.

G-2. INSTRUMENTATION.

a. Each 824 SLM was instrumented with a LD condenser microphone (model 2559) and preamplifier (model 902). Each 870 SLM was instrumented with a LD condenser microphone (model 2541) and preamplifier (model 900). The microphones were calibrated using a Metrosonics precision acoustic calibrator (model CL304). The microphones were calibrated to a peak sound pressure level of 102 decibel (dB) reference 20 μPa at 1,000 Hertz. A photograph of a representative monitoring site is provided in Figure G.

FIGURE G. NOISE MONITOR PLACEMENT AT SITE 9

b. All instrumentation was laboratory calibrated by the U.S. Army Test Measurement Diagnostics Evaluation (TMDE) Support Center before the study using standards traceable to the National Institute of Standards and Technology.

c. The following summarizes the equipment utilized during the monitoring study.

- METROSONICS MODEL 304 CALIBRATOR:

Serial Number	TMDE Calibration Expiration Date
1164	15 October 2010
1433	15 October 2010
1437	15 October 2010

- LD MODEL 824 SLM:

Serial Number	TMDE Calibration Expiration Date
439	28 February 2010
812	27 February 2010
813	27 February 2010
814	27 February 2010
815	13 September 2010
819	27 February 2010
821	28 February 2010
822	28 February 2010
1229	01 March 2010

- LD MODEL 902 PREAMPLIFIER

Serial Number	TMDE Calibration Expiration Date
0811	04 December 2010
1238	09 March 2011
1247	22 February 2011
1248	04 December 2010
1249	23 February 2011
1257	24 February 2011
1703	24 February 2011
1709	24 February 2011
1712	24 February 2011

- LD MODEL 2559 MICROPHONE:

Serial Number	TMDE Calibration Expiration Date
2454	16 October 2010
2520	12 September 2010
2683	21 February 2010
2685	07 November 2010
2786	21 February 2010
2788	12 September 2010
2789	21 February 2010
2790	12 September 2010
2793	13 May 2010

- LD MODEL 870 SLM:

Serial Number	TMDE Calibration Expiration Date
257	05 May 2011
361	09 June 2010
362	28 June 2011
363	01 November 2010
440	09 June 2010
443	01 November 2010
453	31 October 2011
502	09 June 2010
511	08 May 2011
1034	08 May 2011
1036	28 June 2011
1434	05 November 2010
1435	08 May 2011

- LD MODEL 900 PREAMPLIFIER

Serial Number	TMDE Calibration Expiration Date
3364	04 November 2010
3476	04 November 2010
3485	09 November 2010
3538	09 November 2010
3830	09 November 2010
3833	04 November 2010
4066	09 November 2010
4068	09 November 2010
4073	09 November 2010
4095	09 November 2010
4107	15 November 2010
4114	05 November 2010

- LD MODEL 2541 MICROPHONE:

Serial Number	TMDE Calibration Expiration Date
4843	06 June 2010
4857	06 June 2010
5628	07 June 2010
5633	24 April 2010
5637	07 June 2010
6220	07 June 2010
6227	07 June 2010
6260	07 June 2010
6270	07 June 2010
6294	16 October 2010
6747	07 June 2010
6754	07 June 2010

G-3. SETTINGS. The logging function on each sound level meter was used to automatically record the sound levels. The following metrics were measured:

- Unweighted peak (dBP)
- C-weighted peak (LCPeak)
- C-weighted Sound Exposure Level (CSEL)
- A-weighted max (slow)

It should be noted that A-weighting is not an appropriate metric for explosive sounds because it neglects to capture the dominant low-frequency component of impulsive sounds and thereby underestimates or ignores the energy that is responsible for rattles and vibrations associated with the events.

G-4. ANALYSIS. The data acquired from the LD 824 and LD 870 sound level meters were downloaded to a computer database using proprietary LD software. The data was then placed in Microsoft Excel for processing and analysis. For this monitoring study detailed records were made at each of the detonation sites regarding the time each charge was detonated. Each known time event was cross matched to the automated levels recorded by the SLMs.

Final
Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

Prepared by:

FORT A.P. HILL, VIRGINIA

May 2010

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Final

Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

Reviewed by:

TERRY L. BANKS
Chief, Environmental Division
Directorate of Public Works

Reviewed by:

HENRY H. HANRAHAN, III
Director, Plans, Training,
Mobilization and Security

Approved by:

JOHN W. HAEFNER
LTC, EN
Commanding

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Executive Summary

ES.1 Introduction

On September 8, 2005, the Defense Base Closure and Realignment Commission (BRAC Commission) recommended numerous realignment and closure actions for domestic military installations. President Bush concurred with the 2005 BRAC Commission's report and sent it to Congress on September 15, 2005. On November 9, 2005, the recommendations became law, which must be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, as amended).

The Army evaluated realignment of Fort Lee in its *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia*. On May 11, 2007, the Army issued its Record of Decision (ROD) to relocate approximately 7,200 personnel to Fort Lee, to construct and renovate facilities at Fort Lee and Fort A.P. Hill (FAPH), and to conduct operations and training at Fort Lee and FAPH.

Among the facilities projects evaluated in the environmental impact statement (EIS) was establishing an explosives ordnance disposal (EOD) field training area that would cover approximately 1,034 acres at FAPH. Since publication of the ROD, ongoing planning by the Army revealed the need for additional area in the EOD project site. The *Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (July 2008) evaluates the Army's proposal for expanding the planned EOD field training area by adding an additional 1,025 acres resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres.

This supplemental environmental assessment (SEA) evaluates the potential environmental and socioeconomic effects of the proposed action to relocate three demolition sites at the designed Explosives Ordnance Disposal (EOD) field training area to an already existing demolition range at Fort A.P. Hill, Virginia.

ES.2 Proposed Action and Alternatives

The Army proposes to relocate three large demolition sites (hereafter referred to as D1, D2, and D3 respectively) originally planned for the 2,059 acre EOD field training area within Training Areas 26, 27 and 28 of Fort A.P. Hill. These three demolition sites would be used for basic demolition training, energetic tools training, and protective works training. Training at these sites would involve detonations up to 50 lbs net explosive weight (NEW). The 2,059 acres of land dedicated for the EOD field training area will remain unchanged, only the use will change.

The area of Fort A.P. Hill with respect to the proposed action is a combined 42-acre footprint tract of land in and around Demolition Site 70A (DS 70A), an already existing demolition range within the Restricted Area of the installation. It is anticipated that of the 42 acres in the proposed EOD demolition site area, about 23 acres of land would be cleared for an access road and for a demolition pit and bunker for D1. Sites D2 and D3 are already cleared and operating as live-fire ranges.

Demolition site 70A is currently operated by the United States Navy, Naval Surface Warfare Center, Indian Head Division (NSWC-IHD). The footprint of the existing DS70A is large enough to accommodate all three large demolition areas, D1, D2, and D3 proposed for construction at the EOD field training area. With the implementation of the proposed action, NSWC-IHD would no longer be able to use DS 70A due to the fact that the range would be needed for the construction and year-round,

unrestricted operation of the EOD school. The NSWC-IHD would move to already existing demolition ranges on FAPH to accommodate their training.

Inclusion of the No Action Alternative is prescribed by Council on Environmental Quality regulations and serves as the benchmark against which federal actions can be evaluated. Under the No Action Alternative, EOD demolition training would be conducted on ranges constructed within an area of about 2,059 acres in the eastern portion of the installation in Training Areas 26, 27 and 28. The structures and facilities described in the July 2008 EA would remain within these training areas. The United States Navy, Naval Surface Warfare Center, Indian Head Division (NSWC-IHD) would continue operating the DS 70A range. The No Action Alternative is evaluated in detail in this SEA.

ES.3 Environmental Consequences

Implementing the proposed action would be expected to result in a mixture of short- and long-term minor adverse and short- and long-term minor beneficial effects on the environmental resources and conditions. The SEA does not identify the need for any mitigation measures.

For each resource area, the predicted effects from both the proposed action and the No Action Alternative are summarized in Table ES-1.

Table ES-1
Summary of Potential Environmental and Socioeconomic Consequences

	Environmental and socioeconomic effects of alternatives	
Resource	**Proposed Action**	**No Action**
Land use	No effects	Long-term minor adverse
Aesthetic and visual resources	No effects	No effects
Air quality	Short- and long-term minor adverse	Short- and long-term minor adverse
Noise	Short- term minor adverse and long-term minor beneficial	Short- and long-term minor adverse
Geology and soils	Short- and long-term minor adverse	Short- and long-term minor adverse
Water resources		
• Surface water	Short-term minor and long-term negligible adverse	Short-term minor and long-term negligible adverse
• Hydrogeology/Groundwater	Long-term negligible adverse	Long-term negligible adverse
• Floodplains and Wetlands	Long-term minor adverse	Long-term minor adverse
• Coastal zone management	No effects	No effects
Biological resources	No effects	Long-term minor adverse
Cultural resources	No effects	No effects
Socioeconomics		
• Economic Development	Short- and long-term minor beneficial	Short- and long-term minor beneficial
• Housing	No effects	No effects
• Public services	Long-term minor adverse	Long-term minor adverse
• Schools, family services	No effects	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
Transportation	Short- and long-term minor adverse	Short-term minor and long-term major adverse
Utilities	Short- and long-term minor beneficial and adverse	Short- and long-term minor beneficial and adverse

Table ES-1
Summary of Potential Environmental and Socioeconomic Consequences

	Environmental and socioeconomic effects of alternatives	
Resource	**Proposed Action**	**No Action**
Hazardous and toxic substances	Short-term negligible and long-term minor adverse	Short-term negligible and long-term minor adverse

ES.4 Conclusions

On the basis of the analyses performed in this SEA, implementation of the proposed action would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an environmental impact statement is not required. Issuance of a Finding of No Significant Impact would be appropriate.

SECTION 1.0
PURPOSE, NEED AND SCOPE

1.1 Introduction

On September 8, 2005, the Defense Base Closure and Realignment Commission (BRAC Commission) recommended numerous realignment and closure actions for domestic military installations. President Bush concurred with the 2005 BRAC Commission's report and sent it to Congress on September 15, 2005. On November 9, 2005, the recommendations became law, and they must be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, as amended).

The Army evaluated realignment of Fort Lee in its *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia*. On May 11, 2007, the Army issued its Record of Decision (ROD) to relocate approximately 7,200 personnel to Fort Lee, to construct and renovate facilities at Fort Lee and Fort A.P. Hill (FAPH), and to conduct operations and training at Fort Lee and FAPH. The Commission recognized that Fort Lee would have insufficient land and space available to conduct Warrior Training involving heavy weapons and explosives and would therefore need to conduct training at nearby locations.

Among the facilities projects evaluated in the environmental impact statement (EIS) was establishing an explosives ordnance disposal (EOD) field training area that would cover approximately 1,034 acres at FAPH. Since publication of the ROD, ongoing planning by the Army revealed the need for additional area in the EOD project site. The *Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (July 2008) evaluates the Army's proposal for expanding the planned EOD field training area by adding an additional 1,025 acres resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres.

This supplemental environmental assessment (SEA) evaluates the potential environmental and socioeconomic effects of the proposed action to relocate three demolition sites at the Explosives Ordnance Disposal (EOD) field training area to an already existing demolition range at Fort A.P. Hill, Virginia.

1.2 Purpose and Need

The Army proposes to relocate the three large demolition sites (hereafter referred to as D1, D2 and D3 respectively) originally included in the 2,059 acre EOD field training area within Training Areas 26, 27 and 28 of Fort A.P. Hill. These three demolition sites would be relocated to demolition site 70A (DS 70A), an already existing demolition range within the restricted area at Fort A.P. Hill, Virginia. The land dedicated for the EOD field training area will remain unchanged, only the use will change.

Demolition site 70A is currently operated by the United States Navy, Naval Surface Warfare Center, Indian Head Division and is used for experimental demolition testing, training and research. The footprint of the existing DS70A is large enough to accommodate all three demolition sites (D1, D2 & D3) proposed for construction at the EOD field training area.

The purpose of the proposed action is to provide unrestricted access to the future Battle Area Complex (BAX) while providing unconstrained training for the EOD field training area. During initial design

meetings for the construction of the EOD field training area, personnel from Redstone Arsenal EOD expressed concern over potential conflicts with EOD operations and access to the proposed BAX facility. The BAX facility will be located in Training Area 28, with access available solely through the proposed EOD field training site. If access to the BAX is constrained, there could be negative impacts to the training mission at Fort A.P. Hill.

1.3 Scope

This SEA identifies, documents, and evaluates the environmental effects of relocation activities in accordance with the National Environmental Policy Act of 1969 (NEPA) and implements regulations issued by the President's Council on Environmental Quality (CEQ) and the Army.[1] The purpose of the SEA is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

The Defense Base Closure and Realignment Act of 1990 specifies that NEPA does not apply to actions of the President, the Commission, or the Department of Defense (DoD), except "(i) during the process of property disposal, and (ii) during the process of relocating functions from a military installation being closed or realigned to another military installation after the receiving installation has been selected but before the functions are relocated" (Public Law 101-510, as amended, Sec. 2905(c)(2)(A)). The law further specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider "(i) the need for closing or realigning the military installation which has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation which has been selected as the receiving installation, or (iii) military installations alternative to those recommended or selected" (Sec. 2905(c)(2)(B)). The BRAC Commission's deliberation and decision, as well as the need for closing or realigning a military installation, are exempt from NEPA. Accordingly, this SEA does not address the need for realignment.

The BRAC EIS and related ROD will establish a 1,034-acre EOD field training area at Fort A.P. Hill. A subsequent EA and related FNSI was completed to construct and operate an EOD field training area in its entirety—the original 1,034 acres plus an additional 1,025 acres (a total of 2,059 contiguous acres).

This SEA evaluates the potential environmental and socioeconomic effects of relocating three demolition sites described in the EA to an already established demolition range within the Restricted Area of Fort A.P. Hill.

1.4 Public Involvement

The Army promotes public participation in the NEPA process. Consideration of the views and information of all interested persons and entities promotes open communication and enables better decision-making. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process.

Public participation opportunities with respect to this SEA and decision-making on the proposed action are guided by Title 32 of the *Code of Federal Regulations* (CFR) Part 651. Upon completion, the SEA,

[1] *Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, Title 40 of the Code of Federal Regulations (CFR) Parts 1500–1508, and Environmental Analysis of Army Actions, 32 CFR Part 651.

along with a draft Finding of No Significant Impact (FNSI), will be made available to the public for 30 days. At the end of the 30-day public review period, the Army will consider any comments submitted by individuals, agencies, or organizations on the proposed action, the SEA, or the draft FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementing the proposed action. If it is determined before a final FNSI is issued that implementation of the proposed action would result in significant impacts, the Army will publish in the *Federal Register* a notice of intent to prepare an EIS, commit to mitigation actions sufficient to reduce impacts to below significant levels, or not take the action.

Throughout this process, the public may obtain information on the status of the proposed action and the SEA through Fort A.P. Hill by calling Ms. Terry Banks, Chief, Environmental Division, at 804-633-8255.

1.5 Impact Analysis Performed

An interdisciplinary team of environmental professionals has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action. The resources addressed in this SEA are land use, visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomic resources, transportation, utilities, and hazardous and toxic materials.

SECTION 2.0
PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

As a result of BRAC Commission recommendations, EOD training must relocate from Redstone Arsenal, Alabama, to Fort Lee, Virginia. The Commission recognized that Fort Lee would have insufficient land and space available to conduct Warrior Training involving heavy weapons and explosives and would therefore need to conduct training at nearby locations. The Army proposed to accommodate EOD field training requirements at a new 1,034 acre field training area at Fort A.P. Hill in a February 2007 BRAC EIS.

A July 2008 subsequent EA describes the Army's proposal for expanding the planned EOD field training area by adding an additional 1,025 acres resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres (Figure 2-1).

2.2 Proposed Action

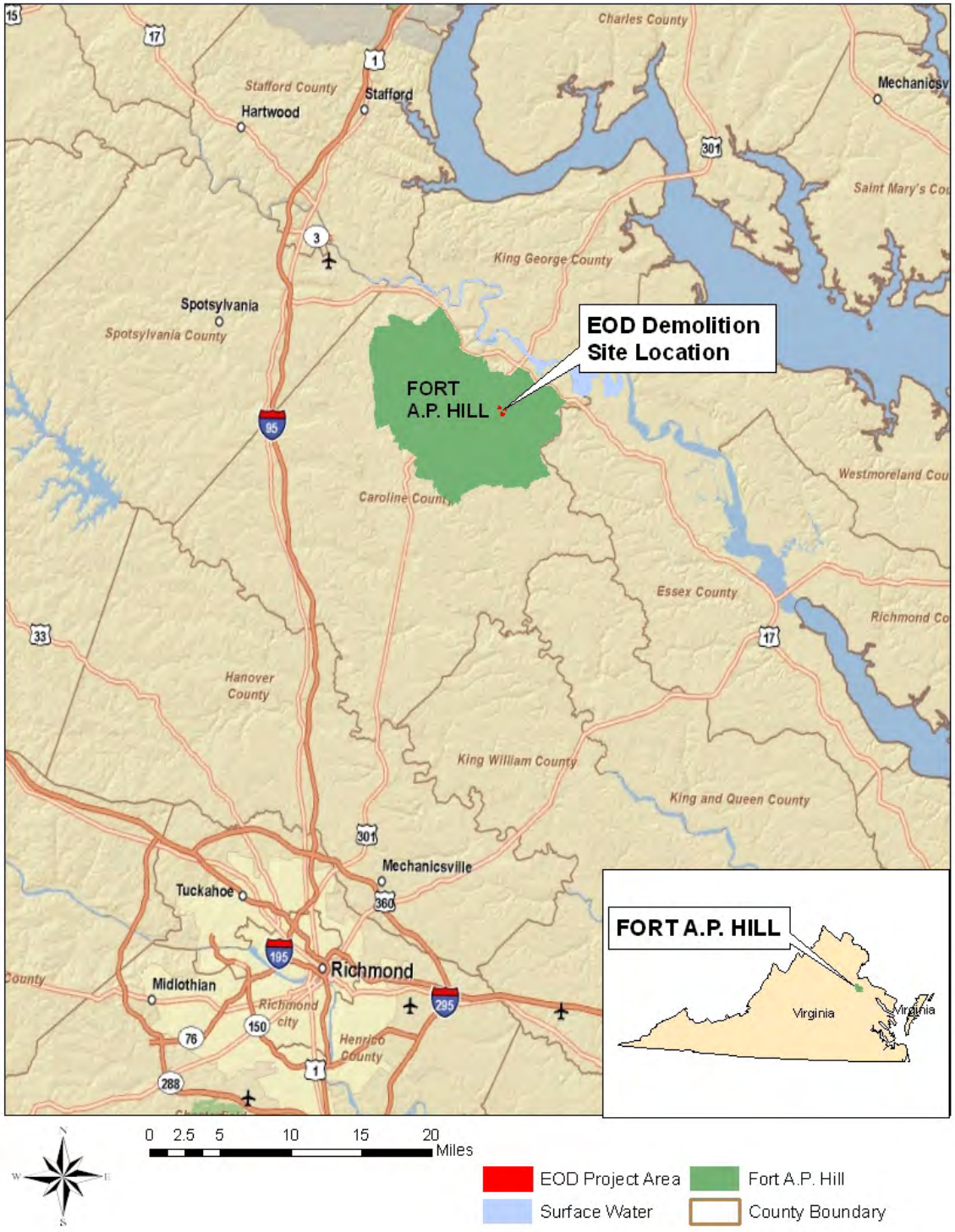
The Army proposes to relocate three large demolition sites (D1, D2, and D3) originally planned for the 2,059-acre EOD field training area within Training Areas 26, 27 and 28 of Fort A.P. Hill. These three demolition sites would be used for basic demolition training, energetic tools training, and protective works training. Training at these sites would involve detonations up to 50 lbs net explosive weight (NEW). The land dedicated for the EOD field training area will remain unchanged, only the use will change.

The area of Fort A.P. Hill with respect to the proposed action is a combined 42-acre footprint tract of land in and around Demolition Site 70A (DS 70A), which is an already-existing demolition range within the restricted area of the installation. It is anticipated that of the 42 acres in the proposed EOD demolition site area, about 23 acres of land at D1 would be cleared for an access road and for a demolition range and bunker. Sites D2 and D3 are already cleared and operating as live-fire ranges.

Demolition site 70A is currently operated by the United States Navy, Naval Surface Warfare Center, Indian Head Division (NSWC-IHD). The footprint of the existing DS70A is large enough to accommodate all three large demolition areas (D1, D2, and D3) proposed for construction at the EOD field training area. With the implementation of the proposed action, NSWC-IHD would no longer be able to use DS 70A due to the fact that the range would be needed for the construction and year-round, unrestricted operation of the EOD school. The NSWC-IHD would construct storage buildings within a previously disturbed site of the controlled access area, near Gouldman's corner. The NSWC-IHD range operations will occur on existing and operational demolition ranges within live-fire complex of the installation.

Information concerning the training frequency, personnel numbers, other facilities (training sites, observation bunkers, training towers, a range operations headquarters building, a robotics range support building, range storage buildings, covered training areas (bleachers), barracks and the water supply and distribution system), and operation of these facilities, as presented in the 2007 BRAC EIS and the sequential 2008 EA, remain valid.

Figure 2-1 EOD Demolition Site Location



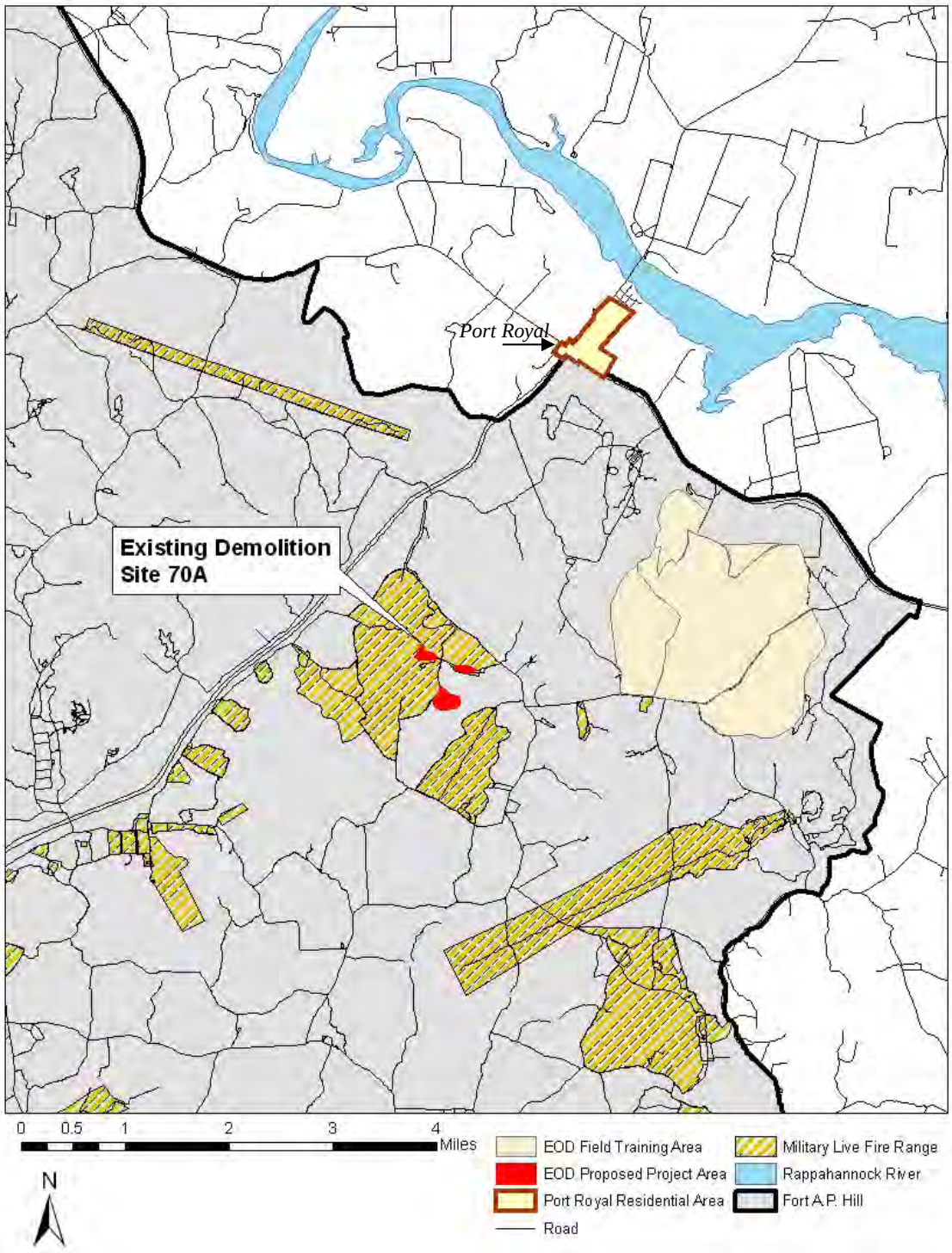
2.2.2 Location

The EOD field training area would remain in Fort A.P. Hill's Training Areas 26, 27, and 28 in the eastern portion of the installation. The three demolition sites in the proposed action would be relocated to demolition site 70A (Figure 2-2). This demolition site is located within the northern portion of the installation's restricted area. Demolition site 70A is currently operated by the NSWC-IHD and is used for experimental demolition testing, training and research.

2.2.3 Schedule

Construction of the EOD field training area and associated demolition sites would take about one year, beginning in April 2010. Construction would have to be completed by the September 2011 deadline to comply with the BRAC requirement to relocate affected personnel and missions.

Figure 2-2 Proposed Location of D1, D2, and D3 and the EOD Field Training Area



2.3 Alternatives

The Fort A.P. Hill staff, working with Redstone Arsenal EOD personnel, and after reviewing all potential sites, proposed an already existing range in the Restricted Area for the siting of the three proposed demolition sites. This location is already used for demolition testing and training has acceptable terrain features and availability of fragmentation safety arcs.

The Army considered one alternative to the proposed action. This alternative could have relocated the one demolition site, D1, in direct conflict with the future Battle Area Complex (BAX) to Demolition Site 70A within the restricted area at Fort A.P. Hill. Demolition site 2 (D2) and D3 would remain as described in the *Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (July 2008).

2.3.1 Alternative 1: Relocating Only D1

The proposed Alternative One is to relocate only the facilities and activities proposed at D1 to Fort A.P. Hill's existing DS 70A. This alternative would retain D2 and D3 within the EOD field training area at Training Areas 26, 27, and 28. This alternative would provide adequate access to the BAX facility, however, from an operational standpoint, all three demolition sites need to be in close proximity to maximize military training time and coordination efforts. Therefore, this alternative was found to be not feasible and, accordingly, is not evaluated in detail in this SEA.

2.4 No Action Alternative

The CEQ regulations prescribe inclusion of the No Action Alternative, which serves as the benchmark by which federal actions can be evaluated. No Action assumes that an EOD field training area could be established as approved in the FONSI for the 2008 Fort A.P. Hill EA. This SEA incorporates by reference the discussion of the EOD field training area contained in the Fort Lee BRAC EIS and subsequent 2008 Fort A.P. Hill EA. The No Action alternative is evaluated in this SEA.

Under the No Action Alternative, EOD training would be conducted on ranges constructed within an area of about 2,059 acres in the eastern portion of the installation in Training Areas 26, 27 and 28. The structures and facilities described in the July 2008 EA would remain within these training areas. The NSWC-IHD would continue operating the DS 70A range. A conflict with the proposed BAX facility would remain and an alternate bypass or road would need to be constructed.

SECTION 3.0
AFFECTED ENVIRONMENT AND CONSEQUENCES

3.1 Land Use

3.1.1 Affected Environment

3.1.1.1 Regional Geographic Setting and Location

Fort A.P. Hill is in Caroline and Essex counties about 75 miles south of Washington, DC. The political jurisdictions surrounding the installation are Caroline County, Essex County, King George County, Spotsylvania County, and the towns of Port Royal and Bowling Green. The location of the installation is shown in Figure 2-1. Climate in the area is temperate with mild winters and hot, humid summers. Prevailing winds in the region are from the north and northwest in winter and autumn and from the south in spring and summer (NCDC 1998).

3.1.1.2 Installation Land Use

Fort A.P. Hill is a field training installation in the northeastern portion of Caroline County, Virginia. The Army owns 75,794 acres of the installation and leases Hick's Landing, which is an 87- acre parcel from two private citizens (FAPH 2009). About 85 percent of the installation is forested and is used to conduct training exercises. The remaining acreage is divided among cantonment, grassland, shrub, and agricultural areas. Overall land use can be divided into several major categories: Training and Range (72,921 acres, or 96 percent of the installation that is predominantly woodlands), Administration, Family Housing, and Airfield areas (3,165 acres). The cantonment area is in the southwest along Route 301; it consists of the headquarters, support buildings, and related facilities.

The area of Fort A.P. Hill with respect to the proposed action is a combined 42-acre tract of land in and around the existing DS 70A range. The proposed demolition site areas are separated into three ranges in the eastern part of the Restricted Area of the installation (Figure 2-1).

The proposed EOD demolition site area is classified entirely as range land use. The area is now operated by the NSWC-IHD and is used for experimental demolition testing, training and research.

Both D2 and D3 sites are classified as non-forested open live-fire range areas. D1 is a pine stand with a year of origin documented as 1941. A salvage harvest was conducted on this pine stand in 1994 due to a southern pine bark beetle (*Dendroctonus frontalis*) outbreak. This area was allowed to regenerate naturally, but due to the high fire frequency, particularly through prescribed burning, this area is characterized by grasses with individual and clumps of trees scattered throughout. The dominant tree species present is loblolly pine (*Pinus taeda*) with scattered hardwoods including oak species (*Quercus spp.*)

3.1.1.3 Surrounding Land Use

The off-post developed area nearest to the proposed action area is the Port Royal settlement, which is about 3.5 miles north of the proposed site in Caroline County, Virginia (Figure 2-1). The Caroline County Comprehensive Plan designates Port Royal as a secondary-growth area for the county. The plan projects

low- to medium-density residential development along the boundaries of the settlement shared with Fort A.P. Hill. A consistent increase in growth pressures in the region indicates continued commercial development at the intersection of Routes 17 and 301, as well as along the route corridors. Port Royal is committed to protecting the small-town character of the community through use of traditional neighborhood designs and low-impact development techniques (Port Royal 2004). Another community of note is the Portobago Bay residential development which lies approximately five miles to the east of the proposed project.

South of Fort A.P. Hill from Route 301 to the Essex County boundary, land uses are predominantly Agricultural Preservation and Floodplain/Open Space. Areas northwest, west, and southwest of the proposed action area are installation land.

3.1.2 Environmental Consequences

3.1.2.1 Proposed Action

No adverse effects on surrounding land use northeast and east of the installation would be expected. The proposed relocated EOD demolition site area is an already existing demolition range within the restricted area of the installation. Using the area for demolitions training would be compatible with the current land use. Further discussion of noise generated at the range is in the Noise section (Section 3.4). Implementing the proposed action would not require that surrounding counties rezone any affected areas.

No effects on regional land use planning or zoning at Fort A.P. Hill would be expected.

Best Management Practices

No best management practices (BMPs) for land use would be necessary. BMPs for noise effects are discussed in Section 3.4, Noise.

Cumulative Effects

A minor adverse cumulative effect on surrounding land use would be expected. Two reasonably foreseeable actions are planned that, when combined with the proposed action, might have cumulative adverse effects on the noise environment surrounding Fort A.P. Hill and, therefore, on surrounding residential area land use. The two actions are establishment of the Asymmetric Warfare Group (AWG) training range complex (FONSI signed 21 December 2006) and establishment of the Naval Special Warfare Explosive Center of Excellence (NSWECE), FONSI expected to be completed in July 2009. Construction for the AWG Range Complex is expected to begin in FY2011 and the NSWECE in FY2010. Further discussion of the cumulative effect is provided in Section 3.4, Noise.

3.1.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the land use discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

A long-term minor adverse effect on surrounding land use would be expected from implementing the No Action Alternative. The EOD training area proposed in the Fort Lee BRAC EIS and the subsequent EOD EA would be established close to the installation border and close enough to the Port Royal settlement and Portobago Bay Community that the noise from explosions of large charges could create an incompatibility with nearby residential areas. No impacts on installation land uses would be expected.

3.2 Aesthetic and Visual Resources

3.2.1 Affected Environment

The proposed EOD demolition ranges are largely in cleared open areas, with fairly flat terrain. The site is not visible from land off the installation.

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

No adverse effects on the aesthetic and visual environment would be expected. Under the proposed action, a limited amount of site clearing (estimated at 23 acres for D1) would occur. Sites D2 and D3 are already cleared. Each demolition site would be isolated from the others, and the sites would not be visible except from ingress and egress routes specifically constructed to access them. The entire area would continue to be used and maintained for military live-fire training.

Best Management Practices

No BMPs for the aesthetic and visual aspects of the proposed action would be necessary.

Cumulative Effects

No cumulative effects on aesthetic and visual resources would be expected.

3.2.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the aesthetic and visual resources discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

No adverse effects on the visual environment would be expected under the No Action Alternative. The EOD demolition sites would be visible only from the immediate surroundings of the ranges complex, and they would not change the overall impression of the area as open non-forested and primarily undeveloped.

3.3 Air Quality

3.3.1 Affected Environment

3.3.1.1 National Ambient Air Quality Standards and Attainment Status

National Ambient Air Quality Standards and Local Ambient Air Quality. U.S. Environmental Protection Agency (EPA) Region 3 and the Virginia Department of Environmental Quality (VDEQ) regulate air quality in Virginia. EPA established primary and secondary National Ambient Air Quality Standards (NAAQS) at Title 40 of the *Code of Federal Regulations*, Part 50. The NAAQS set acceptable concentration levels for seven criteria pollutants: particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), carbon monoxide (CO), nitrous oxides (NO_x), ozone (O_3), and lead. Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants that contribute to chronic health effects. Each state has the authority to adopt standards stricter than those established under the federal program; however, the Commonwealth of Virginia accepts the federal standards.

EPA regulations designate Air-Quality Control Regions (AQCRs) in violation of the NAAQS as nonattainment areas. AQCRs not in violation of the NAAQS are attainment areas. Fort A.P. Hill is within the Northeastern Virginia Intrastate AQCR (AQCR 224), which is an attainment area for all criteria pollutants. Therefore, neither an applicability analysis nor a formal conformity determination under the General Conformity Rule is required for the proposed action.

3.3.1.2 Local Ambient Air Quality

Existing ambient air quality conditions near Fort A.P. Hill can be estimated from measurements conducted at air monitoring stations close to the installation. The most recently available data from nearby monitoring stations is provided in Table 3-1 (USEPA 2008).

Table 3-1
2008 Local Ambient Air Quality Monitoring

Pollutant and averaging time	Primary NAAQS[a]	Secondary NAAQS[a]	Location where maximum was recorded	Monitored data[b]
CO				
8-hour maximum[c] (ppm)	9	(None)	NA	NA
1-hour maximum[c] (ppm)	35	(None)		
NO_2				
Annual arithmetic mean (ppm)	0.053	0.053	U.S. Geological Survey Center Caroline County	0.002ppm
O_3				
8-hour maximum[d] (ppm)	0.075	0.075	Henrico County	0.089
$PM_{2.5}$				
Annual arithmetic mean[e] ($\mu g/m^3$)	15	15	Henrico County	11.26
24-hour maximum[f] ($\mu g/m^3$)	35	35	Henrico County	26.4

Pollutant and averaging time	Primary NAAQS[a]	Secondary NAAQS[a]	Location where maximum was recorded	Monitored data[b]
PM_{10}				
24-hour maximum[c] ($\mu g/m^3$)	150	150	King William County	35
SO_2				
Annual arithmetic mean (ppm)	0.03	(None)		
24-hour maximum[c] (ppm)	0.14	(None)	NA	NA
3-hour maximum[c] (ppm)		0.5		

ppm = parts per million

$\mu g/m^3$ = micrograms per cubic meter

NO_2 = nitrogen dioxide

Notes:

[a] Source: 40 CFR 50.1–50.12.

[b] Source: USEPA 2008.

[c] Not to be exceeded more than once per year.

[d] The 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations over each year must not exceed 0.075 ppm.

[e] The 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from must not exceed 15.0 $\mu g/m^3$.

[f] The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 35 $\mu g/m^3$.

[g] The 3-year average of the weighted annual mean PM_{10} concentration at each monitor within an area must not exceed 50 $\mu g/m^3$.

3.3.1.3 Existing Installation Emissions

Based on the installation's potential to emit, Fort A.P. Hill is a minor source of criteria pollutants. Stationary sources of air emissions at the installation include boilers, generators, degreasers, and gasoline dispensers. Fort A.P. Hill has a minor Stationary Source Permit to Operate (Permit no. 40306). The installation must submit comprehensive emission statements to VDEQ annually. Table 3-2 summarizes 2008 on-post emissions from stationary sources.

Table 3-2
Fort A.P. Hill 2008 Stationary Source Total Emissions (Tons Per Year)

SO_2	CO	PM_{10}	$PM_{2.5}$	NO_x	VOC
1.1	0.9	0.2	0.2	3.5	2.4

Source: FAPH 2008a.

Note: VOC = volatile organic compound.

3.3.2 Environmental Consequences

Air quality impacts would be considered minor unless the estimated emissions would contribute to a violation of any federal, state, or local air regulation or would contribute to a violation of Fort A.P. Hill's air operating permit.

3.3.2.1 Proposed Action

Air impacts from the proposed action would include short-term, temporary emissions from construction equipment operation, the removal of vegetation and possible fugitive dust from vehicle movement. During construction, all fugitive dust would be kept at a minimum using control methods recommended under the Virginia Air Quality Regulations, such as wetting roadways and using construction entrances. During site operations, fugitive dust would be kept at a minimum through the use of operational controls such as limiting vehicles within the range.

Training operations at the relocated EOD demolition sites would be long-term and localized. There are no regulatory emissions restrictions for the proposed training on this site**.**

No significant effects to air quality are anticipated by construction and operation of the relocated EOD demolition sites.

General Conformity

The Clean Air Act mandates the General Conformity Rule (GCR) to ensure that federal actions in nonattainment and maintenance areas do not interfere with a state's timely attainment of the NAAQS (40 CFR 93.153). Because the proposed action is in an area that is in attainment for all criteria pollutants, the GCR does not apply and an applicability analysis is not required. The proposed action is exempt from the GCR (40 CFR 95.153); a Record of Non-Applicability is provided as Appendix B.

Regulatory Review and Air Permit Requirements

All construction would be accomplished in full compliance with Virginia Regulations for the Control and Abatement of Air Pollution, particularly Title 9 of the *Virginia Administrative Code* (VAC), Agency 5, Chapter 40, Part II. Articles of particular relevance are the following:

- Article 1, Visible Emissions and Fugitive Dust/Emissions (9 VAC 5-40-60 to 120)
- 9 VAC 5-130-10 to 60

Cumulative Effects

No cumulative adverse effects on air quality would be expected. The Commonwealth of Virginia takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of its State Implementation Plan to implement the Clean Air Act. It is understood that a project of this limited size and scope would not interfere with the attainment status of the region.

3.3.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the air quality discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Short- and long-term minor adverse effects on air quality would be expected from vehicle and fugitive dust emissions during facility construction and from operational emissions attributable to generators,

boilers, and other internal combustion sources. No violations of federal, state, or local air regulations or Fort A.P. Hill's air operating permit would be expected.

3.4 Noise

3.4.1 Affected Environment

The Federal Interagency Committee on Urban Noise (FICUN) has developed land use guidelines, adopted by the Department of Defense, for areas on or near noise producing activities, such as highways, airports and firing ranges. The Army uses these guidelines to designate Noise Zones (NZ) for land use planning. Land use guidelines are meant to ensure the compatibility with the noise environment while allowing maximum beneficial use of contiguous property. Fort A. P. Hill has an obligation to the surrounding communities to determine ways to protect both the people living and working adjacent to the installation and the public's investment in the installation and the training which occurs there.

The Army follows AR 200-1 for determining land uses recommendations in regards to Operational Noise. As with other government agencies, the Noise Zone limits were developed to be used for all geographical areas and are applicable for all Army installations. A practical reference which can be used by the military or civilian populations to educate personnel on basics of noise is the Operational Noise Manual, an Orientation for DoD Facilities (USACHPPM 2005; http://chppm-www.apgea.army.mil/). It includes further information on the Noise Zones and noise basics, including historical studies conducted by the EPA and other countries which were considered when Federal Agencies developed Noise Zones limits.

3.4.1.1 Noise Zones

Noise Zones (NZ) are designated as Land Use Planning Zone (LUPZ), I, II or III based on the number of decibels (dB) produced for both long term and impulsive events. NZ descriptions for Fort A. P. Hill include:

- LUPZ consists of the areas around a noise source where the C-weighted day-night level (CDNL) is less than 57 dB for all noise. A LUPZ is usually acceptable for all types of land use activities.

- NZ I consists of the areas around a noise source where a single event noise is less than 87 dB for small arms and the C-weighted day-night level (CDNL) is less than 62 dB for large arms impulsive noise. The CDNL is the time weighted average sound level with a 10 dB penalty added to night time (2200 to 0700 hours) noise levels.

- NZ II consists of the area where a single event noise is between 87 and 104 dB for small arms and the CDNL is between 62 and 70 dB for large arms impulsive events. Land use within a NZ II area is normally limited to industrial, manufacturing and transportation type activities.

- NZ III consists of the area around a noise source where a single event noise is greater than 104 dB for small arms and the CDNL is greater than 70 dB for large arms impulsive events. Noise sensitive land uses are not recommended for NZ III areas.

Based on Department of Defense guidance, the Department of the Army has developed an Environmental Noise Management Program which considers noise from all sources of military activities. Fort A. P. Hill

has an installation Environmental Noise Management Plan (ENMP). The ENMP, which applies to all tenants and activities, provides information and recommendations for reducing noise impact during land and air training exercises. It also provides information for weapons firing and noise complaint investigation procedures.

3.4.1.2 Potential for Complaints Regarding Large-Caliber Weapons and Demolition Noise

The use of explosives and large-caliber weapons are common causes of complaint among people living near military installations. Community annoyance due to steady-state noise is typically assessed by averaging noise levels over a protracted period. This approach can be misleading because it does not assess community noise effects due to relatively infrequent, yet loud, impulsive noise events. For example, for a demolition range at which several hundred charges are detonated each year, peak sound levels can exceed 140 dB in areas where annual DNL values indicate that residential land use is recommended for the noise level (i.e., within the military's zone 1). Therefore, to describe better the noise environment, this section discusses individual acoustical events. Peak noise contours provide the absolute maximum sound level for an individual acoustical event, not an average over several events or over a period of time like the DNL. Although not a good descriptor of the overall noise environment like the DNL, peak levels better indicate the potential for concern and possibility of complaints among people living near the boundary of an installation after an individual event. Table 3-3 lists risk of noise complaints guidelines using peak noise levels for impulsive noise.

Table 3-3
Risk of Noise (Peak) Complaints by Level of Noise

Risk of noise complaints	General description of individual demolition event	Large-caliber weapons (> 20 mm) and demolition
Low	Audible and distant	< 115 dBP
Medium	Clearly audible	115–130 dBP
High	Loud	130–140 dBP
Risk of structural damage claims	Very loud	> 140

Source: U.S. Army 2008.

