

Final Environmental Assessment and Finding of No Significant Impact and Finding of No Practicable Alternative for the Replacement of Diamond and Brittin Elementary Schools at Fort Stewart, Georgia



Environmental Division,
U.S. Army Garrison, Fort Stewart, Georgia

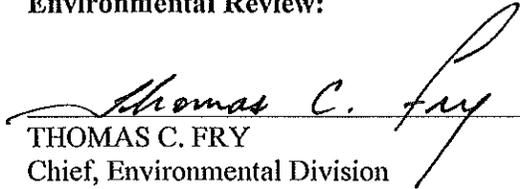
April 2013

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In Compliance with the National Environmental Policy Act of 1968

FINAL ENVIRONMENTAL ASSESSMENT &
FINDING OF NO SIGNIFICANT IMPACT &
FINDING OF NO PRACTICABLE ALTERNATIVE FOR THE
REPLACEMENT OF DIAMOND AND BRITTIN ELEMENTARY SCHOOLS AT
FORT STEWART, GEORGIA

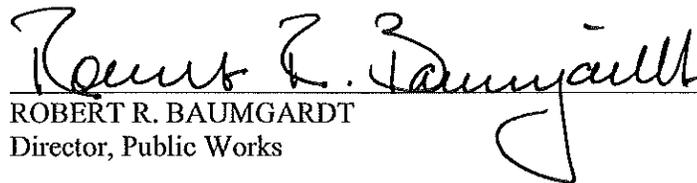
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**FINDING OF NO SIGNIFICANT IMPACT AND FINDING OF NO PRACTICABLE
ALTERNATIVE FOR THE REPLACEMENT OF DIAMOND AND BRITTIN ELEMENTARY
SCHOOLS AT FORT STEWART, GEORGIA**

1.0 BACKGROUND

Fort Stewart (FSGA) is the largest Army Installation east of the Mississippi River, covering approximately 279,270 acres in parts of Liberty, Long, Bryan, Evans, and Tattnall counties. The Installation is approximately 39 miles across from east to west and approximately 19 miles from north to south. Fort Stewart was established in 1940 and has seen varied periods of heightened activity as well as periods of inactivity in its 70-year life. The Installation is now a permanent Post, training its Soldiers and providing a high quality of life experience for its residents.

An Environmental Assessment (EA) was prepared to analyze potential environmental impacts associated with the replacement of the existing Diamond and Brittin Elementary Schools with two new, state-of-the-art elementary schools on FSGA. This Finding of No Significant Impact (FNSI) and Finding of No Practicable Alternative (FNPA) summarize the findings of the EA. This document was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code Section 4321 *et seq.*); the Council on Environmental Quality (CEQ) regulations that implement NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500 to 1508); and Army Regulation 200-2, *Environmental Effects of Army Actions*, as promulgated in 32 CFR 651. This EA identified and evaluated whether the potential impacts of constructing a new Diamond Elementary School and a new Brittin Elementary School and demolishing the existing Diamond and Brittin Elementary Schools would be significant. The use of the term “significant” (and derivations thereof) in this EA is consistent with the definition and guidelines provided in the CEQ regulations (40 CFR 1508.27), which require consideration of both the context and intensity of impacts.

2.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to provide exceptional, modern, efficient, and appropriately-sized educational facilities for Military Families living on Fort Stewart. The Army proposes to meet this need through the construction of two new on-Post elementary schools to serve students in prekindergarten through 6th grade.

The proposed action is needed to remedy the old, inadequate, undersized, and expensive existing Brittin and Diamond Elementary Schools. The proposed action would alleviate overcrowding, better meet the educational needs of Fort Stewart students, and provide more sustainable and energy efficient buildings that will meet current Americans with Disabilities Act (ADA), Building Code, Anti-Terrorism/Force Protection (AT/FP), and sustainability policies.

3.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Fort Stewart requires a total of four operational elementary schools designed to satisfy the 21st Century Education concept standards in order to meet the current and estimated population requirements of its resident Military Families. One of the three existing schools is determined to be adequate and a fourth (Austin Road) is in the design phase. Because Diamond and Brittin are in poor condition and considered inadequate, the Army proposes to replace them with two new elementary schools that meet DoDEA, Fort Stewart, ADA, and safety and sustainability standards.

To remedy the existing Diamond Elementary School and to accommodate the existing and anticipated future on-Post elementary school student population, the Army proposes to construct, operate, and maintain a new Diamond Elementary School, approximately 122,000-square feet (sf) in size, within the Installation boundaries. Based on enrollment projections for 2020, the elementary school would provide educational facilities and recreational space for up to 700 students between 4 and 11 years old (grades prekindergarten through 6th grade). Construction of the new Diamond Elementary School would begin in 2014 and be completed in 2016 so that this school would be operational for the 2016-2017 school year. The Army proposes to construct, operate, and maintain a new Brittin Elementary School to approximately the same size and standards as the new Diamond Elementary School. Construction of the new Brittin Elementary School would begin by 2016 and be completed by 2017 so it would be operational for the 2017-2018 school years.

The Final EA discusses the proposed action and no action alternatives, and specifically analyzes their impacts to floodplains. As part of the Preferred Action Alternative, the proposed Diamond Elementary School would be constructed within the 100-year floodplain. There is an insufficient amount of land within the cantonment area outside the 100-year floodplain on which to build the proposed elementary school. All topographically higher areas with acceptable building soils have been developed. As a result, the majority of undeveloped areas on Fort Stewart are in low-lying areas with unsuitable soils, or in locations with incompatible adjacent land use, such as the Georgia Guard Training Center. The optimal place for a school is within one mile of housing areas because it enables walking to the school, decreases busing of students, and develops a sense of community for the Soldiers and Families living in these areas.

No-Action Alternative: The no-action alternative for this proposed action would consist of maintaining baseline conditions. Although the implementation of the no-action alternative would not meet the purpose and need of the proposed action, which would be to replace the existing Diamond and Brittin Elementary Schools, the no-action alternative was carried forward in the analysis to provide a benchmark to evaluate the potential environmental effects of the proposed action alternatives.

Preferred Action Alternative: The Preferred Action Alternative would result in four elementary schools on Fort Stewart in four separate community areas and include the construction of new Diamond Elementary School and new Brittin Elementary School and the use of a new Austin Elementary School (once constructed) and continued use of the existing Kessler Elementary School (see Figure 2-2, Figure 2-3, and Figure 2-4 of the Final EA). The schools would be sized and sited appropriately so that no overcrowding will occur, no buses (other than those serving Special Education or Exception to Policy students) would be required, and all students can walk to school. This siting and sizing scenario was developed in a cooperative effort between Fort Stewart Schools, Residential Community Initiative (RCI), and Real Property Management, and includes projected community development and population demographics to meet the priorities that: 1) allow all able students to walk to school; and 2) no new overcrowding will occur in the foreseeable future.

Under the Preferred Action Alternative, the Army would develop a new elementary school north of Hero Road and west of the Eisenhower Village housing area. Imported fill would be required to replace unsuitable soils on the site and to raise the campus above the 100-year floodplain. The soil would be transported from a Georgia Department of Natural Resources (GA DNR)-permitted off-Post Surface Mine operation in a tandem axle dump truck. Although the Preferred Action Alternative site is currently designated as A-20 Range and Training Land in the Fort Stewart Master Plan, land use category changes for the Preferred Action Alternative area are under way per Army Regulation (AR)-350-19 and awaiting

final approval. Utility lines to support the proposed action, under this alternative, would extend 500 to 3,700 ft beyond the elementary school footprint.

The preferred siting scenario that offers the least disruption to existing students would establish the new Diamond school at this new Hero Road location (Figure 2-3 of the Final EA). Siting new Diamond at this site would enable students to attend schools closer to their homes, alleviate the overcrowding at other schools, and eliminate the current busing requirements. After the new Diamond Elementary School facilities are operational, the old Diamond Elementary School would be demolished and the new Brittin Elementary School would be built in its place, off Davis Avenue near Hallwood Homes and Marne Homes Military Family Housing (Figure 2-4 of the Final EA). Because a Military Munitions Remediation (MMR) site is adjacent to the eastern boundary of the proposed second school location, the boundary will likely need to be altered to avoid encroachment into this site. The campus footprint would be increased slightly and reconfigured to help alleviate current traffic congestion at the old Diamond site. After new Brittin is operational, the main building of the old Brittin campus on North Hero Road (Building 7392) would be demolished.

Alternative 2: Under Alternative 2, a new elementary school would be established south of Georgia Highway (GA HWY) 144 East. The existing Diamond and Brittin Elementary Schools would be demolished and the new Brittin built at the old Diamond location. Access to the site would be provided by a new road (not directly from GA HWY 144 East) and sidewalks that would link housing communities to the school. The new access road would disturb an additional 2.5 acres of land, in addition to the approximately 28 acres needed for the school's facilities. The Alternative 2 site is currently designated as A-20 Range and Training Land in the Fort Stewart Master Plan; if Alternative 2 is selected, land use category changes will be initiated per AR-350-19. Utility lines to support the proposed action, under this alternative, would extend 500 to 3,700 ft beyond the elementary school footprint. A substantial amount of imported fill would be required to replace unsuitable soils on the site, as well as to raise the campus above the floodplain. Due to similar site characteristics and school design requirements, it is assumed that a similar amount of fill would be required for Alternative 2 as was calculated for the Preferred Action Alternative. The soil would be transported from a Georgia Department of Natural Resources (GA DNR)-permitted off-Post Surface Mine operation in a tandem axle dump truck. Sources of the fill material would come from the same borrow pits as for the Preferred Action Alternative.

Alternative 3: Alternative 3 would establish a new school at the Marne Terrace Military Family Housing Area (Figure 2-6 of the Final EA). Due to its recent function for housing, there are existing utilities available at the site that would be reconfigured and extended as needed to serve the school. It is anticipated that new Diamond would be located here first and (as in the Preferred Action Alternative) new Brittin constructed at the site of the demolished Diamond location.

Older housing in this area has recently been demolished with the plan to rebuild new homes at a 1:1 exchange. Thus, the area is currently held within the RCI leased housing program and is controlled by Balfour Beatty. A land-swap exchange between RCI and Fort Stewart-controlled lands is possible; such negotiations are generally expected take no less than 12 months and would require approval from Department of the Army Headquarters. While there is the potential for Fort Stewart to enter into land-swap negotiations for this land, the construction of the planned housing units to replace those demolished is still required, and the only available land within proximity to the cantonment neighborhoods area is located in the same general area as the Preferred Action Alternative site, i.e. 100-year floodplain. In this instance, a land swap would likely result in an equitable scope of development and land disturbance in the

floodplain. Finally, due to its proximity to the old Diamond location and the greater distance from the population centers at Liberty Woods and Eisenhower Village, student busing would likely be required. However, as Alternative 3 represents a feasible school siting alternative located outside of the 100-year flood zone, it is carried forward for further analysis as required by DoD Instruction 4715.03 (DoD 2011).

4.0 SUMMARY OF ENVIRONMENTAL EFFECTS

Analysis of these proposed action alternatives and the no action alternative resulted in a finding of potential impacts to water resources (surface water and floodplains), soils, biological resources (vegetation and wildlife), hazardous and toxic materials and waste, solid waste, land use, cultural resources, noise, transportation, and public health and safety, as indicated in Table 1, below.

Table 1. Summary of Anticipated Environmental Effects¹

Type of Impact	No Action	Preferred Action Alternative	Alternative 2	Alternative 3
Water Resources (Surface Water, Wetlands, Floodplains)				
Direct / Indirect	No Impact	Minor/Minor	Minor/Minor	Minor/Minor
Cumulative¹	No Impact	Minor	Minor	Minor
Soils				
Direct / Indirect	No Impact	Minor/Minor	Minor/Minor	No Impact
Cumulative¹	No Impact	Negligible	Negligible	No Impact
Biological Resources				
Direct / Indirect	No Impact	Minor/Minor	Minor/Minor	Minor/Minor
Cumulative¹	No Impact	Negligible	Negligible	Negligible
Hazardous and Toxic Materials and Waste				
Direct / Indirect	Moderate	Negligible	Negligible	Negligible
Cumulative¹	No Impact	No Impact	No Impact	No Impact
Solid Waste				
Direct / Indirect	No Impact	Minor/Minor Positive	Minor/ Minor Positive	Minor/ Minor Positive
Cumulative²	No Impact	Negligible	Negligible	Negligible
Land Use				
Direct / Indirect	No Impact	Negligible	Negligible	No Impact
Cumulative²	No Impact	Negligible	Negligible	No Impact
Cultural Resources				
Direct / Indirect	No Impact	No Impact	Moderate/Moderate	No Impact
Cumulative²	No Impact	No Impact	Negligible	No Impact
Noise				
Direct / Indirect	No Impact	Negligible	Negligible	Negligible
Cumulative²	No Impact	No Impact	No Impact	No Impact
Transportation				
Direct / Indirect	Moderate	Minor Positive	Negligible/ Minor	Minor
Cumulative²	Minor	Minor Positive	Minor	Minor
Public Health and Safety				
Direct / Indirect	Moderate	Negligible	Negligible	Negligible
Cumulative²	No Impact	No Impact	No Impact	No Impact

Notes: ¹ Environmental effects listed in Table 1 are assumed to be negative effects unless listed as positive.

² Cumulative impacts reflect the incremental impact the proposed action may have when added to other past, present, and reasonably foreseeable actions. As such, the severity of potential direct/indirect impacts for an individual resource is not indicative of the severity of potential cumulative impact to that same resource.

Refer to Chapter 3.0, Affected Environment and Environmental Consequences, of the Final EA (incorporated by reference) for details on the impact analysis. No other environmental or socioeconomic resources were potentially affected. Resources considered but eliminated from further analysis are briefly discussed in Appendix A of the Final EA. Potential impacts to these resources may be direct, indirect, or cumulative and are defined as follows. Direct impacts are those caused specifically by the proposed action and that occur at the same time and place. Indirect impacts are also caused by the proposed action, but later in time or in distance. Cumulative impacts result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions.

5.0 PUBLIC INVOLVEMENT

The Draft EA and Draft FNSI/FNPA were available for public review February 27 through March 28, 2013, at the local public libraries in Hinesville and Savannah, as well as the Post Library on Fort Stewart. Fort Stewart published Notices of Availability of the Draft EA and Draft FNSI/FNPA in the *Savannah Morning News*, *Coastal Courier*, and *Frontline*, copies of which are in Appendix E. Electronic copies of the document were distributed to the regulatory community and joint land use partners with whom Fort Stewart consults, from which concurrence with the proposed action was indicated. Correspondence and comments are in Appendix F.

6.0 CONCLUSION

This FNSI/FNPA summarizes the potential impacts documented in the Fort Stewart Diamond and Brittin Elementary Schools Replacement Final EA. Due to the need to alleviate overcrowding at existing schools and provide educational and neighborhood continuity to Military Families and because the only remaining, adequately-sized open tracts of land in the cantonment area are located in the floodplain, it is determined that there is no practicable alternative to building in a floodplain.

Following an analysis and comparison of impacts of the proposed action and no action alternatives, it was determined that none of the alternatives will result in potentially significant impacts, and the preparation of a Finding of No Significant Impact and Finding of No Practicable Alternative was appropriate. After, a) land use is reclassified through AR-350-19, b) certification with supporting technical data is provided by a registered, State of Georgia-certified Professional Engineer demonstrating floodplain encroachment will not result in any increase in flood elevations upstream or downstream, and c) the second elementary school is situated and designed to avoid the MMR site, implementation of the Preferred Action Alternative will not have a significant environmental impact within the meaning of NEPA Section 102(2) (c), and preparation of an Environmental Impact Statement is not required. I have selected implementation of the Preferred Action Alternative as the recommended course of action.



KEVIN F. GREGORY
Colonel, U.S. Army
Commanding

Date: 10 MAY 13

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ACRONYMS AND ABBREVIATIONS

AAFES	Army Air Force Exchange Service	ESCA	Erosion and Sediment Control Act
ACM	Asbestos-containing Material	ESPCP	Erosion, Sedimentation, and Pollution Control Plan
ACP	Access Control Points		
ADA	Americans with Disabilities Act	FEMA	Federal Emergency Management Agency
ADNL	A-Weighted Day-Night Average Noise Level	FFE	Finished Floor Elevation
AHERA	Asbestos Hazard Emergency Response Act	FHA	Federal Highway Administration
AR	Army Regulation	FICUN	Federal Interagency Committee on Urban Noise
AT/FP	Anti-Terrorism/Force Protection		
BMP	Best Management Practices	FNPA	Finding of No Practicable Alternative
CDC	Child Development Center	FNSI	Finding of No Significant Impact
CDNL	C-Weighted Day-Night Average Noise Level	ft	Feet
CEQ	Council on Environmental Quality	FSGA	Fort Stewart, Georgia
CFR	Code of Federal Regulations	HVAC	Heating, Ventilation, and Air-Conditioning
CRM	Cultural Resources Management	IBCT	Infantry Brigade Combat Team
CWA	Clean Water Act	IMCOM	Installation Management Command
CX	Categorical Exclusion	GA	Georgia
cy	Cubic Yards	GA DNR	Georgia Department of Natural Resources
dB	Decibel	GA EPD	Georgia Environmental Protection Division
dba	A-Weighted Decibels	GA HWY	Georgia Highway
dbc	C-Weighted Decibels	ICRMP	Integrated Cultural Resources Management Plan
DDESS	Domestic Dependents Elementary and Secondary Schools	INRMP	Integrated Natural Resources Management Plan
DNL	Day-Night Sound Level		
DPW	Directorate of Public Works	ISO	International Organization for Standardization
DO	Dissolved Oxygen	LBP	Lead-Based Paint
DoD	Department of Defense	LEED	Leadership in Energy and Environmental Design
DODEA	Department of Defense Education Activity	LID	Low Impact Development
DRMO	Defense Reutilization and Marketing Office	LUPZ	Land Use Planning Zone
EA	Environmental Assessment	MBTA	Migratory Bird Treaty Act
EFMP	Exceptional Family Member Program	MMR	Military Munitions Response
EIS	Environmental Impact Statement	msl	Mean Sea Level
EO	Executive Order	MVACIS	Mobile Vehicle and Cargo Inspection System
EOC	Explosives of Concern	MWR	Morale, Welfare, and Recreation

NEC	National Electrical Code
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWP	Nationwide Permit
OCGA	Official Code of Georgia
OSHA	Occupational Safety and Health Act
PAL	Privatization of Army Lodging
PCN	Preconstruction Notification
POLs	Petroleum, Oils, and Lubricants
POV	Privately Owned Vehicle
RCI	Residential Community Initiative
REC	Record of Environmental Consideration
ROI	Region of Influence
RPMP	Real Property Master Plan
sf	Square Feet
SPCC	Spill Prevention, Control and Countermeasures
SPiRiT	Sustainable Project Rating Tool
SWMU	Solid Waste Management Unit
TLS	Threshold Level of Significance
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Command
USC	U.S. Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION AND BACKGROUND

Fort Stewart is the largest U.S. Army (Army) Installation east of the Mississippi River, covering approximately 279,270 acres in parts of Liberty, Long, Bryan, Evans, and Tattnall Counties in coastal Georgia (Figure 1-1). The Installation is approximately 39 miles across from east to west and approximately 19 miles from north to south. Fort Stewart was established in 1940 and has seen varied periods of heightened activity and inactivity in its 70-year span. In 1996, the 3d Infantry Division was activated at Fort Stewart and it became a permanent Post.