3.4.1.3 Existing Ambient Noise Levels

The noise generated by military aircraft and weapons extends to areas outside the installation boundary. The noise from industrial-type operations and the movement of heavy military vehicles does not have a considerable effect on the surrounding civilian communities or military housing areas (USACHPPM 1999). Fort A.P. Hill, though not subject to local noise policies or ordinances, has no existing activities that conflict with local standards and guidelines related to human health and safety.

Fort A.P. Hill has one Army airfield, one drop zone (with one assault airstrip), and many authorized landing zones to support aviation training for rotary and fixed-wing aircraft. The Army airfield, on the southeast side of the main gate on Route 301, is used only for rotary-wing operations. Fixed-wing aircraft operations are conducted primarily at the drop zone, which is in the northwest portion of the installation. The daily number of operations at the Army airfield is low—fewer than 10 per day. Residents living near the installation in the Port Royal area (close to the proposed relocated EOD demo range area), along the eastern boundary (e.g., near Supply, Virginia), and near the northwest corner (e.g., near Long Branch and Corbin, Virginia) are exposed to aircraft noise at Fort A.P. Hill.

The existing small-caliber weapons noise contours are shown Figure 3-1.[2] And the existing large-caliber weapons CDNL contours are shown in Figure 3-2. Large-caliber noise zone II extends beyond the southern boundary less than one-quarter mile. Noise zone III is completely contained within the installation boundary. During periods of intense training, the short-term CDNL at a particular range is larger than that depicted in Figure 3-2. Such periods of intense activity occasionally lead to complaints, particularly when artillery firing takes place at night. As expected, some noise complaints have been documented and investigated after large-caliber training events.

The existing large-caliber weapons peak level contours for D1, D2, and D3 are shown in Figure 3-3.

[2] Common Army small arms are the M16 rifle (5.56-millimeter [mm] ammunition), the M240 (7.62 mm) and M249 (5.56 mm) machine guns, and the .50-caliber machine gun.

Figure 3-1 Existing Small-Arms Range Noise Contours

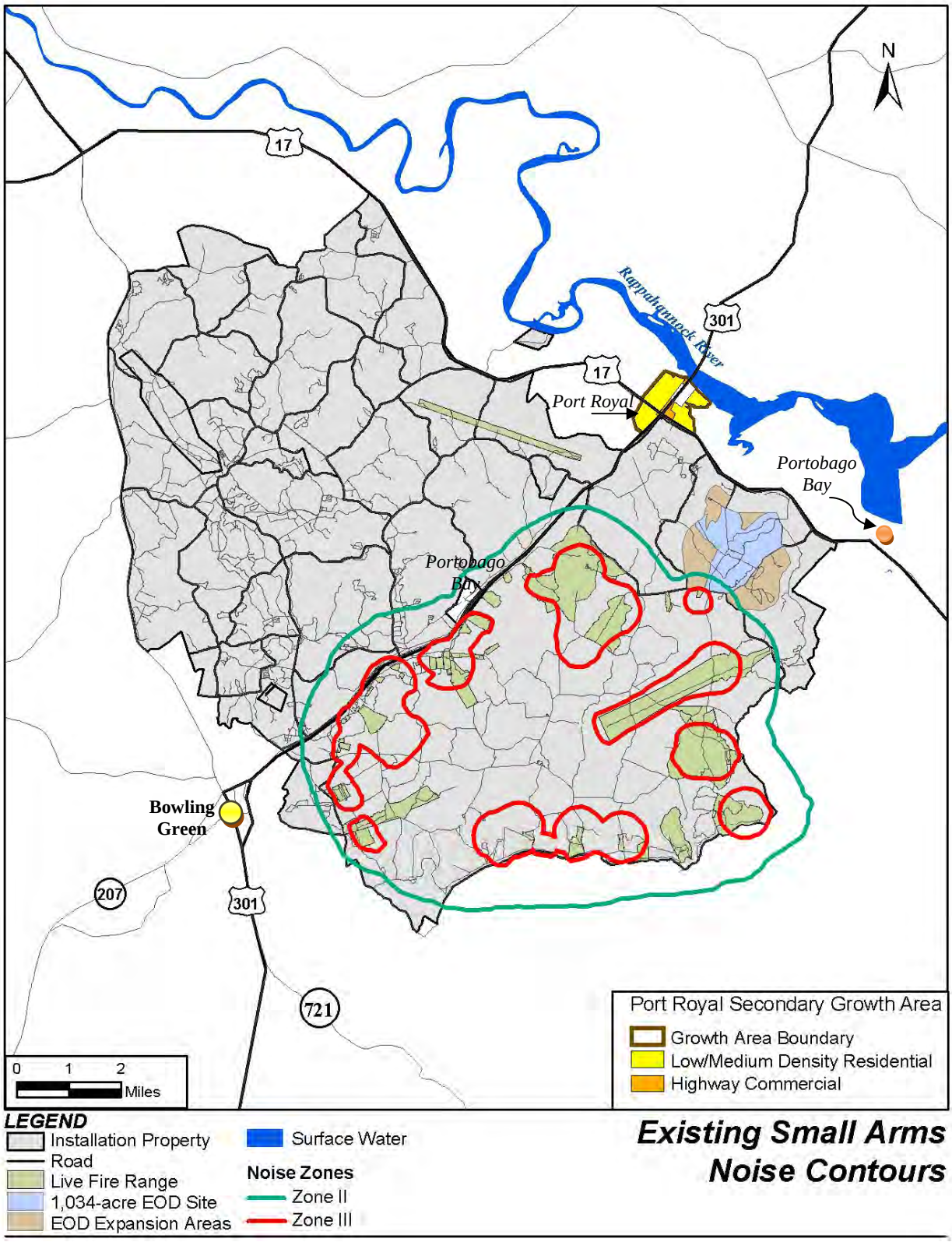
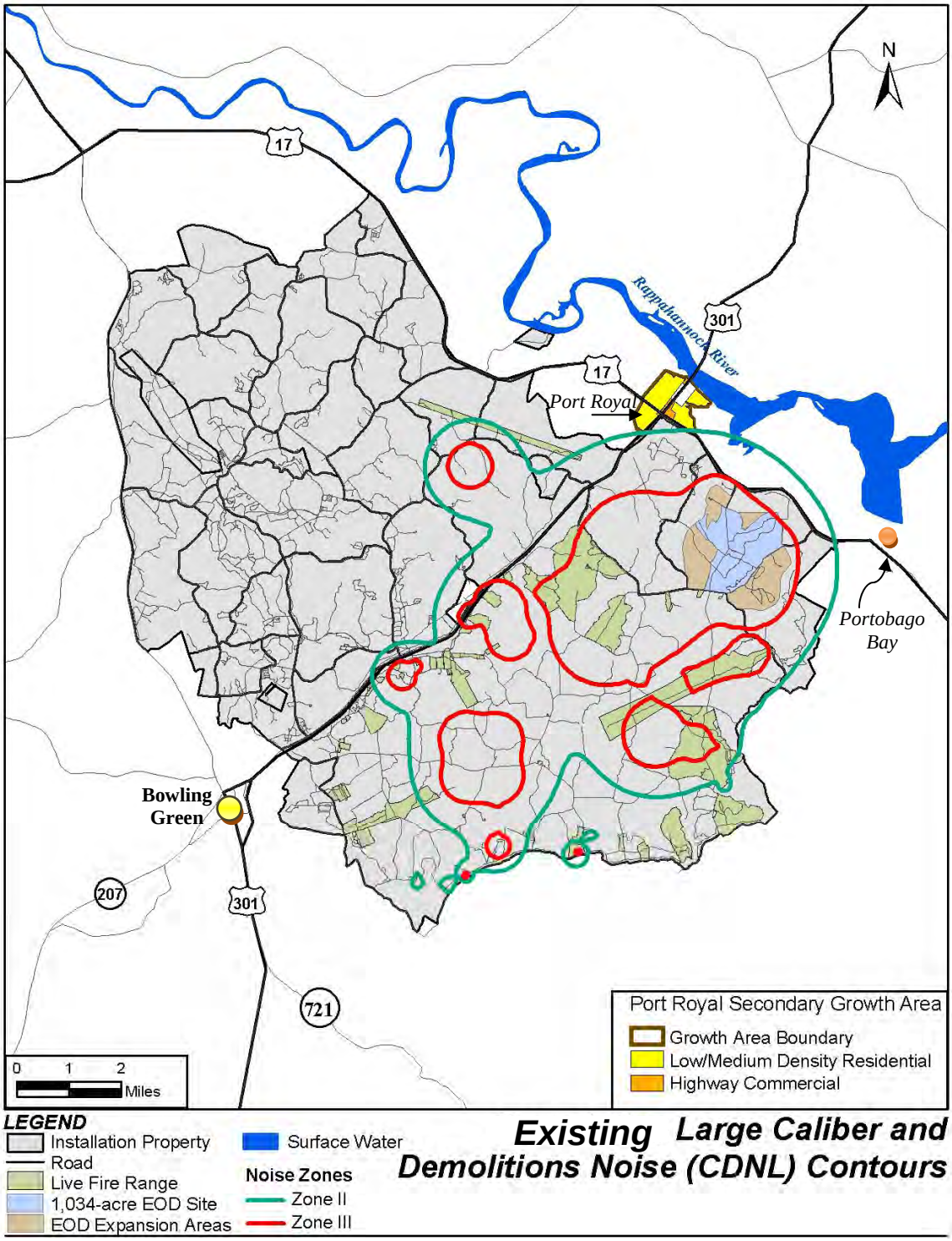


Figure 3-2 Existing Large-Caliber and Demolition Noise (CDNL) Contours



The installation has ongoing efforts to minimize noise due to operations. Aircraft no-fly zones have been established around Bowling Green, Port Royal, and a wildlife refuge; the minimum altitude for military aircraft flying over land adjacent to the boundary is 1,200 feet above ground level; and helicopter traffic is routed along the boundary rather than over private property. Small-arms ranges have been located to provide adequate distance from the installation boundary such that the weapons fired should not disturb neighbors. To protect its neighbors from annoying levels of demolitions noise, Fort A.P. Hill imposes weight limits on its demolition ranges. All demolitions training is restricted to less than or equal to 100-lb equivalent trinitrotoluene (TNT). This limit drops to 50-lb equivalent TNT at dusk or in overcast and cloudy conditions when noise can propagate more readily. Exceptions to these limits are granted case-by-case, such as training requirements for units deploying for overseas missions.

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

Short-term minor adverse and long-term beneficial effects on the noise environment would be expected with implementation of the proposed action. The short-term minor adverse would be primarily due to heavy equipment noise during construction. The long-term beneficial effects would be primarily due to the relocation of the three demolition sites (D1, D2, and D3) from an area currently without any regular noise producing activities to an already existing and operating demolition range within the interior restricted (impact) area of the installation.

Noise from Construction Activities

The zone of relatively high construction noise typically extends 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience noteworthy levels of construction noise. Given the temporary nature of proposed construction activities and the limited amount of noise that construction equipment would generate, this effect would be considered minor (USEPA 1971).

Construction noise is expected to dominate the soundscape for all on-site personnel. Construction personnel, and particularly equipment operators, would wear adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

Figure 3-3 Existing Large Demolition (D1, D2, and D3) Noise (Peak Level) Contours

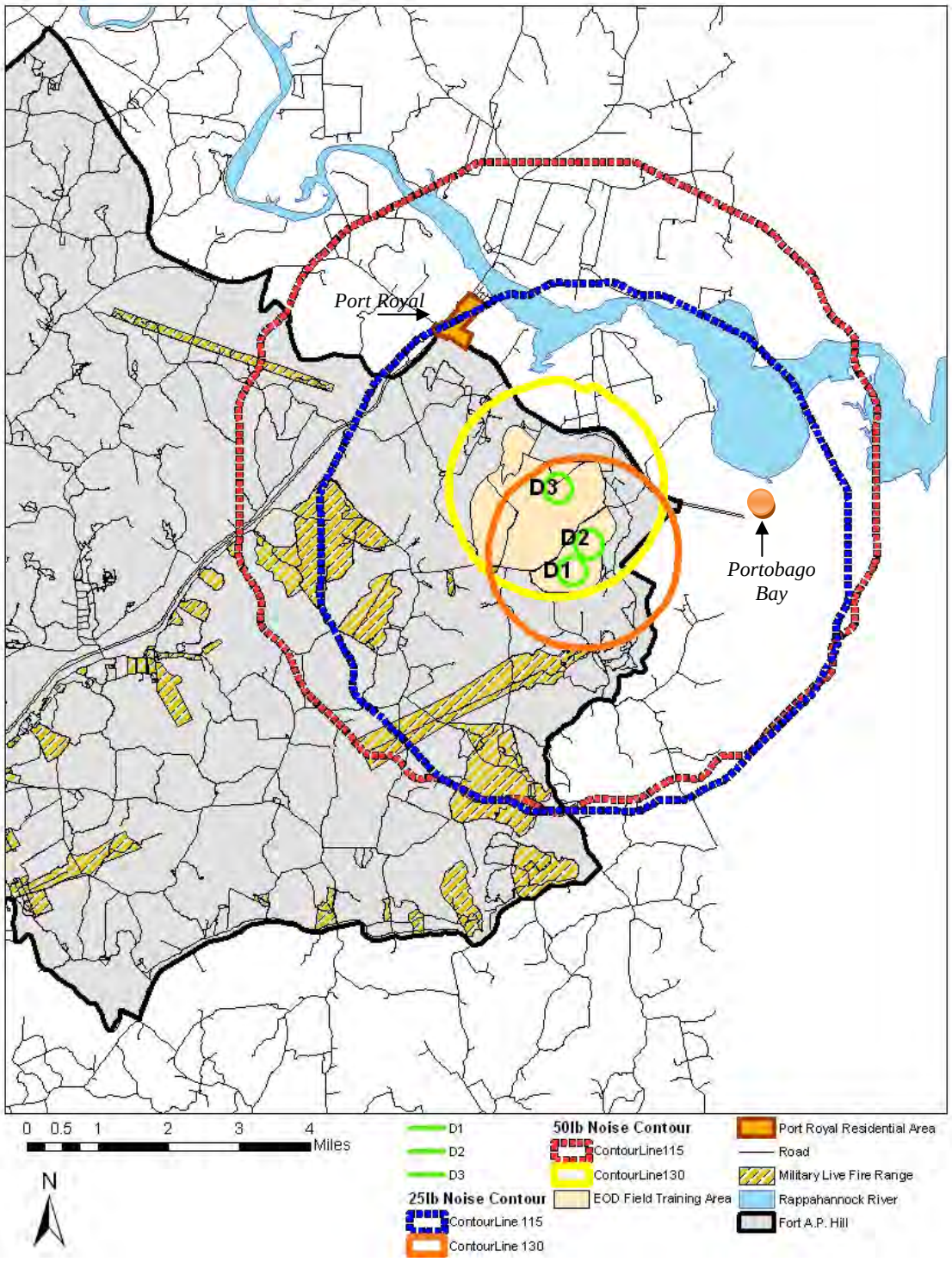
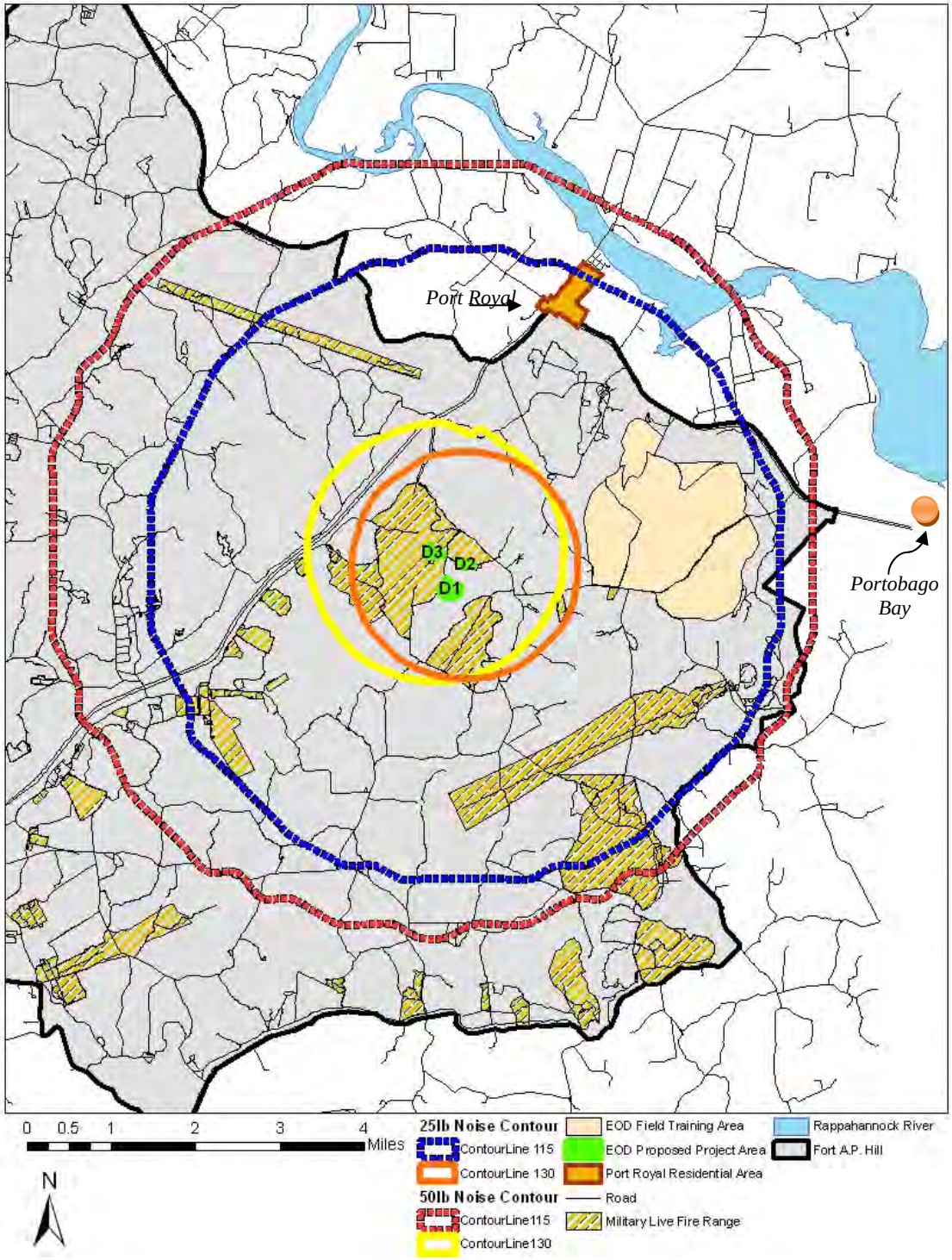


Figure 3-4 Proposed Action Noise (Peak) Contours



Noise from Aircraft and Small-Arms Activities

The proposed action would not introduce new aircraft training, new small-arms ranges, or changes in small-arms weapons used at Fort A.P. Hill.

Noise from Proposed EOD Range Activities

The proposed relocated EOD demolition range area would facilitate demolitions training with TNT equivalent charges of 50 lbs or less. The types and number of charges expected to be used under the proposed action are outlined in Table 3-7.

Table 3-7
Demolitions Charges Due to the Proposed Action

		Frequency (charges/year)	
Size of charge	**TNT equivalent weight (lb)**	**Daytime (7 a.m.– 11 p.m.)**	**Nighttime (11 p.m.– 7 a.m.)**
Large	25 (D1-D2)	276	0
	50 (D3)	40	0

The existing annual average-weighted (CDNL) contours are depicted in Figure 3-2. With the proposed action, due to the relatively low number of events that would be relocated, the change to the annual average noise contours would be negligible. There would be a very slight decrease in the extension of Zone II levels off the eastern boundary, but the change would be so slight that the C-weighted Day-night Level (CDNL) contours depicted in the EA for the 2,059-acre EOD site would still be an adequate representation of the Fort A.P. Hill annual noise environment.

The proposed action of relocating the (276) 25 lbs detonations at D1 and D2 to an already existing and operating demolition site within the interior restricted area of the installation, would result in the Portobago Bay community no longer being within the complaint risk (Peak) contours for these activities. Additionally the Portobago Bay community would no longer be within the complaint risk (Peak) contours for the (40) 50 lbs charges relocated from the original D3 site. As a result of the proposed action, the complaint risk model results (large-caliber contour (PEAK)) would shift to the south (into the installation) and to the east. The effect on the Port Royal Community is neutral and therefore this community would not be exposed to louder or more frequent events than presented in the July 2008 EA. This move also results in a reduction of 16,379 acres no longer within the complaint risk associated with the large-caliber noise contour (PEAK).

Under the proposed action, demolitions training would be restricted to current range TNT equivalent weight limits. Exceptions to these limits are granted case-by-case, such as training requirements for units deploying for overseas missions.

The Peumansend Creek Regional Jail is on a parcel completely surrounded by Fort A.P. Hill. It is about 3 miles west of the proposed relocated EOD range (surrounded by Fort A.P. Hill property) and adjacent to existing ranges. The overall noise environment at the jail would not be expected to change with the implementation of the proposed action (Figures 3-4).

Demolition noise is expected to dominate the soundscape for all on-range personnel. Army personnel would wear adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

Best Management Practices

The demolition activities would comply with existing noise-control policies and procedures. The installation Environmental Noise Management Plan outlines all efforts to minimize noise. Measures in the plan include complaint management and investigation, community outreach and education.

If necessary, Fort A.P. Hill would expand the perimeter noise monitoring system to add a noise monitor in the area of concern. The monitors would allow the installation to evaluate operations under varied weather conditions and assess how noise levels can affect neighbors off-post. The installation would continue to promote an open dialogue with neighboring localities, including rezoning reviews; education and outreach with local communities; and a comprehensive, proactive noise-complaint management program.

Cumulative Effects

With the implementation of the proposed action, NSWC-IHD would no longer be able to use DS 70A due to the fact that the range would be needed for the construction and year-round, unrestricted operation of the EOD school. The NSWC-IHD range operations will occur on existing and operational demolition ranges within live-fire complex of the installation. These existing demolition ranges are currently rated for heavy demolition training and therefore the noise environment would not change Fort A.P. Hill's existing large-caliber demolition noise contours.

Within the same time frame as the proposed action, there are two reasonably foreseeable actions that, when combined with the proposed action, might have cumulative effects on the noise environment surrounding Fort A.P. Hill: establishment of the AWG training range complex and establishment of the NSWECE. These are described in more detail below.

The AWG training range complex would consist of one indoor firing range, one 800-meter (875-yard) firing range, and one demolition range for AWG mission-essential training. The indoor firing range and 875-yard firing range would be internal to the installation and would not introduce training activities that would change the small-arms peak noise contours off the installation. The proposed AWG demolition range would be near the proposed EOD range in the eastern portion of the installation within the borders of Training Area 25C east of Route 301 and North Range Road.

The proposed NSWECE would include an administrative area, a training area, and a demolition area in three separate areas. The area for demolition training would be used for explosive charges up to 35 lb.

The annual average-weighted (CDNL) contours for the combined activities, noise zone III (high levels of noise) would not extend beyond the borders of the installation. Noise zone II (moderate levels of noise) would slightly decrease in distance as described in the July 2008 EA beyond the eastern boundary. Therefore, cumulative impacts on the noise environment surrounding Fort A.P. Hill would be minor. Fort A.P. Hill prepared separate environmental assessments for the proposed AWG and NSWECE actions (FAPH 2006; FAPH 2008).

The peak noise contours with the proposed action and the establishment of the other ranges will result in a neutral effect in the Port Royal area. There will be a positive effect to the east including the Portobago

Bay and other nearby communities. The 140-dBP and 130-dBP noise contours for the combined activities (AWG, NSWECE, and the proposed action) would be considerably reduced towards the installation boundary. The 115-dBP noise contour would decrease by over two miles on the eastern installation boundary. The potential of noise-related complaints would be considered a minor cumulative effect.

3.4.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the noise discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Short- and long-term minor adverse effects on the noise environment would be expected with the implementation of the No Action Alternative. The effects would be due to heavy equipment noise during construction and the operation of the proposed 2,059-acre EOD area.

3.5 Geology and Soils

3.5.1 Affected Environment

3.5.1.1 Geologic and Topographic Conditions

Fort A.P. Hill is in the Atlantic Coastal Plain Physiographic Province. Land features on the installation range from smooth uplands and plateaus to V-shaped stream valleys and ravines that rise abruptly from floodplains. The dominant geomorphic process is active riverine erosion of surface land features, such as rolling terrain that has been influenced by the effects of fluvial dissection by rivers and streams and deposition during overbank flooding.

3.5.1.2 Soils

There are 26 unique soil series on Fort A.P. Hill, three of which comprise most of the soil types within the proposed relocated demolition sites D1, D2, and D3 (FAPH GIS 2008, USDA 2006). These predominant soil series are briefly described below. The soil types within these series are listed on Table 3-8, along with ratings of suitability for particular uses.

Table 3-8
Soil Series on the Proposed EOD Relocated Demolition Sites at Fort A.P. Hill

Soil Type	Map Symbol	Prime Farmland	Dwellings with basements	Dwellings without basements	Septic tank absorption fields	Local roads	Approximate Percentage of Proposed Action	Approximate Acreage in Proposed Action
Kempsville-Emporia-Remlik complex, 15 to 50 percent slopes	10E	No	VL	VL	VL	VL	78%	818
Kempsville-Emporia complex, 6 to 10 percent slopes	11C	SI	SL	SL	SL	SL	3%	33
Kempsville-Emporia complex, 2 to 6 percent	11B	Yes	NL	NL	SL	NL	14%	144

Soil Type	Map Symbol	Prime Farmland	Dwellings with basements	Dwellings without basements	Septic tank absorption fields	Local roads	Approximate Percentage of Proposed Action	Approximate Acreage in Proposed Action
slopes								
Bibb-Chastain complex, 0 to 2 percent slopes, frequently flooded	4A	No	VL	VL	VL	VL	5%	5

Note: NL = not limited, SI = Farmland of Statewide Importance, SL = somewhat limited, VL = very limited.

- *Kempsville.* Kempsville is moderately steep to very steep and very deep. Typically, the surface layer is sandy loam from 7 to 17 inches thick with a moderately low content of organic matter. The seasonal high water table is at a depth of more than 6 feet.
- The Bibb-Chastain complex soil series that occurs on the proposed relocation site is hydric and directly related to wetland regimes. The Bibb series consists of very deep, poorly drained, level to nearly level soils on flood plains. Typically, the surface layer is brown sandy loam 4 inches thick. The next layer, 8 inches thick, is dark gray and dark grayish brown sandy loam. The upper part of the substratum is gray sandy loam with strong brown iron masses and thin strata of silt loam to loamy sand. The lower part of the substratum is gray silt loam with strata of sandy loam and loamy sand. Slopes range from 0 to 2 percent. The Chastain component is very deep, slowly permeable soils on flood plains of rivers. Typically these soils have a dark grayish brown surface layer over gray clayey subsoil. This complex is present on the floodplains of tributaries of Mill Creek along the western portion of the site.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

Short- and long-term minor adverse effects on soils would be expected during construction and operation under the proposed action. The effects would primarily occur during removal of vegetation during construction activities, temporarily exposing soils and potentially increasing soil erosion and sediment runoff rates. Continual explosives training would result in long-term soil disturbance at detonation sites, and firing points would be designed to limit the potential for soil loss and storm water runoff. No effects on geology or topography would occur, and because of the long-term use of the area for military purposes, areas with prime farmland soils would not qualify as prime farmland and no violation would occur under the Farmland Protection Policy Act. Tree and brush clearing would be limited to those areas required for access roads to the demolition sites. The amount of site clearing estimated to support the proposed action is about 10 acres.

Fort A.P. Hill would obtain storm water construction permit coverage for this project from the Virginia Department of Conservation and Recreation (VDCR) under the Virginia Stormwater Management Program (VSMP). A site-specific storm water pollution prevention plan would be developed and implemented in accordance with the VSMP general construction permit, and an erosion and sediment control plan would be developed in accordance with Virginia's Erosion and Sediment Control law and regulations. Areas with slopes of 6 percent or greater are designated Highly Erodible Land, and they would be avoided for development to the maximum extent practicable (USACE Mobile District 2007).

Best Management Practices

Best management practices, including limiting land disturbance on each affected area to no more than what is necessary for the desired use, using temporary crossing bridges or mats to minimize soil compaction, and following erosion and sediment control measures for storm water control, would adequately limit the adverse impact of the proposed action on soils.

Cumulative Effects

No cumulative effects on geology or soils would be expected.

3.5.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the geology and soil resources discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Short- and long-term minor adverse effects on soils would occur under the No Action Alternative. No effects on geology, topography, or prime farmland would occur with construction and operation of the 2,059-acre continuous EOD area. All disturbed areas would be stabilized and revegetated before construction activities were completed. Roads, parking areas, and other constructed facilities would have gravel or another suitable surface treatment that would minimize soil loss due to erosion. Use of the area for explosives training would result in continual soil disturbance at detonation sites throughout the life of the training area. Erosion control measure would be implemented in accordance with an erosion and sediment control plan developed for the project to control soil loss during construction and the training area's long-term operation.

3.6 Water Resources

3.6.1 Affected Environment

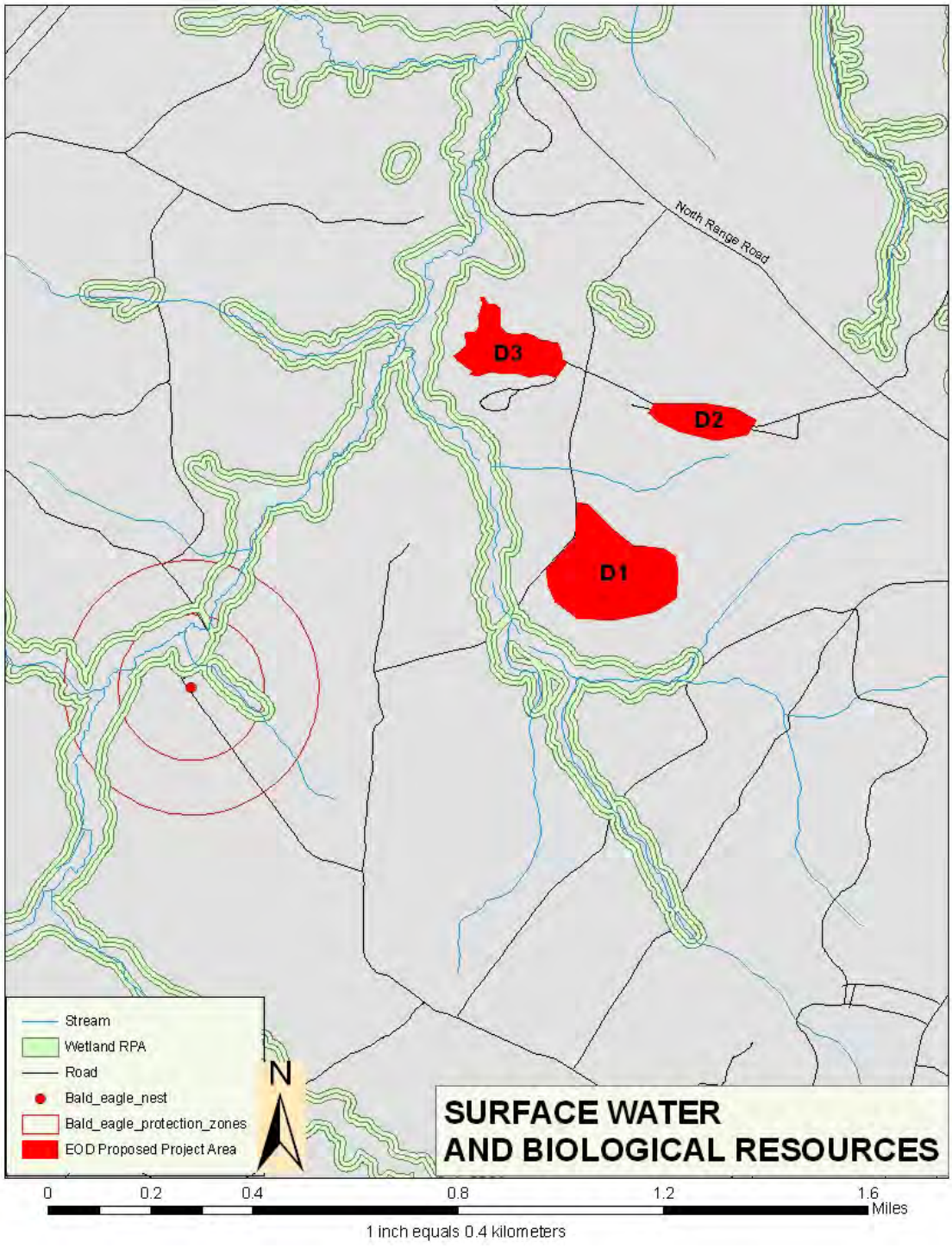
3.6.1.1 Surface Water

The northern portion of Fort A.P. Hill is drained by tributaries of the Rappahannock River, and the southern portion is drained by tributaries of the Mattaponi River. Both rivers ultimately drain to the Chesapeake Bay. The proposed relocated EOD demolition sites are in the northern and eastern portion of Fort A.P. Hill within the Rappahannock River drainages. Figure 3-10 shows the surface water features of the proposed relocation area at Fort A.P. Hill.

The proposed action area is in the Mill Creek watershed. Most of the proposed action area is drained by Peumansend Creek and its tributaries to the south (FAPH GIS 2009). Peumansend Creek flows in a northerly direction toward the confluence with Mill Creek approximately 0.4 miles north of the proposed D1 relocation demolition site.

Mill Creek flows generally northward outside the northern boundary of the proposed relocated EOD demolition sites (Figure 3-5), crosses U.S. Route 17 at the boundary of Fort A.P. Hill, and then continues north about another 0.75 to 1 mile to its confluence with the Rappahannock River (VDEQ 2008a).

Figure 3-5 Surface Water and Biological Resources



Water Quality. The Fort A.P. Hill Integrated Natural Resources Management Plan (INRMP) (FAPH 2008) states that the water quality of the streams, ponds, and lakes within the installation is generally within the expected range for coastal plain water bodies. Water quality data for the lower Rappahannock River indicate that the watershed encompassing Caroline County meets the goals of the Clean Water Act (USACE Mobile District 2007). Streams that could be affected most directly by the proposed relocated EOD demolition sites are Mill Creek and Peumansend Creek and their associated tributaries. Neither Mill Creek nor Peumansend Creek is identified on Virginia's 2006 303(d) list of impaired waters as having violated Virginia water quality standards (VDEQ 2008b). The VDEQ surface water quality monitoring stations closest to the proposed relocated Project Area is on Mill Creek, near its mouth and north of U.S. Route 17 outside the installation (VDEQ 2008a).

Storm Water Management. Construction storm water impacts are regulated through the installation's storm water general permit for construction activities under the VSMP. Fort A.P. Hill is primarily used as a training area, and therefore storm water management activities are usually site-specific. Storm water management activities typically include implementing BMPs and erosion and sediment control structures to reduce runoff and sedimentation. Storm water pollution prevention plans for construction areas and other land disturbance activities on Fort A.P. Hill have been developed to maximize the potential benefits of pollution prevention and sediment and erosion control measures. These plans provide the framework for reducing soil erosion and minimizing pollutants in storm water during construction, and they include the development and implementation of storm water controls and other BMPs (USACE Mobile District 2007).

3.6.1.2 Hydrogeology/Groundwater

Fort A.P. Hill is in Virginia's Coastal Plain, about 40 miles west of the Chesapeake Bay between the Rappahannock and Mattaponi Rivers. The regional hydrogeologic framework of the Virginia Coastal Plain is described by eight major confined aquifers, eight major confining units, and an uppermost water table aquifer, all of varying permeability and water quality. Groundwater movement through the unconfined and confined aquifers is generally lateral; some movement occurs vertically. Groundwater is discharged laterally into a variety of water bodies, including the Chesapeake Bay and the Atlantic Ocean. Recharge of the groundwater system occurs in outcrop zones where precipitation and surface water can infiltrate into aquifers. The groundwater system below Fort A.P. Hill is the sole source of potable water for the installation. The average seasonal depth to groundwater on the installation is 24 to 26 feet.

3.6.1.3 Floodplains and Wetlands

In the northwestern of the proposed relocation area, 100-year floodplains designated by the Federal Emergency Management Agency (FEMA) occur along Peumansend Creek (Figure 3-5).

Wetlands occur in the proposed relocation area, as depicted in Figure 3-10. National Wetlands Inventory mapping indicates areas of palustrine emergent, palustrine forested, and palustrine scrub-shrub wetlands in swales and along streams within the proposed relocation area and associated with Peumansend Creek, and its intermittent and perennial tributaries. Using National Wetlands Inventory survey data and the preliminary design for the placement of the proposed demo sites and range access road, it does not appear that there will be any encroachment within the resource protection area (RPA) or impacts to wetlands. A

field study was completed in July 2009 and determined that jurisdictional wetlands do not occur within the proposed project area.

3.6.1.4 Chesapeake Bay Initiatives and Coastal Zone Management

The federal Coastal Zone Management Act (CZMA) (Title 16 of the *United States Code* [U.S.C.], sections 1451 *et seq.*) was enacted to preserve, protect, develop, and where possible restore or enhance the resources of the coastal zone of the United States. Provisions under the CZMA assist states in developing coastal management programs to manage and balance competing uses of the coastal zone. As it applies to Fort A.P. Hill, the CZMA contains a federal consistency requirement under which federal actions must be consistent to the maximum extent practicable with the enforceable policies of Virginia's federally approved Coastal Zone Management Program (CZMP). This program focuses on problems associated with polluted runoff, habitat protection, riparian buffers, resource protection areas (RPAs), wetlands, fisheries, sustainable development, waterfront redevelopment and encroachment, septic systems, erosion and sediment control, and air pollution control.[3] Under requirements of Virginia's Chesapeake Bay Preservation Act (CBPA), Caroline County has established RPAs that include 100-foot buffer zones and contiguous wetlands along perennial streams and other waterways (Caroline County 2008a, 2008b, 2008c). A coastal zone consistency determination for the proposed relocation area is provided in this SEA in Appendix C.

To protect the water resources within Fort A.P. Hill, timber harvesting within the riparian forest buffer zone is carefully controlled. No timber harvests will occur within the 100-foot Chesapeake Bay RPA buffer, as specified in current Fort A.P. Hill policy which is more stringent than Virginia's CBPA regulation. The Fort A.P. Hill INRMP includes additional information on the installation's program for maintaining riparian areas and RPAs (FAPH 2008).

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

Short- term minor adverse effects on water resources would be expected. Construction of access roads, bunkers and demolition pits as a result of the proposed action could increase runoff due to a minor increase in impervious surface area; soil disturbance, erosion, and compaction during construction and during subsequent training operations; and increases in sediment and pollutant loads. One gravel road to access demolition site D1 will be constructed. Roads to access sites D2 and D3 already exist. Proposed facilities would be sited to avoid sensitive environmental areas, including RPAs, to the maximum extent practicable. Federal and state requirements for avoidance, minimization, and mitigation would be met for any development affecting wetlands and surface waters. Specific information is provided below.

Surface Water Quality and Storm Water Management

Short-term minor and long-term negligible adverse effects on surface waters and storm water would be expected. The proposed action would involve constructing an access gravel roadway and clearing and grubbing wooded areas (Knight 2008) for D1. Fort A.P. Hill would minimize adverse impacts by using

[3] *RPAs* are environmentally sensitive corridors alongside streams, rivers, and other waterways that act as natural buffers to protect water quality by filtering pollutants out of storm water runoff, reducing the volume and velocity of storm water runoff, and inhibiting erosion.

silt fencing, straw bales, and other Virginia-recommended construction BMPs that would be incorporated into sediment and erosion control and storm water runoff plans. All construction work would comply with the requirements of the installation's VSMP permit and state and local erosion and sediment control regulations (VDCR 1992; Caroline County 2008b).

In the long term, storm water runoff from cleared and compacted surfaces could contain nutrients, metals, dissolved solids, hydrocarbons, and other contaminants that could enter surface waters. Given the limited amount of impervious surface and cleared areas associated with the proposed action and that Virginia-approved runoff controls would be used, it is expected that the quantities of additional surface water runoff and pollutants generated would be negligible.

Hydrogeology/Groundwater

Long-term negligible adverse effects would be expected. The proposed action could result in minor increases in loads of pollutants (primarily from small amounts of chemical residues that remain in the soil after explosives training exercises). Some of the pollutants could reach groundwater. Because of the limited area on the proposed relocation area that would be disturbed during construction and used for ongoing EOD training, impacts on groundwater resources would be expected to be negligible.

Floodplains and Wetlands

Long-term minor adverse effects on riparian areas would be expected from implementation of the proposed action. Wetlands occur in the proposed relocation area, as depicted in Figure 3-5. National Wetlands Inventory mapping indicates areas of palustrine emergent, palustrine forested, and palustrine scrub-shrub wetlands in swales and along streams within the proposed relocation area and associated with Peumansend Creek, and its intermittent and perennial tributaries (though operational activities would take place outside sensitive riparian areas on all training sites Indirect effects on riparian areas (as runoff from detonation points, facilities, and roads) would be minimal or negligible. No construction or disturbance would occur within the 100-year floodplain. Fort A.P. Hill would complete a Joint Permit Application for wetland impacts, as required by the U.S. Army Corps of Engineers and VDEQ; and would comply fully with EO 11988 (*Floodplain Management*) and EO 11990 (*Protection of Wetlands*) by ensuring that its Environmental Division would review all project and facility plans for compliance with the EO, Army and installation environmental policies, and applicable laws and regulations.

Chesapeake Bay and Coastal Zone Management

No adverse effects on the Chesapeake Bay or the Virginia CZMP would be expected. Construction and other activities associated with the proposed action would occur in a manner consistent with the enforceable policies of the Virginia CZMP, to the maximum extent practicable. The CZMA requires identification of potential effects of federal actions on a state's coastal zone program. The consistency of the proposed action with Virginia's CZMP has been assessed, and the consistency determination is provided in this SEA in Appendix B.

Best Management Practices

BMPs to control storm water runoff and erosion and to protect surface waters, groundwater, and the Chesapeake Bay would be implemented by Fort A.P. Hill in full accordance with applicable laws and regulations and installation policies for resource protection. Impacts on wetlands would be avoided by

placing any construction activities to avoid wetlands. All storm water construction activities would be done in accordance with the CBPA.

Cumulative Effects

No cumulative effects on water resources or the Chesapeake Bay would be expected. Other future projects on Fort A.P. Hill could result in erosion and sedimentation in streams, and separate environmental documents would analyze the effects of those actions. Any sediment or other pollutants from streams on Fort A.P. Hill and in the area would enter the Chesapeake Bay from the Rappahannock River. Mixing in the river and bay would render any potential for a cumulative water quality effect negligible and immeasurable.

3.6.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the water resources discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Short-term minor and long-term negligible adverse effects on surface water and groundwater quality would be expected from implementation of the No Action Alternative. Construction of facilities for and use of the 2,059-acre EOD training area could increase runoff by adding small amounts of impervious surface area and developed areas, such as roads, from which increased runoff would be expected; and it could increase soil erosion and sediment and pollutant loads in storm water runoff. Minor quantities of sediment and pollutants from vehicles and explosives would continue to be added to storm water runoff during operation of the EOD field training area and potentially after its operation would cease. Proposed facilities would be sited to avoid sensitive environmental areas, such as riparian areas and wetlands, to the maximum extent practicable.

3.7 Biological Resources

3.7.1 Affected Environment

3.7.1.1 Vegetation

Fort A.P. Hill's natural vegetation lies within a belt of natural forest cover composed of mixed southern pine and hardwoods on the uplands and nearly pure hardwoods on the creek bottoms. Typical species include loblolly pine (*Pinus taeda*), Virginia pine (*P. virginiana*), yellow-poplar (*Liriodendron tulipifera*), oaks (*Quercus* spp.), and hickories (*Carya* spp.).

The proposed relocated EOD demolition site is within Fort A.P. Hill's range complex, which is comprised of predominately pine forest with some interspersed hardwood stands. Along Peumansend Creek to the west, open water is very limited in the wetlands and consists primarily of the stream channel. Approximately 0.9 miles northwest of the proposed relocation area is a Commonwealth of Virginia-recognized conservation site, the Rollins Fork Ravines site. The site was designated as a conservation site because the entrenched ravines of this site support a small but impressive fragment of late seral old growth hardwoods.

3.7.1.2 Wildlife

The cooperative agreement between Fort A.P. Hill and the U.S. Fish and Wildlife Service lists 130 avian species, 39 species of mammals, and 40 recorded species of fish present on the installation. Limited data are available on the number of reptile and amphibian species, but 48 species are thought to occur in this area.

Common mammal species include white-tail deer (*Odocoileus virginiana*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), muskrat (*Ondatra zibethica*), woodchuck (*Marrnota monax*), raccoon (*Procyon lotor*), eastern mole (*Scalopus aquaticus*), eastern gray squirrel (*Sciurus carolinensis*), cottontail rabbit (*Sylvilagus floridanus*), gray fox (*Urocyon cinereoargenteus*), and red fox (*Vulpes fulva*).

Bird species common to the area inhabit the forests and clearings of Fort A.P. Hill. Representative species include red-tailed hawk (*Buteo jamaicensis*), great-horned owl (*Bubo virginianus*), American goldfinch (*Carduelis tristis*), downy woodpecker (*Picoides pubescens*), Eastern wood-pewee (*Contopus virens*), American crow (*Corvus brachyrhynchos*), red-eyed vireo *(Vireo olivaceus*), yellow warbler (*Dendroica petechia*), gray catbird (*Dumetella carolinensis*), ovenbird (*Seiurus aurocapilla*), wood thrush (*Hylocichla mustelina*), wild turkey (*Meleagris gallopavo*), mourning dove (*Zenaida macroura*), song sparrow (*Melospiza melodia*), northern mockingbird (*Mimus polyglottos)*, Carolina chickadee (*Poecile carolinensis*), white-breasted nuthatch (*Sitta carolinensis*), Carolina wren (*Thryothorus ludovicianus*), and eastern kingbird (*Tyrannus tyrannus*). All of these species would be expected to be present primarily in upland areas.

Common species encountered in wetlands and open water areas include wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), red-winged blackbird (*Agelaius phoeniceus*), green heron (*Butorides virescens*), and belted kingfisher (Ceryle *alcyon*).

Reptile and amphibian species expected to occur at Fort A.P. Hill include the northern copperhead (*Agkistrodon contortrix mokasen*), northern black racer (*Coluber constrictor constrictor*), eastern kingsnake (*Lampropeltis getulus*), eastern garter snake (*Thamnophis sirtalis*), eastern box turtle (*Terrapene carolina*), snapping turtle (*Chelydra serpentina*), spotted salamander (*Ambystoma maculaturn*), red-spotted newt (*Notophtalmus viridescens*), American toad (*Bufo arnericanus*), spring peeper (*Pseudacris crucifer*), and bullfrog (*Rana catesbieana*).

Surveys at Fort A.P. Hill have identified 40 species of fishes that inhabit the installation's streams, lakes, and ponds. Species found in streams include redfin pickerel (*Esox americanus*), mud sunfish (*Acantharchus pomotis*), creek chub (*Semotilus atromaculatus*), tessellated darter (*Etheostoma olmstedi*), and American eel (*Anguilla rostrata*).

3.7.1.3 Sensitive Species

Several rare plant species that receive legal protection at the federal or state level have been documented to occur on Fort A.P. Hill. They include swamp pink (*Helonias bullata*), small whorled pogonia (*Isotria medeoloides*), American ginseng (*Panax quinquefolius*) and New Jersey Rush (*Juncus caesariensis*). Both swamp pink and small whorled pogonia are listed federally as threatened and in Virginia as endangered. American ginseng and New Jersey Rush have no federal status but is state-listed as threatened. The Division of Natural Heritage documented 16 plants, 5 invertebrates, and 1 amphibian species on the installation that are considered rare.

Among the four sensitive plant species mentioned, only American ginseng has been documented from the Mill Creek Slopes conservation area (Fleming and Van Alstene 1994). The proposed EOD demolition areas were surveyed on June 2, 2009 for threatened and endangered plants by installation biologists. Sites D2 and D3 are existing range facilities that are utilized for military training activities which also undergo routine site maintenance (e.g., vegetation mowing or prescribed burning). Wildfires are also common occurrences. Sites D2 and D3 are not habitat for any federal or state listed species given the land use and land management disturbances typical of these sites. Site D1 is currently an undeveloped site, consisting of a regenerating forest. The site was harvested in 1994 as part of salvage operation following a SPBB outbreak. The overstory of the then pine-dominated stand was heavily cut. The site has been subsequently burned at least once with the current vegetation consisting of a sparse pine hardwood overstory (<25% canopy cover), with herbaceous species and hardwood coppice in the understory. The recently topkilled stems of the hardwood regeneration are still present. The site is not habitat for any federal or state listed species given the heavy land disturbance history of the site. Regarding mammal species, no federal or state-listed threatened or endangered species or species of concern are known to occur on Fort A.P. Hill. Two state mammal species of special concern, the river otter (*Lontra* [= *Lutra*] *canadensis*) and the star-nosed mole (*Condylura cristata*), have been collected on the installation.

VDCR's Natural Heritage Program undertook a comprehensive biological diversity inventory on Fort A.P. Hill in 1993 and identified two bird species on the installation (Fleming and Van Alstene 1994), the federally listed threatened bald eagle and state-listed threatened Bachman's sparrow (*Aimophila aestivalis*). One active bald eagle nest (CA-01-05) is in the vicinity of the proposed relocated EOD demolition site (Figure 3-5). Fort A.P. Hill protects the nests with primary and secondary protection zones that extend 250 and 440 yards, respectively, from the nests. Activities prohibited in primary protection zones include land clearing, clear cutting, and building, road, and trail construction (FAPH 2008). Within secondary protection zones, major habitat alterations (commercial, industrial, and residential development) are prohibited. During the breeding season (July 16 to November 14) people are not allowed in primary protection zones and major activities are prohibited in secondary protection zones. The nest near the proposed Project Area is located approximately 1,370 yards southwest from the proposed location for D1. Eagles at this particular nest are exposed to peak large caliber weapons and demolition noise levels due to the current demolition training at DS 70A and other surrounding ranges.

No reptile or amphibian federal or state-listed threatened or endangered species or federal species of concern are known to occur at Fort A.P. Hill. The carpenter frog (*Rana virgatipes*), a state species of special concern, is known only from the Mattaponi drainage and thus would be restricted to southern areas of the installation.

According to mollusk distribution maps, two mollusk species with special status (i.e., federal or state threatened, endangered, or of concern) have been recorded in counties near Fort A.P. Hill— the Atlantic pigtoe (Fusconaia masoni) and the green floater (Lasmigona subviridis). The green floater is listed as a state species of special concern and is historically known from Fort A.P. Hill. A review of available literature, however, indicated that there have been no recent records of these species occurring in Caroline County.

3.7.2 Environmental Consequences

3.7.2.1 Proposed Action

Long-term minor adverse effects on biological resources would be expected from implementation of the proposed action. It is anticipated that of the 42 acres in the proposed EOD demolition site area, about 10 acres of land would be cleared for an access road and for D1 demolition pit and bunker. Sites D2 and D3 are already cleared and operating as live-fire ranges. The clearing at D1 would be expected to increase edge species of vegetation and could create favorable conditions for invasive or exotic species to establish themselves. The sites would be monitored for invasive and exotic species of concern, however, and overall the effect on the installation's vegetation would be minor.

Wildlife throughout the proposed project area is currently exposed to high noise levels from demolition and training and should be accustomed to the noise levels. Research on noise impacts on wildlife indicates that there is great variability from species to species in response to different noise sources (USAF and USDOI 1988, Radle 2007). Wildlife, forest, and protected species management measures and objectives contained in the Fort A.P. Hill INRMP, protected species management plans, and special area management plans would be adhered to during development and operation of the EOD demolition range area.

No effects on sensitive animal or plant species would be expected from implementation of the proposed action. No training activities would occur within eagle nest protection zones. Eagles at the nearby nest are currently exposed to demolition noise levels. Weapons-testing noise, however, has been found to not substantially affect the behavior of roosting or nesting bald eagles and to not influence eagle reproduction at the population level (Brown et al. 1999). No prohibited activity is proposed to occur within the primary and secondary nest protection zones of the nearby eagle nest.

Best Management Practices

Best Management Practices to minimize, avoid, or compensate for adverse effects on biological resources due to implementing of the proposed action would not be required. Fort A.P. Hill would, however, continue to implement ongoing natural resource protection programs in its INRMP, as well as Army and federal policies for environmental protection.

Cumulative Effects

No cumulative effects on biological resources would be expected. Other future projects on Fort A.P. Hill could affect similar habitats and species, but adherence to the installation's policies for resource protection and federal and state laws and regulations for sensitive species protection, wetland protection, and sediment and erosion control would be expected to limit the individual and cumulative effects of all projects.

3.7.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the biological resources discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Long-term minor adverse effects on vegetation and wildlife would be expected from implementation of the No Action Alternative. Development of the 2,059-acre EOD area would require site clearing and construction of facilities on previously undisturbed and disturbed land. Some vegetation would be cleared to develop ranges and cleared areas would be maintained with minimal vegetation either mechanically or by continual use of the training sites, or both. Wildlife in the immediate vicinity would be temporarily displaced. Sensitive habitats would be avoided. Wildlife in the area would be newly exposed to high noise levels from the demolitions training and different species would be expected to respond differently to the noise, ranging from taking brief notice of the noise to behavioral and physiological changes that could reduce foraging, predator avoidance, and reproductive success. Over time, many species would be expected to become accustomed to the new noise levels.

No impacts on wetlands at the proposed 2,059-acre EOD area would be expected. Fort A.P. Hill has a policy to protect all wetlands and streams by maintaining 100-foot buffers around such areas.

3.8 Cultural Resources

3.8.1 Affected Environment

3.8.1.1 Prehistoric and Historic Background of Fort A.P. Hill

Discussions of the prehistoric and historic periods of Fort A.P. Hill are contained in the installation Integrated Cultural Resources Management Plan (ICRMP) (Williams 2008) and are incorporated into this EA by reference.

3.8.1.2 Cultural Resources Compliance at Fort A.P. Hill

Cultural resource compliance activities at Fort A.P. Hill to consider effects on historic properties and to consult with potentially interested Native American tribes are conducted in compliance with applicable federal legislation and state guidelines. Fort A.P. Hill has an ICRMP that directs cultural resource management actions and decisions for the installation (Williams 2008). The ICRMP contains a summary of the cultural resources identified on the installation, preservation and maintenance strategies for archaeological and architectural resources, cultural resource management strategies and planning, and standard operating procedures to ensure the protection of resources and consideration of effects on resources resulting from military use of the installation. A Programmatic Agreement (PA) addressing BRAC activities and the protection of historic properties was executed in August 2008 among the U.S. Army Garrison Fort A.P. Hill, the Virginia State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation.

3.8.1.3 Cultural Resources at Fort A.P. Hill

Fort A.P. Hill has undergone extensive studies to identify historic properties, including archaeological sites and architectural properties. All buildings and structures dating to 1959 and older have been recorded and evaluated for eligibility for listing on the National Register of Historic Places (NRHP). In total, 97 buildings and structures have been inventoried, mostly relating to the World War II construction phase of the installation. Three of the recorded architectural resources are considered eligible or potentially eligible for listing on the NRHP.

Fort A.P. Hill has completed inventories of about 25 percent of the installation to identify prehistoric and historic archaeological resources (FAPH GIS 2006). These include mostly Phase I surveys to identify sites, some Phase II testing of sites to determine areal extent and eligibility for NRHP listing, and Phase III data recovery excavations to mitigate potential effects.

Fort A.P. Hill conducted archaeological inventories of the original 1,034-acre EOD area in 2006 in preparation for the BRAC realignment. The proposed original EOD area underwent three separate inventories, resulting in full Phase I survey coverage (Roberts 2006, Versar 2006). The installation completed additional Phase I archaeological surveys of the four areas proposed to be added to the original EOD area from March through May 2008 (Berger 2008).

There are 21 known historic cemeteries on Fort A.P. Hill (CRI 1999). When the land for Fort A.P. Hill was acquired by the government in the mid-20th century, all known human remains were reinterred off the installation. At that time, only remains associated with marked graves, headstones, footstones, and fences were removed. It is probable that some of the cemeteries still contain graves with human remains. These areas are marked as *sensitive areas* on the installation geographic information system database.

Cultural Resources in the Area of Potential Effect

None of the three architectural properties on the installation that are eligible or potentially eligible for listing on the NRHP are within the proposed Project Area.

Portions of the Port Royal Rural Historic District (VDHR No. 284-0044) fall within the area of potential effect. However based on noise evaluations, there will be no effects to historic properties within the Historic District.

No subsurface cultural resource investigations have been authorized in the proposed Project Area as the area is located in an active demolition range with a high potential for unexploded ordnance. No previously recorded archaeological sites are located within the Project Area. Historical records research identified one map-projected former cemetery location and two map-projected house sites located within the Project Area. The map-projection of the former cemetery location and one of the house sites places them within previously developed portions of the Project Area. The second map-projected house site is located in a portion of the Project Area where development is not currently planned. As the cemetery has been removed and the cemetery and house site locations have been subsequently developed, these locations have a low potential for intact deposits that may be eligible for inclusion in the NRHP. Furthermore, based on (1) the previous development and use of the Project Area as an active demolition range and (2) the general relief of the proposed new development areas, the Project Area has an overall low potential for historic properties.

Ongoing consultation with the Virginia SHPO would be coordinated under Section 106 of the NHPA. Compliance with Section 106 would be completed before any new construction or ground-disturbing activities took place in the Project Area.

3.8.1.4 Native American Resources at Fort A.P. Hill

There are no known resources on Fort A.P. Hill that are considered of traditional importance to any tribe.

3.8.1.5 Pending Investigations and Compliance

Fort A.P. Hill conducts its cultural resource management in accordance with applicable federal legislation and with guidance from the ICRMP. A PA to address BRAC activities to occur at the installation was executed in 2008. Further work would be done as necessary to inventory and evaluate cultural resources in the Project Area, and the results would be provided to the Virginia SHPO for consultation under Section 106 of the NHPA. Any adverse effects on historic and archeological resources would be avoided, minimized, or mitigated, as determined in consultation with the SHPO and in accordance with the installation's ICRMP and the PA.

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action

No adverse effects on cultural resources at Fort A.P. Hill would be expected within the project area as a result of implementing the proposed action. Although unanticipated adverse effects on historic properties from the EOD construction and operational activities are a possibility, compliance with applicable federal legislation, the installation's ICRMP, and the installation's PA would ameliorate any unanticipated effects to less than significant. Additionally based on the noise evaluation, the proposed action would have no effects on historic properties within the area of potential effect.

Best Management Practices

No specific BMPs to protect cultural resources would be required during implementation of the proposed action. All policies and procedures for cultural resources protection would be adhered to in accordance with the installation's ICRMP and the PA. If avoidance and protection of historic properties were not feasible for any specific activity, measures would be implemented in accordance with Section 106 of the NHPA, the installation's ICRMP, and the PA to mitigate adverse effects on the sites.

Cumulative Effects

No cumulative effects on cultural resources would be expected. Adverse effects on NRHP-eligible cultural resources could result if such resources are physically disturbed during the development of BRAC facilities or training exercises. Federal legislation, the Fort A.P. Hill ICRMP, and the PA would be followed in all cases, including construction for BRAC, the AWG range, and other projects on Fort A.P. Hill, to compensate for any impacts. Thus, any adverse cumulative impacts that would occur would be considered minor.

3.8.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the cultural resources discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Implementation of the No Action Alternative would likely have no significant impacts on historic properties at Fort A.P. Hill. Although unanticipated adverse effects on historic properties from development of a 2,059-acre EOD area are a possibility, compliance with applicable federal legislation,

procedures in the installation's ICRMP, and the BRAC PA would ameliorate any unanticipated effects to less than significant.

3.9 Socioeconomics

3.9.1 Affected Environment

The region of influence (ROI) for the Fort A.P. Hill socioeconomic environment is defined as Caroline, Essex, King George, Spotsylvania, and Stafford counties and the City of Fredericksburg, Virginia. The ROI covers an area of 1,653 square miles in northeastern Virginia. Fort A.P. Hill is within the boundaries of Caroline County along the I-95 corridor between two major metropolitan areas: Washington, DC, and Richmond, Virginia. The towns of Bowling Green (just south of the installation) and Port Royal (just north of the installation) in Caroline County are the closest towns to the installation, and they provide community support to the installation. Fredericksburg is about 20 miles north of Fort A.P. Hill's main gate. These communities and the counties surrounding Fort A.P. Hill have a lengthy history of support for the installation (FAPH 2007b).

The baseline year for socioeconomic data is 2007. Where 2007 data are not available, the most recent data available are presented.

3.9.1.1 Economy

Historically, Caroline County's major private industries have been tied directly to natural resources. These include agriculture and forestry products and nearly 51,604 acres of farmland. Principal crops are soybeans, wheat, barley and corn. There are over 261,700 acres of commercial forestland, which predominantly include loblolly pine, short leaf pine, oak and hickory. Significant mineral resources include sand, gravel, clay, mica and beryl. In addition to the expansion of some resource-based industries, Caroline County is seeing a new wave of activity from a variety of businesses and industries and growth in Caroline County has significantly changed in recent years.

The population areas surrounding Fort A. P. Hill tend to have lower incomes than Virginia residents as a whole; however, this fact most likely reflects the rural nature of the county and the lag in growth compared to its more rapidly urbanizing neighbors such as Stafford and Spotsylvania Counties.

3.9.1.3 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires Federal agencies to identify and address disproportionate adverse effects of their programs, policies and activities on minority and low-income populations.

The Region of Influence (ROI) for this proposed action lies within the confines of Fort A. P. Hill. The training mission applies only to facilities that lie within the installation boundaries and has no applicability to resources that are located on lands outside Fort A. P. Hill. No low income or minority populations exist on the installation or immediately adjacent to the proposed EOD demolition site.

3.9.1.4 Protection of Children

Executive Order 13045 seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of installation policies, procedures, programs, activities and standards. The training lands and ranges of Fort A. P. Hill are restricted to authorized personnel only and access is limited, excluding the entry of unauthorized adults and children.

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

Economic Development

Under the proposed action, short and long-term minor beneficial effects are expected for economic development as described in the Environmental Assessment of Constructing and Operating a 2,059-acre Explosive Ordnance Disposal Field Training Area.

The economic benefits resulting from timber sales to support the relocation of the three demolition sites would be considered minor. If a commercial timber sale is generated from the land that would be cleared, a portion of the proceeds might contribute to the funding of county schools and roads through the Army Timber Management Fund; 40 percent of annual timber sale profits are awarded to county schools.

Sociological Environment

Housing. Existing conditions for housing as described in the Environmental Assessment of Constructing and Operating a 2,059-acre Explosive Ordnance Disposal Field Training Area would continue under the proposed action.

Law Enforcement, Fire Protection, Medical Services. Long-term minor adverse effects would be expected. The installation has only one medical crew. Travel time from Fort A.P. Hill's medical center to proposed Project Area at DS 70A can take up to 20 minutes, with an additional 40 minutes or more if the patient needs to be transported to a hospital. An additional medical crew would be needed. Ideally, a new medical crew would be collocated with the fire engine company in the Heth area (Directorate of Emergency Services, personal communication, 2006). Siting a medical crew at the Heth area would reduce travel time to the demolition site. Long-term minor adverse effects on medical care and response time would be expected if a second medical crew were not acquired.

No adverse effects on police or fire services would be expected. The proposed action would not change the fire department or police services requirements.

Schools. No effects would be expected. The proposed action would not affect local schools.

Family Support, Services, and Recreation. Existing conditions for family support, services and recreation as described in the Environmental Assessment of Constructing and Operating a 2,059-acre Explosive Ordnance Disposal Field Training Area would continue under the proposed action.

Environmental Justice

No effects would be expected. The proposed training and construction activities at Fort A.P. Hill are not actions that have the potential to substantially affect human health or the environment by excluding persons, denying persons benefits, or subjecting persons to discrimination because of their race, color, national origin, or income level.

Protection of Children

No effects would be expected. The proposed training and construction activities would be sited in Fort A.P. Hill's training lands and ranges. The training lands and ranges of Fort A.P. Hill are restricted to authorized personnel only, and access is limited, excluding the entry of unauthorized adults and children.

Best Management Practices

No BMPs would be necessary to reduce the adverse impacts of the proposed action on socioeconomics.

Cumulative Effects

Long-term minor beneficial cumulative economic effects would be expected. The operation of FAPH continues to economically benefit the ROI by providing jobs, income, and business sales through the purchase of goods and services. The proposed construction and operation of the demolition range at FAPH would provide minor short- and long-term beneficial economic effects to the region in the form of additional employment, income, and sales. Other ongoing or proposed future development projects in the ROI include Virginia Department of Transportation road and bridge construction projects; residential development; the opening of two new millworks, two concrete companies, and a new complex for M.C. Dean, a systems integration and engineering firm in Caroline County; a new concrete manufacturing plant in King George County; and the BRAC action at Quantico Marine Corps Base in Stafford County.

In addition to the proposed construction and operation of the training range at FAPH, these other projects would generate employment, income, and business sales in the ROI, resulting in long-term cumulative beneficial economic effects.

3.9.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the socioeconomics discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Economic Development

Long-term minor beneficial effects on economic development would be expected from implementation of the No Action Alternative. The expenditures to establish the range and construct the range facilities, as well as the new employment associated with the operation of the training area, would increase ROI sales volume, employment, and income. These changes would fall within historical fluctuations (i.e., within the RTV range) and be considered minor.

Sociological Environment

Long-term minor adverse effects on medical services would be expected from implementation of the No Action Alternative. Travel time from Fort A.P. Hill's medical center to the Training Areas 26, 27 and 28 areas can take up to 20 minutes, with an additional 40 minutes or more if the patient needs to be transported to a hospital. An additional medical crew would be needed. Adverse effects on medical care and response time would be expected if a second medical crew is not acquired.

No effects on housing, law enforcement, fire protection, schools, family support, services, or recreation would be expected from implementation of the No Action Alternative.

Environmental Justice

No effects on environmental justice would be expected from implementation of the No Action Alternative. The construction and operation of the training range on Fort A.P. Hill is not an action that has the potential to substantially affect human health or the environment by excluding persons, denying persons benefits, or subjecting persons to discrimination because of their race, color, national origin, or income level.

Protection of Children

No effects on the protection of children would be expected from implementation of the No Action Alternative. The No Action Alternative construction and training activities would be sited in Fort A.P. Hill's training lands and ranges. The training lands and ranges are restricted to authorized personnel only and access is limited, excluding the entry of unauthorized adults and children.

3.10 Transportation

3.10.1 Affected Environment

Highway access to Fort A.P. Hill is available regionally via I-95; Routes 1, 17, and 301; and Route 2 (see Figure 2-1). Route 301 provides access to the main entrance of the installation; it is a four-lane, north-south route that bisects Fort A.P. Hill. The primary transportation network within Fort A.P. Hill consists of roads and streets that act as main distribution arteries and provide access to all functional areas. Secondary and tertiary light-duty roadways provide access between and within various functional areas. Wide, clear trails for the use of heavy tactical vehicles are adjacent to some roads.

The closest city to Fort A.P. Hill served by rail transportation, via Amtrak and Virginia Railway Express, is Fredericksburg, Virginia. No public transit access or bus service is available at Fort A.P. Hill. The Fredericksburg Regional Transit provides service at Bowling Green, Virginia (FRED 2006).

Fort A.P. Hill has one Army Air Field, one drop zone, one assault airstrip, and many authorized landing or pick-up zones to support airborne and aviation training for both fixed-wing and rotary aircraft. Fort A.P. Hill does not support private access to the installation by air.

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

Short- and long-term minor adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected from implementation of the proposed action. These effects would result from using on-road construction vehicles during the periods of construction and long-term operational activities on the bussing of Army personnel to and from the EOD field training area to the proposed relocated demolition sites. No effects on railway and air transportation systems would be expected, and effects on the public transportation system would be negligible.

Construction Traffic

Traffic at Fort A.P. Hill would increase from construction vehicles. The effects would be temporary, ending when the construction phase of the proposed action was completed. The local on-post and off-post road infrastructure is sufficient to support any increase in construction vehicle traffic.

Operational Traffic

Minor long-term increases in on-post traffic would be expected from operational activities under the proposed action. Several busses of new trainees would need to be transported from the EOD field training area to the proposed Project Area. Minor improvements to existing roadways to make them serviceable would be expected. No major new on-post roadways would be expected and one new tertiary roadway would be established for access to D1 within the proposed EOD demolition range.

Best Management Practice

Any effects due to construction traffic would be minimized by directing all construction vehicles to access the installation via the most appropriate gate and limiting construction vehicle movement during peak traffic hours. All construction vehicles would be equipped with backing alarms, two-way radios, and "Slow Moving Vehicle" signs when appropriate. Access to the proposed EOD demolition site area would be coordinated through Range Control to ensure personal safety and a lack of conflict with ongoing training and range operations.

Cumulative Effects

No adverse cumulative effects on transportation resources would be expected. Construction of the proposed EOD facilities, establishment of the Asymmetric Warfare Group (AWG) ranges, and establishment of the Naval Surface Warfare Explosive Center of Excellence (NSWECE) would occur simultaneously, and other future projects could also occur concurrently. Traffic attributable to these actions would also occur concurrently. Other construction and development projects would produce some measurable amounts of traffic. The effects on transportation resources associated with the proposed action would be minor and would not be expected to cause adverse cumulative effects.

3.10.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the transportation discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an

Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Short- term minor and long-term major adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected. These effects would be directly related to using on-road construction vehicles during the periods of construction, and bussing of Army personnel to and from the demolition sites for training activities. There would be a long-term major adverse effect on the transportation infrastructure of FAPH with the requirement to construct a bypass road to access the future BAX facility. The effects on railway, air, or public transportation at Fort A.P. Hill would be negligible.

3.11 Utilities

3.11.1 Affected Environment

Utilities available at the proposed relocated EOD demolition area are electricity and telephone.

3.11.1.1 Potable Water Supply

The groundwater system below Fort A.P. Hill is the sole source of potable water for the installation. The potable water infrastructure nearest to the proposed EOD demolition area is a well with a 100,000-gallon tank at Cooke Camp (Knight 2008) (Figure 3-6). The distance from Cooke Camp to the proposed demolition site is about 5 miles along roads. The potable water system on Fort A.P. Hill is owned, operated, and maintained by American Water O&M, Inc.

3.11.1.2 Sewer and Wastewater

The proposed EOD demolition site area has no wastewater infrastructure.

3.11.1.3 Energy Sources

Electricity

The electric distribution system at Fort A.P. Hill is privately owned and operated by Rappahannock Electric Cooperative, which performs all capital improvements and maintenance. The existing electrical distribution system to support the proposed EOD demolition area consists of overhead electrical lines running along North Range Road and the existing DS 70A range road.

Natural Gas

There is no natural gas in the vicinity of the proposed EOD demolition area (Knight 2008).

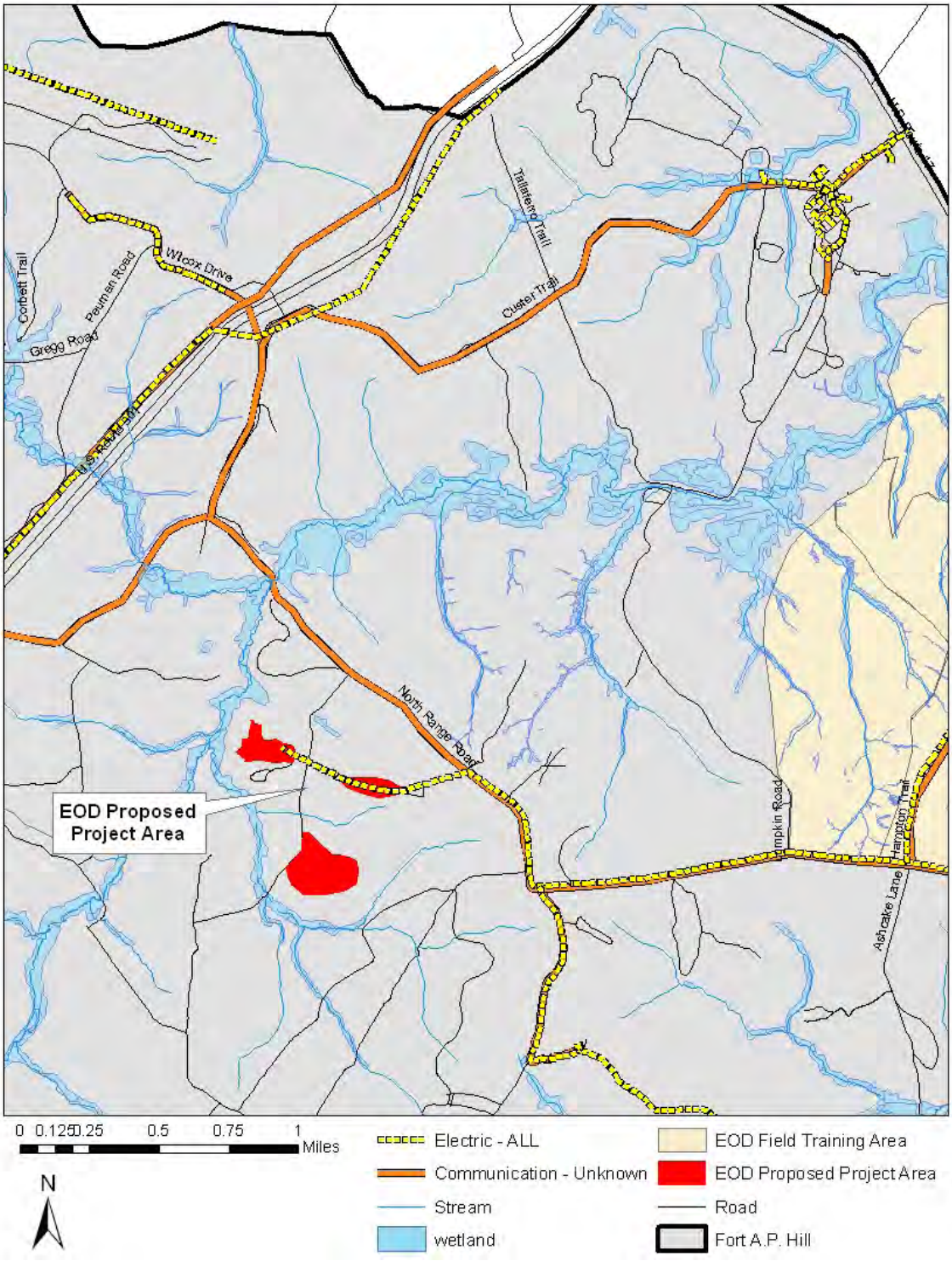
3.11.1.4 Storm Water Collection System

Storm water at the proposed EOD demolition area at Fort A.P. Hill infiltrates the soil or travels over ground in natural drainageways. There is no existing constructed storm water infrastructure.

3.11.1.5 Solid Waste

Solid waste collected at Fort A.P. Hill is transported to the King George Landfill in Virginia once or twice a day depending on the amount of troop training. Construction and demolition (C&D) debris is considered the property of individual contractors and is mostly disposed of in local landfills.

Figure 3-6 Utilities



3.11.1.6 Communication Systems

Communication services at Fort A.P. Hill are owned and operated by the installation. There are two outdoor phones on the proposed EOD demolition range area (Fort A.P. Hill GIS 2009). The existing telephone infrastructure runs along North Range Road and the access road to DS 70A.

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

Negligible effects on landfill capacity would be expected from the disposal of minor amounts of solid waste from construction. No effects on potable water reserves in the region, the sewer and wastewater system, the electrical system, communication systems, and the storm water system would be expected.

Potable Water Supply

No effect on the potable water supply at Fort A.P. Hill would result from the proposed action. No potable water systems are proposed to be installed to serve the EOD demolition area.

Sewer and Wastewater

No effect on sewer and wastewater at Fort A.P. Hill would result from the proposed action. No sewer or wastewater systems are proposed to be installed to serve the EOD demolition area.

Energy Sources

Electrical power

No effects on the electrical system of Fort A.P. Hill would be expected. Activities at the proposed EOD demolition would consume very little electrical power, and the system currently in place is of sufficient capacity to meet the demand of the proposed Project Area.

Natural gas

No effect on natural gas at Fort A.P. Hill would result from the proposed action. No natural gas system is proposed to be installed to serve the EOD demolition area.

Storm Water Collection System

No effect on the storm water collection system would be expected. Storm water would continue to infiltrate the ground and flow through natural drainageways.

Solid waste

Negligible effects on landfill capacity would be expected from the disposal of minor amounts of solid waste from construction. Solid waste would be generated from building construction of the pits and bunkers at D1, D2 and D3.

Communication Systems

No effects on the communications system of Fort A.P. Hill would be expected. The system currently in place at the proposed Project Area is of sufficient capacity to meet the demand.

Best Management Practices

BMPs required as part of DoD and Fort A.P. Hill policy and the Commonwealth of Virginia, examples of which are provided below, would adequately limit the adverse impact of the proposed action on utilities.

- ***Solid Waste.*** Recycle 50 percent of the construction and demolition (C&D) debris as stipulated in an Army memorandum (ACSIM 2006). Incorporate recycling requirements into all contracts awarded to outside contractors.

Cumulative Effects

Minor adverse cumulative effects on regional utility systems would be expected from construction under the proposed action, the AWG training range complex, the NSWECE, and other potential future projects. Utility system upgrades would be required most new ranges, and some C&D debris would be generated by each project. Minor additional demands on regional utility systems and minor reductions in regional landfill capacity would result.

3.11.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the utilities discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Short- and long-term minor beneficial and adverse effects on utilities in the proposed 2,059-acre EOD training area would be expected from implementation of the No Action Alternative. Renovations and upgrades would be required for utility systems (water, wastewater, storm water, communications, and electricity) at the proposed 2,059-acre EOD training area, which could result in minor service interruptions.

Solid waste generated by student Soldiers and instructors during classes held at the proposed 2,059-acre EOD training area would be minimal and would be removed by either Fort A.P. Hill Directorate of Public Works personnel or solid waste contractors.

3.12 Hazardous and Toxic Materials

3.12.1 Affected Environment

Specific environmental statutes and regulations govern hazardous material and hazardous waste management activities at the proposed EOD demolition project area at Fort A.P. Hill. For the purpose of this analysis, the terms *hazardous waste*, *hazardous materials,* and *toxic substances* include those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, might present substantial danger to public health or welfare or to the environment when released into the environment.

3.12.1.2 Hazardous Materials/Wastes

Fort A.P. Hill is a RCRA Large Quantity Generator of hazardous wastes and a former Transportation, Storage, and Disposal facility. The installation's EPA Comprehensive Environmental Response, Compensation, and Liability Information System—or CERCLIS—identification number is VA2210020416. Hazardous wastes are managed by the Fort A.P. Hill Directorate of Public Works in accordance with the *Installation Hazardous Waste Management/Waste Minimization Plan.* Hazardous materials are managed through the Hazardous Materials Management Program, which includes all installation activities, tenants, and contractors working at Fort A.P. Hill. Through the use of a Hazardous Substance Management System database, all hazardous materials procured, stored, or used on the installation are tracked from cradle to grave. The program also allows for the return of unused or partially used hazardous materials for reissue to other activities.

The RCRA Military Munitions Rule defines waste as it applies to three specific categories of military munitions—unused munitions, munitions being used for their intended purpose, and used or fired munitions. The rule conditionally exempts (1) from RCRA manifest requirements and container marking requirements, waste non-chemical military munitions that are shipped from one military-owned or operated treatment, storage, or disposal facility to another in accordance with DoD military munitions shipping controls; (2) from RCRA Subtitle C storage regulations, waste non-chemical military munitions subject to the jurisdiction of the DoD Explosives Safety Board storage standards.

Military munitions are not a solid waste for regulatory purposes when a munition is being used for its intended purpose, which includes a munition being used for the training of military personnel; when a munition is being used for research, development, testing, and evaluation; when a munition is destroyed during range clearance operations at active and inactive ranges; and when a munition that has not been used or discharged, including components thereof, is repaired, reused, recycled, reclaimed, disassembled, reconfigured, or otherwise subjected to materials recovery activities.

This rule also specifies that used or fired munitions are solid waste when they are removed from their landing spot and then managed off-range (i.e., when transported off-range and stored, reclaimed, treated, or disposed of) or disposed of (i.e., buried or land-filled) on-range. In both cases, when the used or fired munition is a solid waste, it is potentially subject to regulation as a hazardous waste (USEPA 1997).

3.12.1.3 Ordnance

Historically, the area proposed for the EOD Project Area has been used for live demolition training.

3.12.2 Environmental Consequences

3.12.2.1 Proposed Action

Long-term minor adverse effects could result from an increase in the use of hazardous materials. The volume of these wastes generated and the amount of storage required would increase. Hazardous materials would be managed in accordance with the installation's *Hazardous Materials Management Program.*

Long-term minor adverse effects could result from an increase in the small amounts of chemical residues that remain in the soil after an explosives training exercise. Monitoring and reporting of soil and groundwater conditions are not required while the training area is being used for its intended purpose. Other explosives residue, such as spent shock tubes, igniters, and packaging material, would be recovered in accordance with DoD policy.

Short-term negligible adverse effects could result from an increase in spills associated with the use of hazardous materials during facility construction. Established controls such as spill containment, emergency response, and cleanup procedures would limit the impact of spills.

No effects would be expected from hazardous waste disposal. All hazardous wastes would be managed in accordance with the installation's *Hazardous Waste Management Plan* and RCRA requirements. Target vehicles (salvaged cars, trucks and vans) would go through an inspection process to ensure that no fluids or batteries were in the vehicles before being used for explosives training. After a target vehicle was not usable for training purposes, range personnel would inspect the vehicle to ensure that no residue remained in the vehicle before permitting its permanent disposal. As previously mentioned, military munitions is not a solid waste for regulatory purposes when a munition is being used for its intended purpose, which includes a munition being used for the training of military personnel.

No adverse effects from the historical uses of area would be expected. Site workers will be trained in ordnance awareness and permits for intrusive activities would likely be required. If ordnance is identified during construction, only qualified Army personnel will respond.

Best Management Practices

BMPs required as part of DoD and Fort A.P. Hill policy and the Commonwealth of Virginia, examples of which are provided below, would adequately limit the adverse impact of the proposed action on hazardous and toxic materials.

- ***Contamination.*** Any soil suspected of contamination, or wastes that are generated, would be tested and disposed of in accordance with applicable federal and state laws and regulations.
- ***Pollution Prevention.*** The Army would implement pollution prevention and waste minimization programs, including reduction of waste materials at the source, reuse of materials, and recycling of solid wastes. Hazardous waste generation would be minimized, and all hazardous wastes would be handled appropriately.
- ***Remediation.*** The Army would honor all CERCLA obligations at active and closed Installation Restoration Program sites at the installation. The installation's remedial project manager would be contacted before any land, soil, or groundwater disturbance at

or near ERP sites to ensure that all remedies in place would remain intact and that long-term monitoring wells would not be disturbed.

- ***Petroleum Contamination.*** If petroleum contamination was discovered during project excavation, the incident would be reported to the applicable state agencies. Any contaminated soils and groundwater would be disposed of in accordance with applicable state guidelines. Petroleum spills would be reported to the state as required.

Cumulative Effects

No cumulative effects on hazardous or toxic materials would be expected. All use, storage, and disposal of hazardous materials for all concurrent and future projects would be required to be conducted in accordance with the Fort A.P. Hill *Hazardous Waste Management Plan*.

3.12.2.2 No Action Alternative

Incorporation. This SEA incorporates by reference the hazardous and toxic materials discussion related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

Long-term minor adverse effects could result from an increase in the use of hazardous materials and an increase in storage capacity requirements for petroleum, oil, and lubricants. New storage facilities would be constructed and maintained in accordance with applicable laws regarding construction materials, leak protection, monitoring, and spill containment. No adverse effects would be expected from hazardous waste disposal, unexploded ordnance (or munitions and explosives of concern), or pesticides.

3.13 Cumulative Effects Summary

Minor adverse cumulative effects on the noise environment and regional utility systems would be expected. None of the adverse cumulative effects would be significant. Minor beneficial cumulative effects on economic development would be expected. No cumulative effects on land use, aesthetic and visual resources, air quality, geology or soils, water resources, biological resources, cultural resources, transportation resources, or hazardous or toxic materials would be expected.

SECTION 4.0
CONCLUSIONS

This SEA was prepared to evaluate the potential effects on the natural and human environment from activities associated with the proposed action to relocate three EOD demolition ranges from the EOD field training area. A No Action Alternative is also evaluated.

The SEA evaluates potential effects on land use, aesthetic and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics (including environmental justice and protection of children), transportation, utilities, and hazardous and toxic substances.

Evaluation of the proposed action indicates that the physical and socioeconomic environments at Fort A.P. Hill would not be significantly affected. The predicted consequences of implementing the proposed action on resources are briefly described below. Table 4-1 provides a summary and comparison of the consequences of the proposed action and the No Action Alternative.

4.1 Proposed Action Summary of Consequences

4.1.1 Land Use

No adverse effects on surrounding land use northeast and east of the installation would be expected. The proposed relocated EOD demolition site area is an already existing demolition range within the restricted area of the installation. Using the area for demolitions training would be compatible with the current land use. No changes to land use classifications on or off Fort A.P. Hill would result. No effects on regional land use planning or zoning at Fort A.P. Hill would be expected.

4.1.2 Aesthetic and Visual Resources

No adverse effects on the aesthetic and visual environment would be expected. The proposed relocated EOD demolition ranges would continue to be used and maintained for military training.

4.1.3 Air Quality

Short- and long-term minor adverse effects on air quality would be expected, primarily from non-road vehicle exhaust and fugitive dust emissions during construction and demolition activities. The proposed action would not cause or contribute to a violation of any federal, state, or local air regulation, nor would it contribute to a violation of Fort A.P. Hill's air operating permit.