The Army Vision at Fort Stewart is to create a community of excellence in which to train and deploy its Soldiers, as well as provide an environment with a high quality of life for Soldiers in which to live and raise their Families. Establishing and maintaining quality of life standards includes the ability to accommodate on-Post population growth while maintaining exceptional educational opportunities for Military Families during their residence at Fort Stewart. The Department of Defense (DoD) currently operates three elementary schools on Fort Stewart, including Kessler, Brittin, and Diamond, all educating prekindergarten through sixth-grade students living on-Post (Figure 1-2). All three schools are currently operating over-capacity and do not conform to the Army's recent 21st Century Education concept.

Overcrowding. The three existing elementary schools are currently designed to accommodate approximately 1,750 students. Based on the 2012 Fort Stewart Enrollment Report (DoDEA 2012c), for the 2012-2013 school year a total of 2,091 students were enrolled at the three schools, and the projected 2020 enrollment is 2,200 students (Table 1-1). While the schools are functioning in accordance with the DoDEA ratio requirement to have a maximum of 18 students per one teacher, the schools do not have adequate classroom space and many teachers are conducting their classes in storerooms, offices, and closet spaces. Additionally, over 350 students per day are bused from the Brittin and Kessler living areas to Diamond Elementary School facilities, requiring the regular use of ten 65-passenger buses.

Table 1-1 Elementary School Population at Fort Stewart

School	Year Constructed	Existing School Design Capacity	2013 School Year Enrollment (Number of students)	2020 Maximum Enrollment Target (Based on 2020 housing unit capacity)
Diamond*	1963	700	973	700
Brittin*	1983	600	660	675
School at Austin Road*	(not constructed)	(not constructed)	(not constructed)	425
Kessler	2005	450	458	400
TOTALS		1750	2091	2,200

* 2020 figures assume that Preferred Action Alternative is implemented.

Table 1-1 is based on the 2012 FSGA Enrollment Report (DoDEA 2012c)

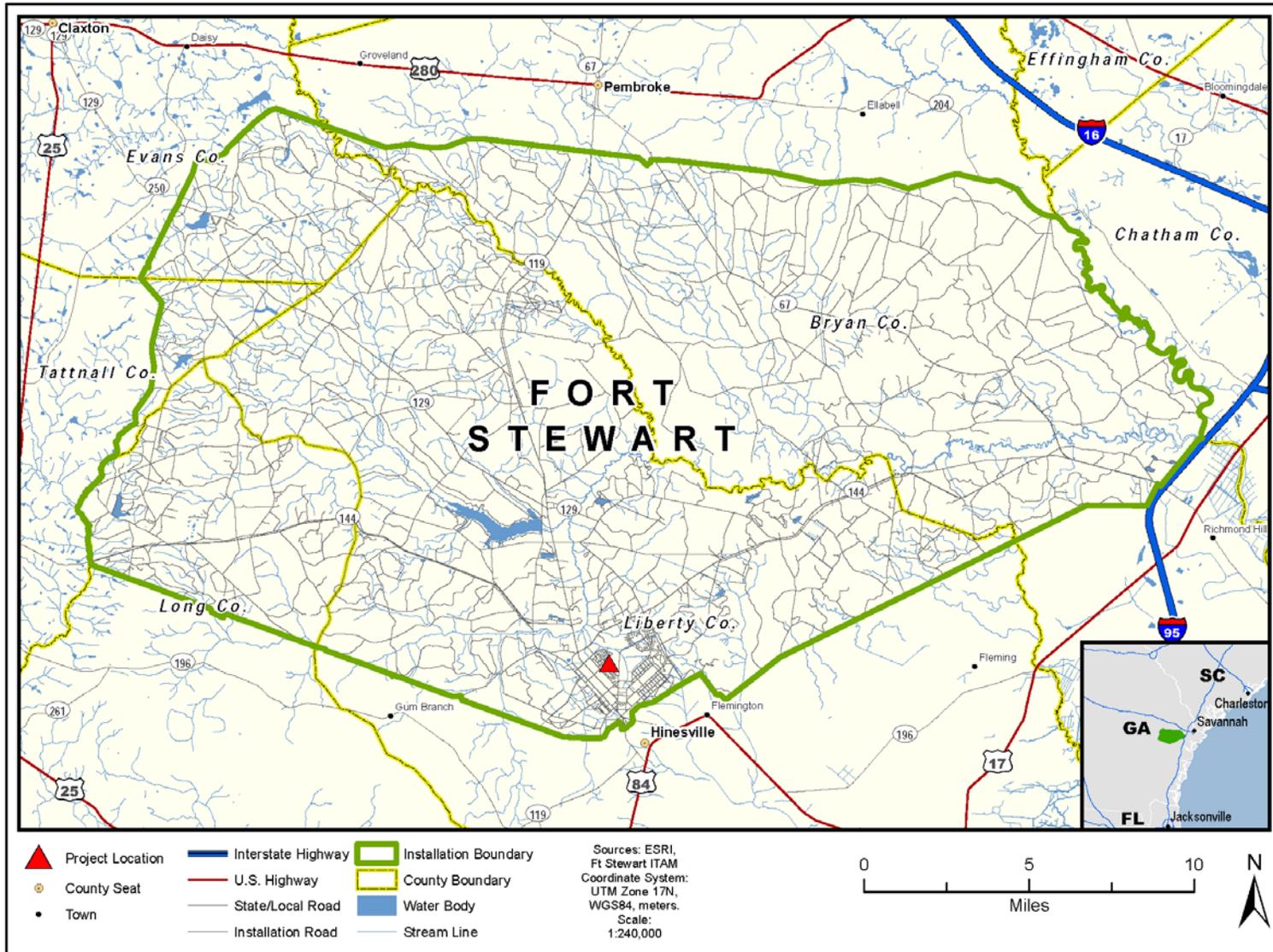


Figure 1-1: Regional Location of Fort Stewart, Georgia

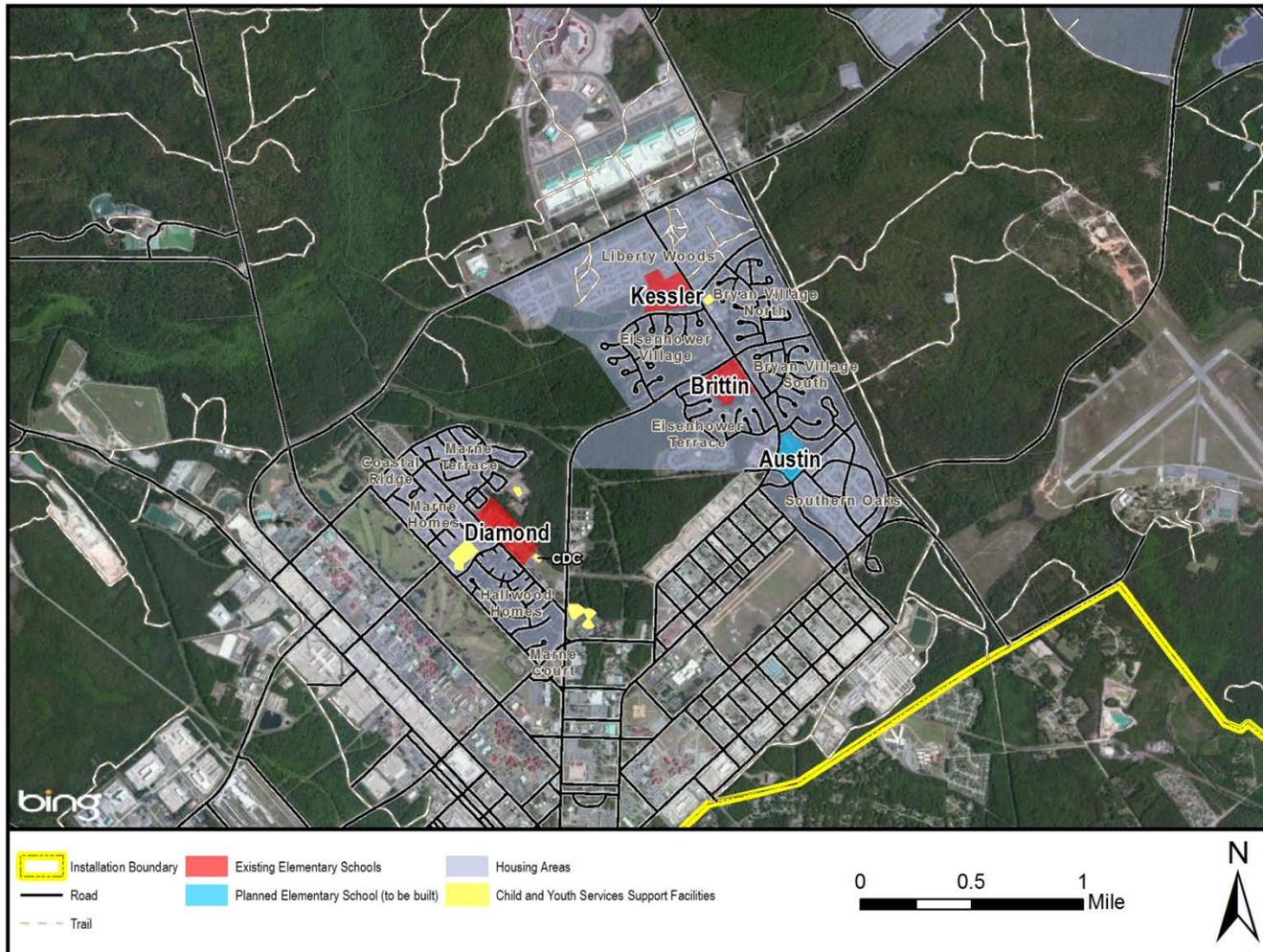


Figure 1-2: Existing Elementary School Locations on Fort Stewart, Georgia

The Army is proactively attempting to alleviate this overcrowding and to remedy the busing of students away from the school facilities for which they are zoned and that best serve them. The Army has obtained approval for construction of a consolidated elementary school on Austin Road, for which NEPA analysis was completed in 2010 (FSGA 2010). This school is currently in the design phase, and construction is estimated to be complete in December 2014. Although the addition of the elementary school at Austin Road will eliminate some of the current overcrowding, it alone cannot fully and efficiently remedy the overcrowding and student zoning problems within the on-Post DoD school system.