4.1.4 Noise

Short- term minor adverse and long-term minor beneficial effects on the noise environment would be expected. The minor adverse effects would be primarily due to heavy equipment noise during construction. The long-term minor beneficial effects on the noise environment would be from the operation of the proposed relocated EOD range from the existing conditions.

Table 4-1
Summary of Potential Environmental and Socioeconomic Consequences

	Environmental and socioeconomic effects of alternatives	
Resource	**Proposed Action**	**No Action**
Land use	No effects	Long-term minor adverse
Aesthetic and visual resources	No effects	No effects
Air quality	Short- and long-term minor adverse	Short- and long-term minor adverse
Noise	Short- term minor adverse and long-term minor beneficial	Short- and long-term minor adverse
Geology and soils	Short- and long-term minor adverse	Short- and long-term minor adverse
Water resources		
• Surface water	Short-term minor and long-term negligible adverse	Short-term minor and long-term negligible adverse
• Hydrogeology/Groundwater	Long-term negligible adverse	Long-term negligible adverse
• Floodplains and Wetlands	Long-term minor adverse	Long-term minor adverse
• Coastal zone management	No effects	No effects
Biological resources	No effects	Long-term minor adverse
Cultural resources	No effects	No effects
Socioeconomics		
• Economic Development	Short- and long-term minor beneficial	Short- and long-term minor beneficial
• Housing	No effects	No effects
• Public services	Long-term minor adverse	Long-term minor adverse
• Schools, family services	No effects	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
Transportation	Short- and long-term minor adverse	Short- term minor and long-term major adverse
Utilities	Short- and long-term minor beneficial and adverse	Short- and long-term minor beneficial and adverse
Hazardous and toxic substances	Short-term negligible and long-term minor adverse	Short-term negligible and long-term minor adverse

4.1.5 Geology and Soils

Short- and long-term minor adverse effects on soils would occur during construction and operation of the proposed EOD demolition range area. In the short-term, vegetation removal during construction activities would temporarily expose soils and potentially increase soil erosion. In the long-term, explosives training would result in soil disturbance at detonation sites.

4.1.6 Water Resources

Short-term minor and long-term negligible and minor adverse effects on water resources would be expected. Construction and operational activities could increase runoff; increase soil disturbance, erosion, and compaction; and increase sediment and pollutant loads. The proposed facilities would be sited to avoid sensitive environmental areas, including RPAs, to the maximum extent practicable. Wetlands and surface waters would be protected from development impacts or, where unavoidable, Fort A.P. Hill would minimize impacts to the resources by using Virginia-approved BMPs, and, if necessary, adhering to all

conditions of permits issued by the U.S. Corps of Engineers and VDEQ. No adverse effects on the Chesapeake Bay or the Virginia CZMP would be expected.

4.1.7 Biological Resources

Long-term minor adverse effects on biological resources would be expected from implementation of the proposed action. It is anticipated that of the 42 acres in the proposed EOD demolition site area, about 10 acres of land would be cleared for an access road and for D1 demolition pit and bunker. Sites D2 and D3 are already cleared and operating as live-fire ranges. The clearing at D1 would be expected to increase edge species of vegetation and could create favorable conditions for invasive or exotic species to establish themselves. The sites would be monitored for invasive and exotic species of concern, however, and overall the effect on the installation's vegetation would be minor.

No population-level effects on any animal species would be expected. Wildlife species would be protected through adherence to the Fort A.P. Hill INRMP, protected species management plans, and special area management plans during development and operation of the proposed EOD demolition range area. No effects on sensitive animal or plant species would be expected from implementation of the proposed action.

4.1.8 Cultural Resources

No adverse effects on cultural resources at Fort A.P. Hill would be expected. Compliance with applicable federal legislation, the installation's ICRMP, and the installation's PA would ameliorate any unanticipated effects on cultural resources to less than significant.

4.1.9 Socioeconomics

Short- and long-term minor beneficial effects on economic development would be expected from expenditures to construct and operate the range facilities and the associated increases in sales volume, employment, and income in the ROI. Economic benefits also could result from timber sales. No effects on housing would be expected. Long-term minor adverse effects on medical services would be expected due to an increased response time to the EOD area, if a second medical crew were not acquired to augment the installation's existing one medical crew. No adverse effects on police or fire services, schools, other services and recreation facilities, environmental justice, or protection of children would be expected.

4.1.10 Transportation

Short- and long-term minor adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected from using on-road construction vehicles during the periods of construction, busing Army personnel to and from Fort A.P. Hill for training activities, and long-term operational activities on the proposed enlarged EOD field training area. No effects on railway and air transportation systems would be expected, and effects on the public transportation system would be negligible.

4.1.11 Utilities

Negligible effects on landfill capacity would be expected from the disposal of minor amounts of solid waste from construction. There would be no effects on the sanitary sewer system, the electrical system, the natural gas system, potable water reserves, the storm water collection system, or communication systems.

4.1.12 Hazardous and Toxic Substances

Short-term negligible and long-term minor adverse effects could occur. Long-term minor adverse effects could result from an increase in the use of hazardous materials. The volume of these wastes generated and the amount of storage required would increase. Long-term minor adverse effects could result from an increase in the small amounts of chemical residues that remain in the soil after an explosives training exercise. Other explosives residue, such as spent shock tubes, igniters, and packaging material, would be recovered in accordance with DoD policy. Short-term negligible adverse effects could result from incidental spills associated with the use of hazardous materials during facility construction. No environmental or health effects resulting from the testing, removal, handling, and disposal of hazardous materials would be expected during demolition or renovation activities. No effects would be expected from hazardous waste disposal; an increase in storage capacity requirements for petroleum, oil, and lubricants; the historical uses of the proposed EOD demolition range; or from pesticides.

4.1.13 Cumulative Effects

Minor adverse cumulative effects on the noise environment and regional utility systems would be expected. None of the adverse cumulative effects would be significant. Minor beneficial cumulative effects on economic development would be expected. No cumulative effects on land use, aesthetic and visual resources, air quality, geology or soils, water resources, biological resources, cultural resources, transportation resources, or hazardous or toxic materials would be expected.

4.1.14 Mitigation

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. The SEA did not identify the need for any mitigation measures associated with implementation of the proposed action.

4.2 No action Alternative Summary of Consequences

Incorporation. This SEA incorporates by reference the discussion of effects related to the 2,059-acre EOD training area contained in the Environmental Assessment of Constructing and Operating an Explosive Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia. Specific information is provided below.

4.2.1 Land Use

A long-term minor adverse effect on surrounding land use would be expected. Noise from explosions could create an incompatibility with nearby residential areas. No impacts on installation land uses would be expected.

4.2.2 Aesthetic and Visual Resources

No adverse effects on the visual environment would be expected.

4.2.3 Air Quality

Short- and long-term minor adverse effects on air quality would be expected from vehicle and fugitive dust emissions during facility construction and from operational emissions attributable to generators,

boilers, and other internal combustion sources. No violations of federal, state, or local air regulations or Fort A.P. Hill's air operating permit would be expected.

4.2.4 Noise

Short- and long-term minor adverse effects on the noise environment at Fort A.P. Hill would be expected. The effects would be due to heavy equipment noise during construction and the operation of a 2,059-acre EOD area.

4.2.5 Geology and Soils

Short- and long-term minor adverse effects on soils would be expected. No effects on geology, topography, or prime farmland soils would occur. All disturbed areas would be stabilized and revegetated before construction activities were completed. Erosion control measures would be implemented in accordance with an erosion and sediment control plan developed for the project to control soil loss during construction and operation of the demolition range.

4.2.6 Water Resources

Short-term minor and long-term negligible adverse effects on surface water and groundwater quality would be expected. Construction and operation of facilities could increase runoff and increase soil erosion and sediment and pollutant loads in storm water runoff. Proposed facilities would be sited to avoid sensitive environmental areas, such as riparian areas and wetlands, to the maximum extent practicable. No impacts on wetlands would be expected. Fort A.P. Hill has a policy to protect all wetlands and streams by maintaining 100-foot buffers around such areas.

4.2.7 Biological Resources

Long-term minor adverse effects on vegetation and wildlife would be expected. Site clearing and construction of facilities would require some vegetation removal, long-term conversion of small areas from forest to open areas and roads, and short- or long-term displacement of local wildlife. Sensitive habitats would be avoided. The wildlife in the area is currently exposed to high noise levels from demolition and training and should be accustomed to the noise levels.

4.2.8 Cultural Resources

No significant impacts on historic properties at Fort A.P. Hill would be expected. Compliance with applicable federal legislation, procedures in the installation’s ICRMP, and the BRAC PA would ameliorate any unanticipated effects to less than significant.

4.2.9 Socioeconomics

Long-term minor beneficial effects on economic development would be expected. A long-term minor adverse effect on medical services would be expected from long travel times from the installation’s medical center to the proposed EOD training area. An additional medical crew could be needed. No effects on housing, law enforcement, fire protection, schools, family support, services, recreation, environmental justice, or the protection of children would be expected.

4.2.10 Transportation

Short- term minor and long-term major adverse effects on vehicle-based transportation resources at Fort A.P. Hill would be expected from using on-road construction vehicles during the periods of construction. There would be a long-term major adverse effect on the transportation infrastructure of FAPH with the requirement to construct a bypass road to access the future BAX facility. The effects on railway, air, or public transportation at Fort A.P. Hill would be negligible.

4.2.11 Utilities

Long-term minor beneficial and negligible adverse effects on utilities would be expected. Renovations and upgrades would be required for utility systems (water, wastewater, storm water, communications, and electricity), which could result in minor service interruptions. Utility system demands expected under the No Action Alternative would be nearly identical to those expected under the Preferred Alternative. Solid waste generated by student Soldiers and instructors during classes held at the proposed EOD training area would be minimal and would be properly disposed.

4.2.12 Hazardous and Toxic Substances

Short-term negligible and long-term minor adverse effects could occur. Long-term minor adverse effects could result from an increase in the use of hazardous materials. The volume of these wastes generated and the amount of storage required would increase. Long-term minor adverse effects could result from an increase in the small amounts of chemical residues that remain in the soil after an explosives training exercise. Short-term negligible adverse effects could result from incidental spills associated with the use of hazardous materials during facility construction. No environmental or health effects resulting from the testing, removal, handling, and disposal of hazardous materials would be expected during demolition or renovation activities. No effects would be expected from hazardous waste disposal; an increase in storage capacity requirements for petroleum, oil, and lubricants; the historical uses of the proposed EOD training area; or from pesticides.

4.2.13 Cumulative Effects

Minor adverse cumulative effects on surrounding land use, the noise environment, and regional utility systems would be expected. Minor beneficial cumulative effects on economic development would be expected. None of the adverse cumulative effects would be significant. No cumulative effects on aesthetic and visual resources, air quality, geology or soils, water resources, biological resources, cultural resources, transportation resources, or hazardous or toxic materials would be expected.

4.2.14 Mitigation

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. The SEA did not identify the need for any mitigation measures associated with implementation of the No Action Alternative.

4.3 Conclusions

On the basis of the analyses performed in this SEA, implementing the proposed action would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required. Issuance of a FNSI is appropriate.

SECTION 5.0
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APPENDIX A

AGENCIES AND INDIVIDUALS CONSULTED

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Department of Environmental Quality
629 East Main Street
Richmond, VA 23219
Ellie Irons, Office of Environmental Impact Review
Michelle Henicheck, Office of Wetlands, Water Protection and Compliance
Allen Brockman, Waste Division
Kotur Narasimhan, Division of Air Program Coordination

Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193
John Bowden, Northern Virginia Regional Office

Department of Conservation and Recreation
203 Governor Street
Richmond, VA 23219
John Davy, Planning and Recreation Resources
Nancy VanAlstine, Division of Natural Heritage

Department of Conservation and Recreation
101 N. 14th Street, 17th Floor
Richmond, Virginia 23219
Alice Baird, Chesapeake Bay Local Assistance Board

Department of Forestry
900 Natural Resources Drive
Charlottesville, VA 22903
Michael Foreman, Division of Forest Management

Department of Game and Inland Fisheries
4010 West Broad Street
Richmond, VA 23230
Raymond Fernald, Division of Project Review

Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221
Marc Holma, Division of Project Review

U.S. Fish and Wildlife Service, Virginia Field Office
6669 Short Lane
Gloucester, VA 23061
Mr. Tylan Dean, Project Review

Virginia Marine Resources Commission
2600 Washington Ave
Newport News, VA 23607
Ben McGinnis, Project Review

Mr. and Mrs. Meehan
Portobago Bay Home Owners Association
30831 Portobago Trail
Port Royal, VA 22535

Mr. William T. Smith III
President, Board of Directors
Portobago Bay Home Owners Association
30347 Portobago Trail
Port Royal, VA 22535-2139

Mr. Helmut Linne von Berg
Portobago Bay Home Owners Association
30523 Portobago Trail
Port Royal, VA 22535

Mr. and Mrs. Donalson
Portobago Bay Home Owners Association
30571 Portobago Trail
Port Royal, VA 22535

Colonel Sandra Thacker
Peumansend Creek Regional Jail
11093 SW Lewis Memorial Drive
Bowling Green, VA 22427

Ms. Anne Richardson, Chief
Rappahannock Tribe Cultural Center
5036 Indian Neck Road
Indian Neck, Virginia 23148

Ms. Deanna Beacham
Program Specialist
Virginia Council on Indians
P.O. Box 1475
Richmond, Virginia 23218

Sharon Nelson Craig
Holland & Knight LLP
2099 Pennsylvania Avenue, N.W.
Suite 100
Washington, D.C. 20006

Mr. John Lampmann
Portobago Bay Home Owners Association
P.O. Box 367
Port Royal, VA 22535

APPENDIX B

COASTAL ZONE CONSISTENCY DETERMINATION

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Coastal Zone Management Act (CZMA) Consistency Determination

for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

This document provides the Commonwealth of Virginia with the Fort A.P. Hill (FAPH) Consistency Determination under CZMA section 307(c) (1) and 15 CFR Part 930, sub-part C, for implementation of the proposed action described below. The information in this Consistency Determination is provided pursuant to 15 CFR section 930.39.

[The following paragraphs of text summarize the proposed federal activity. A full description of the proposed activity may be found in the Supplemental Environmental Assessment (SEA) for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia, *which is incorporated by reference into this Consistency Determination]*.

This federal Consistency Determination identifies consistency with state and federal CZMA regulations in evaluating the relocation of three demolition sites at the explosives ordnance disposal (EOD) field training area at Fort A.P. Hill, Virginia. On May 11, 2007, the Army issued its Record of Decision (ROD) for the *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) Recommendations and Other Army Actions at Fort Lee, Virginia, and Fort A.P. Hill, Virginia.* Among the facilities evaluated in the environmental impact statement (EIS) was establishing an EOD field training area that would cover approximately 1,034 acres at FAPH. Since publication of the ROD, ongoing planning by the Army revealed the need for additional area in the EOD project site. The *Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (July 2008) evaluated the Army's proposal for expanding the planned EOD field training area by adding an additional 1,025 acres resulting in the construction and operation of a contiguous EOD field training area of approximately 2,059 acres.

The Army proposes to relocate the three demolition sites (D1, D2, and D3) originally designed for the 2,059 acre EOD field training area within Training Areas 26, 27 and 28 of Fort A.P. Hill. These three demolition sites would be relocated to demolition site 70A (DS 70A), an already existing demolition range within the restricted area at Fort A.P. Hill, Virginia. The footprint of the existing DS70A is large enough to accommodate all three demolition sites (D1, D2, and D3) proposed for construction at the EOD field training area.

The purpose of the proposed action is to provide unrestricted access to the future Battle Area Complex (BAX) while providing unconstrained training for the EOD field training area.

Consistency Determination

The Virginia Coastal Zone Management Program (CZMP) contains the applicable enforceable policies presented in the left column of the table in the following pages. The Army has determined that the implementation of the proposed action would have no effects on the land or water uses or natural resources of Virginia as described in the right column of the table.

Based upon the information, data, and analysis, as contained in the SEA, the Army finds that the proposed action is consistent to the maximum extent practicable with the enforceable policies of the Virginia CZMP. Pursuant to 15 CFR section 930.41, the Virginia CZMP has 60 days from the receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR section 930.41(b). Virginia's concurrence will be presumed if its response is not received by the Army on or before the 60th day from receipt of this determination. The Commonwealth of

Virginia's response should be sent to Ms. Terry Banks, Chief, Environmental Division, 19952 North Range Road, Fort A.P. Hill, Virginia, 22427.

Coastal Zone Management Act, Fort A.P. Hill Consistency Determination	
Applicable Enforceable Policy	**Effects of the Federally Proposed Action**
Fisheries Management The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC) (Virginia Code '28.2-200 to '28.2-713) and the Department of Game and Inland Fisheries (VDGIF) (Virginia Code '29.1-100 to '29.1-570). The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, VDGIF, and Virginia Department of Agriculture and Consumer Services (VDACS) share enforcement responsibilities (Virginia Code '3.1-249.59 to '3.1-249.62).	**NO EFFECT** The proposed action would not involve building, dumping, or otherwise trespassing on or over, encroaching on, taking or using any material from the beds of the bays, ocean, rivers, streams, or creeks within Virginia. The proposed action would not have a reasonably foreseeable effect on fish spawning, nursery, or feeding grounds, and therefore none on fisheries management per the Virginia Marine Resources Commission and the Department of Game and Inland Fisheries. No paints containing Tributyltin will be used under this proposed action.
Subaqueous Lands Management The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (VDEQ), Water Division. The program is administered by the Marine Resources Commission (Virginia Code '28.2-1200 to '28.2-1213).	**NO EFFECT** No subaqueous land use is proposed under this action. This project involves no encroachments in, on, or over state-owned submerged lands.
Non-point Source Pollution Control Virginia's Erosion and Sediment Control (ESC) Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation (VDCR) (Virginia Code'10.1-560 et seq.). Also, construction activity of less than 1 acre but part of a common plan of development disturbing 1 or more acres and having the potential to discharge stormwater requires coverage under the Virginia Stormwater Management Program (VSMP) *General*	**NO EFFECT** The proposed action would require ground disturbance for facility construction. Fort A.P. Hill is developing an Integrated Storm Water Pollution Prevention Plan (SWPPP). Site-specific ESC plans that provide information relevant to each activity will be developed per the Virginia ESC law and regulations for EOD training areas. These plans will become temporary additions to the SWPPP for the duration of the activity. The SWPPP is being developed IAW the VSMP general construction permit, and a VSMP permit will be obtained for this project. Design and construction of a septic system or drain field would be coordinated with the Virginia

Coastal Zone Management Act, Fort A.P. Hill Consistency Determination	
Applicable Enforceable Policy	**Effects of the Federally Proposed Action**
Permit for Discharges of Stormwater for Construction Activities.	Department of Health.
Wetlands Management The purpose of the wetlands management program is to preserve tidal wetlands, prevent their despoilation, and accommodate economic development in a manner consistent with wetlands preservation. (i) The tidal wetlands program is administered by the Marine Resources Commission (Virginia Code §28.2-1301 through '28.2-1320). (ii) The Virginia Water Protection Permit program administered by the Department of Environmental Quality includes protection of wetlands --both tidal and non-tidal. This program is authorized by Virginia Code § 62.1-44.15.5 and the Water Quality Certification requirements of Section 401 of the Clean Water Act of 1972.	**NO EFFECT** The proposed action would not affect any tidal wetlands at Fort A.P. Hill. It is unlikely that the proposed action would require a Virginia Water Protection (VWP) Permit as it does not propose to conduct any of the following activities in a wetland: 1. New activities to cause draining that significantly alters or degrades existing wetland acreage or functions. 2. Filling or dumping. 3. Permanent flooding or impounding. 4. New activities that cause significant alteration or degradation of existing wetland acreage or functions. During the course of the proposed action, however, if it were to become evident that an impact would occur, then the installation would apply for a VWP permit prior to commencing the activity. Additionally, the installation would prepare and adhere to an Erosion and Sediment Control Plan to prevent sedimentation from entering surface waters (see non-point source pollution control section below).
Dunes Management Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission (Virginia Code '28.2-1400 through '28.2-1420).	**NO EFFECT** No permanent alteration of or construction upon any coastal primary sand dune will take place under the proposed action.
Point Source Pollution Control The point source program is administered by the State Water Control Board pursuant to Virginia Code '62.1-44.15. Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.	**NO EFFECT** American Water O&M, Inc., is now the permittee for the wastewater treatment plant at Fort A.P. Hill. Fort A.P. Hill has a petroleum, oil, and lubricants (POL) industrial general permit. Permittees would work with VDEQ to revise the permits as necessary as the proposed action was implemented, and Fort A.P. Hill would adhere to all permit of its conditions.
Coastal Lands Management A state-local cooperative program administered by the Department of Conservation and Recreation's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia, established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §§ 10.1-2100 through 10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative code 9 VAC10-20-10 et seq.	**NO EFFECT** Buffer areas of not less than 100 feet adjacent to and landward of the components listed in 9 VAC 10-20-80 Resource Protection Areas would be adhered to. Best management practices will be developed and implemented in accordance with the VSMP SWPPP. Applicable provisions of the Chesapeake Bay Preservation Act will be adhered to during all construction and operational activities..

Coastal Zone Management Act, Fort A.P. Hill Consistency Determination	
Applicable Enforceable Policy	**Effects of the Federally Proposed Action**
Shoreline Sanitation The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code '32.1-164 through '32.1-165).	**NO EFFECT** Sanitation facilities at the EOD area would not be close to streams, rivers, or other waters of the Commonwealth, and no adverse effects on Commonwealth waters would result from use of the facilities.
Air Pollution Control The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code '10-1.1300).	**NO EFFECT** The estimated emissions from implementation of the proposed action would not exceed the *de minimis* threshold values. A conformity determination is not required and a Record of Non-applicability is in Appendix B of the SEA.

APPENDIX C
AGENCY CORRESPONDENCE

APPENDIX D
PUBLIC NOTICES/PUBLIC COMMENTS

AFFIDAVIT

THE FREE LANCE STAR
616 Amelia Street
Fredericksburg, Virginia 22401

DPW Environmental Division
19952 North Range Road
Bowling Green, VA 22427

Subject: Public Notice
Fort A. P. Hill FONSI

I hereby certify that the attached notice was published in The Free Lance-Star, a newspaper published daily in Fredericksburg, Va. on the following date (s):

July 1, 2009

Joanne Burton
Accounting Assistant

Subscribed and sworn to before me,
This 1st day of July 2009

Linda D. Alsop
Notary Public

LINDA D. ALSOP
NOTARY PUBLIC
Commonwealth of Virginia
Reg. #314273
My Commission Expires June 30, 2010

THE FREE LANCE-ST

Draft Finding of No Significant Impa
Supplemental Environmental Assessment for the
Three Demolition Sites at the Explosives O
Disposal Field Training Area at Fort A.P. Hill

Pursuant to the Council on Environmental Qu (40 *Code of Federal Regulations* [CFR] Parts 1500–1508) for impleme provisions of the National Environmental Policy Act of 1969 (42 *Unite* seq.) and 32 CFR Part 651 (*Environmental Analysis of Army Action* prepared a supplemental environmental assessment (SEA) of the pot and socioeconomic effects of the proposed action to relocate three de Explosives Ordnance Disposal (EOD) field training area to an alread range at Fort A.P. Hill, Virginia.

Proposed Action

The Army proposes to relocate three large demolition sites (D1, D planned for the 2,059-acre EOD field training area to an already exi 70A on Fort A.P. Hill, Virginia. The purpose of the proposed unrestricted access to a proposed Battle Area Complex (BAX) while al training for the EOD field training area. These three demolition sit basic demolition training, energetic tools training, and protect Detonations up to 50 lbs net explosive weight (NEW) would occur at th

Alternatives

The Army considered one alternative to the proposed action. This a relocated the one demolition site, D1, in direct conflict with the Complex (BAX) to Demolition Site 70A within the restricted are Demolition site 2 (D2) and D3 would remain as described in the *Assessment of Constructing and Operating an Explosives Ordnance D Area at Fort A.P. Hill, Virginia* (July 2008).This alternatives was feasible and therefore not evaluated in detail in the SEA. Consistent by the Council on Environmental Quality, the SEA evaluated the no ac

Environmental Consequences

Implementing the proposed action would be expected to result in a long-term minor adverse and short- and long-term minor beneficial environmental resources and conditions. The SEA does not ident mitigation measures. For each resource area, the predicted effects fr action and the no action alternative are summarized in the following ta

Table -1
Summary of Potential Environmental and Socioeconomic Co

	Environmental and socioeconomic effects of alter	
Resource	**Proposed Action**	
Land use	No effects	Long-term
Aesthetic and visual resources	No effects	No effects
Air quality	Short- and long-term minor adverse	Short- and

Draft Finding of No Significant Impact
Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

Pursuant to the Council on Environmental Quality regulations (40 *Code of Federal Regulations* [CFR] Parts 1500–1508) for implementing the procedural provisions of the National Environmental Policy Act of 1969 (42 *United States Code* 4321 et seq.) and 32 CFR Part 651 (*Environmental Analysis of Army Actions*), Fort A.P. Hill has prepared a supplemental environmental assessment (SEA) of the potential environmental and socioeconomic effects of the proposed action to relocate three demolition sites at the Explosives Ordnance Disposal (EOD) field training area to an already existing demolition range at Fort A.P. Hill, Virginia.

Proposed Action

The Army proposes to relocate three large demolition sites (D1, D2 and D3) originally planned for the 2,059-acre EOD field training area to an already existing Demolition Site 70A on Fort A.P. Hill, Virginia. The purpose of the proposed action is to provide unrestricted access to a proposed Battle Area Complex (BAX) while allowing unconstrained training for the EOD field training area. These three demolition sites would be used for basic demolition training, energetic tools training, and protective works training. Detonations up to 50 lbs net explosive weight (NEW) would occur at these sites.

Alternatives

The Army considered one alternative to the proposed action. This alternative could have relocated the one demolition site, D1, in direct conflict with the proposed Battle Area Complex (BAX) to Demolition Site 70A within the restricted area at Fort A.P. Hill. Demolition site 2 (D2) and D3 would remain as described in the *Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (July 2008).This alternatives was, however, found not feasible and therefore not evaluated in detail in the SEA. Consistent with guidance issued by the Council on Environmental Quality, the SEA evaluated the no action alternative.

Environmental Consequences

Implementing the proposed action would be expected to result in a mixture of short- and long-term minor adverse and short- and long-term minor beneficial effects on the subject environmental resources and conditions. The SEA does not identify the need for any mitigation measures. For each resource area, the predicted effects from both the proposed action and the no action alternative are summarized in the following table (Table 1).

Table -1
Summary of Potential Environmental and Socioeconomic Consequences

	Environmental and socioeconomic effects of alternatives	
Resource	**Proposed Action**	**No Action**
Land use	No effects	Long-term minor adverse
Aesthetic and visual resources	No effects	No effects
Air quality	Short- and long-term minor adverse	Short- and long-term minor adverse
Noise	Short- term minor adverse and long-term minor beneficial	Short- and long-term minor adverse
Geology and soils	Short- and long-term minor adverse	Short- and long-term minor adverse
Water resources		
• Surface water	Short-term minor and long-term negligible adverse	Short-term minor and long-term negligible adverse
• Hydrogeology/Groundwater	Long-term negligible adverse	Long-term negligible adverse
• Floodplains and Wetlands	Long-term minor adverse	Long-term minor adverse
• Coastal zone management	No effects	No effects
Biological resources	Long-term minor adverse	Long-term minor adverse
Cultural resources	No effects	No effects
Socioeconomics		
• Economic Development	Short- and long-term minor beneficial	Short- and long-term minor beneficial
• Housing	No effects	No effects
• Public services	Long-term minor adverse	Long-term minor adverse
• Schools, family services	No effects	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
Transportation	Short- and long-term minor adverse	Short-term minor and long-term major adverse
Utilities	Short- and long-term minor beneficial and adverse	Short- and long-term minor beneficial and adverse
Hazardous and toxic substances	Short-term negligible and long-term minor adverse	Short-term negligible and long-term minor adverse

Finding of No Significant Impact

Based on the SEA, it has been determined that implementation of the proposed action would have no significant effects on the quality of the human or natural environment. Preparation of an environmental impact statement is not required prior to implementation of the proposed action.

Copies of the final SEA can be obtained by contacting Ms. Terry Banks, Chief, Environmental Division, at 804/633-8223, terry.banks1@us.army.mil or on the Fort A.P. Hill website at: http://www.aphill.army.mil/sites/directorates/ea.asp. Comments on the SEA and draft FNSI should be submitted to Ms. Banks no later than the end of the public comment period. Written comments on the proposed action, the SEA, or this draft FNSI may be submitted to Ms. Banks within 30 days following issuance of this draft FNSI. Subject to comments that may be received from individuals, organizations, or agencies, Fort A.P. Hill intends to execute the FNSI 30 days after its release for public review and to proceed with the proposed action.

Lakeway Publishers of Virginia
P.O. Box 8
Warsaw, VA 22572
804-333-6397
FAX 804-333-0033

Draft Finding of No Significant Impact

Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

Pursuant to the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508) for implementing the procedural provisions of the National Environmental Policy Act of 1969 (42 United States Code 4321 et seq.) and 32 CFR Part 651 (Environmental Analysis of Army Actions), Fort A.P. Hill has prepared a supplemental environmental assessment (SEA) of the potential environmental and socioeconomic effects of the proposed action to relocate three demolition sites at the Explosives Ordnance Disposal (EOD) field training area to an already existing demolition range at Fort A.P. Hill, Virginia.

Proposed Action

The Army proposes to relocate three large demolition sites (D1, D2 and D3) originally planned for the 2,059-acre EOD field training area to an already existing Demolition Site 70A on Fort A.P. Hill, Virginia. The purpose of the proposed action is to provide unrestricted access to a proposed Battle Area Complex (BAX) while allowing unconstrained training for the EOD field training area. These three demolition sites would be used for basic demolition training, energetic tools training, and protective works training. Detonations up to 50 lbs net explosive weight (NEW) would occur at these sites.

Alternatives

The Army considered one alternative to the proposed action. This alternative could have relocated the one demolition site, D1, in direct conflict with the proposed Battle Area Complex (BAX) to Demolition Site 70A within the restricted area at Fort A.P. Hill. Demolition site 2 (D2) and D3 would remain as described in the Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia (July 2008).This alternatives was, however, found not feasible and therefore not evaluated in detail in the SEA. Consistent with guidance issued by the Council on Environmental Quality, the SEA evaluated the no action alternative.

Environmental Consequences

Implementing the proposed action would be expected to result in a mixture of short- and long-term minor adverse and short- and long-term minor beneficial effects on the subject environmental resources and conditions. The SEA does not identify the need for any mitigation measures. For each resource area, the predicted effects from both the proposed action and the no action alternative are summarized in the following table (Table 1).

Table -1
Summary of Potential Environmental and Socioeconomic Consequences

	Environmental and socioeconomic effects of alternatives	
Resource	**Proposed Action**	**No Action**
Land use	No effects	Long-term minor adverse
Aesthetic and visual resources	No effects	No effects
Air quality	Short- and long-term minor adverse	Short- and long-term minor adverse
Noise	Short- term minor adverse and long-term minor beneficial	Short- and long-term minor adverse
Geology and soils	Short- and long-term minor adverse	Short- and long-term minor adverse
Water resources		
Surface water	Short-term minor and long-term negligible adverse	Short-term minor and long-term negligible adverse
Hydrogeology/Groundwater	Long-term negligible adverse	Long-term negligible adverse
Floodplains and Wetlands	Long-term minor adverse	Long-term minor adverse
Coastal zone management	No effects	No effects
Biological resources	Long-term minor adverse	Long-term minor adverse
Cultural resources	No effects	No effects
Socioeconomics		
Economic Development	Short- and long-term minor beneficial	Short- and long-term minor beneficial
Housing	No effects	No effects
Public services	Long-term minor adverse	Long-term minor adverse
Schools, family services	No effects	No effects
Environmental justice	No effects	No effects
Protection of children	No effects	No effects
Transportation	Short- and long-term minor adverse	Short-term minor and long-term major adverse
Utilities	Short- and long-term minor beneficial and adverse	Short- and long-term minor beneficial and adverse
Hazardous and toxic substances	Short-term negligible and long-term minor adverse	Short-term negligible and long-term minor adverse

Finding of No Significant Impact

Based on the SEA, it has been determined that implementation of the proposed action would have no significant effects on the quality of the human or natural environment. Preparation of an environmental impact statement is not required [illegible]

I have examined a copy of *The Caroline Progress*, a newspaper published in Bowling Green and having a general circulation in Caroline County, State of Virginia and do hereby certify that this Legal Advertisement/Order of Publication was published for **One** successive week(s) in the issue(s) of **7/2/2009** Given under my hand this **6th** day of **August**, 2009.

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AFFIDAVIT

THE FREE LANCE STAR
616 Amelia Street
Fredericksburg, Virginia 22401

DPW Environmental Division
19952 North Range Road
Bowling Green, VA 22427

Subject: Legal Notice
Draft Finding of No Significant Impact

I hereby certify that the attached notice was published in The Free Lance-Star, a newspaper published daily in Fredericksburg, Va. on the following date (s):

October 8, 2009

✓ **Listed additionally on-line @ Fredericksburg.com**

Joanne Burton
Accounting Assistant

Subscribed and sworn to before me,
This 9th day of October 2009

Linda D. Alsop
Notary Public

LINDA D. ALSOP
NOTARY PUBLIC
Commonwealth of Virginia
Reg. #314273
My Commission Expires June 30 2010

Draft Finding of No Significant Impact
Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia

Pursuant to the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) for implementing the procedural provisions of the National Environmental Policy Act of 1969 (42 United States Code 4321 et seq.) and 32 CFR Part 651 (Environmental Analysis of Army Actions), Fort A.P. Hill has prepared a supplemental environmental assessment (SEA) of the potential environmental and socioeconomic effects of the proposed action to relocate three demolition sites at the Explosives Ordnance Disposal (EOD) field training area to an already existing demolition range at Fort A.P. Hill, Virginia.

Proposed Action

The Army proposes to relocate three large demolition sites (D1, D2, and D3) originally planned for the 2,059-acre EOD field training area to an already existing Demolition Site 70A on Fort A.P. Hill, Virginia. The purpose of the proposed action is to provide unrestricted access to a proposed Battle Area Complex (BAX) while allowing unconstrained training for the EOD field training area. These three demolition sites would be used for basic demolition training, energetic tools training, and protective works training. Detonations up to 50 lbs net explosive weight (NEW) would occur at these sites.

Alternatives

The Army considered one alternative to the proposed action. This alternative could have relocated the one demolition site, D1, in direct conflict with the proposed Battle Area Complex (BAX) to Demolition Site 70A within the restricted area at Fort A.P. Hill. Demolition site 2 (D2) and D3 would remain as described in the Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia (July 2000). This alternatives was, however, found not feasible and therefore not evaluated in detail in the SEA. Consistent with guidance issued by the Council on Environmental Quality, the SEA evaluated the no action alternative.

Environmental Consequences

Implementing the proposed action would be expected to result in a mixture of short- and long-term minor adverse and short- and long-term minor beneficial effects on the subject environmental resources and conditions. The SEA does not identify the need for any mitigation measures.

Finding of No Significant Impact

Based on the final SEA, it has been determined that implementation of the proposed action would have no significant effects on the quality of the human or natural environment. Preparation of an environmental impact statement is not required prior to implementation of the proposed action.

Copies of the final SEA can be obtained by contacting Ms. Terry Banks, Chief, Environmental Division, at 804/633-8223, terry.banks1@us.army.mil or on the Fort A.P. Hill website at: http://www.aphill.army.mil/sites/directorates/ea.asp. Comments on the final SEA and draft FNSI should be submitted to Ms. Banks no later than the end of the public comment period. Written comments on the proposed action, the final SEA, or this draft FNSI may be submitted to Ms. Banks within 30 days following issuance of this draft FNSI. Subject to comments that may be received from individuals, organizations, or agencies, Fort A.P. Hill intends to execute the FNSI 30 days after its release for public review and to proceed with the proposed action.

Lakeway Publishers of Virginia
P.O. Box 8
Warsaw, VA 22572
804-333-6397
FAX 804-333-0033

I have examined a copy of ***The Caroline Progress***, a newspaper published in Bowling Green and having a general circulation in Caroline County, State of Virginia and do hereby certify that this Legal Advertisement/Order of Publication was published for **1 one** successive week(s) in the issue(s) of 10/08/2009 Given under my hand this 20th day of October , 2009.

Legal Advertising Department

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
TDD (804) 698-4021
www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

July 16, 2008

Ms. Terry Banks
Chief, Environmental Division
19952 North Range Road
Fort A.P. Hill, Va. 22427-3123

RE: Draft Supplemental Environmental Assessment and Federal Consistency Determination for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia (DEQ 09-120F)

Dear Ms. Banks:

The Commonwealth of Virginia has completed its review of the above-referenced draft supplemental environmental assessment (EA), which includes a federal consistency determination (FCD). The Department of Environmental Quality (DEQ) is responsible for coordinating Virginia's review of federal environmental documents prepared pursuant to the National Environmental Policy Act and responding to appropriate federal officials on behalf of the Commonwealth. DEQ is also responsible for coordinating state reviews of FCDs submitted under the Coastal Zone Management Act. The following agencies and locality joined in this review:

Department of Environmental Quality
Department of Conservation and Recreation
Department of Agriculture and Consumer Services
Department of Game and Inland Fisheries
Department of Health
Department of Historic Resources
Department of Forestry
Essex County

The George Washington Planning District Commission, Caroline County and Town of Port Royal also were invited to comment.

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PROJECT DESCRIPTION

The Department of the Army submitted a supplemental environmental assessment (EA) and federal consistency determination (FCD) to relocate three demolition sites at Fort A.P. Hill. The Army is proposing to relocate them from a designed explosives ordnance disposal field training area, which has already been environmentally evaluated, to an existing demolition range. The document identifies and evaluates the environmental effects of the proposed action and the no action alternative. The demolition sites would be on a 42-acre tract in and around an existing demolition range. About 23 acres of land would be cleared for an access road, demolition pit and bunker for one of the sites. The other two sites are already cleared and operating as live-fire ranges. The FCD states that the project will be conducted in a manner that is consistent to the maximum extent practicable with the applicable enforceable policies of the Virginia Coastal Resources Management Program.

ENVIRONMENTAL IMPACTS AND MITIGATION

1. Subaqueous Lands Management. The EA (appendix B, page 2) states that no subaqueous land use is proposed (appendix B, page 2).

1(a) Agency Jurisdiction. The Virginia Marine Resources Commission (VMRC) regulates encroachments in, on or over state-owned subaqueous beds as well as tidal wetlands pursuant to *Virginia Code* § 28.2-1200 through 1400.

The VMRC serves as the clearinghouse for the Joint Permit Application (JPA) used by the:

- Corps for issuing permits pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act;
- DEQ for issuance of a Virginia Water Protection permit;
- VMRC for encroachments on or over state-owned subaqueous beds as well as tidal wetlands; and
- local wetlands board for impacts to wetlands.

The VMRC will distribute the completed JPA to the appropriate agencies. Each agency will conduct its review and respond.

1(b) Agency Recommendation. Contact the VMRC if impacts to state-owned subaqueous beds or tidal wetlands are proposed.

2. Water Quality and Wetlands Management. The EA (page 4-2) states that wetlands would be protected from development impacts or, where unavoidable, Fort A.P. Hill would minimize impacts to the resources by using Virginia-approved best management practices, and if necessary, adhering to all conditions of permits issued by the Corps and DEQ. The EA (page 3-23) states that Fort A.P. Hill would complete a JPA for wetland impacts, as required by the Corps and DEQ, if necessary.

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2(a) Agency Jurisdiction. The State Water Control Board promulgates Virginia's water regulations, covering a variety of permits to include Virginia Pollutant Discharge Elimination System Permit, Virginia Pollution Abatement Permit, Surface and Groundwater Withdrawal Permit, and the Virginia Water Protection (VWP) Permit. The VWP Permit is a state permit which governs wetlands, surface water and surface water withdrawals and impoundments. It also serves as § 401 determination of the federal Clean Water Act § 404 permits for dredge and fill activities in waters of the United States. The VWP program is under the Office of Wetlands and Water Protection and Compliance, within the DEQ Division of Water Quality Programs. In addition to central office staff members who review and issue VWP permits for transportation and water withdrawal projects, the six DEQ regional offices perform permit application reviews and issue permits for the covered activities.

2(b) Agency Comments. According to the DEQ Northern Virginia Regional Office (NVRO), the EA states that the National Wetlands Inventory Maps indicate wetlands and streams are located within the project area. The EA also indicates that a field study would be conducted to determine the exact location of jurisdictional surface waters and a JPA would be submitted to apply for the applicable permits to impact surface waters if impacts are proposed.

2(c) Agency Recommendations. DEQ recommends the avoidance and minimization of surface water impacts to the maximum extent practicable.

In general, DEQ recommends that stream and wetland impacts be avoided to the maximum extent practicable. To minimize unavoidable impacts to wetlands and waterways, DEQ recommends the following practices:

- Operate machinery and construction vehicles outside of stream-beds and wetlands; use synthetic mats when in-stream work is unavoidable.
- Preserve the top 12 inches of material removed from wetlands for use as wetland seed and root-stock in the excavated area.
- Erosion and sedimentation controls should be designed in accordance with the most current edition of the Virginia Erosion and Sediment Control Handbook. These controls should be in place prior to clearing and grading, and maintained in good working order to minimize impacts to state waters. The controls should remain in place until the area is stabilized.
- Place heavy equipment, located in temporarily impacted wetland areas, on mats, geotextile fabric, or use other suitable measures to minimize soil disturbance, to the maximum extent practicable.
- Restore all temporarily disturbed wetland areas to pre-construction conditions and plant or seed with appropriate wetlands vegetation in accordance with the cover type (emergent, scrub-shrub or forested). The applicant should take all appropriate measures to promote revegetation of these areas. Stabilization and restoration efforts should occur immediately after the temporary disturbance of each wetland area instead of waiting until the entire project has been completed.
- Place all materials which are temporarily stockpiled in wetlands, designated for

use for the immediate stabilization of wetlands, on mats or geotextile fabric in order to prevent entry in state waters. These materials should be managed in a manner that prevents leachates from entering state waters and must be entirely removed within thirty days following completion of that construction activity. The disturbed areas should be returned to their original contours, stabilized within thirty days following removal of the stockpile, and restored to the original vegetated state.

- All non-impacted surface waters within the project or right-of-way limits that are within 50 feet of any clearing, grading or filling activities should be clearly flagged or marked for the life of the construction activity within that area. The project proponent should notify all contractors that these marked areas are surface waters where no activities are to occur.
- Measures should be employed to prevent spills of fuels or lubricants into state waters.

2(d) Requirements. If surface waters are proposed to be impacted, a Virginia Water Protection (VWP) permit will be required from DEQ.

2(e) Conclusion. To be consistent with the wetlands management enforceable policy of the VCP, the Army must obtain a VWPP, if applicable.

3. Nonpoint Source Pollution Control. The EA (page 3-18) states that Fort A.P. Hill would obtain stormwater construction permit coverage for this project, and a site-specific stormwater pollution prevention plan and an erosion and sediment control plan would be developed and implemented. Best management practices, including limiting land disturbance on each affected area to no more than what is necessary for the desired use, would limit adverse impacts.

3(a) Agency Jurisdiction. The Department of Conservation and Recreation (DCR) Division of Soil and Water Conservation (DSWC) administers the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R) and Virginia Stormwater Management Law and Regulations (VSWML&R).

3(b) Erosion and Sediment Control, and Stormwater Management. Fort A.P. Hill and its authorized agents conducting regulated land-disturbing activities on private and public lands in the state must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R) and Virginia Stormwater Management Law and Regulations, including coverage under the General Permit for Discharges of Stormwater from Construction Activities, and other applicable federal nonpoint source pollution mandates (e.g. Clean Water Act Section 313, Federal Consistency under the Coastal Zone Management Act). Clearing and grading activities, installation of staging areas, parking lots, roads, buildings, utilities, borrow areas, soil stockpiles and related land-disturbance activities that result in the land-disturbance of 2,500 square feet would be regulated by VESCL&R.

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Accordingly, Fort A.P. Hill must prepare and implement an erosion and sediment control plan to ensure compliance with state law and regulations. The erosion and sediment control plan is submitted to the DCR regional office that serves the area where the project is located for review for compliance. Fort A.P. Hill is ultimately responsible for achieving project compliance through oversight of on-site contractors, regular field inspection, prompt action against non-compliant sites and other mechanisms consistent with agency policy. [Reference: VESCL §10.1-567]

3(c) Virginia Stormwater Management Program General Permit for Stormwater Discharges from Construction Activities. According to the DCR DSWC, the operator or owner of construction activities involving land-disturbing activities equal to or greater than 2,500 square feet in areas designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations (adopted pursuant to the Chesapeake Bay Preservation Act) are required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project-specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit, and it must address water quality and quantity in accordance with the VSMP Permit Regulations. General information and registration forms for the General Permit for Discharges of Stormwater from Construction Activities are available on DCR's website at *www.dcr.virginia.gov/soil_&_water/vsmp.shtml.* [Reference: Virginia Stormwater Management Law Act §10.1-603.1 *et seq.*; VSMP Permit Regulations §4VAC-50 *et seq.*]

3(d) Agency Comment. Additional information on erosion and sediment control and stormwater management is available in section 5.

4. Air Pollution Control. The EA (page 3-6) states that minor short- and long-term adverse effects on air quality would be expected, primarily from vehicle exhaust and fugitive dust during construction.

4(a) Agency Jurisdiction. The DEQ Air Division, on behalf of the Air Pollution Control Board, is responsible for developing regulations that become Virginia's Air Pollution Control Law. DEQ is charged with carrying out mandates of the state law and related regulations as well as Virginia's federal obligations under the Clean Air Act as amended in 1990. The objective is to protect and enhance public health and quality of life through control and mitigation of air pollution. The division ensures the safety and quality of air in Virginia by monitoring and analyzing air quality data, regulating sources of air pollution, and working with local, state and federal agencies to plan and implement strategies to protect Virginia's air quality. The appropriate regional office is directly responsible for the issue of necessary permits to construct and operate all stationary sources in the region as well as to monitor emissions from these sources for compliance. As a part of this mandate, the environmental documents of new projects to be undertaken in the state are also reviewed. In the case of certain projects, additional evaluation and demonstration must be made under the general conformity provisions of state and federal law.

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4(b) Ozone Attainment Area. According to DEQ's Division of Air Program Coordination, the project site is located within an ozone attainment area.

4(c) Fugitive Dust. During construction, fugitive dust must be kept to a minimum by using control methods outlined in 9VAC5-50-60 *et seq.* of the Regulations for the Control and Abatement of Air Pollution. These precautions include, but are not limited to, the following:

- Use, where possible, of water or chemicals for dust control;
- Installation and use of hoods, fans and fabric filters to enclose and vent the handling of dusty materials;
- Covering of open equipment for conveying materials; and
- Prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried sediments resulting from soil erosion.

4(d) Open Burning. If project activities include the burning of vegetative debris or construction or demolition material or the use of special incineration devices in the disposal of land clearing debris, this activity must meet the requirements under 9VAC5-130-10 through 9VAC5-130-60 of the regulations for open burning, and it may require a permit. The regulations provide for, but do not require, the local adoption of a model ordinance concerning open burning. The project developer should contact officials with Caroline County to determine what local requirements, if any, exist.

4(e) Fuel-Burning Equipment. The DEQ NVRO states that should the project install fuel-burning equipment (boilers, generators, etc.) or other equipment that emits air pollution, the project may be subject to 9VAC5-130-100, Article 6, Permits for New and Modified sources and as such should contact the air permitting manager at the DEQ NVRO prior to construction and operation of fuel-burning or other air-pollution-emitting equipment for a permitting determination.

5. Chesapeake Bay Preservation Act. The EA (page 3-22) states that timber harvesting within the riparian forest buffer is carefully controlled. No timber harvests will occur within the 100-foot Resource Protection Area (RPA), as specified by Fort A.P. Hill policy. The project would be designed to avoid RPAs.

5(a) Agency Jurisdiction. The DCR Department of Chesapeake Bay Local Assistance (DCBLA) administers the coastal lands management enforceable policy of the VCP, which is governed by the Chesapeake Bay Preservation Act (*Virginia Code* §10.1-2100-10.1-2114) and Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC10-20 *et seq.*).

5(b) Agency Comments. In Caroline County, the areas protected by the Chesapeake Bay Preservation Act, as locally implemented, require conformance with performance criteria. These areas include RPAs and Resource Management Areas (RMAs).

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(i) Resource Protection Areas. In general, no land disturbance (to include clearing of vegetation) or non-water dependent development is to occur in RPAs unless specifically permitted by the regulations and the local ordinance. RPAs include the following:

- tidal wetlands;
- non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow;
- tidal shores; and
- a 100-foot buffer adjacent to and landward of the aforementioned features, and along both sides of any water body with perennial flow.

(ii) Resource Management Areas. RMAs require less stringent performance criteria than RPAs as specified in §9VAC10-20-120 and the local ordinance. RMAs, as locally designated, include the following:

- floodplains;
- highly erodible soils;
- highly permeable soils;
- steep slopes in excess of 15 percent; and
- other lands designated by the Board to protect the quality of state waters, including but not limited to an area 300 feet in width contiguous to and landward of the RPA.

5(c) Agency Finding. Fort A.P. Hill states that portions of the subject site are located within areas analogous to the RPA and the RMA.

5(d) Analysis and Requirements.

- Any portions of the sites that are within areas analogous to the RPA are subject to the development criteria of §§ 9VAC10-20-120 and 130 and the local ordinance.

- Development in RMAs is subject to performance criteria, which include the following:
  - minimizing land disturbance (including access and staging areas);
  - preserving indigenous/existing vegetation;
  - minimizing impervious surfaces;
  - controlling stormwater runoff quality; and
  - developing erosion and sediment control plans for land disturbances greater than or equal to 2,500 square feet (see "Environmental Impacts and Mitigation," item 4(b), above).

5(e) Chesapeake Ecosystem Unified Plan. The 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan requires the signatories, including the Department of Defense/Army, to fully cooperate with local and state governments in carrying out voluntary and mandatory actions to comply with the management of stormwater. In that Plan, the agencies also committed to encouraging construction design that:

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- minimizes natural area loss on new and rehabilitated federal facilities;
- adopts low-impact development and best management technologies for stormwater, sediment and erosion control, and reduces impervious surfaces; and
- considers the Conservation Landscaping and Bay-Scapes Guide for Federal Land Managers.

5(f) Chesapeake 2000 Agreement. The Chesapeake 2000 Agreement committed the government agency signatories to a number of sound land use and stormwater quality controls. The signatories additionally committed their agencies to lead by example with respect to controlling nutrient, sediment and chemical contaminant runoff from government properties. In December 2001, the Executive Council of the Chesapeake Bay Program issued Directive No. 01-1, Managing Storm Water on State, Federal and District-owned Lands and Facilities, which includes specific commitments for agencies to lead by example with respect to stormwater control.

5(g) Conclusion on Coastal Lands Management Consistency. Provided that the project is consistent with the following CBPA requirements, DCBLA concurs that it is consistent with the Coastal Lands Management enforceable policy of the VCP. The requirements are:

- Portions of the project within areas analogous to RPAs in Caroline County are subject to the Land Use and Development Performance Criteria, Chesapeake Bay Preservation Area Designation and Management Regulations, 9VAC10-20-120 and 130 and local ordinance;

- Portions of the project within areas analogous to RMAs in Caroline County are subject to the Land Use and Development Performance Criteria, Chesapeake Bay Preservation Area Designation and Management Regulations, 9VAC10-20-120 *et seq.* and local ordinance;

- Stormwater management criteria consistent with water quality protection provisions of the Virginia Stormwater Management Regulations (4VAC50-60 *et seq.*); and

- *Virginia Erosion and Sediment Control Handbook* (Third Edition, 1992).

Contact Joan Salvati with the DCR DCBLA at (804) 225-3440 for additional guidance and coordination.

6. Solid and Hazardous Waste Management. The EA (page 4-6) states that long-term minor adverse effects could result from an increase in the use of hazardous materials. Solid waste collected at Fort A.P. Hill and construction and demolition debris are disposed of at local landfills (page 3-37).

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6(a) Agency Jurisdiction. Solid and hazardous wastes in Virginia are regulated by DEQ, the Virginia Waste Management Board and the U.S. Environmental Protection Agency. They administer programs created by the federal Resource Conservation and Recovery Act, Comprehensive Environmental Response Compensation and Liability Act, commonly called Superfund, and the Virginia Waste Management Act. DEQ administers regulations established by the Virginia Waste Management Board and reviews permit applications for completeness and conformance with facility standards and financial assurance requirements. All Virginia localities are required, under the Solid Waste Management Planning Regulations, to identify the strategies they will follow on the management of their solid wastes to include items such as facility siting, long-term (20-year) use and alternative programs such as materials recycling and composting.

6(b) Database and Data File Searches. The DEQ Waste Division states that solid and hazardous waste issues were addressed. The report did not specifically cite a search of waste-related databases, but the text implies that one was conducted. A Geographic Information System (GIS) database search found no waste sites within a half-mile radius that would impact or be impacted by the project. The division conducted a cursory review of data files and determined that there are several hazardous waste and solid waste sites within the same zip code, although their proximities to the subject site are unknown. These sites are as follows:

Hazardous waste

- Fort A. P. Hill, VA2210020416 LQG (ACTIVE) & TSD (ACTIVE)

Solid waste

- Caroline County Landfill, GW 182, Sanitary Landfill
- Caroline County Landfill, Solid Waste Permit (SWP) 147, Closed Sanitary Landfill
- Caroline County Landfill, SWP 182, Sanitary Landfill
- U.S. Army Fort A P Hill, SWP 332, Closed Sanitary Landfill
- U.S. Army - Fort A P Hill, SWP 393, Closed Construction and Demolition Debris (CDD) Landfill
- Haynesville Correctional Center, Permit-by-Rule (PBR) 373, Regulated Medical Waste (RMW) Steam Sterlizer

The following websites may be accessed to locate additional information for the aforementioned sites using their identification numbers:

- *http://www.epa.gov/superfund/sites/cursites/index.htm*
- *http://oaspub.epa.gov/enviro/ef_home2.waste*

6(c) Federal Facilities Program. The DEQ Federal Facilities Restoration Program states that it appears the relocation will not affect any environmental restoration program sites. Therefore, the program has no comment on the EA.

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6(d) Asbestos-Containing Materials and Lead-Based Paint. If structures will be demolished, they should be checked for asbestos-containing materials and lead-based paint prior to demolition. If these materials are found, in addition to the federal waste-related regulations mentioned above, state regulations 9VAC 20-80-640 for asbestos-containing materials and 9VAC 20-60-261 for lead-based paint must be followed.

6(e) Agency Recommendations. DEQ encourages all construction projects and facilities to implement pollution prevention principles, including:

- the reduction, reuse and recycling of all solid wastes generated; and
- the minimization and proper handling of generated hazardous wastes.

6(f) Requirements. Any soil that is suspected of contamination or wastes that are generated during construction-related activities must be tested and disposed of in accordance with applicable federal, state and local laws and regulations.

For additional information, contact Richard Doucette with the DEQ NVRO at (703) 583-3813.

7. Natural Heritage Resources. The EA (page 3-25) states that several plant species that receive legal protection at the federal or state level have been documented to occur on Fort A.P. Hill. One of the proposed demolition sites would be cleared of pine trees (page 3-27). Sensitive habitats would be avoided (page 4-5).

7(a) Agency Jurisdiction. The mission of DCR is to conserve Virginia's natural and recreational resources. DCR supports a variety of environmental programs organized within seven divisions including the Division of Natural Heritage (DNH). DNH's mission is conserving Virginia's biodiversity through inventory, protection and stewardship. The Virginia Natural Area Preserves Act, 10.1-209 through 217 of the Code of Virginia, was passed in 1989 and codified DCR's powers and duties related to statewide biological inventory: maintaining a statewide database for conservation planning and project review, land protection for the conservation of biodiversity, and the protection and ecological management of natural heritage resources (the habitats of rare, threatened and endangered species, significant natural communities, geologic sites, and other natural features).

7(b) Agency Findings. DCR searched its Biotics Data System for occurrences of natural heritage resources from the project area. According to the information currently in DCR's files, there is potential for small whorled pogonia (*Isotria medeoloides*, G2/S2/LT/LE) within the project site. Small whorled pogonia grows in a variety of woodland habitats in Virginia but tends to favor mid-aged woodland habitats on gently north or northeast facing slopes often within small draws. It is quite natural for plants of this species to remain dormant in the soil for long periods of time. Direct destruction, as well as habitat loss and alteration, are principle reasons for the species' decline (Ware, 1991). This species is classified as threatened by the U.S. Fish and Wildlife Service (FWS) and as endangered by the Virginia Department of Agriculture and Consumer Services (VDACS).

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work related to the survey for rare, threatened and endangered species.

7(f) Agency Comments. With the survey results, DCR can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. DCR DNH biologists are qualified and available to conduct inventories for rare, threatened and endangered species. A list of other individuals who are qualified to conduct inventories may be obtained from the U.S. FWS.

8. Fish and Wildlife Resources, and Protected Species. The EA (page 3-27) states no adverse effects on sensitive animal species would be expected from implementation of the proposed action. No training activities would occur within eagle nest protection zones.

8(a) Agency Jurisdiction. The Department of Game and Inland Fisheries (DGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state- or federally-listed endangered or threatened species, but excluding listed insects (Virginia Code Title 29.1). DGIF is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 *et seq.*) and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DGIF determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce or compensate for those impacts. Furthermore, DGIF and the VMRC administer the fisheries management enforceable policy of the VCP.

8(b) Agency Findings. DGIF's records document the state-listed threatened bald eagle in the project area. However, this project sites falls outside the management zone for the documented nesting site. Therefore, impacts upon this species are not likely to result from the proposed work.

DGIF also documents a colonial waterbird colony containing great blue heron from immediately adjacent to the project site. It appears that the last time this colony was documented at this location was in 1988.

8(c) Agency Comments. DGIF states that in Section 3.7.1.3 Sensitive Species, it is stated (page 3-26) that the bald eagle is federally listed. This is incorrect. This species has been de-listed federally but remains state-listed threatened. In addition, it is stated in this section that the bald eagle breeding season is from July 16 through November 14. This is incorrect. The bald eagle nesting season in Virginia is from December 15 through July 15 of any year. DGIF also notes that when referring to listed mussels known from the area, the state-listed threatened status of Atlantic pigtoe is not listed, and the green floater is erroneously listed as a state species of concern. Green floater is a state-listed threatened species.

8(d) Agency Recommendations. DGIF has the following recommendations:

- Correct the errors documented in item 9(c).
- Evaluate forested areas within 0.25 mile of the proposed sites for the presence of colonial waterbird colonies.
- Conduct additional coordination with DGIF (Amy Ewing at (804) 367-2211) and U.S. FWS (540-899-4169) if any colonial waterbird colonies are located within a 0.25 mile radius around the proposed sites to ensure protection of this resource.

Contact Amy Ewing with DGIF at (804) 367-2211 for additional information regarding these comments.

8(b) Agency Finding. Assuming adherence to strict erosion and sediment controls, DGIF finds the project consistent with the fisheries management enforceable policy of the VCP.

9. Forest Resources. The EA (pages ES-1) states that 23 acres of forest may be cleared. One of the three sites is covered by pine trees (page 3-1).

9(a) Agency Jurisdiction. The mission of the Virginia Department of Forestry (DOF) is to protect and develop healthy, sustainable forest resources for Virginians. DOF was established in 1914 to prevent and suppress forest fires and reforest bare lands. Since the Department's inception, it has grown and evolved to encompass other protection and management duties including: protecting Virginia's forests from wildfire, protecting Virginia's waters, managing and conserving Virginia's forests, managing state-owned lands and nurseries, and managing regulated incentive programs for forest landowners.

9(b) Agency Finding. The Department of Forestry (DOF) finds that the proposed project will not have a significant impact to the forest resources of the Commonwealth.

For additional information, contact Todd Groh, Assistant Director of the DOF Forest Resource Management Division, at (434) 977-6555, ext. 3344, or at *todd.groh@dof.virginia.gov*.

10. Historic Structures. The EA (page 4-5) states that significant impacts on historic properties at Fort A.P. Hill would not be expected.

10(a) Agency Jurisdiction. DHR conducts reviews of projects to determine their effect on historic structures or cultural resources under its jurisdiction. DHR, as the designated Historic Preservation Office for the Commonwealth, ensures that federal actions comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulation at 36 Code of Federal Regulations Part 800. The NHPA requires federal agencies to consider the effects of federal projects on properties that are listed or eligible for listing on the National Register of Historic Places. Section 106 also applies if there are any federal involvements, such as licenses, permits, approvals

or funding. DHR also provides comments to DEQ through the state environmental impact report review process.

10(b) Agency Comments. DHR has executed a Programmatic Agreement with the Army dealing with BRAC actions at Fort. A.P. Hill. This project falls under that agreement and will be handled accordingly. DHR would like to remind the Army of its responsibility to continue consultation with DHR pursuant to this agreement and Section 106 of the National Historic Preservation Act.

11. Waterworks Operation Regulations. The EA (page 4-6) states that renovations and upgrades would be required for utility systems.

11(a) Agency Jurisdiction. The Virginia Department of Health (VDH) Office of Drinking Water (ODW) reviews projects for the potential to impact public drinking water sources (groundwater wells and surface water intakes).

11(b) Agency Findings. VDH states that no groundwater wells are within a one mile radius of the project site, and no surface water intakes are located within a five mile radius of the project site. The project does not fall within the watershed of any public surface water sources. There is no impact to public drinking water sources due to this project.

11(c) Agency Comment. VDH states that potential impacts to public water distribution systems or sanitary sewage collection systems must be verified by the local utility.

Contact Barry E. Matthews with VDH at (804) 864-7515 for additional information on water supply sources.

11(d) Waterworks Operation Regulations. Installation of new water lines and appurtenances must comply with the Commonwealth's Waterworks Regulations. The Virginia Department of Health (VDH) Office of Drinking Water administers both federal and state laws governing waterworks operation.

11(e) Water Conservation Recommendations. DEQ recommends that to the extent practicable, Fort A.P. Hill consider the following water conservation measures:

- Grounds should be landscaped with hardy native plant species to conserve water as well as minimize the need to use fertilizers and pesticides.
- Convert turf to low water-use landscaping such as drought resistant grass, plants, shrubs and trees.
- Consider installing low flow restrictors/aerators to faucets.
- Improve irrigation practices by:
    - upgrading sprinkler clock; watering at night, if possible, to reduce evapotranspiration (lawns need only 1 inch of water per week and do not need to be watered daily; over watering causes 85 percent of turf problems);

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- installing a rain shutoff device; and
- collecting rainwater with a rain bucket or cistern system with drip lines.

- Consider replacement of old equipment such as washers and dishwashers with new high-efficiency machines to reduce water usage by 30-50 percent per use.
- Check for and repair leaks (toilets and faucets) during regular routine maintenance activities.

12. Pesticides and Herbicides. Should construction or operation of the proposed facilities require the use of herbicides or pesticides for landscape maintenance, these chemicals should be used in accordance with the principles of integrated pest management. The least toxic pesticides that are effective in controlling the target species should be used. Contact the Virginia Department of Agriculture and Consumer Services (VDACS) at (804) 786-3501 for more information.

13. Pollution Prevention. DEQ advocates that principles of pollution prevention be used in all construction projects. Effective siting, planning and on-site best management practices (BMPs) will help to ensure that environmental impacts are minimized. However, pollution prevention techniques also include decisions related to construction materials, design and operational procedures that will facilitate the reduction of wastes at the source.

13(a) Agency Recommendations. We have several pollution prevention recommendations that may be helpful in constructing or operating this project:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content, toxicity level, and amount of packaging should be considered and can be specified in purchasing contracts.
- Consider contractors' commitment to the environment (such as an environmental management system or EMS) when choosing contractors. Specifications regarding raw materials and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable materials and practices for infrastructure and building construction and design. These could include asphalt and concrete containing recycled materials, and integrated pest management in landscaping, among other things.

DEQ's Office of Pollution Prevention provides information and technical assistance relating to pollution prevention techniques and EMS. For more information, contact Sharon Baxter with DEQ's Office of Pollution Prevention at (804) 698-4344.

14. Energy Conservation. DEQ recommends that the proposed development should be planned and designed to comply with state and federal guidelines and industry standards for energy conservation and efficiency. For example, the energy efficiency of the facility can be enhanced by maximizing the use of the following:

- Thermally efficient building shell components (roof, wall, floor, windows and insulation);
- siting and orientation with consideration towards natural lighting and solar loads
- high-efficiency heating, ventilation and air conditioning systems; and
- high-efficiency lighting systems and daylighting techniques.

Please contact Matt Heller with DMME at (434) 951-6351 for additional information.

15. Local and Regional Comments. The George Washington Planning District Commission, Caroline County, Essex County and the Town of Port Royal were invited to comment.

15(a) Jurisdiction. In accordance with the *Code of Virginia*, Section 15.2-4207, planning district commissions encourage and facilitate local government cooperation and state-local cooperation in addressing, on a regional basis, problems of greater than local significance. The cooperation resulting from this is intended to facilitate the recognition and analysis of regional opportunities and take account of regional influences in planning and implementing public policies and services. Planning district commissions promote the orderly and efficient development of the physical, social and economic elements of the districts by planning, and encouraging and assisting localities to plan for the future.

15(b) Local Comments. Essex County states that it has reviewed the EA and sees no significant change in impact upon the County. Caroline County and the Town of Port Royal did not respond to our request for comments.

15(c) Regional Comments. The George Washington Planning District Commission did not respond to our request for comments.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities located inside or outside of Virginia's designated coastal management area that can have reasonably foreseeable effects on coastal resources or coastal uses must, to the maximum extent practicable, be implemented in a manner consistent with the Virginia Coastal Resources Management Program (VCP) (also called the Virginia Coastal Zone Management Program). The VCP consists of a network of programs administered by several agencies. DEQ coordinates the review of FCDs with agencies administering the enforceable and advisory policies of the VCP.

The EA includes a FCD and accompanying analysis of the enforceable policies of the VCP. According to information in the FCD, the proposed activity would have no effect on any of the enforceable policies of the VCP. However, based on a review of the EA, it is possible that the fisheries management, subaqueous lands management, wetlands management, non-point source pollution control, air pollution control and coastal lands management policies may be affected.

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PUBLIC PARTICIPATION

In accordance with 15 CFR §930.2, the public was invited to participate in the Commonwealth's review of the FCD. A public notice of this proposed action was published on the DEQ website from June 22, 2009 to July 7, 2009. No public comments were received in response to the notice.

CONSISTENCY CONCURRENCE

Based on the information provided in the EA and FCD, and the comments of reviewing agencies, DEQ concurs that the proposed activity is consistent with the VCP, provided that Fort A.P. Hill complies with all requirements of applicable permits and other authorizations that may be required. DEQ also encourages Fort A.P. Hill to consider the Advisory Policies of the VCP as well (attachment 2).

REGULATORY AND COORDINATION NEEDS

1. Subaqueous Lands Management. Contact Dan Bacon with the VMRC at (757) 247-2256 if impacts to subaqueous lands or tidal wetlands are proposed.

2. Wetlands. If surface waters are proposed to be impacted, a Virginia Water Protection (VWP) permit will be required from DEQ. Contact Trisha Beasley with the DEQ NVRO at (804) 527-5081 to ensure compliance with the VWP program prior to initiating impact to surface waters if applicable. Contact Dan Bacon with the VMRC at (757) 247-2256 to inquire if a JPA is necessary.

3. Erosion and Sediment Control, and Stormwater Management.

3(a) Erosion and Sediment Control. Fort A.P. Hill and its authorized agents conducting regulated land-disturbing activities of 2,500 square feet or more must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R), Virginia Stormwater Management Law and Regulations. Fort A.P. Hill must prepare and implement an erosion and sediment control plan to ensure compliance with state law and regulations. The erosion and sediment control plan should be submitted to the DCR Tappahannock Regional Office at (804) 443-6752.

3(b) Virginia Stormwater Management Program General Permit for Stormwater Discharges from Construction Activities. For land-disturbing activities equal to or greater than 2,500 square feet in areas designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations (adopted pursuant to the Chesapeake Bay Preservation Act), Fort A.P. Hill is required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit, and it must address water quality and quantity in accordance with the VSMP Permit Regulations. Specific questions regarding the Stormwater

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Management Program requirements should be directed to Holly Sepety with DCR at (804) 225-2613.

4. Air Quality Regulations. Guidance on restricting the emissions of volatile organic compounds and oxides of nitrogen during construction may be obtained from the DEQ NVRO. Furthermore, activities associated with this project may be subject to air regulations administered by DEQ. The state air pollution regulations that may apply to the construction phase of the project are:

- fugitive dust and emissions control (9 VAC 5-50-60 *et seq.*) and
- open burning restrictions (9VAC5-130-10 through 9VAC5-130-60).

Also, permits may be required for any boilers or fuel-burning equipment installed at the development. Prior to construction and operation, contact Terry Darton with the DEQ NVRO at (703) 583-3845 for a permitting determination.

5. Coastal Lands Management/Chesapeake Bay Preservation Areas. In order to ensure consistency with the Coastal Lands Management enforceable policy of the Virginia Coastal Resources Management Program (VCP), activities at Fort A.P. Hill must be consistent with the general performance criteria (9VAC10-20-120 *et seq.* and 130) and the stormwater management criteria that are consistent with water quality protection provisions (4VAC3-20-17 *et seq.*) of the Virginia Stormwater Management Regulations (4VAC3-20 *et seq.*). Provided these requirements are met, DCR DCBLA concurs that the proposed action would be consistent with the coastal lands management enforceable policy of the VCP. Contact Joan Salvati with DCR DCBLA at (804) 225-3440 for additional guidance and coordination.

6. Solid and Hazardous Wastes. All solid waste, hazardous waste and hazardous materials must be managed in accordance with all applicable federal, state and local environmental regulations. Some of the applicable state laws and regulations are:

- Virginia Waste Management Act (Code of Virginia Section 10.1-1400 *et seq.*);
- Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC20-60);
- Virginia Solid Waste Management Regulations (VSWMR) (9VAC20-80);
- Virginia Vegetative Waste Management Regulations (9VAC20-101 *et seq.*); and
- Virginia Regulations for the Transportation of Hazardous Materials (9VAC20-110).

Some of the applicable federal laws and regulations are:

- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations); and
- U.S. Department of Transportation Rules for Transportation of Hazardous materials (49 Code of Federal Regulations Part 107).

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For additional information, contact Richard Doucette with the DEQ Northern Virginia Regional Office at (703) 583-3813.

6(a) Asbestos-Containing Material. It is the responsibility of the owner or operator of a renovation or demolition activity, prior to the commencement of the renovation or demolition, to thoroughly inspect the affected part of the facility where the operation will occur for the presence of asbestos, including Category I and Category II nonfriable asbestos-containing material. Upon classification as friable or non-friable, all asbestos-containing material shall be disposed of in accordance with the Virginia Solid Waste Management Regulations (9VAC20-80-640) and transported in accordance with the Virginia regulations governing Transportation of Hazardous Materials (9VAC20-110-10 *et seq.*). Contact the DEQ Waste Division for additional information at (804) 698-4021 and Ronald L. Graham with the Department of Labor and Industry at (804) 371-0444.

6(b) Lead-Based Paint. This project must comply with the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) regulations and with the Virginia Lead-Based Paint Activities Rules and Regulations. For additional information regarding these requirements, contact David Dick with the Department of Professional and Occupational Regulation at (804) 367-8588.

7. Natural Heritage Resources.

- Contact the DCR DNH at (804) 786-7951 for an update on natural heritage information if a significant amount of time passes before it is utilized.
- Coordinate with J. Christopher Ludwig, DCR Natural Heritage Inventory Manager, at *chris.ludwig@dcr.virginia.gov* or (804) 371-6206 on conducting an inventory for the small whorled pogonia in the study area due to the potential for this site to support populations of natural heritage resources.
- Coordinate with the U.S. FWS (540-899-4169) and Keith Tignor with VDACS at (804) 786-8938 to ensure compliance with protected species legislation due to the legal status of the small whorled pogonia.

8. Wildlife Resources. Coordinate with DGIF (Amy Ewing at (804) 367-2211) and U.S. FWS (540-899-4169) if any colonial waterbird colonies are located within a 0.25 mile radius around the proposed sites to ensure protection of this resource.

9. Historic and Archaeological Resources. Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations codified at 36 Code of Federal Regulations Part 800 require federal agencies to consider the effects of their undertakings on historic properties. To ensure compliance, contact Roger W. Kirchen, Office of Review and Compliance, at DHR by phone at (804) 367-2323 x153.

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Thank you for the opportunity to review the EA and FCD for this undertaking. Detailed comments of reviewing agencies are attached for your review. Please contact me at (804) 698-4325 or Julia Wellman at (804) 698-4326 for clarification of these comments.

Sincerely,

Ellie L. Irons, Manager
Office of Environmental Impact Review

Enclosures

cc: Amy Ewing, DGIF
Barry Matthews, VDH
Paul Kohler, DEQ Waste
David Hartshorn, DEQ NVRO
Roger Kirchen, DHR
Todd Groh, VOF
David Whitlow, Essex County
Robert H. Wilson, George Washington PDC
Percy Ashcraft, Caroline County
Herb Posner, Town of Port Royal

L. Preston Bryant, Jr.
Secretary of Natural Resources

Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

203 Governor Street
Richmond, Virginia 23219-2010
(804) 786-6124

MEMORANDUM

Date: July 7, 2009

To: Julia Wellman, DEQ

From: Robert S. Munson, Planning Bureau Manager, DCR-DPRR

Subject: DEQ 09-0120F, Fort AP Hill Ordinance Relocation Fields, Caroline CO

Division of Natural Heritage

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, there is potential for Small whorled pogonia (*Isotria medeoloides*, G2/S2/LT/LE) within the project site. Small whorled pogonia grows in a variety of woodland habitats in Virginia, but tends to favor mid-aged woodland habitats on gently north or northeast facing slopes often within small draws. It is quite natural for plants of this species to remain dormant in the soil for long periods of time. Direct destruction, as well as habitat loss and alteration, are principle reasons for the species' decline (Ware, 1991). Please note that this species is currently classified as threatened by the United States Fish and Wildlife Service (USFWS) and as endangered by the Virginia Department of Agriculture and Consumer Services (VDACS).

Due to the potential for this site to support populations of natural heritage resources, DCR recommends an inventory for the resource in the study area. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. Due to the legal status of the Small whorled pogonia, DCR recommends coordination with USFWS and VDACS to ensure compliance with protected species legislation.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact J. Christopher Ludwig, Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206 to discuss arrangements for field work. A list of other individuals who are qualified to conduct inventories may be obtained from the USFWS.

The Virginia Department of Agriculture and Consumer Services (VDACS), which has regulatory authority to conserve rare and endangered plant and insect species through the Virginia Endangered Plant and Insect Species Act, has established a Memorandum of Agreement with the Virginia Department of Conservation and Recreation (DCR). Under this Agreement DCR's Division of Natural Heritage, in consultation with VDACS, represents VDACS in its comments and recommendations regarding the potential impact of reviewed projects or activities on state-listed plant and insect species. Since it has been determined that this project or activity may impact a state-protected plant, **Small whorled pogonia**, VDACS will respond directly to ensure compliance with Virginia's Endangered Plant and Insect Species Act. Further correspondence regarding the potential impacts of this project or activity on state-listed plant and insect species should be directed to VDACS.

In addition, our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Shirl Dressler at (804) 367-6913.

Division of Chesapeake Bay Local Assistance

In Caroline County, the areas protected by the Chesapeake Bay Act, as locally implemented, require conformance with performance criteria and these areas include: *Resource Protection Areas* (RPAs) and *Resource Management Areas* (RMAs). RPAs include tidal wetlands, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, tidal shores and a 100-foot vegetated buffer area located adjacent to and landward of the aforementioned features and along both sides of any water body with perennial flow. RMAs, which require less stringent performance criteria, are floodplains, highly erodible soils, highly permeable soils, steep slopes in excess of fifteen percent and other lands designated by the Board to protect the quality of state waters, including but not limited to an area three hundred feet in width contiguous and landward of an RPA.

Portions of the subject site are located within the RPA and the RMA. Any portions of the site that are within the RPA are subject to the development criteria of §§ 9 VAC 10-20-120 and 130 and the local ordinance. No land disturbance (to include clearing of vegetation) or development is to occur within RPAs unless specifically permitted by the Regulations and the local ordinance. Areas within the RMA are subject to the general performance criteria as specified in § 9 VAC 10-20-120 and the local ordinance. Projects within the RMA must minimize land disturbance (including access and staging areas), retain existing vegetation and minimize impervious cover. For land disturbances over 2,500 square feet, the project must comply with the requirements of the *Virginia Erosion & Sediment Control Handbook*, Third Edition, 1992. Additionally, stormwater management criteria consistent with water quality protection provisions of the Virginia Stormwater Management Regulations (§ 4 VAC 50-60) shall be satisfied.

Provided adherence to the above requirements, we concur that the proposed activity would be consistent with the *Chesapeake Bay Preservation Act and Regulations*.

Division of Soil and Water Conservation

The U.S. Army and their authorized agents conducting regulated land disturbing activities on private and public lands in the state must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R), Virginia Stormwater Management Law and Regulations including coverage under the general permit for stormwater discharge from construction activities, and other applicable federal nonpoint source pollution mandates (e.g. Clean Water Act-Section 313, Federal Consistency under the Coastal Zone Management Act). Clearing and grading activities, installation of staging areas, parking lots, roads, buildings, utilities, borrow areas, soil stockpiles, and related land-disturbance activities that result in the land-disturbance of greater than 2,500 square feet would be regulated by VESCL&R. Accordingly, the Army must prepare and implement erosion and sediment control (ESC) plan to ensure compliance with state law and regulations. The ESC plan is submitted to the DCR Regional Office that serves the area where the project is located for review for compliance. The Army is ultimately responsible for achieving project compliance through oversight of on site contractors, regular field inspection, prompt action against non-compliant sites, and other mechanisms consistent with agency policy. [Reference: VESCL §10.1-567;].

General Permit for Discharges of Stormwater from Construction Activities in CBPA:
The operator or owner of construction activities involving land disturbing activities equal to or greater than 2,500 square feet in areas designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the Chesapeake Bay Preservation Act are required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit and the SWPPP must address water quality and quantity in accordance with the Virginia Stormwater Management Program (VSMP) Permit Regulations. General information and registration forms for the General Permit are available on DCR's website at
http://www.dcr.virginia.gov/soil_and_water/index.shtml
[Reference: Virginia Stormwater Management Law Act §10.1-603.1 et seq.; VSMP Permit Regulations §4VAC-50 et seq.]

The remaining DCR divisions have no comments regarding the scope of this project. Thank you for the opportunity to comment.

CC: Keith Tignor, VDACS
Tylan Dean, USFWS

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR PROGRAM COORDINATION

ENVIRONMENTAL REVIEW COMMENTS APPLICABLE TO AIR QUALITY

TO: Julia H. Wellman **DEQ - OEIA PROJECT NUMBER: 09 – 120F**

PROJECT TYPE: ☐ STATE EA / EIR **X FEDERAL EA / EIS** ☐ SCC

X CONSISTENCY DETERMINATION

PROJECT TITLE: RELOCATION OF THREE DEMOLITION SITES AT THE EXPLOSIVES ORDNANCE DISPOSAL FIELD TRAINING AREA

PROJECT SPONSOR: U. S. DOD / DEPARTMENT OF THE ARMY / FORT A. P. HILL

PROJECT LOCATION: **X OZONE ATTAINMENT AREA**

REGULATORY REQUIREMENTSMAY BE APPLICABLE TO: **X** **DEMOLITION**
☐ OPERATION

STATE AIR POLLUTION CONTROL BOARD REGULATIONS THAT MAY APPLY:
SPECIFIC TO VIRGINIA OPERATIONS

1. ☐ 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 E – STAGE I
2. ☐ 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 F – STAGE II Vapor Recovery
3. ☐ 9 VAC 5-40-5490 et seq. – Asphalt Paving operations
4. **X** **9 VAC 5-130 et seq. – Open Burning**
5. **X** **9 VAC 5-50-60 et seq. Fugitive Dust Emissions**
6. ☐ 9 VAC 5-50-130 et seq. - Odorous Emissions; Applicable to_____
7. ☐ 9 VAC 5-50-160 et seq. – Standards of Performance for Toxic Pollutants
8. ☐ 9 VAC 5-50-400 Subpart_____, Standards of Performance for New Stationary Sources, designates standards of performance for the_____
9. ☐ 9 VAC 5-80-10 et seq. of the regulations – Permits for Stationary Sources
10. ☐ 9 VAC 5-80-1700 et seq. Of the regulations – Major or Modified Sources located in PSD areas. This rule may be applicable to the _____
11. ☐ 9 VAC 5-80-2000 et seq. of the regulations – New and modified sources located in non-attainment areas
12. ☐ 9 VAC 5-80-800 et seq. Of the regulations – Operating Permits and exemptions. This rule may be applicable to _____

COMMENTS SPECIFIC TO THE PROJECT:

K. S. Narasimhan

(Kotur S. Narasimhan)
Office of Air Data Analysis **Date:June 26, 2009**

If you cannot meet the deadline, please notify JULIA H. WELLMAN at 804/698-4326 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MS. JULIA H. WELLMAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319
jhwellman@deq.virginia.gov

RECEIVED

JUL 07 2009

DEQ-Office of Environmental Impact Review

Julia H. Wellman

JULIA H. WELLMAN
ENVIRONMENTAL PROGRAM PLANNER

COMMENTS

See attached e-mail comments sent on July 2, 2009.

(signed) R. Davis Hutchinson (date) 7-2-09

(title) Regional Air Compliance Manager

(agency) DEQ-NRO

PROJECT #09-120F **6/08**

RECEIVED

JUL 07 2009

DEQ-Office of Environmental Impact Review

Hartshorn,David
From: Hartshorn,David
Sent: Thursday, July 02, 2009 10:25 AM
To: Wellman,Julia
Cc: Hartshorn,David
Subject: CD #09-120F

NRO comments regarding the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal field Training Area – U.S. DOD/Department of the Army/Fort A.P. Hill are as follows:

Virginia Water Protection Permit (VWPP) Program: U.S. Department of the Army proposes the relocation of three demolition sites at the designed Explosives Ordinance Disposal field training area to an existing demolition range at Fort A.P. hill, Virginia. The draft Supplemental Environmental Assessment Report states that the National Wetlands Inventory Maps indicate wetlands and streams are located within the project area. The report also indicates that a field study would be conducted to determine the exact location of jurisdictional surface waters and a Joint Permit Application would be submitted to apply for the applicable permits to impact surface waters if impacts are proposed. DEQ recommends the avoidance and minimization of surface water impacts to the maximum extent practicable. If surface waters are proposed to be impacted, a Virginia Water Protection (VWP) permit will be required from the Virginia Department of Environmental Quality (DEQ).

Air Compliance: The project manager is reminded that during construction phase of this project, that the project is subject to the Fugitive Dust/Fugitive Emissions Rule 9 VAC 5-50-60 through 9 VAC 5-50-120; and that should any open burning or use of special incineration devices be employed in the disposal of land clearing debris during construction, that the operation would be subject to the Open Burning Rule 9 VAC 5-40-5600 through 9 VAC 5-40-5645. In addition, should the project install fuel burning equipment (Boilers, Generators, etc…), or other air pollution emitting equipment, the project may be subject to 9 VAC 5-80, Article 6, Permits for New and Modified sources and as such should contact the Air Permitting Manager DEQ-NRO prior to construction and operation of fuel burning or other air pollution emitting equipment for a permitting determination.

R. David Hartshorn
Regional Air Compliance Manager
DEQ-NRO
13901 Crown Court
Woodbridge, VA 22193
(703) 583-3895
fax (703) 583-3821
e-mail - R.David.Hartshorn@deq.virginia.gov

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

MEMORANDUM

TO: Anne Pinion, Environmental Program Planner

FROM: Paul Kohler, Waste Division Environmental Review Coordinator

DATE: Saturday, June 27, 2009

COPIES: Sanjay Thirunagari, Waste Division Environmental Review Manager; file

SUBJECT: Environmental Impact Report: Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area; 09-120F

The Waste Division has completed its review of the Environmental Impact report for the Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area project near Bowling Green, Virginia. We have the following comments concerning the waste issues associated with this project:

Both solid waste and hazardous waste issues were addressed in the report. The report did not specifically cite a search of waste-related data bases, but the text implies that one was conducted. A GIS database search did not reveal any waste sites within a half mile radius that would impact or be impacted by the subject site. The Waste Division staff performed a cursory review of its data files and determined that there are several hazardous and solid waste facilities located within the same zip code, however their proximity to the subject site is unknown. These are as follows.

Hazardous waste
Fort A. P. Hill, VA2210020416 LQG (ACTIVE) & TSD (ACTIVE)

Solid waste
Caroline County Landfill, GW 182, Sanitary Landfill
Caroline County Landfill, SWP 147, Closed Sanitary Landfill
Caroline County Landfill, SWP 182, Sanitary Landfill
US Army - Fort A P Hill, SWP 332, Closed Sanitary Landfill
US Army - Fort A P Hill, SWP 332, Closed Sanitary Landfill
US Army - Fort A P Hill, SWP 393, Closed CDD Landfill
US Army - Fort A P Hill, SWP 393, Closed CDD Landfill
Haynesville Correctional Center, PBR 373, RMW Steam Sterilizer

The following websites may prove helpful in locating additional information for these identification numbers: http://www.epa.gov/superfund/sites/cursites/index.htm or

http://oaspub.epa.gov/enviro/ef_home2.waste. Steve Mihalko of DEQ's Federal Facilities Program was contacted for his review of this determination and he responded as follows. "I reviewed the Document and it appears that the relocation will not impact any Environmental Restoration Program sites. Therefore I have no comments on the Document."

Any soil that is suspected of contamination or wastes that are generated during construction-related activities must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations. Some of the applicable state laws and regulations are: Virginia Waste Management Act, Code of Virginia Section 10.1-1400 *et seq.*; Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60); Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-80); Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110). Some of the applicable Federal laws and regulations are: the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and the U.S. Department of Transportation Rules for Transportation of Hazardous materials, 49 CFR Part 107.