Modernization. The goal of DoDEA is to design schools to meet 21st Century learning objectives to include innovation in education, curriculum delivery, use of technology, and the requirements for sustainability and energy conservation (DoDEA, 2012a and 2012b). Announced in 2012, this strategy is now used throughout the DoD School System and is being retroactively incorporated into the design of the new school planned for Austin Road. These new DoDEA standards require schools of the future to be flexible and adaptable, allowing adjustments to new and innovative ways to deliver instruction and meet the needs of all students. The Army proposes to upgrade and modernize the elementary education strategy at Fort Stewart, including its facilities, to be in accordance with current DoDEA standards. This modernization effort would include the phased replacement of both existing Diamond and Brittin Elementary Schools.

Diamond Elementary School was built in 1963, and Brittin Elementary School was built in 1983. The Army has determined that replacing these buildings is more economical than continued maintenance and repair at both locations because

- 1) The buildings do not comply with the current Americans with Disabilities Act (ADA) standards, building codes, and current anti-terrorism/force protection (AT/FP) measures.
- 2) The building exteriors exhibit water infiltration from gutter and downspout leaks. In both facilities, portions of the roof persistently leak and damage interior ceiling tiles. These leaks can lead to unhealthy mold growth and costly repairs.
- 3) Interior finishes are generally in good-to-fair condition, but there are areas that need improvement, such as restrooms that have deteriorating fixtures, partitions, and kitchens; all of which are in overall poor condition.
- 4) Heating, ventilation, and air conditioning (HVAC) systems work intermittently.
- 5) Exterior lighting is inadequate and electrical panel boards require upgrading.
- 6) Facility layouts adversely impact educational activities. Current substandard facility examples include lack of toilet facilities in the prekindergarten and kindergarten classrooms; exterior play area for prekindergarten is too small and not developmentally appropriate; inadequate technology; not enough classrooms for special education; a lack of acoustic treatment in the cafeteria areas; and lack of storage, administrative, classroom, guidance, and teacher work space. There is also a lack of parking spaces at both locations with poor circulation of buses and cars which impacts traffic conditions during drop-off and pick-up periods.
- 7) Neither school meets sustainability requirements as necessary for Sustainable Project Rating Tool (SPiRiT)-Gold or Leadership in Energy and Environmental Design (LEED)-Silver certification.
- 8) Fort Stewart is an Exceptional Family Member Program (EFMP) Installation, which requires all DoD schools to have adequate classroom space and facilities to accommodate a spectrum

of special needs students and handicaps. Diamond and Brittin were not designed to provide optimal service to EFMP students.

No actions are proposed for the Austin Road and the existing Kessler Elementary School. Fort Stewart/DoD has a rating system to determine the condition of a given facility and whether a facility is adequate or is eligible for remodeling or replacement. It is Fort Stewart/DoD policy that only buildings with a Q3/Q4 rating (as determined through regular Facilities Condition Assessments conducted by the Fort Stewart Real Property Management activity) are eligible for remodel or rebuild, and Kessler is still considered fairly new (Q1 condition). Kessler was built in 2005 and is currently providing adequate, safe, and effective educational opportunities to its students. With regards to building efficiency, Kessler was designed to maintain a Gold standard in accordance with the SPiRiT program, which is the precursor to LEED and from which the Army has since transitioned in order to implement LEED-silver certification requirements (DA 2006; DA 2010). Likewise, Kessler meets all current ADA and Building Code standards, and the facility meets or exceeds current AT/FP standards, including the requirement for a greater than 92 ft vehicular standoff distance. Although the DoDEA had not delivered its 21st Century Education concept prior to the publication of the EA for the elementary school on Austin Road, its concepts are being retroactively incorporated into the school's design ensuring it will also meet applicable standards once constructed. For these reasons, these two schools are not discussed further in this EA.

This EA analyzes potential environmental impacts associated with the construction of two new elementary schools and the demolition of two existing elementary schools at Fort Stewart. This document was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] Section 4321 *et seq.*); the Council on Environmental Quality (CEQ) regulations that implement NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500 to 1508); and Army Regulation 200-2, *Environmental Effects of Army Actions*, as promulgated in 32 CFR 651. This EA will also address sustainable community principles and energy alternatives as required in all NEPA documentation by Executive Order (EO) 13514 (5 Oct 2009) in the relevant sections to follow.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to provide exceptional, efficient, modern, and appropriately-sized educational facilities for Military Families living on Fort Stewart. The Army proposes to meet this need through the construction of two new on-Post elementary schools to serve students in prekindergarten through 6th grade.

The proposed action is needed to remedy the old, inadequate, undersized, and expensive Brittin and Diamond Elementary Schools. The proposed action would alleviate overcrowding, better meet the educational needs of Fort Stewart students, and provide more sustainable and energy efficient buildings that will meet current ADA, building code, and AT/FP requirements.

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROJECT DEVELOPMENT

Fort Stewart developed siting alternatives and related construction requirements for the replacement of the existing Diamond and Brittin Elementary Schools using a master planning design process including a charrette approach for the Diamond Elementary School. This collaborative process involved an interdisciplinary team composed of representatives from the Installation's Master Planning Division, Engineering Division, Environmental Division, and FSGA schools representatives; DoDEA; DoD Domestic Dependents Elementary and Secondary Schools (DDESS); and the U.S. Army Corps of Engineers (USACE). The team collected and evaluated project-specific information to develop school requirements and alternatives that met the purpose and need of the proposed action.

2.2 PROPOSED ACTION

Fort Stewart requires four operational elementary schools designed to satisfy the 21st Century Education concept standards to meet the current and estimated population requirements of its resident Military Families. Final design work on the elementary school at Austin Road is under way, and Kessler is determined to be adequate. Since Diamond and Brittin are in poor condition and considered inadequate, the Army proposes to replace them with two new elementary schools that meet DoDEA, Fort Stewart, ADA, and safety and sustainability standards.

To Remedy the Existing Diamond Elementary School: The Army proposes to construct, operate, and maintain a new, approximately 122,000-square-foot (sf) elementary school within the Installation boundaries to accommodate the existing and anticipated future on-Post elementary school student population. Based on enrollment projections for 2020, the elementary school would provide educational facilities and recreational space for up to 700 students between 4 and 11 years old (grades prekindergarten through 6th grade). Construction of the school would begin in 2014 and be completed in 2016 so that the school would be operational for the 2016-2017 school year.

To Remedy the Existing Brittin Elementary School: The Army proposes to construct, operate, and maintain a new, approximately 122,000-sf elementary school within the Installation boundaries to accommodate the existing and anticipated future on-Post elementary school student population. Based on enrollment projections for 2020, the elementary school would provide educational facilities and recreational space for up to 675 students between 4 and 11 years of age (grades prekindergarten through 6 grade). Construction of the school would begin by 2016 and be completed by 2017 so it would be operational for the 2017-2018 school year.

School Specifications. The elementary schools would be designed to provide safe and secure, indoor and outdoor activity spaces that meet the standards outlined in the DoDEA 21st Century Education Facilities Specifications (DoDEA 2012a; 2012b). They would include general classrooms, information center/library, flex laboratories, gymnasium, performance spaces, commons/ dining, kitchen, supply areas, specialist rooms, art room, music room, learning impaired space, occupational therapy/ physical therapy space, teacher work rooms, counseling areas, storage, health offices, administrative offices, and other areas required for a fully functioning elementary school. All spaces would be wired and otherwise equipped to accommodate modern technology needs. Exterior space would include playground facilities

and outdoor learning and gathering spaces. Fort Stewart is an EFMP Installation and must accordingly provide facilities capable of accommodating a variety of special needs students and handicaps.

Supporting Infrastructure. The construction requirements of the two schools are determined to be essentially the same. The HVAC system at both new school locations would be a hybrid geothermal system, and the air conditioning load for a 122,000-sf facility is estimated to be 350 tons. Intrusion detection, video surveillance systems, and outside perimeter and sidewalk security lighting (with illumination up to 0.75 foot candle) would be installed as well as advanced and general communications systems. Energy monitoring and control systems would be installed; to help maintain a green energy rating, the voltage drop between the external feeder and the building would not exceed 2 percent. Sprinkler systems would be installed in both schools, as well as a lightning protection system as deemed necessary after a lightning protection assessment. Supporting infrastructure includes a mechanical enclosure; dumpster enclosure; service yard; and visitor, staff, and bus parking. Access roads (including the configuration of adequate circulation and stacking), sidewalks, canopies, landscaping, playgrounds, and the use of low-impact development (LID) are also part of the proposed action.

Both new schools would be designed in accordance with the ADA, Architectural Barriers Act, National Fire Protection Association (NFPA) Life Safety Code, Standards of Seismic Safety for Federally Owned Buildings, the latest version of the International Building Code, AT/FP, the latest National Electrical Code (NEC), and energy and water conservation standards.