Please note that DEQ encourages all construction projects and facilities to implement pollution prevention principles, including the reduction, reuse, and recycling of all solid wastes generated. All generation of hazardous wastes should be minimized and handled appropriately.

If you have any questions or need further information, please contact Paul Kohler at (804) 698-4208.

Mihalko,Stephen
From: Mihalko,Stephen
Sent: Monday, June 22, 2009 1:45 PM
To: Kohler,Paul
Cc: Sismour,Karen
Subject: AP HILL Relocation of Three Demolition sites at the EOD Field Training Area

I reviewed the Document and it appears that the relocation will not impact any Environmental Restoration Program sites. Therefore I have no comments on the Document.

07/06/2009 17:12 14342962369 VA DEPT OF FORESTRY PAGE 02/02

If you cannot meet the deadline, please notify JULIA H. WELLMAN at 804/698-4326 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MS. JULIA H. WELLMAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319
jhwellman@deq.virginia.gov

Julia H. Wellman
JULIA H. WELLMAN
ENVIRONMENTAL PROGRAM PLANNER

COMMENTS

The Virginia Department of Forestry finds no significant impact to the forest resources of the Commonwealth for this project.

(signed) Todd A. Groh (date) 7/6/09
(title) Asst. Director - Forest Resource Mgmt. Division
(agency) VA Department of Forestry

PROJECT #09-120F **6/08**

Wellman,Julia

From: Ewing, Amy (DGIF)
Sent: Thursday, July 02, 2009 10:24 AM
To: Wellman,Julia
Cc: Moyer, Brian (DGIF); Cooper, Jeff (DGIF)
Subject: ESSLog# 26773_09-120F_Ft. AP Hill_relocation of 3 demolition sites

We have reviewed the supplemental Environmental Assessment (EA) and consistency determination for the subject project that proposes to relocated three demolition sites at the designed Explosives Ordnance Disposal (EOD) field training area located on Ft. AP Hill in Caroline County.

According to our records, state Threatened bald eagle has been documented in the project area. However, this project sites falls outside the management zone for the documented nesting site. Therefore, impacts upon this species are not likely to result from the proposed work.

We also document a colonial waterbird colony containing great blue heron from the immediately adjacent to the project site. It appears that the last time this colony was documented at this location was in 1988. We recommend that forested areas within 0.25 mile of the proposed sites be evaluated for the presence of colonial waterbird colonies. If any are located within a 0.25 mile radius around the proposed sites, we recommend further coordination with us and the USFWS to insure protection of this resource.

In Section 3.7.1.3 Sensitive Species, it is stated (pg 3-26) that the bald eagle is federally listed. This is incorrect. This species has been de-listed federally, but remains listed state Threatened. In addition, it is stated in this section that the bald eagle breeding season is from July 16 through November 14. This is incorrect. The bald eagle nesting season in Virginia is from December 15 through July 15 of any year. We also note that when referring to listed mussels known from the area, the state Threatened status of Atlantic pigtoe is not listed and the green floater is erroneously listed as state species of concern. Green floater is state Threatened. We recommend these errors be fixed.

Assuming adherence to appropriate erosion and sediment controls during ground disturbance, we find this project consistent with the Fisheries Management Section of the CZMA.

Thanks, Amy

Amy M. Ewing
Environmental Services Biologist
Virginia Dept. of Game and Inland Fisheries
4010 West Broad Street
Richmond, VA 23230
804-367-2211
amy.ewing@dgif.virginia.gov

Wellman,Julia

From: Kirchen, Roger (DHR)
Sent: Monday, July 13, 2009 9:06 AM
To: Wellman,Julia
Subject: RE: Comment Reminder: Relocation of Three Demolition Sites at Fort AP Hill

Sorry I didn't get back with you on this last week. DHR has executed a Programmatic Agreement with the Army dealing with BRAC actions at Ft. A.P. Hill. This project falls under that agreement and will be handled accordingly. Please remind the Army of its responsibility to continue consultation with DHR pursuant to this agreement and Section 106 of the National Historic Preservation Act. Thanks.

Roger

Roger W. Kirchen, Archaeologist
Office of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, Virginia 23221
phone: (804) 367-2323 x153
fax: (804) 367-2391
web: www.dhr.virginia.gov

From: Wellman,Julia [mailto:Julia.Wellman@deq.virginia.gov]
Sent: Thursday, July 09, 2009 11:25 AM
To: Kirchen, Roger (DHR); Groh, Todd (DOF); Caroline - Percy Ashcraft; townofportroyal@aol.com
Subject: Comment Reminder: Relocation of Three Demolition Sites at Fort AP Hill

This email is a reminder that comments were due to the DEQ Office of Environmental Impact Review on July 7, 2009, regarding the environmental assessment and federal consistency determination for the relocation of three demolition sites at Fort AP Hill.

If you would like to comment, please respond by close of business today, July 9.

Sincerely, Julia

Project Description:

The Department of the Army submitted a supplemental environmental assessment and federal consistency determination to relocate three demolition sites at Fort A.P. Hill. The Army is proposing to relocate them from a designed explosives ordnance disposal field training area, which has already been environmentally evaluated, to an existing demolition range. The documents identify, evaluate and document the environmental effects of the proposed action and the no action alternative. The demolition sites would be on a 42-acre tract in and around an existing demolition range. About 23 acres of land would be cleared for an access road, demolition pit and bunker for one of the sites. The other two sites are already cleared and operating as live-fire ranges. The consistency determination states that the project will be conducted in a manner that is consistent to the maximum extent practicable with the applicable enforceable policies of the Virginia Coastal Resources Management Program.

Julia Wellman
Environmental Impact Review Coordinator
Virginia Department of Environmental Quality

Wellman,Julia

From: Tignor, Keith (VDACS)
Sent: Wednesday, July 15, 2009 4:35 PM
To: Wellman,Julia
Subject: Re: Fort A.P. Hill Supplemental EA on Relocation of Demo Sites09-120F

Julia,

I looked through the AP Hill project proposal. The D1 demolition site is the most likely location in question for small whorled pogonia. As noted in the EA AP Hill maintains a number of conservation areas that contain sensitive biological resources. One of these is within a mile of the project site. The staff at the base may have current information, i.e. survey results, for the training areas in question. For your report, I would recommend that they coordinate with VDACS and USFWS regarding the status of biological resources in the project area.

Sincerely,
Keith Tignor
Apiarist/Endangered Species Coordinator

VA Department of Agriculture and Consumer Services Office of Plant and Pest Services P.O. Box 1163 Richmond, VA 23218

Phone: (804) 786-3515
Fax number: (804) 371-7793
Website: www.vdacs.virginia.gov

Wellman,Julia

From: Forsgren, Diedre (VDH)
Sent: Thursday, June 25, 2009 2:18 PM
To: Matthews, Barry (VDH)
Cc: Wellman,Julia
Subject: EIS/CD: Demo Site Relocation, US DOD Fort AP Hill

DEQ Project #: 09-120F
Name: Relocation of Three Demolition Sites at the Explosives Ordnance Disposal Field Training Area
Sponsor: US DOD/Dept. of the Army/Fort A.P. Hill
Location: Caroline & Essex Counties, town of Port Royal

VDH – Office of Drinking Water has reviewed DEQ Project Number 09-120F. Below are our comments as they relate to proximity to public drinking water sources (groundwater wells, springs and surface water intakes). Potential impacts to public water distribution systems or sanitary sewage collection systems must be verified by the local utility.

No groundwater wells are within 1 mile radius of the project site.

No surface water intakes are located within 5 miles radius of the project site.

Project does not fall within Zone 1 or Zone 2 of any public surface water sources.

There is no impact to public drinking water sources due to this project.

Diedre Forsgren
Office Services Specialist
VIRGINIA DEPARTMENT OF HEALTH
Office of Drinking Water
109 Governor Street, 6th Floor
Richmond, VA 23219
Phone: (804) 864-7241
email: diedre.forsgren@vdh.virginia.gov

If you cannot meet the deadline, please notify JULIA H. WELLMAN at 804/698-4326 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

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C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MS. JULIA H. WELLMAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319
jhwellman@deq.virginia.gov

RECEIVED
JUN 30 2009
DEQ-Office of Environmental Impact Review

Julia H. Wellman
JULIA H. WELLMAN
ENVIRONMENTAL PROGRAM PLANNER

COMMENTS

I have reviewed the amendment to the environmental impact statement and see no significant change in impact upon Essex County.

(signed) _____ (date) 6/29/09

(title) County Administrator

(agency) Essex County Board of superivors

PROJECT #09-120F **6/08**

Please note: Several of the issues raised by members of the Portobago Homeowners' Association letter involve actions that are not addressed in the EA and therefore a specific response is not included. For instance, the letter calls into question the original determination that Fort A.P. Hill would be used to support training for the EOD as it moved from Redstone Arsenal to Fort Lee, as directed under the Base Closure and Realignment law. This was analyzed in the 2007 EIS. Other comments deal with the establishment of the EOD field training area. This action was analyzed in the 2008 EA. The present proposed action, rather than establishing the field training area or adding to it, actually reduces it. This is because the location of certain training will be moved from the training area to areas D1, D2, and D3. Our detailed responses are limited to addressing issues that are part of the 2009 EA.

July 31, 2009

Lieutenant Colonel John Haefner
Installation commander
Fort A.P. Hill, Virginia

Dear Commander:

Attached is the response of the Portobago Bay Homeowners Association to the Draft Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordinance Disposal Field Training Area at Fort A.P. Hill, Virginia. We request that our response in its entirety along with the Homeowner's December 2008 related response incorporated into it be made a part of the permanent public record of the above supplemental environmental assessment.

Our response is direct. That directness does not reflect nor should it be interpreted as hostility. We oppose the proposed mission but we do not oppose our warriors. As we say in the text of our response: we want and are prepared to work to have our good neighbor back.

The Army's critical missions cannot be compromised. The property rights of Portobago Bay residents and the citizens of Caroline County also cannot be compromised. I look forward to working with you to be sure that neither is compromised.

Congratulations on your appointment as Commander.

Sincerely,

John W. Lampmann
President
Portobago Bay Homeowners Association

INTRODUCTION

Overview

The Portobago Bay Homeowners Association (PBHA) responds as homeowners and as citizens of Caroline County to the draft *Supplement Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordinance Disposal Field Training Area at Fort A.P. Hill, Virginia* (SEA for EOD) prepared by Fort A.P. Hill, Virginia June 2009.

The position of the PBHA is summarized below and elaborated on in the text of the response. The Army's statements of fact in its three assessments, other Fort A.P. Hill (FAPH) documents and Army manuals are the sources relied upon to document the PBHA position. Sources for socioeconomic impacts of the Army's proposed actions are county and other public documents available to the Army.

The 2005 Defense Base Closure and Realignment (BRAC) did not mandate that the Explosive Ordinance Disposal (EOD) field training area be located at Fort A.P. Hill (FAPH). In violation of the law and its regulations, the Army did not evaluate alternative EOD field training area. Further, the Army has not widely disclosed its plans - also not BRAC mandated -- to raise FAPH daily training levels more than seven times and make FAPH the training fields for 23,000 plus soldiers annually that will be permanently housed at Fort Lee, Virginia.. The PBHA does concur with the Army position that the resultant training noise is incompatible with residential land use and will contribute to the destruction of the quality of life and property values in the 35,000 acres around FAPH. Specifically, the proposed EOD field training area, with the proposed SEA for EOD changes, remains incompatible with Portobago Bay's residential land use.

Incompatible Land Use.

FAPH training noise thus far in 2009 is unprecedented. Army records show record numbers of complaints and record numbers of damage claims filed with FAPH.

For 250 days of the year, the proposed EOD training will add in Portobago Bay daily 99 detonations or 24,163 detonations annually. Having issued now three environmental assessments, the Army still has failed to disclose information it knows or should know to give notice to citizens of the proposed mission's impact. The Army plans on average to daily detonate a mile and half from Portobago Bay: two large explosives estimated to reach Peak noise levels of 125 dBP; two to three of the smallest explosives between 11 p.m. and 7 a.m. each night creating Peak noise levels approaching Portobago Bay of 115 dBP to 130 dBP; 47 medium-size explosives for which the Army provides no noise mapping; and 47 small-size explosives (in addition to the two to three nighttime detonations mentioned above) for which the Army provides no noise mapping.

The daily detonations above do not include the SEA for EOD proposal to move 316 demolitions annually back five miles from Portobago Bay. These are in addition. In its SEA assessment the Army affirms that Army training for these detonations will be authorized not at 25 lb. and 50 lb. weights but 100 lb. (TNT) equivalent weight. No noise mapping at the three new proposed sites for 100 lb. (TNT) equivalent weight is provided

Peak noise levels mapping for 50 lb. explosives at the three proposed sites has Noise II contours crossing the river into King George County at the Town of Port Royal and arcing back towards the FAPH installation border roughly four miles in both directions. Noise levels in the eight-mile long area will reach 120 dBP to 125 dBP. For demolitions at the three proposed sites Peak Noise II contour lines shown no longer reach Portobago Bay. In the Corridor area Peak noise levels will result in vibrations that will cause concern to homeowners and possible plaster and glass cracks. The Army findings that the EOD training area will have no significant impact on adjoining residential land use is counter intuitive and unsupported by the Army facts thus far provided.

Further, the Army's stated position for several years is that its (proposed) training including but not limited to the EOD field training is incompatible with residential land use in Portobago Bay, large areas throughout The Corridor including the Town of Port Royal, and elsewhere extending around FAPH. To conclude that the EOD training

will have no significant impact where the Army has expended millions of taxpayer dollars on its claim that the land is incompatible with FAPH land use is reckless and arbitrary.

Socioeconomic Impact.

Over the last nine years, FAPH has been living off the land. FAPH holds a fifth of Caroline County's land assets tax-free, but over the last nine years the Army has contributed to Caroline County 0.0001 percent of Fredericksburg area DoD spending on military personnel, 0.0143 percent of areas spending on civilian personnel, 0.0125 percent of area operating budget spending, and 0.0037 percent of area DoD contract spending. FAPH is more valuable to the Army than it is to Caroline County.

The Army campaign to terminate property rights on up to 35,000-acres of surrounding land poses a direct threat to the county tax base and the ability of citizens to finance their future public needs. The decision to remove large areas of county land from the tax base is a county decision, a prerogative of citizens and not a decision for the Army to dictate. The Army's actions are a destructive attack on Caroline County self-government and economic self-sufficiency. They harm not help future efforts to preserve the natural resources and beauty of the county. And they narrow county options to manage development so as to preserve the rural lifestyle of Caroline County while creating opportunity for its citizens including better jobs and schools.

The proposed location of the EOD field-training mission at FAPH is incompatible with residential land use in Portobago Bay and the Corridor area. It will destroy residential use.

The Army's plan to make FAPH the training fields for Fort Lee also is incompatible with Caroline County land use based on the Army's stated position taken repeatedly in its own documents that tens of thousands of acres of county land are incompatible with FAPH military training.

In addition to encroaching on county land uses, the Army's plans are in direct conflict with the interests and capability of Caroline County to government itself and decide its future.

The proposed EOD training at FAPH will encroach on Portobago Bay homeowners as residents – destroying their quality of life and their property values, and as citizens – raising their taxes and eroding their county tax base and future.

I. OVERVIEW

1. Defense Base Closure and Realignment (BRAC) Mandate

Unsupported Army Assertion

No BRAC Mandate.

Again, on the matter of the Army operating an Explosives Ordinance Disposal (EOD) training area in Caroline County, Virginia and in particular, in proximity to the area known as The Corridor between Fort A.P. Hill (FAPH) and the Rappahannock River including the historic Town of Port Royal and the neighboring residential community of Portobago Bay, the Army presents by asserting first that it is under a legal mandate to locate the EOD at (FAPH).

The assertion by the Army that it is under a Defense Base Closure and Realignment Act of 1990 (BRAC) mandate to locate the (EOD) training site at FAPH, whether when implied or made directly, cannot be supported by the Army's facts.

Persisting in promulgating this assertion in its documents and in oral presentations to citizens and apparently to local and Federal elected officials, the Army has spread confusion. The affect has been to lay down rhetorical mine fields that must be negotiated by citizens before they can begin to redress their concerns with local and Federal officials on the matter of relocating the EOD training to FAPH.

The *Supplemental Environmental Assessment for the Relocation of Three Demolition Sites at the Explosives Ordinance Disposal Field Training Area at Fort A.P. Hill, Virginia, June, 2009* (SEA for EOD) further encourages this false impression.

The Army's SEA Executive Summary starts with naming the Defense Base Closure and Realignment Commission (BRAC Commission), the 2005 BRAC Commission's report, and then cites the law, the Defense Base Closure and Realignment Act of 1990 (Public Law

101-510, as amended). These words are connected with words such as "President Bush concurred...sent it to Congress...the recommendations became law, which must be implemented...."

The second paragraph continues:

"The Army evaluated realignment of Fort Lee in its *Final Environmental Impact Statement: Implementation of Base Realignment and Closure (BRAC) recommendations and Other Army Actions at Fort Lee, Virginia and Fort A.P. Hill, Virginia.* On May 11, 2007, the Army issued its Record of Decision (ROD) to relocate approximately 7,200 personnel to Fort Lee, to construct and renovate facilities at Fort Lee and Fort A.P. Hill (FAPH), and to construct operations and training at Fort lee and FAPH."

The third paragraph begins:

"Among the facilities projects evaluated in the environmental impact statement (EIS) were establishing an explosives ordinance disposal (EOD) field training area that would cover approximately 1,034 acres at FAPH."

Army Intent Clear.

What might ten randomly selected Caroline County citizens deduce from reading the first three paragraphs of the SEA? If asked whether locating the EOD training area at FAPH is required by law, how many would say yes?

The intent of the text is clear: The reader is to conclude that locating the EOD training site at FAPH is mandated by law.

How many – if any -- of those ten randomly selected citizens would pause on the phrase *"Other Army Actions"* in the BRAC EIS title? And if even one did, what would that citizen discover reading on in the SEA that might help clarify whether law mandates the EOD move to FAPH?

Section 2.0 of the *Supplemental Environmental Assessment* offers a sample.

> "As a result of BRAC Commission recommendations, EOD training must relocate from Redstone Arsenal, Alabama, to Fort Lee and Fort A.P. Hill, Virginia."

Now, how many of those ten randomly selected citizens would doubt that law to relocate to FAPH mandates the EOD?

Assume more, assume these ten citizens not only read the above but also attended meetings at which FAPH officials asserted the proposed EOD mission under the umbrella of a BRAC mandate even more directly?

Further, assume these citizens meet with their elected officials and their elected officials tell these citizens that the move is mandated by BRAC?

Even assuming that at least the Army's written word has implied and not directly made this false assertion, the fact is that the subject of relocating the EOD at FAPH does not come up without the Army first repeating the BRAC mantra. Over a period of eleven months the effect of the Army campaign continually repeating this message has been to initially thwart efforts by Caroline County citizens to engage each other and their elected officials. Not only citizens but also apparently also high-level elected officials have been confused.

How disruptive this all has been to public discussion of the proposal is illustrated by the kinds of questions in the minds of citizens when they encounter elected officials who are confused. The Army campaign leaves a citizen wondering whether his elected official has been misled by the Army's persistent representations that the EOD relocation is BRAC mandated or whether the elected official may be intentionally misleading them to further his and/or the Army's own interests. Either way, the Army has a serious problem of its own making. It needs to be fixed now. It is the Army's duty to clearly inform local and federal officials that the BRAC law does not mandate the EOD mission.

(Note the Section 2.0 statement quoted above doesn't say the relocation is legally mandated, just that "As a result of BRAC commission recommendations...EOD training must relocate...." This oft-repeated kind of phrasing by the Army is a drumbeat and cannot be passed off as inept writing and inadvertent slips of the tongue. The cumulative effect of the drumbeat aggressively furthers the Army objective to relocate the EOD at FAPH for reasons that cannot be supported.)

The Army's persistent misrepresentation raises a question: What is the Army interest in misrepresenting the reason for the relocation of the EOD to FAPH?

2. Army Documents Own Decision-Making Process

The BRAC Commission did not recommend relocating EOD field training to FAPH. The BRAC Commission did not decide to relocate EOD to FAPH. Congress did not pass nor did President Bush sign a law that requires the EOD training sites to be relocated at FAPH. The Army decided.

Independent of any BRAC mandate, the Army identified FAPH as an EOD field-training site to facilitate implementation of a separate BRAC-mandated obligation that the Army does have -- to relocate the EOD School at Ft. Lee, Virginia.

The BRAC law was signed November 9, 2005.

In the Army's February 2007 BRAC EIS, the Army reports:

> The BRAC Commission found that Fort Lee had insufficient land and space to conduct Warrior Training. The Commission determined that the shortfall could be mitigated by using nearby training sites at Fort Pickett, an installation operated by the Virginia National Guard. The BRAC Commission, however, did not require the use of Fort Pickett as a training facility to support the incoming BRAC activities; it cited the installation as an example only.

The Army is not obligated by BRAC to relocate EOD field training to Fort Pickett. BRAC suggests one possible location, Fort Pickett. It does not mandate that the EOD field training be moved to Fort Pickett. BRAC leaves the decision to the Army. BRAC does not mention FAPH.

Later in its BRAC EIS discussing another possible location to house the EOD training site the Army states: "No land for lease that could be suitable for the proposed training missions (such as National Forest Service land) is available in the area."

Thus, the Army identified in its BRAC EIS not one but two options other than FAPH. Its actions document that the Army believes it is not under a BRAC mandate to relocate the EOD training sites to Fort Pickett, to National Forest Service land or, for that matter, to FAPH.

Shockingly, the Army in violation of their regulations and the law, never evaluated alternatives for its plan to re-locate the EOD field training area. It summarily dismissed two of the three options and double-marched forward to the third, FAPH. Whether this omission fuels the Army's current penchant to promulgate the myth that the EOD relocation to FAPH is BRAC mandated is a matter of speculation.

But by persisting in its most recent SEA to promulgate this fiction and by incorporating both the BRAC EIS and the FAPH EA into the SEA, the Army requires that an adequate response address the record upon which the underlying EOD training mission is proposed to be located at FAPH. By reference, the PBHA association response of December 2008 is also incorporated in its entirety into this response.

3. Army Did Not Evaluate Alternative Locations For EOD.

FAPH An Unevaluated Army Decision

The Army's analysis of Fort Pickett and National Park Service land is as follows:

"Further evaluation by the Army determined that Fort Pickett does not have suitable training areas or facilities and lacks schedule availability to support Warrior Training for SCOE students."

And the rationale provided for rejection of National Park Service land lease option is no land "is available in the area."

Rejection of the national park option as an alternative to be evaluated is particularly troubling given the presence of expansive national parks to the west of Fort Lee. The George Washington National Forest and the Jefferson National Forest are both located to the west of Fort Lee. Together the combined acreage of the two national forests is 1.8 million acres. Caroline citizens also are left to wonder what might be possible knowing that their Member of Congress, besides sitting on the House Armed Services Committee, is a member of the House Natural Resources Committee and its subcommittee on National Parks.)

Bottom line: the Army never evaluated these alternative locations for the EOD. What the Army did evaluate in its initial BRAC EIS was 1) a construction option to implement its BRAC mandate at Fort Lee and 2) a construction option at FAPH. In the former, the BRAC-mandated that the Army either use existing facilities at Fort Lee, renovate existing facilities, lease off-post facilities or construct new facilities. The Army elected to construct new facilities at Fort Lee.

The Army identified FAPH as the training site with neither a mandate nor public evaluation of alternative sites (see above) and then proceeded to evaluate a FAPH construction option. In short, the Army assumed its unilateral conclusion. That initial FAPH construction proposal option is still a work in process and is now being repackaged a second time in the SEA.

4. Army Decision In Context.

Consequences for Caroline County.

Imagine how all this looks to a long-time concerned Caroline County resident.

As long as many can remember, the Army has told Caroline County citizens, kind of kicking at the ground, head down, that FAPH is not a real Army post. Rather, it is something down the pole called a garrison. And, as Caroline folks have had it explained to them -- sometimes by people high up that ought to know -- a garrison does not amount to much when it comes to realigning Army missions, particularly permanent missions, the kind that contribute jobs and income to the County and financial support to better educate County children.

Probably the most frequently cited answer to the question why doesn't Caroline county get missions that contribute to the county economy is because FAPH is only a garrison. So the Caroline history has been one of folks looking to see the Army house permanent missions at FAPH. And seemingly forever, Caroline citizens have been disappointed.

More recently citizens in Caroline hear the Army tout that FAPH was recently ranked the 22nd most valuable military asset nationally. Big military bases, the names of which are well known to patriotic Caroline citizens, are ranked below – even far below -- our FAPH. And they are real bases, not garrisons.

Still, no permanent community-friendly missions come to Caroline County. Instead, Caroline County citizens are about to get an unpleasant surprise.

Quietly for several years, the Army has been busy, hard at work to bring about a major change at FAPH, change that for the most part local citizens do not know about. No notice. No public consultation.

Recall above the Army stated in its 2007 BRAC EIS document that: The BRAC Commission found that Fort Lee had insufficient land and space to conduct Warrior Training. Warrior training. The Commission was not taking about just the EOD mission but the field training of 23,000 soldiers annually in its new Sustainment Center of Excellence (SCOE) to be permanently located at Fort Lee. EOD is just a part of the SCOE.

The Army has successfully kept under wraps not only the proposed relocation of the EOD field training to FAPH but the relocation of SCOE field training for 23,000 student soldiers annually. As noted in our December 2008 response to FAPH's EA, the Army did not consult with a single Caroline County official when it acted on its 2007 BRAC EIS. Not one. There is no record in the Army assessment of consultation with Caroline County on the Army plan to radically change the level and intensity of field training at FAPH. Regarding the EOD, the Army did not and has not to this day put the proximity of the Portobago Bay residential community to the proposed EOD training area on any map in its now three environmental assessments. (The SEA does identify the community for the first time in the document text.) Nor has the Army held news conferences of the kind the Army dresses up for such as the one bringing into Caroline County the General in charge of all the bases in the whole northeast United States to present a plaque and sign a good-neighbor community covenant with the Town of Bowling Green, population 766, and the Town of Port Royal, population 204.

On reflection, the appearance is that the Army does not think it in their interest to risk exposure to Caroline County citizens of its underlying plan to limit FAPH to being an outpost, just a training garrison. Once again, the Army's packaging its actions in the cloak of a BRAC mandate appears to serve its own purposes, but, as above, that is a matter of speculation.

What the Army plans is to ratchet up its level and intensity of training, radically changing its character. In doing so it will destroy the historic compatibility FAPH has had with quiet Caroline County where neither the County nor the Army unreasonably intruded upon the other.

In the future, FAPH will encroach upon and dominate all the areas surrounding it; in the process it will destroy the Caroline County quality of life and devalue Caroline County citizens' property. The level of warrior training daily at FAPH will explode a minimum of seven times its daily trainee levels in 2006. These soldiers will train ten hours a day. The noise will intrude over large areas of the County. Based on what the Army has already disclosed demolition noise at levels not recommended for residential housing will extend daily over a major portion of The

Corridor between FAPH and the Rappahannock River, cross the river and extend into Essex and King George County.

The initial nearly 900 additional soldiers a day that are to train at FAPH will be bused into Caroline County, into FAPH, will train 10 hours a day and then be bused backed out of FAPH, out of Caroline County and back to their barracks and beds at Fort Lee, Virginia 70 miles to the south of FAPH. They will not step foot in Caroline County. The FAPH Garrison is to permanently become the training fields for Fort Lee.

For Caroline County citizens, the benefits -- if any -- of this are not readily discernable. But the costs are and in the future those costs will be real, substantial and potentially economically ruinous to the County and its citizens.

Garrison or not, the Army appears to be able to act when it wants to act.

5. Army Generated Financial Benefits.

Caroline County Short-Changed.

Consider below how citizens in what the Army calls the region of influence (ROI) of Fort Lee are impacted compared to how citizens in the ROI of FAPH are impacted by these plans. (The ROI of FAPH is Stafford, Spotsylvania, King George and Caroline counties and the City of Fredericksburg.)

Currently, Ft. Lee employs 3,000 civilians. **FAPH employs about 250.**

Fort Lee contributes more than $700 million annually to the local economy (2006). **FAPH contributes slightly more than $1 million.**

Fort Lee's average daily population will nearly double, rising from 12,593 personnel to 20,701. **The FAPH average daily population will grow from 145 to 1,025.**

Fort Lee will add an additional 16,000 jobs to its ROI. **FAPH will add 60 to 80 jobs.**

Fort Lee's new jobs will create $586 million in the ROI income. **FAPH's new jobs will generate $1.8 to $2.5 million.**

Fort Lee's could generate $1.1 billion in increased ROI sales volume. **FAPH's could generate $2.9 to $7.4 million – not billion -- in-increased sales volume.**

Fort Lee expansion will make the local school systems eligible for student impact add and possibly special BRAC related funding. **FAPH changes will not make the Caroline School system or any of the counties and city cited above eligible for impact aid.**

In summary, Fort Lee -- which currently contributes $700 million to its local economy -- will increase the ROI income by $586 million and sales volume by $1 billion. One billion. In contrast, FAPH -- which current contributes a $1 million annually to the economy -- may add up to $2.5 million in increased income and $7.4 million in increased sales volume. Put another way. The change generates 234 times the income for Fort Lee neighboring jurisdictions than it does for those of FAPH. And it generates 148 times as much in increased sales volume.

Citizens in the Fort Lee ROI will benefit by the BRAC realignment. More jobs. Better schools. Citizens will enjoy a better quality of life. Citizens in the FAPH ROI – but particularly Caroline County – will pay in devalued property, reduced tax revenues, decline in investment in the County, loss of quality jobs and opportunity costs that can total in the hundreds of thousands if not millions of dollars annually, far more than Caroline County can possibly hope to trickle down from the proposed Army expenditures at FAPH. Caroline County citizens will confront a declining quality of life.

II. Incompatible Land Use

1. Past Land Uses.

A History of Compatibility.

FAPH

Army documents summarize in part as follows.

In the spring of 1940, the War Plans Division of the Army General Staff developed a plan to raise a four million men army.... In July 1940, a movement began to locate an area of approximately 60,000 acres, independent of any post, and lying somewhere between the Potomac River and the upper Chesapeake Bay.

Military Reservation A.P. Hill was established as an Army training facility on June 11, 1941, pursuant to War Department General Order No. 5. It was a staging area during World War II For General Patton's forces deployed to invade French Morocco; during the Korean War for troops deployed to Europe; during the Vietnam War for Engineer Officer Candidate School training out of Ft. Belvoir; and most recently for Desert Shield/Storm.

FAPH describes itself as being used year-round..."for military training of both active and reserve troops of the Army, Navy, Marines, and Air Force, as well as other government agencies. These include the Departments of State and Interior; U.S. Customs Service; and federal, state and local security and law enforcement agencies."

"The total number of personnel (soldiers and civilians) trained at the installation from October 2005 through July 2006 was 35,108." -- 2007 BRAC EIS.

As a point of reference FAPH plans in 2010 to host the Boy Scout Jamboree. It estimates that there will be 45,000 scouts and leaders attending for the two-week event. Another 250,000 visitors are expected.

FAPH is located on 76,794 acres entirely within Caroline County. Wetlands consume 6,500 of those acres. Of the remaining roughly 70,000 acres more than half, 42,000 are classified as Maneuver Areas. There are 28,000 acres of ranges in the southeastern portion of the installation.

The Maneuver Areas extend the length of the FAPH installation boundary, historically creating a large and substantial buffer between training activities and the environmentally sensitive Corridor area between FAPH and the Rappahannock River including the Town of Port Royal and the Portobago Bay residential community.

These Maneuver Areas along the northern FAPH installation boundary slope down to The Corridor, the area between FAPH and the River. Use of these areas for maneuvers rather than as ranges is consistent with Army guidance. (See Army Noise Operations Manual.) Sound levels are higher at a given distance downwind than at the same distance upwind, an effect first noticed at least as early as the Civil War. The Army guidance is to not locate a range upwind "from a noise-sensitive area."

The proposed EOD Field Training area is to be located in a part of what is now the Maneuver Area along the north installation boundary that is above the Corridor. The stated Army rationale for this location is in part that it is not currently used.

The Portobago Bay Homeowners Association (PBHA) December 2008 response to the FAPH EA incorporated here by reference and subsequent questions and FAPH answers summarizes how the above past FAPH land use has been experienced in the neighboring 20-year old community. They describe the Corridor's rural ambient quiet as being only infrequently and sporadically intruded upon by military noise. Portobago Bay's perception of FAPH is consistent and its residents concur that at least up until this year, except for infrequent loud explosions. FAPH training activities have not encroached on the enjoyment of their property.

Portobago Bay

Portobago Bay emerged into being in 1985 with a developer's plan. (Caroline County Planning Commission minutes.)

The Caroline County Planning Commission received a "preliminary sketch" of a proposed subdivision from Mr. Larry D. Silver and his design team on November 20, 1985. (See Minutes in Appendix.)

On January 15, 1986, Mr. Berkley Mitchell and Mr. Tom Welch representing Silvers Inc. presented a revised sketch plan and a preliminary plat for Phase I. The Planning Board approved Phase I.

At successive Board meetings on March 19, 1986, April 16, 1986, April 20, 1986 and May 21, 1986 the Board approved the 494-acre Portobago Bay residential community plan.

There is no stated opposition to the plan including no record of opposition from FAPH.

2004: FAPH Abstains From Public Participation in Port Royal Area Land-Use Planning.

In August of 2004, the Caroline County Planning Commission received comments from the Port Royal Community Advisory Committee regarding a draft Port Royal Community (land-use) Plan that creates a significant new residential land-use area larger than the entire Town of Port Royal. (Caroline County Board of Supervisor Minutes, 11/23/04.)

The Port Royal Committee Chair, Mr. Jimmy Street, testified in part as follows:

> The best indication that the plan before the Planning Commission represents the will of the citizens is that those of you that have served on the Commission for quite some time knows that the citizenry of this area is extremely active. If you are doing something regarding land use or planning that they consider

being inappropriate for the area, they have in the past filled this room up and are not at all shy about letting you know when the Planning Commission has made an error. All that being said, the fact that it does not appear that the room is full or anyone else is going to speak, it may be the greatest endorsement (of the plan) before the Planning Commission.

The public hearing was then closed.

The Commission adopted the Port Royal Plan in October 2004. FAPH did not publicly engage in the 2004 Port Royal land-use planning process.

2004 Army Takes View Residential Land Use is Incompatible and Initiates Actions to Halt Residential Land-Use Around FAPH.

In 2004 (before the 2005 BRAC recommendations were made) the Army established a conservation consortium to acquire development rights around the garrison. (See briefing materials, "Fort A.P. Hill Army Compatible Use Buffer Program, DoD/EPA/States Region III Environmental Colloquium", Terry Banks, 31 October 2007.)

The FAPH Army Compatible Use Buffer (ACUB) program is implemented through cooperative agreements with three partners within a larger coalition that includes FAPH, U.S. Fish and Wildlife Service, Virginia Outdoors Foundation, Virginia Department of Historic Resources, The Conservation Fund, The National Conservancy, the Trust for Public Land and Northern Neck Land Conservancy. Through the program the Army is able to acquire development rights to land surrounding FAPH, effectively halting any further residential land use.

The 76,000-acre FAPH seeks through the ACUB program to halt development on 35,000 acres in a three-mile band around the garrison property. Its top priority is 16,000 acres in The Corridor between FAPH and the Rappahannock River. The Town of Port Royal and the residential community of Portobago Bay are located in the Corridor.

To date, FAPH has acquired development rights to 4,200 acres in the Corridor. These acquisitions have cost reported millions, as much as three to four times the amount of money that FAPH contributes annually to the Caroline County economy, and they have been funded directly and indirectly with federal, including base closure monies, and state taxpayer monies. The Army rationale for the expenditure of public monies for these acquisitions is to halt residential development around FAPH because, as the Army states, residential use of land surrounding FAPH is incompatible with the Army's military land use.

The Army's position over the last four years is that residential land use within a three-mile band around FAPH's 76,000-acre installation is incompatible with FAPH's mission. It is prepared to spend tens of millions of dollars more to address the incompatible land use.

Purchases to date have all been made in FAPH's top priority area, the Corridor area that includes both the historic Town of Port Royal and an area around the Portobago Bay residential community.

ACUB Priority 2 is along the southern border, roughly 8,300 acres. The Army states separately in its installation environmental assessment that: This area will be significantly impacted by several new range construction projects initiated to support the Army Campaign Plan. These ranges are programmed for construction in FY 06 through FY 12.

ACUB Priority 3 is on the western border and is an estimated 11,000 acres. The Army states: Several new training facilities have been or are scheduled to be constructed in the next three years that will increase noise levels on the western and northern boundaries.

Finally, the Army comments on the training impact on the Haymount development as follows: The possible influx of suburban residents near installation boundaries may increase the likelihood of conflict concerning land use issues. Installation air and vehicular traffic from helicopters and conveys, as well as noise and smoke form ammunition and incendiary devices may provide sources of controversy among residents and the installation.

2004: Portobago Bay and Corridor Property Values Increase.

The Army recognizes the current and future value of the real property in The Corridor.

In its FAPH environmental assessment the Army evaluates the residential land use value of land in the Corridor including the historic Town of Port Royal, areas of residential housing such as in the Snowden area, Portobago Bay, and the agricultural-use lands under the County's 25-acre residential development rule. Underlined portion is added.

> This area is the most threatened by development due to the location between the Rappahannock River and the Installation. U.S. Route 17 provides a direct transportation link to the burgeoning southern suburbs of Fredericksburg. Development pressures are following Route 17 south towards FAPH. In addition, the desirability and price of waterfront property has skyrocketed in recent years, and the Rappahannock River provides some of the best-undeveloped river frontage in all of the state. The pressure to develop these lands over the next ten years will be enormous. The threat in this area is evidenced by the imminent construction of the 4,000-home planned development, Haymount, and a 1,500-home planned development located 7 miles from the Installation's northern border. Within the last several months a large developer purchased a 1,500-acre site contiguous to the Installation called the Moss Neck Manor tract.

The Proposed EOD mission will destroy the value of this property.

Even now, the Army's ACUB initiative is creating a market environment that tends to reduce both present and future residential property values. An informed buyer is more likely to be disinclined to purchase a residence where the adjoining property has an easement prohibiting residential use on the basis that such use is incompatible with nearby military use of land.

2007-2008: FAPH Training Activity.

According to FAPH, it ratcheted up annual numbers of soldiers trained in 2007 to 57,000 and in 2008 to 67,000. In 2007 and 2008 the Army documentation of FAPH noise levels appears to comport with the experience of neighboring residents. Except for infrequent loud explosions and large weapons fire, FAPH training activities did not encroach on resident's enjoyment of their property.

While the Army is required in its environmental assessments to give notice to the public by providing a motion picture of sorts of its proposed missions, showing the cumulative flow of past, present and future impacts so as to put new missions in their proper context, the Army instead, at least for the EOD, only displays selected snapshots to include in its three assessments. However, even if only by chance, the 2007 and 2008 EOD environmental assessments do document FAPH noise levels (if not the frequency of noise events) during the period.

The Noise II level contours for small arms and large-caliber fire are virtually the same. Either noise from small-arms and large-caliber fire produce similar noise level contours or the explosive weights of the large-caliber weapons being fired at FAPH in 2007 were relative low. Either way, neighboring residents generally experienced the resultant noise sporadically and as background noise except as noted above on occasion when the noise was intrusive. (Figure 4.2-5 on page 4-144 of the 2007 BRAC EIS document noise level contours for FAPH Small-Arms fire. Figure 4.2-6 on page 4-145 of the same 2007 assessment document noise level contours for FAPH Large-Caliber Weapons and Demolitions.)

In 2008 the FAPH EA documents virtually the same noise contours for both small arms and large-caliber fire at FAPH. (See Figure 3.2 on page 3-11 and Figure 3.3 on page 3-12.) There is 1/5th to 2/5ths of a mile distance between the contours. And the Noise II contours for both are at least three miles away from Portobago Bay.

Most importantly, FAPH noise historically has been sporadic. Many weeks go by without any noise. The Army has chosen to not document the historic frequency of FAPH noise events.

In PBHA's December 2008 response ambient community noise levels were described. It is a quiet area. In its remarks, the PBHA took note of the following Army guidance in making adjustments for noise in rural areas.

> "Ambient noise is relevant to how loud a community perceives military noise. (The Army's Noise Operational Manual cites the Air Force Land Use Planning Guide to make the point.) The difference between rural and urban ambient noise perceptions warrants a 20-decible span in adjustment. A correction of 10 dB is given in a quiet rural community. A correction of (-) 10 dB is given in an urban community."

There is no indication that the Army has made this adjustment and its own procedures dictate that it should, thus invalidating their own data and conclusions.

2. Present Land Use

In 2009 FAPH Training Noise Intrudes, Causes Property Damage.

Unwelcome change in FAPH training noise has already marked 2009 as being unprecedented in the numbers and noise levels of FAPH noise events. The events have been characterized as intrusive and unacceptable and have resulted in unprecedented numbers of complaints and property damage claims being filed with the Army.

The Army states that the numbers of calls to protest reached FAPH record levels this year. For one particular weekend the calls reached near a hundred.

The Army also states that up until this year, FAPH had received three claims of structural damage to houses in the Port Royal area. It has disclosed receiving at least four claims thus far in 2009 alone.

The force of a demolition blast blew out the window of a church.

The Army SEA does not report the total FAPH demolitions this year. No baseline is provided to gauge the impact of the proposed mission. Again, the experience of neighboring Portobago Bay residents is that there have been several weeks of intrusive, highly disruptive and unacceptable noise from training events mixed with occasional load and intrusive isolated noise events. Over 20 years no resident can recall such loud; occasionally ongoing intrusive and unacceptable noise intrusion.

Because the Army does not report the kinds of training currently being undertaken at FAPH, it is unknown whether the greatly increased noise experienced by neighboring residents this year is generated by the introduction of new training, training in closer proximity to the installation border and/or the use of larger weighted explosives. What is known is that the Army has documented that the EOD mission will add to its current training activities day-in and day-out year-round at least as loud and damaging noise levels.

3. Future Land Use with Proposed EOD

Residential Land Use Destroyed.

24,163 EOD New Demolitions Annually at FAPH.

For its proposed future training the Army sets forth in three different documents the numbers of new annual demolitions it proposes at FAPH. (See the BRAC EIS, the FAPH EA and the FAPH SEA for EOD.) The numbers are below.

Large Caliber Weapons and Demolitions.

50 lb.	40
25 lb.	276
14 lb.	500
TOTAL	816

Medium-Size Demolitions.

1.0 lb.	400
1.25 lb.	6,032
2.5 lb.	4,468
TOTAL	10,900

Small-Size Demolitions.

0.5 lb.	9,000
0.25 lb.	3,447
TOTAL	12,447

TOTAL NEW ANNUAL DEMOLITIONS PROPOSED AT FAPH EOD TRAINING AREA. 24,163

Above and beyond historic or even the currently high and intrusive levels of demotion activity thus far in 2009 at FAPH, the Army proposes to detonate each year more than 24,000 additional explosives in close proximity to its installation border and neighboring residents including the Portobago Bay community.

These activities are the proposed starting point. Army training guidance is to plan for a 10 to 15 percent increase in activity levels annually.

Also, these proposed activities do not take into consideration the future impact of changes in technology. Better and more energetic explosives should be expected.

Location of Proposed EOD Demolition Training Activity.

All three Army EOD environmental assessments propose to locate the EOD training area within a mile of neighboring residents and a mile and a half of Portobago Bay.

The EOD field training area is identified in the 2007 BRAC EIS, expanded in the 2008 FAPH EA and its usage modified in the current 2009 FAPH SEA. The discussion of the EOD field training location in the December 15, 2008 PBHA response to the FAPH EA is incorporated in its entirety in this response.

The first two Army assessments above did not disclose the proximity of the field training area to the Portobago Bay residential community either in the text of the assessments or on their maps. In the latest SEA assessment the community is referenced in the text but its location does not appear on maps.

SEA Figure 2-1 "EOD Site Location" displays a FAPH area map and identifies the SEA proposed location of three large demolition sites five miles inside the installation border. It does not show the location of the EOD field training area next to the installation border nor does it show the location of the Portobago Bay residential community just outside the installation border. If a picture is worth a thousand words, the few words in the text are inadequate to overcome the deceptive impression created by the map.

The Army's continuing failure to fully disclose the EOD field training land-use incompatibility issue (and in turn the SCOE training relocation to FAPH) began in the 2007 BRAC EIS. In addition to not disclosing the proximity of a residential community in that document, the Army did not consult with a single Caroline County official in its preparation. Section III of this response elaborates more fully on the scope and depth of the Army's continuing omissions to fully disclose the Caroline County land-use incompatibility issues in its proposed actions.

SEA Moves Three Demolition Sites Back From Installation Border.

The June 2009 SEA moves three demolition sites away from the FAPH northeast corner installation border and the Portobago Bay residential community.

Specifically, it moves two 25 lb. and one 50 lb. demolition sites to an area used currently by the Navy for experimental demolition testing. Noise contour maps in the various Army environmental assessments indicate that the current Navy testing is of relatively small devices.

The result is that 276 (25 lb.) annual demolitions and 40 (50 lb.) demolitions are moved five miles away from the Portobago Bay community. Remaining to be detonated annually in the proposed field training area a mile and a half from Portobago Bay are 23, 897 explosives including 500 large-caliber explosives.

The SEA proposes no other changes at FAPH. Nor does it identify where the displaced Navy mission will be placed.

CDNL Noise II Level Impact of SEA Proposed Shift of Three Sites.

The CDNL Noise II map contour marks the point inside which the Army does not recommend residential land use.

Detonations are to be made only during daytime at the three demolition sites (D1, D2 and D3) proposed to be moved. The Army provides no C-weighted daytime noise contours in the SEA.

The omission to include a C-weighted daytime noise contour is compounded by the Army's failure to make clear that demolitions at the D1, D2 and D3 sites are to be authorized up to 100-lb. equivalent trinitrotoluene (TNT) and not limited to the 25 lb. and 50 lb. equivalents suggested. On page 3-15 of the Army's SEA, Table 3-7 "Demolitions Charges Due to the Proposed Action" identifies charges of 25 lb. and 50 lb. And immediately above the table the text states: "The proposed relocated EOD demolition range area would facilitate demolitions training with TNT equivalent charges of 50 lbs or less. The types and

number of charges expected to be used under the proposed action are outlined in Table 3-7."

Two paragraphs below Table 3-7 the SEA states:

> The proposed action of relocating the (276) 25 lbs detonations at D1 and D2 to an already existing and operating demolition site within the interior restricted area of the installation, would result in the Portobago Bay community no longer being within the complaint risk (Peak) contours for these activities. Additionally the Portobago Bay community would no longer be within the complaint risk (Peak) contours for the (40) 50 lbs charges relocated from the original D3 site.

> Then in the same paragraph and immediately following the Army inserts the following: "Under the proposed action, demolitions training would be restricted to current range TNT equivalent weight limits. Exceptions to these limits are granted case by case."

By this, the Army switches out the 25 lb. and 50 lb. weight limits. Significantly, on p 3-12 of the SEA, in a paragraph that describes FAPH general noise practices, the Army discloses that "(a)ll demolitions training is restricted to less than or equal to 100-lb equivalent trinitrotoluene (TNT)." Further, the Army discloses that current range equivalent weights at dusk (before 11 p.m. at night) are limited to 50 lb. weight. Citizens must at a minimum assume that the Army can use the proposed new D1, D2 and D3 EOD blast sites for detonations up to 100 lb. (TNT) equivalents and, at dusk until 11 p.m., 50 lb. TNT equivalents.

The Army provides no CDNL noise level analysis for either usage.

<u>EOD Field Training CDNL Noise II Contour After Removal of Three Sites.</u>

The Army states that for CDNL demolition noise contours in the proposed EOD field training area, moving the three sites back roughly four miles from the FAPH installation border for the 316 annually proposed demolitions would change the proposed Noise II level contours in the training area very little.

> There would be a very slight decrease in the extension of Zone II levels off the eastern boundary, but the change would be so slight that the C-weighted Day-night Level (CDNL) contours depicted in the EA for the 2,059-acre EOD site would still be an adequate representation of the Fort A.P. Hill annual noise environment.

In the FAPH EA (Figure 3-6) "Proposed Action Large Caliber and Demolitions Noise (CDNL) Contours", the Zone II (115 dB) contour line is a third of a mile from Portobago Bay.

With the SEA proposed removal of three sites, 500 large-size detonations annually are authorized in the EOD field training area immediately next to the FAPH installation boundary along Route 17.

The Army does not disclose the CDNL and/or C-weighted daytime noise levels for these Large-Caliber & Demolition activities.

Still, the Army has provided the following.

As noted above, the CDNL Noise II contour lines of the 2008 FAPH EA assessment remain virtually unchanged with the move of the three sites. That places the CDNL Noise II contour line a third of a mile from Portobago Bay, uncomfortably close. The SEA-relocated sites' Peak contour Noise II line falls in the immediate area of this CDNL line. The FAPH EA CDNL Noise II line thus cannot be for the three relocated blast sites. That suggests that it is the CDNL Noise II contour for the only other authorized large explosives in the EOD field training area, the 500 14 lb. explosives.

But without Army disclosure the Portobago Bay community has no notice of the actual impact.

Lastly, the Army repeatedly in its EOD environmental assessments has qualified its CDNL mapping for existing large-caliber weapons and demolitions at FAPH. It states:

> During periods of intense training, the short-term CDNL at a particular range would be expected to be larger than that depicted

> here. Such periods of intense activity can lead to complaints, particularly when artillery firing takes place at night...As expected, some noise complaints have been documented and investigated after large-caliber training events.

The Army does not disclose the nature of this "intense training". Certainly the proposed daily, year-round EOD training will be intense. The Army needs to identify the kinds of weapons and demolitions used in these "periods of intense training", and the frequency with which detonations occur over the period. Such information is important baseline information upon which citizens may be able to better judge the impact of the proposed EOD training mission.

CDNL Methodology Issues.

Methodology in the CDNL mapping in the three Army EOD assessments is a concern. The Army decision to average noise over both day and nighttime on a 365-day basis is likely to have the effect of shrinking the Noise mapping contours and not reflect their actual impact on residential land use.

The Army does not disclose how much of the proposed EOD training is to be done in the daytime and how much is to be done at night. But its entire noise mapping is done on a CDNL, day/night time annual basis.

The Army identifies one EOD nighttime training activity and that for the smallest explosive to be used.

> The proposed action would introduce about 800 demolition-training activities equal to 0.5 lb at the proposed EOD range during nighttime hours (11 p.m. to 7 a.m.). On average, two or three of these small charges (0.5 lb) per night would be detonated at different training sites. Depending on weather conditions and the training sites used for nighttime detonations, areas adjacent to the installation boundary could be exposed to training noise that would vary from clearly audible (>115 dBP) to, more rarely, loud (>130 dBP).

The 800 nighttime detonations are 0.03 percent of the total 24,000 plus detonations to be done annually.

Without addressing here the obvious potential even this proposed nighttime activity of the smallest explosive to be used would generate for residents in the adjoining community, the question is are these 800 detonations the only night time detonations? If so, then why has the Army used a CDNL annual measurement in all three of its assessments for its large-size explosives?

Finally, as to adjustments for the time period, the Army Noise Operational Manual provides guidance that "(t)he typical assessment period over which the noise energy is averaged is 250 days for Active Army installations and 104 days for Army Reserve and National Guard installations."

Given the nature of the Army proposed training mission, the Army is duty bound to the soldiers it expects to train to generate and disseminate the most fact-based analysis in the furtherance of its obligations to not compromise that training mission.

The Army needs to disclose its proposed day and nighttime training activities. Its large caliber and demolitions CDNL (or if appropriate daytime only) noise mapping should be redone based on 250 days. The current CDNL Noise II contour line falls one-third of a mile from Portobago Bay.

The Army Noise Operations Manual also refines its guidance for noise calculating adjustments in rural areas.

> This one adjustment covers a 20-decibel span with a correction of 10 dB given to noise made in a quiet suburban or rural community and a correction of minus (-) 10 dB given to noise made in a very noisy urban residential community. This is important for DOD planners because, since most military installations are located in rural areas where the background noise is generally low, it follows that complaints can be expected from relatively low levels of DNL.

The Army must disclose whether this adjustment has been made. Doing so is again in the Army's interests of protecting its mission. The constitutionally protected property rights of citizens are directly in the Army's line of fire. Citizens have a right to know what the Army knows about noise impact on surrounding land use.

SEA Peak Noise II Level Impacts.

Peak noise contours provide the absolute maximum sound level for an individual acoustical event. They are a better indication of the potential for concern and the possibility of complaints than the CDNL. Inside Peak Noise II mapping lines residential land uses is not recommended.

For the SEA proposed site changes only, the Peak Noise II level contours are as follows.

In The Corridor between FAPH and the Rappahannock River the SEA Noise level II (115 dB.) line for 286 25 lb. demolitions annually runs over the historic town of Port Royal and roughly three miles east and west in an arc back across the Corridor to the FAPH installation boundary. This includes at least half of the Snowden residential area.

The noise level II (115 dB.) line for 40 additional 50 lb. demolitions annually crosses the river into King George County at the Town of Port Royal and arcs back in either direction towards the installation border roughly four miles in either direction.

The Army states that noise levels in Port Royal and the surrounding area including virtually all of the Snowden residential area will remain the same as proposed in its two previous environmental assessments. That means that noise levels for the 316 proposed detonations would be 120 dBP to 125 dBP.

In the first two Army assessments, the same levels were present in the Portobago Bay community. The SEA proposal changes this outcome for the community for the three sites being moved four miles back from the installation border. The 50 lb. SEA Peak Noise II contour

line is now between FAPH and the community less than a mile away; the 25 lb. noise II contour line is almost a mile away.

The different SEA outcomes for the Portobago Bay community and others in The Corridor are driven by the new site location.

The Army's AR-200 regulation requires that "(n)oise sensitive land uses be discouraged in areas where PK 15(met) is between 115 and 130 dB, medium risk of complaints." PBHA raised this issue in its December 2008 Response.

For Portobago Bay and only for the Peak Noise II contours for the three sites identified in the SEA proposal, the SEA proposal appears to technically address the problem. The Army's violation of its own regulations continues however in its SEA proposal which blankets a wide swath of land in the Corridor roughly eight miles long and at its widest point nearly two miles wide with noise levels incompatible with residential land use. This area includes the Town of Port Royal, the residential area known as Snowden and individual residences. While much of the remaining area is currently used for agricultural purposes, the owners of this land hold substantial future value in their lands' potential use for residential use under Caroline County's 25-acre rule.

The Army Operational Noise Manual includes an EPA table that limits the number of recommended blasts a day depending upon the noise generated by the blast. For above 125 dBP, it recommends no demolitions. This does not govern Army activity but it is suggestive of the Army's awareness of the likelihood of complaint for the SEA-covered 316 detonations a year.

Unfortunately, the residents of Portobago Bay and their neighbors in the Corridor have no idea what the actual Peak levels of noise may be from the proposed EOD training activity. The Army SEA provides Peak noise contours only for 50 lb. and 25 lb. explosives. But it authorizes itself to use explosives up to 100 lb. at the three relocated sites. No Peak noise mapping is provided for these detonations. It can be assumed that the resultant Peak Noise II levels would reach Portobago Bay and across The Corridor.

Peak Noise II Impact From EOD Training Area With SEA Change.

The Army says that with the SEA change Peak noise levels in Port Royal and along a large swath of the Corridor will remain at 125 dBP. Despite the SEA proposed removal of those Peak levels in Portobago Bay, residents have reason to believe that noise levels of 125 dBP will continue to be reached in their community even after the move of the three sites. Five hundred (500) large-size explosives are still to be detonated annually in the EOD field training area along the installation border.

The Army provides no Peak noise mapping for these demolitions.

What is known from the Army assessment documents follows.

The 2007 Army Corps of Engineer prepared BRAC EIS Peak level analysis for large demolitions based on 500 14 lb. and 184 25 lb. explosives to be detonated in the proposed EOD field training area produced a Noise II Peak contour line that extended almost three miles beyond Portobago Bay, crossing the Rappahannock River into King George County. The Army said in its BRAC EIS that the above contour was based on "approximately 700 demolition–training activities greater than or equal to 14 lb at the proposed EOD range."

In the following year the Army engineers evaluated a different mix of 276 25 lb. and 40 50 lb. explosives. It produced virtually the same Noise II contour lines as the 2007 analysis. Given these two results, it is reasonable to assume that Peak Noise II contours for 500 14 lb. explosives detonated in the same location will extend at a minimum beyond Portobago Bay more than half of that three-mile distance, putting those Noise II contours well beyond Portobago Bay. The resultant noise levels in Portobago Bay then will likely approximate those the Army indicates under virtually the same conditions for Port Royal, 120 to 125 dBP.

Finally, looking at the Army noise mapping in another way, the ratio of the Peak Noise III (130 dBP) contours to the Peak Noise II (115 dBP) contours on all the Army Peak noise maps is 1:2. And the Peak Noise III contours on all the Army maps routinely fall within the

immediate vicinity of the CDNL Noise II contours for the same explosives. That suggests that for the 500 14 lb demolitions the Peak Noise II contour will extend twice as far as is the CDNL Noise II contour, which the Army says is a third of a mile from Portobago Bay. Again, by this reasoning the Peak Noise II contour for the 500 14 lb. explosives should fall far beyond Portobago Bay.

Again, without Army disclosure of its noise mapping there is no way to actually know.

Peak Noise Levels and Vibrations.

The Army's EOD assessments state that "(a)irborne vibrations, their effects of structures, and peak sound levels are strongly correlated."

The Army goes on to state: The level of airborne vibrations generated by the activities at the proposed EOD range at Fort A.P. Hill would be anticipated to be great enough to introduce vibration levels just barely perceptible by individuals and to generate concern from homeowners.

The Army's analysis makes clear that noise levels of 120 dBP are to be expected within the eight-mile long and two-mile wide area in the Corridor identified above. The Army states that such sound levels will produce "concern by homeowner about structural rattling and possible damage." The Army defines "possible damage" as glass and plaster cracks. The Army assessments document that the proposed EOD training will include at a minimum 316 such vibration-causing demolitions up to a maximum of 816 a year in The Corridor.

Thus, the EOD proposal, by the Peak noise II levels that it generates across the Corridor, continues to first directly threaten the quality of life for residents in the Corridor, secondly, damage property, and thirdly, devalue homes and the future value of current agricultural land. This area impact in turn negatively impacts the quality of life and the value of Portobago Bay resident's property.

Not addressed above are the 23,347 other demolitions annually that are proposed to be conducted in the EOD field training area along the FAPH installation border.

Impact of Small-Size Demolitions in the EOD Field Training Area.

The Army proposes to detonate 12,447 small C-explosives annually at the EOD field training area a mile and a half from Portobago Bay.

No Peak level noise mapping is disclosed.

In the 2007 BRAC EIS (Figure 4.2-5 on p. 4-144) the Army provides then current FAPH Zone II noise contours for small-arms fire. Again in 2008 the Army Corps prepared assessment provides Zone II noise contours for current small-arms fire. Existing small-arms fire at FAPH is M16 (5.56 mm amo), M240 (7.62 mm amo) and M249 weapons (5.56 mm amo) and the 50-caliber machine gun.

But no Peak noise mapping is provided for the EOD-proposed training using C-explosives.

When the current small arms fire Peak noise contour maps are transposed on the proposed EOD field training area the small-arms noise II contour lines reach to Portobago Bay.

How is small-arms fire Peak noise and small C-explosive Peak noise different? Citizens need to know.

The Army states that for the proposed EOD training the smallest, 0.5 lb explosives could expose "areas adjacent to the installation boundary...to training noise that would vary from clearly audible (>115 dBP) to, more rarely, loud (>130 dBP)". This training noise would occur between 11 p.m. and 7 a.m., an exception to the more likely daytime noise events.

The noise from the proposed 800 demolitions of the smallest C-explosives approaches the boundary of Portobago Bay. What are the

Peak noise contours for the other small C-explosives? The Army needs to disclose this information. It has done so for FAPH existing small-arms fire, but without having the noise mapping for the proposed small C-explosives there is no basis for comparison and thus again no notice to citizens of their impact.

Impact of EOD Proposed Medium-Size Explosives.

The Army proposes to detonate 10,900 medium-size explosives annually in the proposed EOD training area a mile and half from Portobago Bay..

Assume the 10,900 medium size demolitions were the total number of EOD demolitions to be done in the EOD training area.. Given the site location near a residential community, would the Army be expected to disclose the Peak noise levels to be produced by those 10,900 detonations annually? Having reviewed Army materials on medium-size explosives and their startling and annoying effect on citizens, the PBHA is assured it would.

Over three years and three assessments the Army has disclosed nothing about the noise this activity will generate.

No disclosure no notice. The Army's continuing omissions to disclose information about the noise impact of the proposed EOD training at FAPH screams, and in doing so, it drowns out the Army's parsed admissions. Without disclosure there is no notice of proposed activity.

Cumulative Impact of Other Missions.

Two other new missions are identified at FAPH, the AWG and the NSWECE. The latter is expected to detonate explosive charges up to 35 lbs. The frequency of demolitions is not provided for either.

Their loudest noise impact is likely in the Port Royal area and is depicted in part in the FAPH EA noise maps. The loudest impacts do not appear to reach Portobago Bay.

Proposed EOD Field Training Noise and The Weather.

Army guidance is that when predicting how much noise a community will receive from military training, weather is a more important variable than the caliber of the weapon. Army studies have documented that different weather conditions can cause a variance of 40 decibels from the same size weapon.

Wind direction alone has an impact on how noise travels. Half the year the wind from the proposed site will blow towards the Corridor, Port Royal and Portobago Bay.

Weather conditions matter. The Army Noise Manual describes bad (because of its impact on noise) conditions as those 1) where there are steady winds of 5-10 MPH with gusts of greater velocities (above 20 MPH) in the direction of residences close by, 2) Clear days on which layering of smoke or fog are observed, 3) cold hazy or foggy mornings, 4) days following a day when large extremes of temperature between day and night are noticed, and 5) generally high barometer readings with low temperatures. Such conditions are not unknown, even common in Portobago Bay.

There is no evidence in the Army's three environmental assessments that its analysis of noise impact has taken into consideration weather factors.

This omission is important for at least two reasons.

The first is the extraordinary closeness to a residential community of the proposed training area for the detonation of 24,000 explosives annually. The Army's limited noise mapping disclosures in one instance leave Portobago Bay less than 1800 feet from the CDNL line inside of which the Army says residential use is not acceptable. As noted above in the methodological comments, this line already may be under estimated. It appears without further disclosures that the Army defined bad weather alone could cause that line to advance into Portobago Bay. That is a threat to both the residents of Portobago Bay and the Army. For the residents, their quality of life and the value of

their property is threatened. For the Army, their critical training mission is threatened, subject to being compromised or even stopped.

Secondly, the Army located site ignores Army guidance not to place a range above sensitive land uses. Noise moves downward. Weather can encourage that tendency. The Army has stated that Portobago Bay is below the proposed site and that there are no natural land barriers between the proposed training area and Portobago Bay. In fact there are natural declivities encouraging sound to roll into Portobago Bay.

In its SEA, the Army's noise maps for the existing and proposed Peak Noise II contours for the three sites demonstrate that sound in the EOD training area and that of the new D1, D2 and D3 blast sites is pulled by the terrain down hill towards The Corridor and Portobago Bay. The contour lines to the south on both maps remain essentially fixed even though the three demolition sites are pulled back to the southwest four miles. It is the line contours to the north and east, down hill from the demolition activity that shift. This fact is likely a factor in the Army's estimate that night noise from the smallest C-explosives will reach 115 dBP to sometimes 130 dBP near Portobago Bay.

Without addressing the weather impact on the extraordinary EOD training-area noise detonated extraordinarily near a residential community, the Army assessment exhibits recklessness.

<u>The Army Position on Land Use Compatibility.</u>

In its three FAPH EOD environmental assessments beginning in 2007 the Army concludes that the detonation of 24,000-plus explosives annually along its installation border next to the Corridor will have "short and long-term minor adverse impact" on adjoining land use.

Beginning in 2004, before the 2005 BRAC and the first of the three FAPH EOD assessments, the Army began organizing to appropriate and spend millions in taxpayer dollars, directly and indirectly, based on the Army's claim that the 35,000 acres of land surrounding FAPH is not compatible with the Army's land use. The Army identified the Corridor including the Town of Port Royal and the residential community of

Portobago Bay as its area of greatest concern and made it its top land-use priority. The Army since has acquired in part with public monies the development rights to more than 4,000 acres of surrounding near-by land. Those lands are around the Town of Port Royal and the residential community of Portobago Bay.

Further, the Army also acknowledges that the SCOE training that includes nearly 900 trainees to be bused daily to FAPH is itself incompatible with Caroline County residential land use in its comments in its installation environmental assessment (See above).

The Army's overall conclusion of "no significant impact" in its three assessments is untenable. That conclusion is belied even by the selective, partial disclosures that the Army makes. But if any should still doubt, the Army's words and actions on its second front, the ACUB front, affirms and loudly proclaims the actual position of the Army.

The Army's ACUB actions demonstrate that the Army position is that land use within a three-mile (35,000 acre) band around FAPH is not compatible for residential land use, and most particularly the land in the Corridor is not suitable.

This was not the position of the Army before 2004. Before then the Army and Caroline County were for the most part good neighbors because neither intruded upon the other. That changed in 2004 and since then the Army has quietly and unilaterally moved to take and dictate the use of Caroline County citizens' property surrounding FAPH. In the process and without citizen's consent the Army is seeking to extend the Army's presence from 76,000 acres to as much as 110,000 acres. As will be demonstrated in the next section, the result is to devalue property, slash the County tax base, block citizen control of its County's economic future and the preservation of its natural resources. A good neighbor no more, the Army intends to live off the land, the land of Caroline County citizens. Preserving Caroline's future is the challenge and the right (duty) of Caroline citizens guaranteed by the Constitution.

As Caroline County citizens and American patriots the residents of Portobago Bay are saddened by the Army's proposed action. They recall those who have died for their freedom. They reflect: How do we now in

turn defend our freedom? An American soldier would never yield his family's property, his family's constitutionally guaranteed economic foundation to be free, to secure opportunity. We pledge as we go forward to work to keep our property and to preserve Caroline County's control of its future to do so in a way that honors and pays tribute to the values for which our soldiers have died. We want our good neighbor back.

The PBHA Position on the Proposed EOD and Land Use Compatibility.

The PBHA agrees with the facts as thus far presented and the Army's position that the EOD and SCOE training missions are not compatible with residential land use in Caroline County.

Specifically, the proposed EOD field training at FAPH is most assuredly incompatible with Portobago Bay residential land use and the residential land use of our neighbors in the Corridor.

III. SOCIOECONOMIC IMPACT

1. Background: The Crescent.

In what has been labeled "The Golden Crescent" there are 8.5 million people living in a crescent shaped area running from Baltimore, Maryland through Washington, D.C., Richmond, Virginia down to the Norfolk and New Port News, Virginia area. In the not too distant future the entire area will be linked by commuter rail.

Population growth in the Crescent is from the ends to the middle.. Caroline County is in the middle.

Coming changes create enormous opportunities for Caroline County citizens. They do not want to go the way of their neighboring counties to the north, Spotsylvania and Stafford. They do not want urban sprawl. They want to preserve the rural quiet lifestyle of

Caroline. But they do not want a future that is financially strapped and without opportunity either. They want to preserve the nature of their county but with more quality jobs and a school system that no longer is one of the worst but one of the best in the state. They want water and sewer and broadband. The want the financial capability that is essential to preserve their extraordinary natural resources including the Rappahannock and Mattaponi rivers. Citizens want Caroline County to be valued, and in the process, they want the value of their property to grow in order to financially anchor their efforts to secure greater opportunity for themselves and their children.

FAPH needs to be a part of Caroline County's future. The reality is that FAPH is a part of the problem. Its actions work to destroy that future and mire Caroline County citizens in relative rural poverty, depriving them of opportunity to enjoy better lives, sentencing their children to a life without the kind of education all children should receive.

2. In the Past: Army Has Lived Off the Land.

FAPH Has Not Contributed Its Fair Share.

Virginia is second only to the District of Columbia in Department of Defense (DoD) per capita spending in the United States.

Nearly six percent of Virginia's workforce is DoD. Within the Golden Crescent, the Hampton Road area employs 59 percent of the Virginia total, producing income of $10 billion annually in the surrounding area. At the other end of the Crescent Northern Virginia accounts for another 25 of Virginia's DoD employment. Those jobs contribute $4.25 billion a year to the local economy.

In the middle of the Golden Crescent, Caroline County has two permanent DoD personnel assigned at FAPH and another 150 to 250 civilian employees.

The problem is not that the DoD does not employ in the center of the crescent.

The Fredericksburg area accounts for seven percent of Virginia's DoD employment. That employment contributes $1.2 billion to the area economy. But virtually none of that $1.2 billion annually comes to Caroline County. Dahlgren in King George County has 500 permanent personnel, 3,700 civilian personnel and additional 4,000-badged contractors. Its operating budget annually is $1 billion. Quantico has 13,000 permanent personnel. Their annual budget is also $1 billion. In comparison, the FAPH permanent DoD personnel accounts for 0.0001149 percent of the DoD Fredericksburg area employment. The FAPH civilian personnel account for 0.0143661 percent of DoD Fredericksburg area employment. (GovernmentContractsWon.Com)

As for DoD contracts, Virginia receives approximately $30 billion in DoD contracts, second only to California. Most go to the Hampton Roads and Northern Virginia areas.

For the nine-year period between FY 2000 and FY 2008 the DoD awarded contracts to contractors located in the Fredericksburg area that totaled $1.956 billion. How did these area county contractors do?

Over nine years those in Spotsylvania County received $637,000,000. The average each year was $70.8 million.

In nine years those in Stafford County received $530,300,000. They averaged $59 million each year.

King George County contractors received a total of $499,300,000 that averaged out to $55.5 million a year.

In the City of Fredericksburg they received $281,700,000, an average of $31.3 million a year.

And in Caroline County over nine years they received $7,400,000. On a yearly basis that does not total even $1 million.

Looked at another way, contractors in the City of Fredericksburg, Stafford and Spotsylvania counties together received over the last nine years $1.449 billion or 74 percent of the area DoD contract spending.

King George County contractors received over the same period 26 percent of DoD Fredericksburg area contract spending.

And Caroline County contractors received over the same nine-year period 0.0037 percent of DoD Fredericksburg area contract spending. To put that in another perspective, contractors in Caroline County would have to receive what they have received on average over the last nine years for another 38 years before they would receive as much as contractors in the next lowest recipient county received just last year.

FAPH is the second largest DoD installation in the northeastern United States. As a DoD military asset, it is ranked 22nd among bases nationwide. It occupies 76,000 acres, an estimated 21 percent of Caroline County. It is located in such a way as to effectively divide the County and compound the counties infrastructure development problems, making them more difficult and more costly.

In turn, while FAPH holds a fifth of Caroline County's land assets tax free, the Army has contributed to Caroline County 0.0001 percent of area spending on military personnel, 0.0143 percent of area spending on civilian personnel, 0.0125 percent of area operating budget spending, and 0.0037 percent of area DoD contract spending.

The record over the last nine years is clear and irrefutable. FAPH is more valuable to the Army than it is to Caroline County. The County effectively subsidizes the U.S. Army. The Army has been living off the land. That must change.

3. The Present: Army Takes Caroline County Land Resources.

FAPH ACUB Program to Increase Caroline County Citizens' Taxes.

Beginning in 2004, the Army at FAPH unilaterally initiated a program to acquire residential development rights to the 35,000 acres that are the three-mile wide band of land around FAPH.

Up until at least then, Caroline County citizens felt FAPH was a good neighbor. Citizens did not intrude on the Army's activities. And the Army for the most part did not intrude on theirs. So what changed?

The Army decided that it would change the nature of the FAPH mission, convert it into permanent, year-round training fields for Fort Lee soldiers and others, and in the process greatly accelerate the level of daily training and activity levels at FAPH. It knew as much as five years ago those increased training levels would no longer be compatible with residential land use. Since then it has appropriated and spent federal and state taxpayer dollars directly and indirectly to buy up property rights because, as it has stated repeatedly in its ACUB materials, the FAPH mission and surrounding residential land use are incompatible.

The Army looks at the Golden Crescent and sees a problem. Its solution is to take property to isolate training from the coming changes in the crescent. But in the process its actions are destroying opportunity for its hosts and neighboring Caroline County citizens.

The Army packages its easement takings as serving the purpose of preservation of the natural beauty of the Caroline County countryside, particularly in The Corridor along the Rappahannock River. Ultimately the Army actions do exactly the opposite.

Here is why.

Conservation easements are legal agreements. Landowners for a wide range of reasons and good motives may individually enter into an agreement to sell an easement that limits residential development on their land. The Army seeks limits on the land for residential development purposes forever.

Conservation easements may sound like they will preserve the land. That's not always true. By these agreements the landowner is not required to implement conservation measures or institute practices to reduce pollution. If not the landowner then who will pay for these efforts throughout time? This much is certain. A conservation easement does conserve one thing, the limit in the agreement on the use of the land and that limit is forever. More accurately stated, a

conservation easement terminates forever the development right in the property. The public receives no right to enter the property. Scenic views may even be out of sight of the public.

Generally, tax benefits are seen as a primary motivation for landowners to enter into a conservation easement agreement. For instance, depending on how sold an easement can provide significant income tax, estate tax, and real property tax benefits. An appraiser calculates the fair market value of the right being donated. The donation value equals the difference between what the property is worth with the terminated right at its highest and best use and without. The difference is the value of the easement. Once a right is sold, the property owner's property taxes should be lowered by the value of the easement. The organizations that acquire the easement do not pay local property taxes on the value of the property rights they now own forever.

It is the potential impact on Caroline County real property taxes of the Army 's plan that is of concern to Caroline County citizens now and into the future. The Army's campaign to terminate property rights on tens of thousands of acres of county land poses a direct threat to the county tax base and the ability of citizens to finance their future public needs. The Army already has the use tax free of a fifth of the county land. Taking property rights on nearly half that acreage again and driving down forever the value of that land will shrink the county tax base.

That lost revenue must be made up through all time from somebody else or done without. Caroline County citizens will directly subsidize the Army in higher taxes or do as they have too often, just do without public services and better schools.

When the County government grants an easement for some public good it carefully considers the impact on tax revenues through time. The taxes that land generates for public expenditures will have to be shifted in the future onto the county residents, pushing their tax rates up. So the county is careful to be sure that the public benefit from granting that easement more than compensates for the public cost of the easement. The Army's conservation easement initiative is being

done without any public involvement and any consideration of the public costs, which are potentially enormous. Effectively, the Army is spending future county tax revenues for its purposes. The cost to citizens is in fewer services, no water and sewer or broadband, no better schools and higher taxes.

Caroline County is not a wealthy county. Consider that the current Caroline County budget allocates zero dollars for Capital Improvements. Despite extraordinary efforts, Caroline County schools are among the worst in the state. That is not a criticism of the Board of Supervisors. The Board is doing everything humanly possible with the resources it has available. But others with contributing DoD partners have more resources. King George County, for example reports having $19 million in reserves this year. Its bond rating has actually gone up in these difficult economic times. Its schools are ranked among the best in the state.

To be clear, Caroline County citizens do not want an economy that is 57 percent military-driven as is King Georges' just like they do not want Spotsylvania sprawl. But while a fifth of Caroline County land area is occupied by FAPH, the Army has not and continues to not carry anything approaching its fair share of local costs. And now it is actually taking future county tax revenues to underwrite its land use incompatibility with surrounding Caroline County.

The decision to remove large areas of county land from the tax base is a County decision, a prerogative of citizens and not a decision for the Army to dictate.. This kind of destructive attack on Caroline County self-government and its economic self-sufficiency is not wanted and is to be resisted.

Caroline citizens care and want to preserve and protect their scenic countryside. They are capable of governing themselves and their county. The Army campaign in the name of preservation zeros out future preservation effort funding and bars the possibility of future public enjoyment of the land. The record is clear. The worst environmental conditions exist in areas where citizens are resource poor. Ultimately, preservation costs money. Conservation easements

on the scale pursued by the Army take from the public good and public resources while granting tax benefits to the few.

The problem is not whether the Army is acting within the law. It is. The problem is that the missions the Army intends to pursue -- including but not limited to the EOD mission -- are incompatible with Caroline County land use now and in the future. The Army has repeatedly and in its written documents acknowledged this as fact. Its easement campaign is based on that acknowledgement.

4. The Future Army Socioeconomic Impact on Caroline County.

Army Plans Threaten Caroline's Ability to Control Growth, Preserve Rural Areas, and Create Better Jobs, Schools.

Caroline County's future at the center of the Golden Crescent is dependent first on citizens' ability to govern themselves and their resources. Only then can they decide how to create a future that can both finance the preservation of the rural Caroline lifestyle and build the infrastructure and schools to support and create better jobs and quality of life for all citizens.

The Army at FAPH needs to be part of that future. But its current plan directly attacks and threatens to destroy Caroline County's financial foundation for self government, its tax base, and in the process it directly threaten citizens' opportunity to maximize their coming opportunities to decide and create a promising future.

The Golden Crescent Challenge to Caroline County.

Caroline County is in the middle of two rapidly expanding population growth areas, one to the north and one to the south. The trends are clear and seemingly irreversible. The possibility of a seamless metropolitan area from Maryland to Virginia Beach confronts the county.

The Army sees this coming change as a threat. It initiated its response plan to the threat in 2004. Already occupying a fifth of Caroline County's land assets tax free, it seeks to hunker down and

further isolate itself by acquiring the residential development rights in a buffer zone totaling 35,000 acres. FAPH is to be the permanent training fields for Fort Lee. The activity and noise levels in the 35,000 acres around FAPH will be unsuitable for residential living. Citizens living there now will see their quality of life destroyed and the value of their homes destroyed. Caroline County citizens would never adopt such a plan.

For them the Golden Crescent is both a threat and an opportunity. For Caroline the challenge of the Golden Crescent is to seize the opportunity.

The County is beginning to do this. It will not be easy. Old plans are being reviewed. They are found wanting to effectively halt urban sprawl at the county border. Hope is not a strategy. Where will "living wage" jobs come from? How Caroline County rises to this occasion and decides to develop will ultimately empower it to slow unwanted development and protect citizens against what otherwise already is growing pressure to raise county taxes. With no change in policies the county will need another new school in five to seven years. With no change in policies the county budget debt costs alone will grow by 2020 to $5,270,500 dollars a year for new school, additional student education and wastewater treatment upgrades. Note these new costs are for debt service only and do not include roads, emergency services, social services and maintenance of older county structures.

The County is confronted with the need to develop a strategy that will empower its citizens to seize the coming opportunities to realize better lives. That strategy must be budgeted. Public investments must be weighed to produce returns that hold the promise of keeping taxes down. The Army's plan works directly against all this.

The Army plan's attack on the county tax base and useable lands effectively seizes county resources. If land is unsuitable for residential use it is more likely to be unsuitable for commercial use. Even small office complexes that can produce as much as four times the tax revenues as a residential land use are to be discouraged. Existing residential property is devalued and the county loses additional revenues.

The Army ACUB plan leaves all future preservation and pollution control on its easement-constricted lands to the owner of the land. The owner is required by the agreement to do nothing. Uses of the land 20, 40, 100 years are bound by the agreement. Long-time Caroline residents know how farming economics has changed in the last 50 years. The next 50 years will be the same -- only faster.

Conclusion

The proposed location of the EOD field-training mission at FAPH is incompatible with residential land use in Portobago Bay and the Corridor. It will encroach upon and destroy the quality of life and devalue property in the community.

The Army plan to make FAPH the training fields for Fort Lee is incompatible with Caroline County land use. The Army agrees. In fact it declares that the tens of thousands of acres of county land surrounding it are incompatible with FAPH military training. The coming training will destroy residential and commercial use of the land.

The result of the Army's ACUB program will be to devalue land and lower tax revenues. Parcels adjoining land with easements will in turn lose value. Tax revenues will be lowered more. The County will have to raise taxes on other citizens or the county will have to do without.

The Army's plans in turn are in direct conflict with the interests of Caroline County and its citizens. It will drain the county treasury. It will limit future choices. It will force taxes to be raised. Caroline County citizens will be forced to subsidize Army training at FAPH while FAPH will continue to not contribute to the county's economy in any meaningful way. And the ability of Caroline County citizens to seize future opportunities on the horizon to create better jobs and schools will be detonated.

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Ms Terry Banks

Chief, Environmental Division

Fort A.P. Hill

Dear Ms Banks

We have received the "Supplemental Environmental Assessment for the relocation of three Demolition sites---". Our thoughts and impressions can be summed up very quickly, to wit:

-once again, there is no full overview of what has been initiated over the last four/five years and what is "on the books" or planned as new/enhanced activities over the next five years. Lacking this most fundamental ingredient, there is no point in creating a critique of this SEA. All that would do is offer some legitimacy to the proposal and that is not something which it deserves.

-no matter where on FAPH this activity may take place, it remains an expenditure of millions of dollars to re-fight WWII, rather than train in the environments equivalent to those our service men and women are headed toward. This may qualify as "good theatre" for visiting folks from Capitol Hill or the Pentagon, but is atrocious as a medium for appropriate training!

-as we think back on this and other EAs, it becomes more and more apparent that the basic building block for the conclusions drawn in each EA is "blame it on BRAC". As a foundation for military decisions, this lacks fundamental value!

Sincerely,

Stephen Meehan 7/14/09

Christine Meehan 7/14/09

INCOMPATIBLE LAND USES

THE CONSTRUCTING AND OPERATING AN EXPLOSIVES ORDNANCE DISPOSAL FIELD TRAINING AREA AT FORT A.P. HILL, VIRGINIA
And
THE PORTOBAGO BAY RESIDENTIAL COMMUNITY

The response of the Portobago Bay Homeowners Association to the November 13, 2008 "Responses of Fort A.P. Hill".

BACKGROUND

On November 13, 2008 the Fort A.P. Hill (FAPH) command forwarded to the Portobago Bay Homeowners Association (PBHA) responses to questions submitted by the PBHA at the request of the FAPH Installation Commander. Enclosed with the response was a copy of the *Final Environmental Assessment of Constructing and Operating an Explosives Ordnance Disposal Field Training Area at Fort A.P. Hill, Virginia* (EA) and a *Finding of No Significant Impact* (FNSI) dated November 3, 2008 signed by Michael S. Graese, Lieutenant Colonel, U.S. Army Installation Commander Fort A.P. Hill, Virginia. A cover letter provided 30 days from receipt of the Fort A.P. Hill responses for the PBHA to provide additional comment. This document provides that comment in a timely manner.

The PBHA received actual notice of the Army's proposed new mission(s) in a September 4, 2008 news article and expressed its concern to FAPH. In response to those concerns, the Fort A.P. Hill Installation Commander granted a meeting with PBHA representatives on October 2, 2008. This meeting took place one day after the Virginia Department of Environmental Quality (DEQ) had signed off on the EA. It is the understanding of the PBHA that the state DEQ sign off is the last required in the Army process. Further, PBHA understands that the FNSI dated November 3, 2008 in the Army's most recent response normally would signal the end of a 30-day comment period on a draft FNSI, thus making the FNSI final. The PBHA has made repeated requests both in writing and orally without success for the Army's decision-making schedule and finds the above noted Army pattern of behavior troubling. Nevertheless, again we respond in good faith relying, in part, on the repeated oral commitments of the installation command to address our community's concerns. However, we relied primarily on our own commitment to the belief that the clash between the critical missions of the Army here involved and our PBHA constitutionally granted rights to property must be resolved prior to the Army breaking ground. Failure to do so is not an option for either the Army or the PBHA.

OVERVIEW

As Americans we confront threats posed throughout the world by the war on terrorism. The kind of new explosives training missions proposed to be located at FAPH are critical to our nation's success. And these missions likely will grow in importance and size. Neither their scope nor their effectiveness can be compromised. On these matters there is no dispute.

The 2005 Defense Base Closure and Realignment Commission (BRAC Commission) relocated the Explosive Ordnance Demolition, Training Department (OMEMS) to Fort Lee, Virginia. The BRAC Commission determined that using nearby training sites at Fort Pickett could successfully mitigate a shortfall in land and space at Fort Lee. That shortfall was driven at least in part by the fact that Fort Lee is surrounded by major highways and beyond them nearby residential areas. Further evaluation by the Army determined Fort Pickett would not meet its facilities and schedule needs. Thus, the Army proposes to locate the EOD and other explosives missions training sites at FAPH. To facilitate that modification in Army plans, the February 2007 BRAC Environmental Impact Statement (EIS) included an evaluation of a portion of the currently proposed FAPH site. That evaluation is incorporated by reference in the Army's August 2008 EA and in the subsequent related written responses by the Fort A.P. Hill command to the PBHA. "The purpose of the proposed action is to implement the BRAC Commission's recommendations pertaining to Fort Lee." (Source: Record of Decision, May 11, 2007.)

FAPH is the second largest Army installation in the Northeast and covers 76,794 acres. Eighty-five percent is forested. Wetlands consume another 6,500 acres. Approximately 55,000 military personnel from all services train annually at FAPH. Historically, the coming and going of FAPH temporary trainee personnel has gone unnoticed in Caroline County, both by their physical presence and any noticeable socioeconomic impact on the county.

Forty-two thousand FAPH acres are classified as "Maneuver Area". The Army's proposed new explosives training action sites are in the "Maneuver Area", specifically portions of sites 26, 27 and 28 in the northeastern section of the Fort. There are 28,000 acres of training ranges in the southeastern portion of the Fort. The Army's primary rationale for locating the EOD mission in the northeastern sector is that the sector does not house other missions. U.S. Route 17 runs to the north just outside the installation border and the sites for the proposed explosives training sites. The residential community of Portobago Bay is immediately on the other side of Rt. 17 approximately a mile away.