Environmental and Sustainability Measures. Sustainability principles would be maximized in the design, development, and construction of the projects in accordance with Executive Orders (EOs) 13423 and 13514, other applicable laws and EOs, and compliance and coordination with the FSGA International Organization for Standardization (ISO) 14001 Sustainability Management System. Energy conservation and environmental measures would be incorporated in this project wherever feasible, practical, or required by regulation, including maximizing energy and natural resource conservation measures in the design to the greatest extent possible. In accordance with LEED for Schools, Silver certification will be the goal of the project.

Construction of the new Brittin and Diamond Elementary Schools must comply with the Department of the Army Memorandum on Sustainable Design and Development Policy Update (Environmental and Energy Performance) (DA 2010), which states that the Army will incorporate the high performance building requirements of EO 13514. As required by EO 13514, Federal agencies shall implement high performance sustainable Federal building design by ensuring that all new construction, major renovation, or repair and alteration of Federal buildings complies with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (NIBS 2012), www.wbdg.org/references/fhpsb_new.php. It addresses (1) employing integrated design principles, (2) optimizing energy performance, (3) protecting and conserving water, (4) enhancing indoor environmental quality, and (5) reducing environmental impact of materials. Further, contractors shall recycle construction and demolition debris as required by the FSGA Recycling Clause, 52.000-4061: "Recycling, Salvage, and Disposal of Materials, Fort Stewart and Hunter Army Airfield" (FSGA 2010c; Appendix B).

2.3 SCREENING CRITERIA

Identification of proposed action alternative locations involved reviewing the existing Fort Stewart Master Plan and the existing standard design for DoD Elementary Schools in order to make the best use of

available land while minimizing environmental and mission impacts. The interdisciplinary charrette team (see Section 2.1) created the following specific criteria to further refine the choice of alternative locations:

- **Size** – approximately 28 acres of land within the Fort Stewart boundaries to support the school as well as provide on-site playgrounds and sports facilities; landscaping; parking space; vehicular and pedestrian circulation, including separated parent and bus entrances and loading/unloading zones; and security buffers. Schools must be of adequate size to accommodate all potential residents within feeder boundaries and schools must be developed to meet DoDEA’s Procedures to Provide Outstanding Schools (DoDEA 2010; see School Specifications and Supporting Infrastructure in Section 2.2 above). In developing the site selection alternatives under DoDEA Procedures, a parcel size of 28 acres was determined by Fort Stewart to be optimal to meet the needs of an on-Installation elementary school.
- **Community Location** – the site must be in proximity to Military Family Housing Areas and family/community support facilities, such as Child Development Centers (CDC) or School-Age Centers, in order to increase community convenience and pedestrian access and to reduce costs associated with dispersed busing requirements. DoD Regulation 4500.36, *Management, Acquisition, and Use of Motor Vehicles*, states that “the walking distance for grades 6 and below shall not normally exceed 1 mile from their primary residence to the school or designated bus stop.” Therefore, it is the goal of Fort Stewart to site all schools so that all students reside within 1 mile of their school and all students (other than those individuals with special needs or that have been given an Exception to Policy status) can walk to school. Thus, through careful community planning and with the exception of special needs students, it is desirable to eliminate the need for student busing in the foreseeable future at Fort Stewart.
- **Vehicular and Pedestrian Circulation** – roads and sidewalks must be available to provide bus, privately owned vehicles (POV), pedestrian, and emergency vehicle access from across the Installation. Access and parking must provide adequate flow and stacking to help alleviate traffic concerns on adjacent feeder roads. Also, the site must be located on-Post, i.e., avoid the need for going through Access Control Points (ACP).
- **Sustainability Measures** – the site must provide adequate pedestrian connection into adjacent local neighborhoods and be sited and situated in a way that supports LEED and LID requirements. The building shall attain LEED-silver certification, provide maximum exterior open space and joint-use facility space, ensure indoor air quality, and utilize recycled-content and bio-based materials where feasible. The school should be a “Teaching Tool” to illustrate sustainability measures provided for and possible in its own design.
- **Existing Utilities** – the presence or adjacency of existing communication and electrical lines, potable water, and sewage services.
- **Wetland/Environmental Concerns** – avoidance or minimization of impacts to wetlands, threatened and endangered species, known cultural resources, and identified contaminated areas.
- **Training Area Impacts** – avoidance of impacts to training lands and training mission. This criterion includes avoiding encroachment over or flanking training area boundaries.

- **Noise Impacts** – identify locations outside the Noise Zone Level II noise contour, which is considered incompatible with classroom and outdoor student activities.

2.4 ALTERNATIVES CONSIDERED

Through collaboration between the Installation's Master Planning and Environmental Divisions, and by applying the criteria discussed above, Fort Stewart considered potential school sites that could meet the purpose and need of the proposed action. The alternative sites are analyzed in a way that should not limit their potential for consideration and so that any combination of the sites could be reviewed for acceptably responding to the purpose and need., i.e., the alternative sites are described as locations at which "a school could be built" rather than limiting it to only accommodate Diamond or Brittin specifically or in any specific order. However, each alternative does describe a preferred action scenario associated with the selection of the particular location that would establish each new facility with minimal disruption to the existing student population. Due to the extent of the current overcrowding and busing situation (Table 1-1), it has been determined that the least disruptive and most efficient way to transition to the new schools would be to establish Diamond first followed by Brittin. The alternatives identification process eliminated seven alternatives from further consideration and accepted three action alternatives for further evaluation. A no action alternative will provide a baseline for comparative analysis of the three action alternatives. Specifically, Fort Stewart considered one new elementary school site at Hero Road, one south of Georgia Highway (GA HWY) 144 East, and one site at the demolished Marne Terrace Military Family Housing Area. These three alternatives include the placement of a second new school at the location of the demolished old Diamond Elementary School. Based on the Fort Stewart screening criteria and application of the DoDEA-prescribed design process, Alternative 1 is identified as the Preferred Action Alternative. Figure 2-1 shows the location of the alternatives, which are situated just north of the Installation's southern boundary.

This section discusses the three alternatives analyzed in the EA; refer to Section 2.5 for a discussion of the seven alternatives considered but eliminated from further evaluation.

2.4.1 No Action Alternative

The CEQ regulations that implement NEPA require a clear basis for choice among options provided to the decision-maker and the public, and a no action alternative must be included and analyzed (40 CFR 1502.14[d]).

Under the no-action alternative, Diamond and Brittin Elementary Schools would not be replaced by new facilities, and operation and maintenance of the existing Diamond and Brittin Elementary Schools would continue as they are currently. The schools would not meet DoDEA's 21st Century school design criteria. Although the schools could continue to provide educational services to on-Post students, the maintenance and utility costs would continue to increase, the facilities would remain undersized, and they would not meet adequate ADA accessibility, NFPA fire safety codes, or AT/FP and safety requirements.

Although the implementation of the no action alternative would not meet the purpose and need of the proposed action, it is carried forward in this analysis to provide a benchmark to evaluate the potential environmental effects of the proposed action alternatives.