More than 20 years ago Caroline County zoned as residential the area occupied by Portobago Bay. The decision was a considered exception to the county's overarching policy to preserve the rural nature of the area in the Rappahannock River watershed

outside of FAPH. Called The Corridor, the area runs between FAPH and the river and for the most part is one or two miles wide. At its widest it is six miles. It includes the historic town of Port Royal. Structures date from the 1700s and include a tavern with records that document George Washington and Thomas Jefferson stayed at the tavern. Five miles from Port Royal down Route 17 at the Essex County line is Portobago Bay. The entire Corridor is considered a resource sensitive area. It has significant wetlands -- including Portobago Creek, habitat for game and threatened/endangered specifies, water supply, and historical resources. Other than historic Port Royal and the larger Portobago Bay residential community The Corridor is productive agricultural land with low-density housing. FAPH's land use along the entire installation border along Route 17 and The Corridor is designated "Maneuver Area". FAHP training range areas are located east of Route 301 in the southeastern sector of the base away from the Corridor's resource sensitive area.

Over the last 20 years the unique attractiveness of The Corridor's quiet rural environment has attracted significant home investments in Portobago Bay, today conservatively estimated to be between $60 and $75 million. This diverse community includes residents ranging from young families to retirees. The educational level is high. There are multi-million dollar homes in the community. Community residents contribute significant amounts to county tax revenues.

For 20 years Portobago Bay residents have perceived FAPH as largely dedicated to reserve and short-term military training needs. Except for infrequent loud explosions and large weapons fire, FAPH training activities have not encroached on resident's enjoyment of their property. When they have, the community views it as having exercised restraint in lodging complaints about training noise, the sounds of freedom. In short, FAPH is viewed as a neighbor that one rarely sees come or go, enjoys a good reputation partly because it hosts the Boy Scouts, a neighbor that occasionally one hears at a distance and, only infrequently, loudly and intrusively. In the latter instances, complaints are made.

Against this experience and the community's long-standing expectations regarding FAPH, the Army's proposed action to relocate the intensive, year-round EOD and other explosives training sites a little more than a mile away from Portobago Bay is an intolerable encroachment. Common sense tells community members that the proximity of two such starkly different land uses is incompatible. As will be set forth in detail in the following sections using the Army's own facts and analysis, it is reasonable to assume that the Army's EA for the proposed action will 1) effectively destroy the quality of life of Portobago Bay residents and 2) deprive them of their property (destroy its value).

The Fifth Article of the U.S. Constitution protects the right to property. It is about protecting the practical foundation for the preservation of our freedoms as a people. Just as the residents of Portobago Bay stand with our U.S. Army in its efforts to accomplish its critical missions in the defense of our liberties, we look to and expect our U.S. Army to stand with us in protecting the constitutional right to hold property. Otherwise, how is

either of us to believe that the ultimate sacrifices of our military personnel are for the preservation of liberty for all?

INCOMPATIBLE LAND USES: NOISE

ACUB

Caroline County has targeted the Corridor for preservation. With few exceptions residential land use is limited to one dwelling on 25 acres (the 25-acre rule).

The U.S. Army has supported the county preservation goal while working to achieve its own particular goals to create a buffer around FAPH to prevent new residential land uses including those under the county's 25-acre rule. The Corridor is FAPH's top priority zone (16,000 acres) through its Army Compatible Use Buffer (ACUB) program formed in December 2006. The ACUB is an 8 to 10 year plan to purchase development rights to 35,000 acres around FAPH to secure the ability of the military to train.

Through ACUB the FAPH to date has secured the development rights to at least four large parcels of land. One parcel is said by a knowledgeable source to have cost third-party non-profit ACUB partners more than $2 million. The four parcels are on either side of Portobago Bay, two in adjoining Essex County.

According to FAPH, the buffer is to protect "A.P.Hill from encroachment of incompatible land uses" meaning residential land uses. The ACUB Objective is to "(p)revent development along boundary".

The Army considers residential land use development in The Corridor under the 25-acre rule as an encroachment on FAPH land uses. It is willing to direct the spending of millions to prevent it. By its ACUB actions, FAPH has defined what it considers for itself to be incompatible military/residential land use in the Corridor. Any reasonable application of the Army's land-use standard to its proposed actions to locate new year-round explosives training missions across from the Portobago Bay residential community must conclude that the two land uses are incompatible.

PBHA is equally sensitive to land use encroachment. PBHA members have been neighbors of FAPH for 20 years. Good neighbors should talk. PBHA believes that the Army's new proposed actions would encroach on their land use by a magnitude that far exceeds anything the Army perceives might result from the occasional development of profitable, productive agricultural land under the 25-acre rule in The Corridor.

It is not unreasonable under the circumstances for members of the PBHA to conclude that the Army intends to either ignore their property rights or buy them. PBHA members want neither. They want to continue to enjoy their property.

PROXIMITY OF PROPOSED SITES TO PORTOBAGO BAY

EXISTING SITES

FAPH Training Ranges are in the post's southeastern sector. Existing large caliber and demolitions impact areas are located in this area. Available FAHP maps show those impact areas to be 8 to 10 miles and 6 to 8 miles from Portobago Bay.

PROPOSED SITES

The EOD proposed demolition sites are to be located in what are classified by FAPH as late as October, 2007 as "Maneuver Areas" in the northeastern sector of the post, in portions of areas 26, 27 and 28 along the installation border. The EA states that the "area is now used for dismount maneuvers". FAPH cites Operational Security (OPSEC) concerns preventing release of the proposed impact areas. The proposed training area is one and a half miles from Portobago Bay.

In short, it is as much as six and a half to eight and a half miles closer to Portobago Bay than existing FAPH large-caliber and demolition sites.

PROPOSED SITE NOISE FACTORS

The Army's Operational Noise Manual, (November, 2005) states that geographical and environmental factors are greater variables determining noise than the caliber of the weapons. Specifically, the slope of the land, the existence of natural buffer and weather influence the extent of noise resulting from detonation of weapon

Here, the EOD and related explosives training sites are proposed to be located on land that slopes down to the northeast directly towards Portobago Bay. According to the Army's Manual, the sound of demolitions will be magnified for those located in the direction of the slope.

The BRAC EIS identified a related particular site problem. It found that the proposed proximity of the explosives training land use to Portobago Bay's residential land use is compounded by the fact that there is no natural land buffer between the two areas.

Other related concerns about the site raised by factors identified in the Army's Noise Manual are weather and wind. The BRAC EIS and the EA note that half the year the wind will be coming from the south moving over the training sites and carrying the site generated noise towards Portobago Bay and in the process effectively magnifying those noise levels.

The Army identifies weather specifically as a more important variable than the caliber of the weapon being fired. For example, The Army cites in its Noise Manual that tests done at Fort Leonard Wood, Missouri to create the BNOISE database for the Air Force and using 0.5 lb. explosives concluded that weather conditions created a variation in noise levels two miles away of 40 dBs. Fort Leonard Wood weather conditions are similar to those at FAPH. These and other related factors can be expected to magnify noise levels in the immediate surrounding area of the training.

Further, the Army's noise measuring guidelines assign a 10 dB penalty to nighttime detonations partly because of air inversions at night. Noise is perceived differently at night, and the measurement penalty acknowledges that the perception of one detonation at night equals that of 10 during the day. (The FAPH EA states that small (0.5 lb.) explosives will be used at night between 11 pm and 7 am. It states that sound levels from these random two to three nightly explosions will reach 115 dB and sometimes130 dB along the border of the Portobago Bay residential community.)

NOISE LEVELS AT PORTOBAGO BAY: CDNL

Ambient Levels of Community Noise

Ambient noise is relevant to how loud a community perceives military noise. (The Army's Noise Operational Manual cites the Air Force Land Use Planning Guide to make the point.) The difference between rural and urban ambient noise perceptions warrants a 20-decibel span in adjustment. A correction of 10 dB is given in a quiet rural community. A correction of (-) 10dB is given in an urban community.

Portobago Bay is in a quiet rural area. On moonless nights the community experiences almost total darkness. Sounds of people talking in the community are clearly audible over large distances that would make it impossible to hear another person in an urban environment.

The FAPH EA describes ambient noise levels on the installation but not those in the surrounding areas outside the base. The PBHA believes that there is a correction of 10dB to estimate noise levels in the community.

The exception to the Corridor's – and Portobago Bays' – rural ambient quiet is the infrequent, sporadic intrusion of military training noise.

EXISTING FAPH TRAINING SITES: RESULTING CDNL NOISE LEVELS

Large-Caliber Weapons and Demolition Noise

DNL is a day-night average sound level over a 24-hour period. A 10-dB penalty is added to nighttime levels. C weighting is predominately used to describe noise that has a component of rumble or the potential for noise-induced vibrations.

CDNL is identified in the EA as metrics "to quantify the noise environment at Army installations". The EA states that the measurement is "a useful descriptor for continuous noise, such as a busy highway, aircraft noise, or the ongoing components of repetitious blast noise". (The November 13, 2008 FAPH response to PBHA questions states that the CDNL levels on an annual basis would be below 62 dBC, at Portobago Bay and therefore "compatible with residential land uses". The EA does not clarify whether "annual" refers to training days or calendar days per year.)

"Existing Large Caliber and Demolitions Noise (CDNL) Contours", Figure 3-3 in the EA show the Zone II contour to be two and a third miles away from Portobago Bay. The EA notes that: "During periods of intense training, the short-term CDNL at a particular range is larger than that depicted in Figure 3-3. Such periods of intense activity occasionally lead to complaints, particularly when artillery firing takes place at night. As expected, some noise complaints have been documented and investigated after large-caliber training events".

Frequency

FAPH does not provide the frequency of large-caliber weapon firings and demolitions. Over the last 20-years intrusive, loud, window-jarring explosions have been heard in Portobago on an infrequent basis. At those times complaints have been made and house damage has been reported and repairs made.

PROPOSED EXPLOSIVES TRAING SITES: RESULTING CDNL NOISE LEVELS

Large-Caliber Weapons and Demolition Noise

"Proposed Action Large Caliber and Demolitions Noise (CDNL) Contours" are show in Figure 3-6 of the EA. The Zone II contours extend beyond the northern and eastern boundaries of the installation about 0.6 miles.

Zone III (130 dB) contour is less than a mile and a half from Portobago Bay.

Zone II (115 dB) contour is a third of a mile from Portobago Bay.

Fig. 3-8 shows the sound contours for EOD and two proposed additional missions, the AWG and NSWECE. It shows that CDNL contours for the EOD alone and for the three missions together are essentially the same.

The FAPH response to PBHA questions dated November 13, 2008 states: "Land use compatibility and overall effect are determined by the CDNL noise levels. Figure 3-6 of the EA shows that Portobago Bay community lies outside of the CDNL Noise Zone II contour for the proposed EOD range. Residential use in Portobago Bay will remain compatible with the new training activities". The FAPH response elsewhere states that FAPH conclusions were carefully reviewed by U.S. Army lawyers and meet legal requirements.

Frequency

Under the EOD proposed action large-caliber-weapon firings and demolitions would total 316 a year. Forty of these would be 50 lb.; 276 would be 25 lb. (Medium charges would total 5,212 demotions and small charges would total 11,647 charges.)

The EA also incorporates by reference the BRAC EIS. The frequency levels for large-caliber weapons and demolitions in the BRAC EIS is 5,000 plus. Thus, the Army has the flexibility with approval of its EA – with the BRAC EIS incorporated by reference – to increase the current frequency of firings of large charges at FAPH by over 5,000 at the EOD proposed training sites.

The EA identifies a related proposed explosives training mission, the _____ (AWG), to be located near the proposed EOD range within training area 25C. No demolition frequency is provided in the EA.

The EA also identifies the _____ (NSWECE) training mission that would be using in the same training area explosive charges up to 35 pounds. No frequency is provided.

The EA documents that the proposed actions would place CDNL Noise Zone III (130 dBP) contours to within a mile and a half of Portobago Bay and Noise Zone II (115 dBP) contours to within less than a third of a mile from Portobago Bay and then increase the frequency of large caliber weapons firings and demolitions by between five and six thousand a year.

Because noise levels – specifically the frequency of loud, intrusive noise -- is the issue here even the smallest charges proposed to be fired at the new training sites will be intrusive. FAPH states in its EA that: "The proposed action would introduce about 800 demolition training activities equal to 0.5 lb at the proposed EOD range during nighttime hours (11 p.m. to 7 a.m.). On average, two to three of these small charges (0.5 lb.) per

night would be detonated at different training sites. Depending on weather conditions and the training sites used for nighttime detonations, areas adjacent to the installation boundary would be exposed to training."

Further, the Army's noise research and guidelines suggests that the EA proposed additional detonation of 16,859 medium and small charges annually upgrade and up-wind one and a half miles from Portobago Bay will best case intrude on and significantly raise the community's ambient noise level. (See 0.5 lb. nighttime demolitions EA discussion noted above.)

The proposed actions will directly impact and radically change the quality of life in Portobago Bay. In the process, it will destroy the value of properties.

The Army's legally strapped analysis as applied in its EA is wholly inadequate to determine whether the proposed actions encroach on the property rights of the Portobago Bay residential community. Further, PBHA believes that the Army has not correctly followed its own regulations in arriving at the EA's common-sense defying conclusions.

NOISE LEVELS AT PORTOBAGO BAY: PEAK NOISE

MEASUREMENT OF PEAK NOISE

Large-Caliber Weapons and Demolitions

In its EA, FAPH states "(p)eak noise contours provide the absolute maximum sound level for an individual acoustical event, not an average over several events or over a period of time like DNL. Although not a good descriptor of the overall noise environment like the DNL, peak levels better indicate the potential for concern and possibility of complaints among people living near the boundary of an installation after an individual event."

The position of the Army in its EA is that it is not legally required to look beyond the edge of the Zone II contour, CDNL levels.

Army regulation AR 200-1 initially requires the U.S. Army to look at the CDNL Zone II contours to address whether there may be an adverse impact on residential land use. The FAPH EA does this. But then it halts its analysis, asserting that it has met its legal requirement. (Note: The Army's EA position is literally on the Zone II contour line. The CDNL Zone II (115 dB) contour for the proposed action comes to within one-third of a mile of Portobago Bay. Would FAPH still hold to its position if it were one-fifth of a mile? What about 200 yards? One hundred yards away?)

AR 200-1, however, requires more analysis. It requires the Army to take into consideration peak noise levels. And this is only reasonable, in the best interests of the Army and residential communities.

U.S. Army Regulation AR 200-1 Requires that Peak Level Noise Levels be Used to Supplement Zone II Land Use Decision Making on Surrounding Residential Land Use.

The requirement

"Single event noise events in table 14-2 correspond to areas of low to high risk of noise complaints from large caliber weapons and weapons systems. These should be used to supplement the noise zones defined in table 14-1 for land use decisions. Noise sensitive land uses are discouraged in areas where PK 15(met) is between 115 and 130 dB, medium risk of complaints. Noise sensitive land uses are strongly discouraged in areas equal or greater than PK 15(met) = 130 dB; high risk of noise complaints. For infrequent noise events, installations should determine if land use compatibility within these areas is necessary for mission protection. In the case of infrequent noise events, such as the detonation of explosives, the installation should communicate with the public." (See Chapter 14, Operational Noise, 14-4 Program Requirements.)

A footnote to Table 14-2 that supplements Table 14-1 on noise zones underscores Army concerns about noise from large-caliber weapons and demolitions and residential land use. In part it states: "The NLR (indoor noise reduction level for new housing) for communities subject to large caliber weapons and weapons systems noise is lacking scientific studies to accomplish the recommended NLR. For this reason it is strongly discouraged that noise sensitive land uses be allowed in Noise Zone II from large caliber weapons."

Portobago Bay is an established community. Homes in the community have not been built using NLR techniques and materials.

As documented in the Army's BRAC EIS and FAPH's EA, Portobago Bay is in the PK(met) 115dB and 130 dB areas for large caliber weapons and demolitions. (See below.) The U.S. Army guidance in AR 200-1 is to include this fact in decision-making on land use compatibility. The U.S. Army's EIS and EA and its responses to the questions of the Portobago Bay homeowners do not.

The U.S. Army's BRAC EIS and EA document that the proposed large caliber weapons and demolitions firings will be frequent events. Also, for land use planning purposes, the Army guideline is to assume a reasonable mission growth rate. The Army suggests 10 to 15 percent annually as an example.

EXISTING SITES: PEAK LEVEL NOISE

Large-Caliber Weapons and Demolitions

Figure 3-4 of the EA shows the existing large-caliber weapons peak level contours. "The existing 115-dBP contour extends beyond the northeastern and eastern boundary less than 1.5 miles..." (the EA). Less than 1.5 miles" brings the existing large-caliber contours up to the edge of the Portobago Bay residential community.

In addition to the large-caliber weapons and demolitions contours, the Army discharges a Mine Clearing Line Charge (MICLIC) identified separately. Figure 3-5 shows peak noise contours for the Mine Clearing Line Charge (MICLIC).

The MICLIC Zone II contour extends through Portobago Bay and beyond Portobago Bay, across the Rappahannock River to a point three miles away from the edge of Portobago Bay's boundary. The EA states elsewhere that under similar circumstances where the Port Royal Historic District is "between the 115 dBP and the 130 dBP noise contours...the worst-case peak sound level expected in the district would be between these noise levels, or about 125 dBP". Best case, those are the levels for the MICLIC experienced in Portobago Bay.

The EA also states: "The contours indicate that there is a moderate probability of receiving noise complaints when the MICLIC is detonated. As expected, some noise complaints have been documented and investigated after MICLIC training events".

Frequency

As previously indicated above, FAPH does not provide information on the frequency of current large-caliber weapon firings and demolitions. Regarding the MICLIC, the FAPH EA states: "The MICLIC is detonated only a few times a year, if at all. (Detonations are 0 to 3 a year.) It is shown as a separate item because of its size and infrequency".

At Portobago Bay over the last 20 years, these large-caliber events have been infrequent. When they have been intrusive, complaints have been made and where damage has resulted claims made.

PROPOSED ACTION SITES: PEAK LEVEL NOISE

Large-Caliber Weapons and Demolitions

Large-caliber weapons and demolitions peak contours for the proposed missions are shown in Figure 3-7.

The Zone III contour (130 dB) exits the installation's northeast boundary within a half mile of the Portobago Bay residential community.

The Zone II contour (115 dB) reaches the Portobago Bay boundary and two miles beyond. By the Army's own deductions in its EA for the historic community of Port Royal, sound levels in Portobago Bay would be at least 125 dB. The noise levels for the current MICLIC detonations most closely approximate the noise impact of large-caliber weapons and demolitions for the proposed new missions.

Fig. 3-9 shows the sound contours for the EOD mission and two proposed missions, AWG and NSWECE. They are essentially the same as for the EOD alone.

Frequency

The Army plans to increase the frequency of large-caliber weapons and demolitions by 5,152 plus large-caliber weapon firings and detonations annually.

Regarding the peak noise level impact of the 5,152 plus charges FAPH concludes in its EA:

"There would be a low risk of noise complaints within the 115 dBP noise contour. With the proposed action, that contour would extend about 3.5 miles (about 2 miles farther than existing conditions) off the eastern boundary of the installation Although moderately loud, demolitions using 25 lb or more of explosives would be infrequent and charges in the overall noise environment (CDNL) would result in only a minor increase in land within the military noise zone normally not recommended for residential use. Therefore, impacts on the noise environment would be minor".

In FAPH's November 13, 2008 response to questions form the PBHA, FAPH asserts:

Figure 3-7 shows the peak contours for the proposed EOD range, and the Portobago Bay community lies within the 115 dB contour. Fort A.P. Hill is aware, therefore, that the larger explosions at the range will be clearly audible and pose a medium risk of noise complaints from residents (see EA Table 3-6, page 3-10). This analysis was provided for informational purposes – to help characterize the future individual noise events that would be heard. Notably, the peak contours represent the 50-lb. charges, which would occur about 40 times a year, or less than 2 percent of the demolitions at the range. The vast majority of demolition activities would not be clearly audible at the Portobago Bay community".

The PBHA – and apparently the Army itself -- strongly disagrees with both assertions. Those disagreements are elaborated below.

1. **FAPH:** ***"There would be a low risk of noise complaints within the 115 dB noise contour".***

On this, PBHA, FAPH, and the Army in their research and guidelines, all disagree. There is significant risk of noise complaints within the 115 dBP noise contour and a failure to be responsive to those risks could destroy the quality of life in Portobago Bay and pose a threat to Army missions.

First FAPH. FAPH variously describes the likely risk of complaint from a residential community within the 115 dB contour in its EA and November 13, 2008 response to the PBHA as a 1) "low risk"; 2) a "medium risk"; and, 3) "a moderate probability". It is most convincing when it speaks from its own experience. FAPH states from that experience "there is a moderate probability of receiving noise complaints when the MICLIC is detonated. As expected, some noise complaints have been documented and investigated after MICLIC training events". The 0 to 3 MICLIC detonations a year place Portobago Bay and all those living in the Corridor well inside the 115 dPB contour.

The Army: The Operation Noise Manual cites a method of predicting complaints from the testing of a wide range of weapons fired in all kinds of weather. The system focuses not on the size of the weapon but on the noise generated by the weapon under various weather conditions. Weather, according to the Army manual, is a greater noise variable than weapon size. Focusing on the noise generated, it ranked risks of complaint within the 115 dBP contour as "moderate". The action recommended under a moderate risk of complaints was to "Fire important tests. Postpone non-critical testing, if feasible". FAPH is not a testing installation. It is a training installation and will not have the luxury of postponing detonations when it is training soldiers bused 70 miles from Fort Lee for a few days of training.

PBHA: The noise levels within the 115 dBP are tolerable currently only because they are infrequent. Nevertheless, they are loud and intrusive and the proposed significant increase in their frequency under the proposed actions will destroy our quality of life.

2. "...demolitions using 25 lb or more of explosives would be infrequent...."

PBHA disagrees with the premise of FAPH's assertion and its characterization of frequency as being "infrequent".

The premise of FAPH's assertion is that only weapon size matters. Army noise research and guidelines directly contradict that assertion. Weather conditions along with wind direction and the slope of the land are critical factors in determining the frequency with which peak level sound contours are reached in Portobago Bay under the proposed actions.

The Army's characterization of proposed firings as "infrequent" cannot be supported. The characterization is of explosives 25 lb. and larger. The EA identifies 316 additional explosions a year the peak sound levels of which will place Portobago Bay two miles within the 115 dBP contour. That contour line closely tracks the 115 dBP line of the MICLLIC charges which are intrusive. Zero to three MICLIC charges a year is infrequent. The Army's minimal estimate of 316 charges a year is frequent and a direct threat the quality of life in Portobago Bay.

3. ***"...changes in the overall noise environment (CDNL) would result in only a minor increase in land within the military noise zone normally not recommended for residential use."***

PBHA disagrees strongly with an implied suggestion here of a minor adverse impact on residential land use. It also disagrees with FAPH reasoning to reach it.

What FAPH has done in making this assertion is -- in the middle of a paragraph on peak noise contours – change the subject and in doing so, the standard of measurement to weighted noise levels (CDNL). The flip renders the FAPH conclusion illogical and baseless.

4. ***"Figure 3-7 shows the peak contours for the proposed EOD range, and the Portobago Bay community lies within the 115 dB contour. Fort A.P. Hill is aware, therefore, that the larger explosions at the range will be clearly audible and pose a medium risk of noise complaints from residents..."***

Again, PBHA notes FAPH's moving characterizations of the risk as low, medium and moderately probable. (See 1. Above.)

Another source on the likely reaction and likely complaint response is provided in the U.S. Army Noise Operational Manual. In a discussion of the likely response from a residential community within the 115 dB contour the manual cites a study by Luz and Eastridge (2001). That study documents that most complaints at Aberdeen Proving Ground are associated with peak levels between 115 and 130 dbP, a critical issue at Portobago Bay.

5. ***"This analysis was provided for informational purposes..."***

Actually the Army's own regulations (AR 200-1) require a serious analysis which is not forthcoming in either the FAPH EA or its November response.

The Army guidance is: "Single event noise events in table 14-2 correspond to areas of low to high risk of noise complaints from large caliber weapons and weapons systems. These should be used to supplement the noise zones defined in table 14-1 for land use decisions." (AR 200-1)

The 14-1 table noise zones are for weighted (CDNL). Table 14-2 is for peak level noise.

The Army's noise regulation recommend: "Noise sensitive land uses are strongly discouraged in areas where PK 15(met) is between 115 NS 130 dB, medium risk of complaints".

6. ***"Notably, the peak contours represent the 50-lb. charges, which would occur about 40 times a year, or less than 2 percent of the demolitions at the range".***

Given the facts that FAPH must be aware of in the BRAC EIS and its own EA, the PBHA is unsettled by the blatant misrepresentation of those facts in this statement from FAPH's November 13, 2008 response to the PBHA..

The FAPH knows that the BRAC EIS peak level analysis was based on detonations of 25 lb. explosives. It also knows that the 25 lb. explosives produced virtually the same peak noise contours as did the 50 lb. explosives in their EA. Thus, effectively the EA peak contours at the very least are representative of both the 50 lb. and 25 lb. charges. That in turn significantly changes the math. Now it is not 40 demolitions a year but rather a minimum of 316.

Further, the size and frequencies of the AWG training is not included in FAPH's response. Also, the frequency of NSWECE detonations of explosive charges identified as being up to 35 lbs. is not disclosed in the response to Portobago Bay. Inclusion of these missions, it is reasonable to assume, would substantially raise the percentage of events associated with peak sound levels under the new proposed missions.

FAPH states from its experience "there is a moderate probability of receiving noise complaints when the MICLIC is detonated. As expected, some noise complaints have been documented and investigated after MICLIC training events". And the MICLIC 115 dBP noise contours closely track the large-caliber weapons and demolitions contours in the FAPH EA.

And lastly:

7. ***"The vast majority of demolition activities would not be clearly audible at the Portobago Bay community".***

To which the PBHA responds, how is that possible?

FAPH says that the "vast majority" of the nearly 22,000 proposed explosive events annually within a mile and a half of Portobago Bay "would not be clearly audible" to the community.For FAPH's assertion to be true, FAPH has to conclude that the 5,112 large caliber weapons and demolitions proposed to be detonated annually in its EA will not be clearly audible a mile and a half down hill in Portobago Bay.

Again, even the smallest (0.5) explosives detonated at the rate of 800 a year will, according to the FAPH EA, produce nighttime (11 p.m. to 7 a.m.) sound levels of 115 dBs to 130 dBs on the border of Portobago Bay. Is the PBHA to believe that these FAPH documented levels of sound will not be clearly audible in Portobago Bay? To the contrary, the PBHA believes strongly that the facts in the FAPH's EA demonstrate that the proposed new missions will destroy their quality of life and in turn their property values.

UNANTICIPATED NOISE IMPACT OF PROPOSED ACTIONS

U.S. Route 17 – a major public highway -- runs between FAPH and Portobago Bay.

For the proposed action large-caliber and demolitions peak level Zone I contour line (140 dB) the contour line actually crosses U.S. Route 17 for approximately a mile. The Army noise manual identifies 140 dB as the pain threshold.

Who would argue that drivers, particularly those unfamiliar with the area possibly heading back and forth to the beach, should not be warned of such ear-splitting random demolitions? A mother with several children in the car could be startled. One of the large trucks frequently present on Route 17 could be next to her in the other lane.

Under the proposed conditions on U.S. Route 17 (and even larger impacts on Route 301 to the north), posting warnings could be common sense and required by government entities.

How will it impact Portobago Bay resident's enjoyment of their property to drive to and from their homes through a hail of 140dB explosions?

What is a prospective buyer of a property in Portobago Bay to think when he or she is a mile from the community entrance on U.S. Route 17 and sees the warning signs and/or is subjected to one of the 140 db blasts?

NOISE COMPATIBILITY AND THE INTERESTS OF THE PARTIES

At the outset of this compatible land use response, the point was made that the PBHA sees two principles at stake. There is the requirement that the Army be able to carry out its critical missions in the defense of liberty. And there is the constitutional right of the residents of Portobago Bay to have liberty, to be able to enjoy their property and not have it taken by their government.

The 20-year relationship between FAPH and Portobago Bay is an illustration of how otherwise conflicting land uses – and these two principles -- can under certain

conditions work side-by-side. The key is that neither intrude upon the other. Without the compatibility both principles are threatened.

The facts underlying that 20-year working relationship between FAPH and the PBHA are that the noise intrusions of the Army training activities have been infrequent. They can be momentarily annoying to residents of Portobago Bay but they are accepted in calmer moments as reminders of the sounds of freedom. Most importantly, they are not experienced nor seen as so intrusive as to impact the residents' enjoyment of their property in what they treasure as a unique, beautiful, quiet rural setting. And, significantly, they are not seen as impacting the value of their substantial investments in their property.

With the proposed explosive demolition training activities within a mile and a half of Portobago Bay the compatibility between the neighbors appears, at least for the moment, to be ended. The PBHA residential land use compatibility cannot stand with the kinds of noise intrusions documented by the Army in the Army's BRAC EIS and the FAPH EA.

The FAPH EA makes its case for the compatibility of its proposed new missions with the residential community of Portobago Bay with a narrow argument of the law. Their position is they have not violated Army regulations and so their position is reasonable – regardless of the impact the proposed missions will have on Portobago Bay.

The Army asserts further that to conclude otherwise would be acting in an arbitrary and capricious manner.

The PBHA believes that on this proposition, the Army's position is so divorced from a realistic consideration of the Army's own stated facts as to be itself arbitrary and capricious. The appearance is that the Army has laid out the facts that demonstrate incompatibility and then, in its EA, turned abruptly to find compatibility In making this kind of argument the Army appears to be unilaterally and aggressively moving to change its relationship with Portobago Bay.

Good neighbors don't act that way. This compatibility issue is not about a potential conflict between neighbors but ultimately a potential conflict between two critical underlying principles that, as Americans, we must not allow to be compromised. The underlying interests of both parties deserve more substantive and serious consideration.

Such a consideration should, at least initially in a continuing dialogue on this issue,focus on the underlying interests of the two parties and the potential impact of the Army's proposed actions on them.

In summary, simply identifying a few of the underlying interests of the Army and the PBHA above, it makes clear that the Army's EA is a wholly disabled vehicle to address the important, real concerns of either.

INCOMPATIBILITY: SOCIOECONOMIC FACTORS

Both the BRAC EIS socioeconomic analysis and the FAPH EA socioeconomic analysis of the socioeconomic impacts of the Army's proposed actions are flawed.

And the methodology is wanting.

The original preparers of the BRAC EIS solicited contributions from not a single Caroline County official, elected or appointed. No Port Royal officials were solicited to contribute to the analysis. The single official and the single Caroline County person solicited was the Town Manager of Bowling Green, Virginia – a town on the opposite side of the installation from the proposed missions and not directly impacted by them.

The FAPH EA analysis of the socioeconomic impacts on Caroline County is similarly flawed.

First, while the EA did solicit contributions from Caroline County officials, it provided those officials with only the first two sections of the EA. As informational bases for their comments, the officials could comment only on the Army's notice of new missions and their conclusions that there would be no significant County impact. One official responded, -- the Commander at the prison located within FAPH. Her comments related to existing impacts on the prison population of weapons noise and smoke.

Second, the single means of socioeconomic analysis used in both of the completed evaluations is an Army computer model. Input into the model is based on regional data that includes, among counties other than Caroline County, a considerably more urbanized county near Fredericksburg, Virginia. The analysis of costs to Caroline County, that is home to Fort A.P. Hill, is invisible. The suggested benefits in construction contracts are likewise invisible to Caroline County residents and may be minimal. To the extent Caroline County businesses and their workers may receive contracts, the numbers are lumped into data that is then reported for all the regional counties and are unknowable.

In both analyses the Army concludes minor short-term and long-term socioeconomic benefits on the regional area. But what does that mean to the FAPH's neighbors, its home county of Caroline? The implication is that there may be minor benefit but any such benefit is without support.

This much we do know from the EA. There will be as many as 880 additional persons – Soldier trainees and instructors – at Fort A.P. Hill on any given day year round. The analysis concludes that this always-changing additional daily population will

THE ARMY

According to The Army Operational Noise Manual there are six principle reasons a military commandeer should be concerned about noise. Among those are avoiding mission loss and avoiding tort claims.

In discussing the loss of mission, the manual assumes that these threats occur within the context of the growth of civilian communities around a base. Similarly, a military commander must also be concerned about avoiding mission loss and about tort claims when, as here, the military encroaches upon an established civilian community on the installation border.

The Army manual notes: "This growth process can place severe limitations upon the ability of a military installation to support training and maintain an adequate level of readiness for assigned units. As noise impacts upon these civilian communities increase from military activity, so do litigation and/or political pressures that could result in degradation of the installation's mission."

Further: "The consequences of this adverse public reaction to military operations can be the placement of limitations on the operations of some bases to the outright closure of others".

In the discussion of avoidance of federal tort claims, the Army manual notes:

"Noise claims against the DOD have generally slotted into three main categories: 1) property damage, 2) "taking" of property use, and 3) personal injury. Examples of property damage include sonic boom damage to glass and plaster, loss of livestock from startled reaction, and a reduction in milk or egg production due to noise stress. Some examples of "taking" include such claims as loss of property, diminished enjoyment of the property due to noise, and a decrease in property values. Lastly, the personal injury claims usually result from an accident caused by startled reaction to a sudden onset of noise. Most claims were handled and paid for by the local installation and these myriad court cases has led to a haphazard method of dealing with noise".

On the basis of FAPH EA facts, Portobago Bay residents, like the military commanders addressed in the Army noise manual, are now concerned about the potential for future property damage, "takings", and personal injury.

Are the Army's EA factual findings – not its startling conclusions -- a starting point for evaluating these and other potential consequences from the proposed missions that could lead to what no one wants -- restrictions on the Army's ability to successfully meet its missions requirements and Portobago Bay residents losing the enjoyment of their property and property values.

THE RESIDENTS OF PORTOBAGO BAY AND ITS CIVILIAN NEIGBORS

Quality of life will be the first casualty if the new explosives training missions are located as proposed at FAPH. For community residents their quality of life is the primary benefit of their property. For them it did not come easy. It is unique and treasured.

The location, the shear size, and the numbers of proposed demolitions within a mile and half of their community is not change that Portobago Bay residents can tolerate. The facts as presented in the Army's EA are the basis of this concern. With the destruction of quality of life follows destruction of property values. People work to buy quality of life not a piece of property. But the reverse is also true. When you devalue the property you devalue quality of life.

Destruction of property values poses additional and ultimately far more menacing threats to homeowners. Whether the Portobago Bay homeowner is a young family starting out or a retired couple enjoying life in a quiet rural setting, each has a significant portion of their financial future at stake in their property ownership. That ownership is central to theirs and all American's liberty. An encroachment-driven devaluation of the property value threatens that future, threatens their liberty both personally and as Americans.

Unfortunately, that threat to Portobago Bay homeowners is present today.

In the Practical Guide to Compatible Civilian Development Near Military Installations, real estate disclosure is addressed.

"**Real Estate Disclosure:** One strategy that is strongly advocated by DoD under its AICUZ-type programs is real estate disclosure. Buyers and sellers of real property should be required as part of real estate transactions to make prospective buyers and renters of real property aware of noise routinely generated from nearby military installations, testing and training ranges, and military aerial training routes (MTRs)."

The State of Virginia has some of the strongest real estate disclosure requirements. The Army's EA is a public document. At the very least, its presence in the public domain puts Portobago Bay homeowners thinking about selling their property in a grey area about whether to disclose the proposed location of three explosives training missions a half-mile away. Even if not required to, a property owner who sold their property without disclosing the new mission could be exposed to lawsuit when the buyer learns about the proposed missions.

The very day after the Fredericksburg Freelance Star published the story about the new missions near Portobago Bay, a prospective buyer of a house in Portobago Bay pulled back the offer. This demonstrates that the proposed missions are a clear and present threat to Portobago Bay homeowners.

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This much we do know from the EA. There will be as many as 880 additional persons – Soldier trainees and instructors – at Fort A.P. Hill on any given day year round. The analysis concludes that this always-changing additional daily population will

commit no crimes or traffic violations in Caroline County., that there will be no additional burden on county law enforcement and no burden on housing or schools. This is asserted because the Army states that it intends to bus the soldiers in and out of Caroline County. The only time a soldier will be off the post and in the county is when they are on their buses coming and going from Fort Lee, Virginia. So the additional soldiers themselves can make no contribution to county revenues. The Army identifies at least one cost to the county, that of medical assistance should any one of the 880 soldiers engaged daily in training with explosives be injured or become ill and the Army fails to add its own medical care facility.

With the short-term benefits of construction contracts unclear to Caroline County workers and the dim prospects for any long-term additional spending and resultant jobs and revenue to the county, the socioeconomic impact of the Army's proposed new missions seem at best to be insignificant.

Moreover, the analyses do not consider that the mission is incompatible with the residential land use in Portobago Bay. If the mission is allowed to proceed, the value of the property in Portobago Bay, as well as the value of other property along the Corridor, is sure to plummet. The losses will not be restricted to the property owners. A devaluation of the property will undercut the county tax base, resulting in a loss in county revenues. For example, Portobago Bay alone is estimated to be a $60 to $70 million capital investment. Tax revenues flowing to the county from these investments are significant. Loss of value of the investment, in part or in whole, would result in serous revenue losses to the county.

For the reasons set forth above, the Army's two environmental assessments are fatally flawed, in scope and in methodology, and cannot be a basis for informed decision making.

OTHER INCOMPATIBILITY ISSUES

The foregoing demonstrates that the Army's proposed missions are incompatible with the residential land use long established in Portobago Bay. Other serious related issues are raised below.

WATER

The proposed site of the training missions is in an area that slopes northeastward towards Portobago Bay. Within the proposed training area much of the land is steep slopes. This is so much the case that the FAPH EA states that the slopes in the area proposed by the BRAC EIS made only a portion of the proposed area suitable for training. In addition to the general slope of the land towards Portobago Bay, two primary forks feeding directly into Portobago Bay Creek run through the training site.

The PBHA is concerned that the clearing of more than 200 acres above Portobago Bay and the following construction will generate silt that could threaten Portobago Creek. Residents not only enjoy the creek's beauty but also have, under careful supervision, built several boathouses on the Creek. The rising and falling of the tide often determines whether a boat may leave or enter the Creek from the bay. Any activity-generated build up in the Creek would directly threaten homeowner enjoyment of the Creek. The EA general assurance that this would not be the case does not satisfy PBHA.

Secondly, the FAPH EA analysis of the control of run off water is inadequate.

The EA states that the impact sites will be carefully contained to prevent the run off of blast residues. And then it undermines that assertion by basing its conclusion of no significant run off impact on the proposition that all the water running off the installation eventually spills into the Chesapeake Bay. Recall that the infamous Valdez oil spill in the northwest did not pollute the Pacific Ocean. But it did cause considerable damage within the immediate area of the spill.

The FAPH EA also describes the blast safety arks around the impact areas. Whether there would be residue on fragments falling over the areas surrounding the blast sites and whether those fragments could be contaminated is not clear. Questions such as these contribute to PBHA concern that there could be run off and the run off could impact both fish and fowl in Portobago Bay Creek.

Finally, there is concern that any threat to underground water resulting from hazardous materials intense training activities could eventually threaten the wells down slope that are the sole source of water in Portobago Bay. In a public meeting on the proposed EA, an official commented that County officials routinely disapprove wells close to FAPH. The absence of specific information in the EA leaves this issue unresolved.

Generally, the EA water quality analysis does not provide data helpful to understanding how proposed training would impact on compatible residential land use in Portobago Bay.

AIR

The likely impact on air quality in Portobago Bay is, as a practical matter, unaddressed in the EA.

The analysis in summary states that air quality in the area meets current regional standards. Therefore, an analysis is not required. The problem here in the methodology as it contributes to an understanding of land use compatibility is that it ignores the likelihood of impact on the immediately adjoining area and points only to an expected no significant impact on a wide regional area. When the Commander at the prison located

within the boundaries of FAPH wrote to comment on the proposed missions and commented on current problems created by training noise and smoke, the Commander was addressing conditions in the immediate area.

Being down wind from the proposed training area a mile and half away for at least half the year, the PBHA is not able to accept the Army's EA analysis as sufficient to satisfy questions about its impact on the compatibility of land.

WILDLIFE

Specifically, the EA discusses Bald Eagles, an everyday presence in Portobago Bay. Homeowners are highly aware of the potential sensitivities of the eagles. No one has built a house in Portobago Bay without first hearing the cautionary word that if an eagle is spotted nesting in the area, construction will have to stop. At least one homeowner had construction stopped.

So the FAPH EA section addressing the eagles is read through the eyes of this experience. Noted are the Army's studies demonstrating that weapons noise has been found to not disturb nesting eagles. At least one of those tests was done at Aberdeen. Unclear from the information available to the PBHA is how close the demolitions at Aberdeen were to the eagle nests. Nor is it clear how close the human activity surrounding the firing of the weapons was to the nesting area.

What apparently disturbs eagle nesting is human activity. The FAPH EA asserts that human activity in the area will be halted when the eagles are nesting. The nesting areas are located along existing roads and the proposed training areas on the installation. Does human activity have to stop for the eagles to come to nest? Wildlife and the eagles are central to the uniqueness of the area and Portobago Bay. The EA needs to be more detailed.

APPENDIX E
ACRONYMS AND ABBREVIATIONS

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ACRONYMS AND ABBREVIATIONS

ADNL	A-weighted day-night average sound level
ACM	asbestos-containing material
a.m.	ante meridiem (before noon)
AQCR	Air-Quality Control Region
AQCR 224	Northeastern Virginia Intrastate Air-Quality Control Region
AWG	Asymmetrical Warfare Group
BMP	best management practice
BOQ	Bachelor Officers' Quarters
BRAC	Base Realignment and Closure
C&D	construction and demolition
CBPA	Chesapeake Bay Preservation Act
CDNL	C-weighted day-night average sound level
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CO	carbon monoxide
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
dBP	peak level decibel
DNL	day-night average sound level
DoD	Department of Defense
EA	environmental assessment
EIFS	Economic Impact Forecast System
EIS	environmental impact statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
FAPH	Fort A.P. Hill
FEMA	Federal Emergency Management Agency
FNSI	Finding of No Significant Impact
GATOR	Global Antiterrorism Operational Readiness
GCR	General Conformity Rule
ICRMP	Integrated Cultural Resource Management Plan
INRMP	Integrated Natural Resource Management Plan
JERRV	Joint EOD Rapid Response Vehicles
lb, lbs	pound, pounds
LBP	lead-based paint
LEED	U.S. Green Building Council's Leadership in Energy and Environmental Design
MICLIC	Mine Clearing Line Charge
mm	millimeter
MOUT	Missions on Urban Terrain
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NEW	net explosive weight
NO_x	oxides of nitrogen

NRHP	National Register of Historic Places
NSR	New Source Review
NSWECE	Naval Special Warfare Explosive Center of Excellence
O_3	ozone
OMEMS	Ordnance Munitions and Electronic Maintenance School
PA	programmatic agreement
PCPI	per capita personal income
p.m.	post meridiem (afternoon)
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROI	region of influence
RPA	resource protection area
RTV	rational threshold value
SF	square foot/square feet
SHPO	State Historic Preservation Officer
SI	Farmland of Statewide Importance
SO_2s	ulfur dioxide
TNT	trinitrotoluene
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VSMP	Virginia Stormwater Management Plan