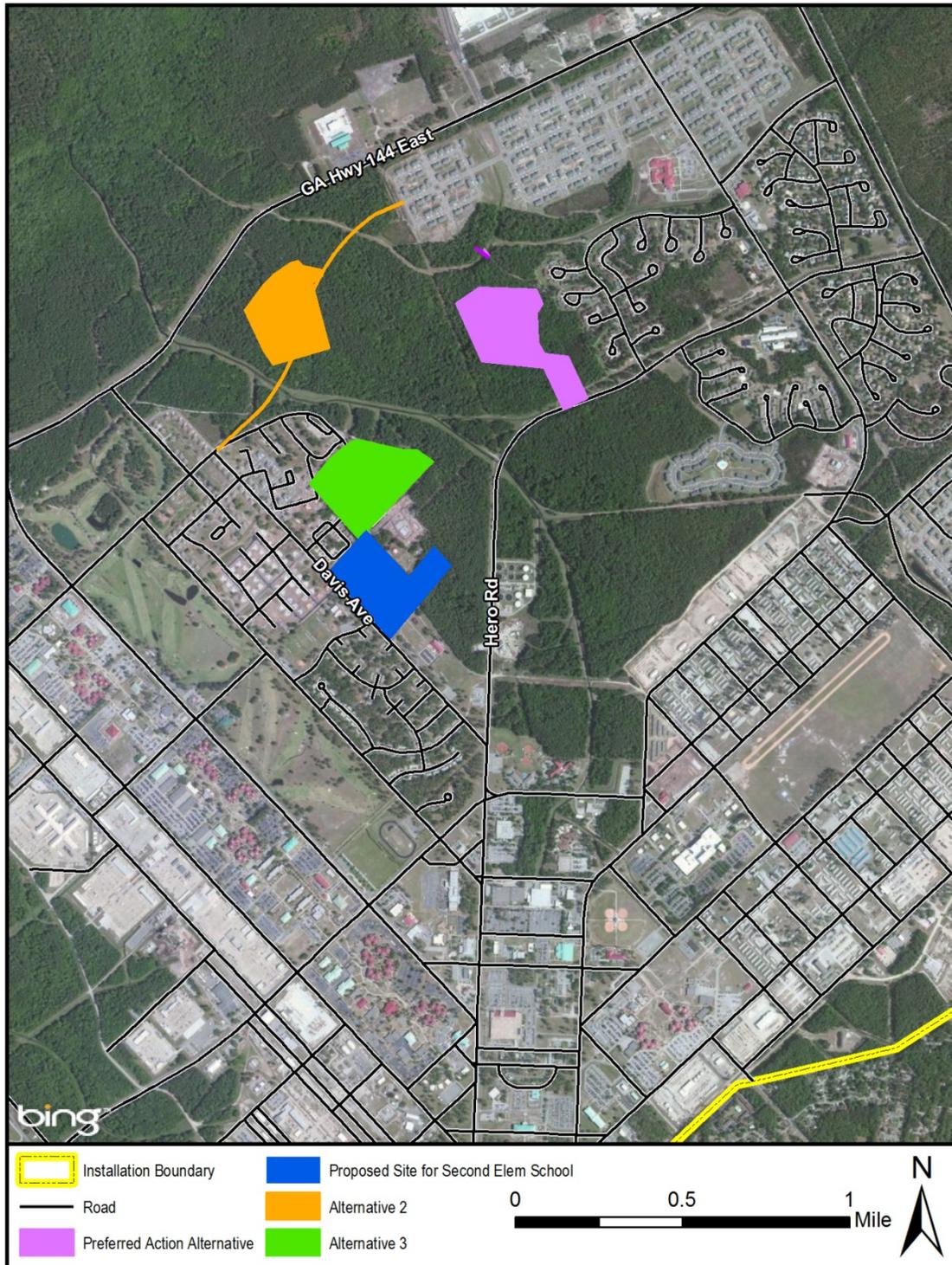


Figure 2-1 Geographic Relationships of Proposed Alternatives

2.4.2 Preferred Action Alternative

The Preferred Action Alternative would result in the construction of two new schools at FSGA for a total of four on-Post elementary schools in four separate community areas. The preferred configuration would include construction of a new Diamond Elementary School and new Brittin Elementary School, the use of the new Austin Elementary School (once constructed), and use of the existing Kessler Elementary School (see Figure 2-2, Figure 2-3, and Figure 2-4). These schools would be sized and sited appropriately so that no buses (other than those serving Special Education or Exception to Policy students) would be required and all students could walk to school. The new Brittin Elementary School would be expected to handle the neighborhoods currently served by the old Diamond Elementary School. The new Austin Elementary School will solve the overcrowding and busing situation in the old Brittin neighborhoods. The new Diamond Elementary School is thus sited to draw from and serve the overcrowded Kessler and old Brittin neighborhoods. This siting and sizing scenario was developed in a cooperative effort between Fort Stewart Schools, Residential Community Initiative (RCI), and Real Property Management, and includes projected community development and population demographics to meet the priorities that: 1) will allow all able students to walk to school; and 2) no new overcrowding will occur in the foreseeable future.

Under the Preferred Action Alternative, the Army would develop one new elementary school on a 28-acre parcel north of Hero Road near the Eisenhower Village Housing Area. As part of this alternative, a walkway and footbridge crossing Liberty Woods Channel would be established to facilitate pedestrian traffic accessing the school from nearby housing areas. Utility lines to support the proposed action under this alternative would extend 500 to 3,700 feet beyond the elementary school footprint and connect to the existing utility infrastructure at Hero Road. Approximately 117,000 cubic yards (cy) of imported fill would be required to replace unsuitable soils on the site and to raise the campus above the 100-year floodplain. The soil would be transported in a tandem axle dump truck from a Georgia Department of Natural Resources (GA DNR)-permitted off-Post surface mine (borrow pit) operation.

The preferred siting scenario that offers the least disruption to existing students would establish the new Diamond Elementary School at this new Hero Road location (Figure 2-3). Approximately 800 students live in the housing area around Kessler, and many of the students are bused from around Kessler to the existing Diamond Elementary School. Siting the new Diamond Elementary School at the Preferred Action Alternative site north of Hero Road would enable students to attend schools closer to their homes, alleviate the overcrowding at Kessler, and eliminate the current busing requirement to the existing Diamond site. After the new Diamond Elementary School facilities are operational, the old Diamond Elementary School at Davis Road would be demolished and the new Brittin Elementary School would be built in its place.

The new Brittin Elementary School would be constructed on 18 of the 23 acres at the reclaimed site of the old Diamond Elementary School, off Davis Avenue near Hallwood Homes and Marne Homes Family Housing Areas (Figure 2-4). The campus footprint would be increased to 26 acres, impacting 18 acres of the former school site and expanding 8 acres into undisturbed area. Traffic flow would be reconfigured to alleviate congestion currently experienced at this location. An access road for the existing youth center north of the property is to be built near the new Brittin footprint and may reduce the final boundary of the proposed school to the north. Final site selection and design for the access road has not occurred; however, if it impacts the school's footprint, additional NEPA analysis and documentation may be

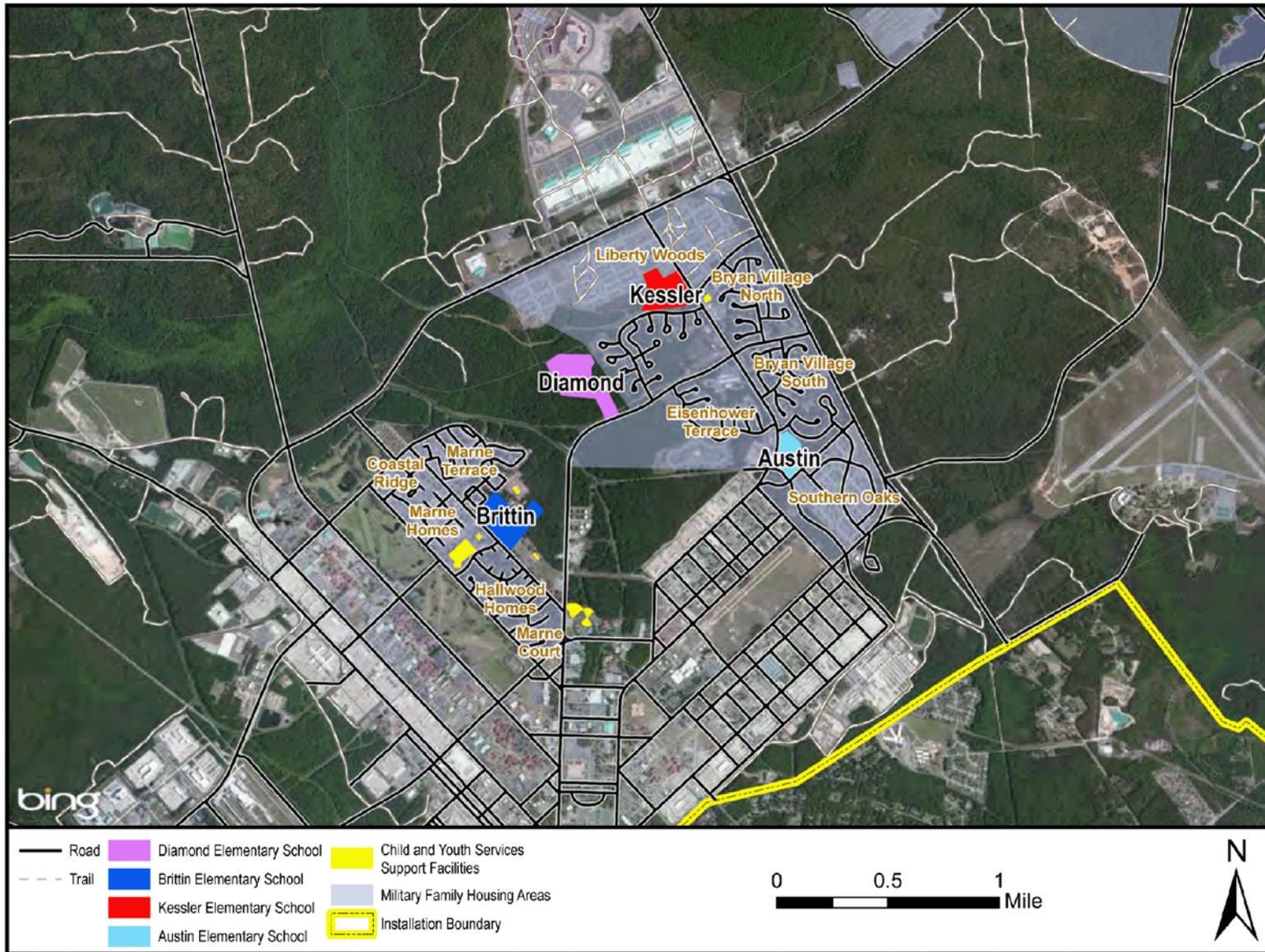


Figure 2-2: Preferred Action Alternative, Final Neighborhood Design of Four Elementary Schools at Fort Stewart



Figure 2-3: Proposed Location, Preferred Action Alternative

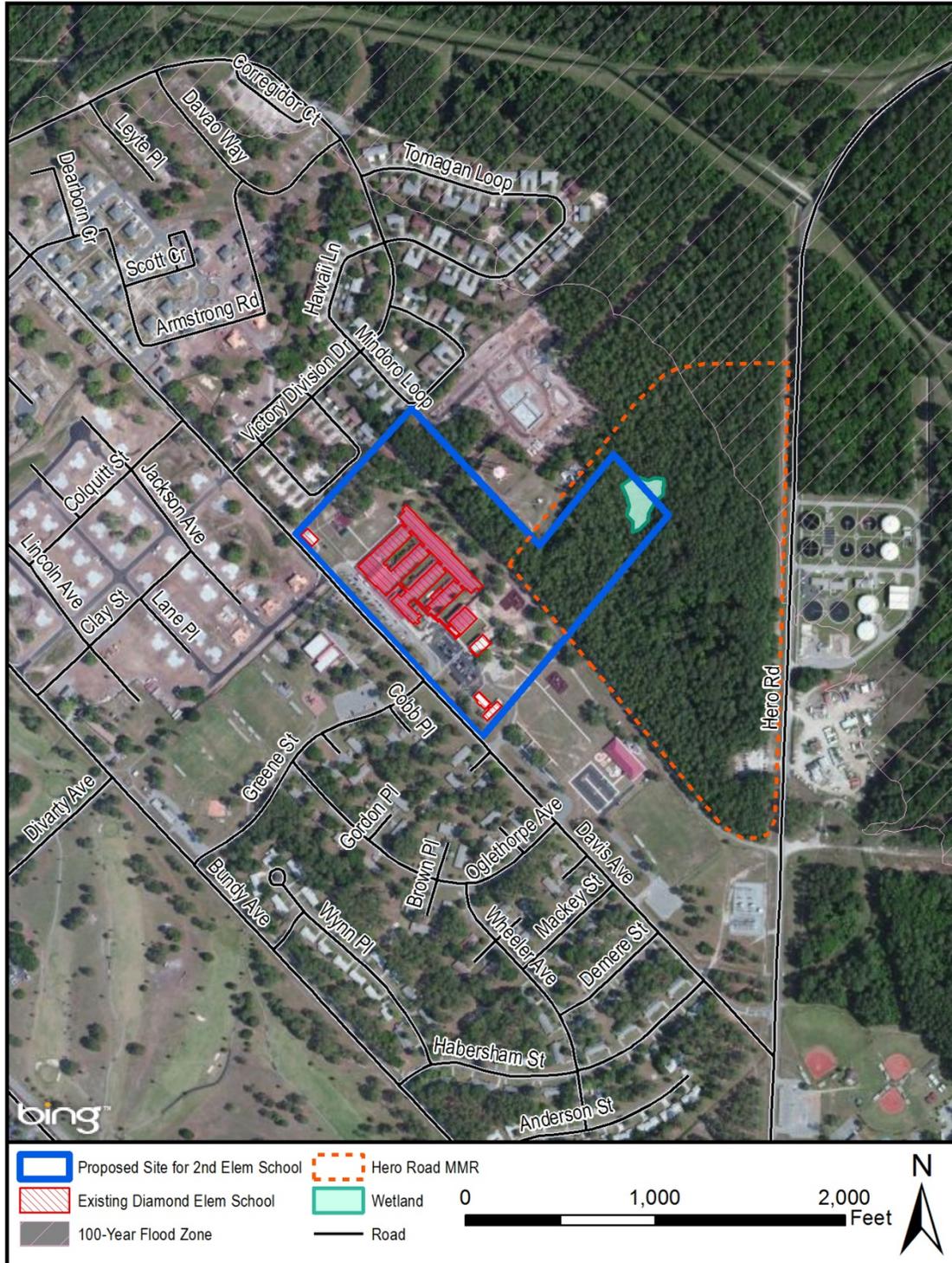


Figure 2-4: Proposed Location, Second New Elementary School

required. The 26 acres is slightly less than the optimal acreage of 28 acres noted earlier but considered sufficient to meet the site layout at this location.

After new Brittin Elementary School is operational, the main building of the old Brittin campus on North Hero Road (Building 7392) would be demolished and the vacant area seeded and stabilized. Other structures at the current 15-acre Brittin campus are associated with Fort Stewart Schools Headquarters functions and will not be demolished, including Buildings 7393 (warehouse and IT server); 7394 (closed pump house that currently houses schools' HVAC maintenance); and 7395 (maintenance warehouse). There are also modular trailers currently located on the Brittin campus (Buildings 7396, 7397, and 7398), and these trailers will be removed as soon as possible once new schools come online and relieve the need for modular classroom space.

Site Work. Site preparation at both of the new school construction sites would involve tree removal, grubbing and grading, clearing, properly disposing of demolition debris, and reconfiguring traffic flow at and around the location. For both locations, a contractor material staging area would be identified within the footprint of the proposed action prior to construction and used throughout construction. The components of the staging area, including trailers and utility connections, would be removed and the site restored at the conclusion of construction and prior to the start of school operations.

Infrastructure. Utility work at new Diamond Elementary School would include the installation of new electrical and communications lines, potable water and sewer pipes, and stormwater drainage features. Utility work at new Brittin would include connecting all utilities to existing lines, pipes, and features currently serving existing Diamond Elementary School as well as updating and reconfiguring utility features as necessary.

Demolition. Both existing Diamond and Brittin Elementary Schools would be demolished. The existing Diamond Elementary School encompasses approximately 114,314 sf of interior space, which includes Buildings 5601, 5602, 5603, and 5604. The existing Brittin Elementary School main building (Building 7392), off Hero Road and surrounded by Eisenhower Terrace, Eisenhower Village, and Bryan Village North and South Military Family Housing areas, encompasses approximately 72,863 sf of interior space.

2.4.3 Alternative 2

Alternative 2 would establish one of the two elementary schools south of GA HWY 144 East (Figure 2-5). A new road and sidewalks linking housing communities to the school would provide access to the site. The access road would disturb approximately 2.5 acres of land in addition to the approximately 28 acres needed for the school's facilities. Access would not occur directly from GA HWY 144 East. Utility lines to support the proposed action under this alternative would extend 500 to 3,700 feet beyond the elementary school footprint. Because of similar site characteristics and anticipated school design requirements, it is assumed that approximately the same amount of imported fill would be required for Alternative 2 as was calculated for the Preferred Action Alternative. This fill would replace unsuitable soils on the site and raise the campus above the floodplain.

As with the Preferred Action Alternative, this site is proposed to accommodate the existing Diamond population. After the students at the existing Diamond Elementary School are relocated to the new facility, the old Diamond off Davis Avenue would be demolished and new Brittin Elementary School would be established in its place (Figure 2-4).

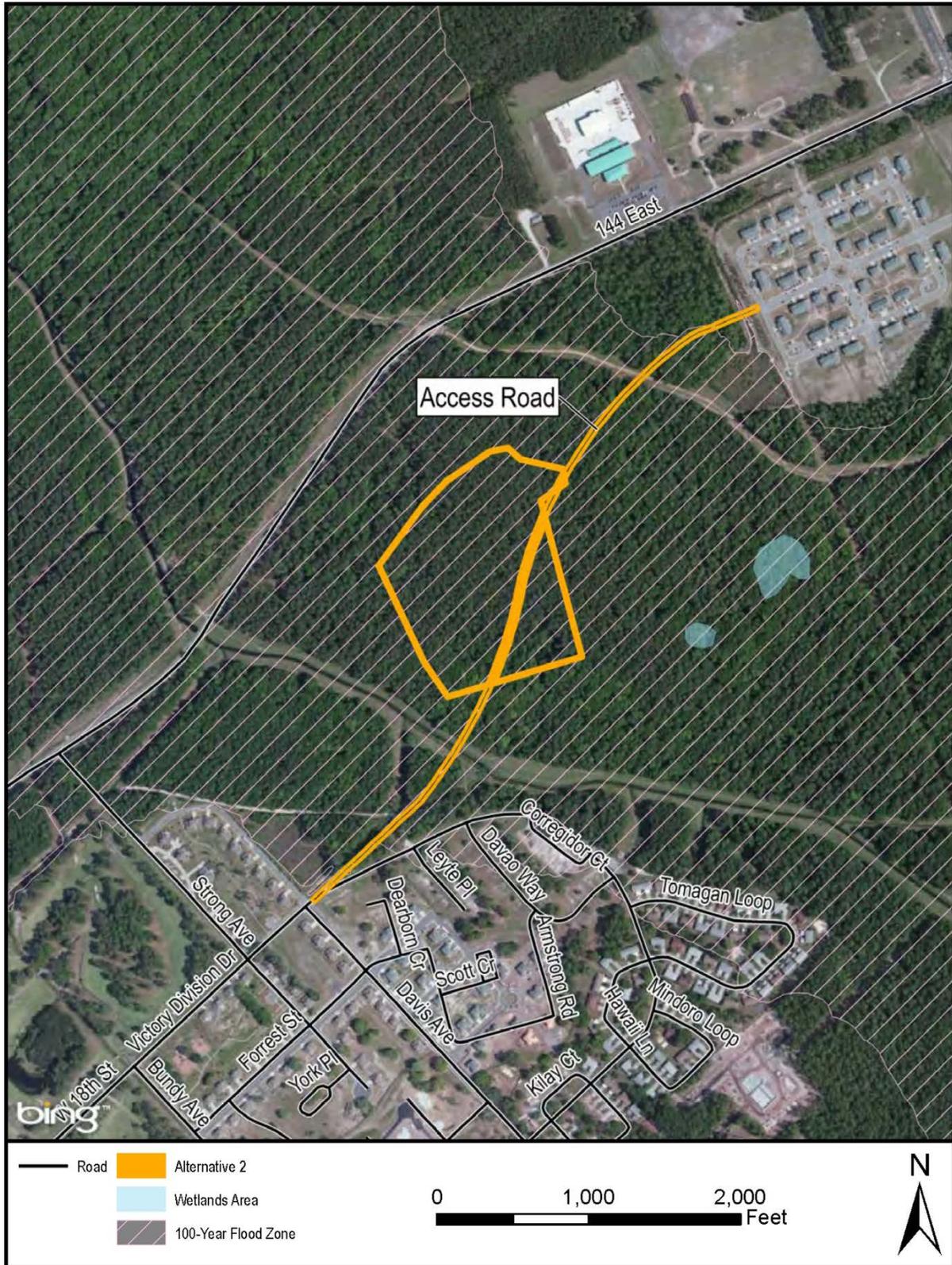


Figure 2-5: Proposed Location, Alternative 2

2.4.4 Alternative 3

Alternative 3 would establish a new school at the Marne Terrace Military Family Housing Area (Figure 2-6). Access to the 27-acre site would be provided via existing roads and sidewalks that would link housing communities (Coastal Ridge, Marne Homes, and the relocated Marne Terrace) to the school. Due to its recent function for housing, there are existing utilities available at the site that would be reconfigured and extended as needed to serve the school. It is anticipated that, if this site is found feasible for the construction of a Fort Stewart elementary school, new Diamond Elementary School would be located here first, and (as in the Preferred Action Alternative) a new Brittin Elementary School constructed at the site of the demolished Diamond location.

Older housing in this area has recently been demolished with the plan to rebuild new homes at a 1:1 exchange. Thus, the area is currently held within the RCI leased housing program and is controlled by Balfour Beatty. A land-swap exchange between RCI and Fort Stewart-controlled lands is possible; such negotiations are generally expected to take no less than 12 months and would require approval from Department of the Army Headquarters. While there is the potential for Fort Stewart to enter into land-swap negotiations for this land, the construction of the planned housing units to replace those demolished is still required, and the only available land within proximity to the cantonment neighborhoods area is located in the same general area as the Preferred Action Alternative site. In this instance, a land swap would likely result in an equitable scope of development and land disturbance in the floodplain. Finally, due to its proximity to the old Diamond location and the greater distance from the population centers at Liberty Woods and Eisenhower Village, student busing would likely be required if Alternative 3 is selected. However, as Alternative 3 represents a feasible school siting alternative located outside of the 100-year flood zone, it is carried forward for further analysis as required by DoD Instruction 4715.03 (DoD 2011).

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

In order for a school site location to be carried forward as an alternative site for further consideration, it must meet the screening criteria as described in Section 2.3 (i.e., size, minimize conflicts with other mission functions, in proximity to neighborhoods, safety criteria, and minimize environmental impacts, etc.). The alternatives listed below were developed during the planning process, but they were dismissed from further detailed review because they failed to meet one or more of the critical screening criteria and, therefore, the purpose and need for the proposed action. They are presented here to inform the reader of the full spectrum of alternatives analyzed by the Installation's interdisciplinary team during the course of this project's development.

2.5.1 Off-Post Location

Assessing a parcel of land outside of the Installation boundaries does not meet transportation or safety requirements to avoid busing students through ACPs and does not comply with sustainable, pedestrian-friendly community planning initiatives.



Figure 2-6: Proposed Location, Alternative 3

2.5.2 Remodel/Reconstruct Other Structure Elsewhere in Cantonment Area

No unused buildings are available within proximity to residential areas that would meet the size, siting, or other requirements for the new schools. Likewise, modern school space and configuration requirements are designed to optimize the early educational learning environment, and it would likely be more expensive, time consuming, and difficult to retrofit a facility than to build a new one consistent with the new DoDEA standards.

2.5.3 Infill Other Open Space in Cantonment Area

Fort Stewart reviewed open cantonment land regardless of ownership or land-use designation, including RCI lands and other military lands, such as those controlled by the Morale, Welfare, and Recreation (MWR) function. Additionally, the Fort Stewart cantonment area is almost completely located within the 100-year flood zone; there are few parcels of land large enough to accommodate a school that is above flood zone elevations. All other available land in the cantonment area was reviewed and is found to have various development restrictions. Of two areas that are adjacent to the old Diamond and old Brittin sites that are Fort Stewart-controlled and potentially large enough, the area adjacent to the old Diamond is a Military Munitions Response (MMR) site with a canal bisecting the property and the area north of old Brittin was previously used as a construction landfill. Any of the MWR ball fields could potentially be available for construction; however, a ball field exchange is infeasible as ball fields are not big enough (about 8 acres) and the adjacent properties are occupied and unavailable for site expansion.

The three alternative locations chosen for further analysis in Section 2.4 represent parcels that do not further sprawl the cantonment area, but instead, to some degree, infill the only available space and minimize the cantonment ecological footprint and related transportation needs.

2.5.4 Remodel Current School Structures

As with infilling or reconstructing another structure (Section 2.5.2), it is not cost-effective to remodel and maintain the existing school facilities because they are in such poor condition and do not meet current space, modernization, or configuration requirements (DoDEA 2010).

2.5.5 Use Existing School Locations, with Temporary Classes at Austin and Kessler Elementary Schools

This alternative would establish new schools at the existing schools' locations and phase construction in a way that would disperse students among the other existing schools, including an operational Austin Road School, during construction. Students attending the school being built would be divided among the other three schools. If necessary, class size would be temporarily increased at existing schools, or temporary portable classrooms could be brought on site.

With the additional new school at Austin Road, no increase in the number of on-Post Army Family housing units, and only one school offline at a time, DoDEA would still be operating three on-Post elementary schools (as it is currently). However, the elementary school at Austin Road is designed to accommodate 425 students, meaning it would have to hold an additional 209 from Brittin or 438 from Diamond during those transition years. This action would double the population of the new Austin Road School making it unacceptably overloaded both in terms of the number of students at the new Austin Road School and the traffic congestion associated with this option. Even if Brittin were constructed first (and the new Brittin then accommodated a portion of the Diamond students), the new Austin Road School

would still be over-capacity by 50 percent to accommodate these Brittin students. Continually dispersing overflow students among all three operational schools would not be preferable because repeatedly changing schools would cause undue disruption to military Families, fail to provide continuity to existing Fort Stewart students, and adversely affect the quality of life for the Soldiers and their Families.

Increasing class size beyond 18 students per teacher is prohibited by DoDEA policy. Adding modular classrooms is also not preferable due to the high cost of establishing, maintaining, and removing the temporary structures. The three double-wide modular, temporary classrooms currently in use at Brittin each cost approximately \$400,000 per month to operate and cost approximately \$500,000 each to set up, not including the additional fees required for removal and site remediation.

2.5.6 “15th Street Alternative” from the FY 2010 DoD Elementary School Final EA (FSGA 2010)

The 15th Street alternative was analyzed as a possible location to site a new school in the FY 2010 DoD Elementary School Final EA but it was not chosen as the preferred alternative in that analysis because of existing land use designation and safety concerns. With regard to safety, the 15th Street alternative site is situated approximately 0.2 miles from ACP Gate 7, which is a commercial ACP that accommodates POVs as well as trucks, cargo, and other large equipment. As a commercial ACP, Gate 7 is equipped with a Mobile Vehicle and Cargo Inspection System, a portable vehicle and cargo imager that conducts nonintrusive inspections of freight containers, trucks, cargo containers, rail heads, and passenger vehicles. Operators view the images on a video monitor and can identify voids, false walls or ceilings, and other secret compartments typically associated with the transportation of drugs, explosives, and weapons. If explosives or hazardous materials are identified, an area of up to 1.3 miles needs to be evacuated to ensure safety. This potential location falls within the evacuation area and is therefore incompatible with the development of an elementary school.

2.5.7 “National Guard Site Alternative” from the FY 2010 DoD Elementary School Final EA (Elementary School Planned at Austin Road) and 2009 Real Property Master Plan

The National Guard Site alternative was analyzed as a possible location to site the elementary school planned at Austin Road, but it was not chosen as the preferred alternative in that analysis because the Georgia Guard Training Center (GGTC), including motorpool, training, ranges, and troop-designated zones, is operational adjacent to the site. Troops rotate in and out of the GGTC, and both weekend and weekday training occurs at this location, leading to noise impacts and other potential incompatibility issues for siting an elementary school at this location.

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the environment that would be affected by the construction, operation, and maintenance of two new elementary schools at Fort Stewart and the demolition of the old Diamond and old Brittin Elementary Schools. This chapter also analyzes the potential direct and indirect effects that the action alternatives would have on the affected environment and compares those impacts to the no action alternative. This analysis enables decision-makers to compare the magnitude of environmental impacts with the baseline. Cumulative effects are analyzed in Chapter 4, and other NEPA considerations are discussed in Chapter 5.

The affected environment analysis focuses on those features of the environment that could potentially be impacted from the proposed action at Fort Stewart. The region of influence (ROI) delimits the geographic extent of the environmental effects analysis. Because constructing two elementary schools would affect a relatively small geographic area (the proposed action affects approximately 28 acres to reconstruct one school and 11 previously undisturbed acres to rebuild the second at the old Diamond School site), the ROI encompasses the immediate vicinity of the proposed action alternative site locations. Additionally, due to the substantial amount of fill that would be hauled onto Fort Stewart to implement the Preferred Action Alternative and Alternative 2, borrow pits and potential fill truck transportation routes are also included in the ROI and discussion of potential environmental impacts.

3.2 MEASURING ENVIRONMENTAL IMPACTS

As a result of NEPA, Federal agencies must integrate environmental values into their decision-making processes and analyze the potential environmental impacts of any proposed action and reasonable alternatives before the action is taken. This analysis must be documented in a Record of Environmental Consideration (REC), Categorical Exclusion (CX), or in an EA or Environmental Impact Statement (EIS). The primary purpose of preparing an EA is to provide evidence and analysis for determining whether to prepare an EIS. An EIS is required if significant or potential significant direct, indirect, or cumulative environmental impact(s) are anticipated from a proposed action and a threshold level of significance (TLS) is surpassed for each resource. Direct impacts are those caused specifically by the proposed action and that occur at the same time and place. Indirect impacts are also caused by the proposed action but later in time or farther in distance. Cumulative impacts “result from the incremental impact of the action” when added to “other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or what person undertakes such other actions” (Canter et. al, 2007). This chapter focuses on the direct and indirect potential impacts to these environmental resources; potential cumulative impacts are discussed in Chapter 4.0.

An analysis of each alternative is conducted so a measure of the intensity of anticipated environmental impacts can be fully disclosed, which allows the decision-maker to weigh each alternative prior to reaching a decision. The levels of intensity of potential impacts are described as follows:

- *Negligible*. This term indicates that the environmental impact is barely perceptible or measurable; remains confined to a single location; and will not result in a sustained recovery time for the resource impacted (days to months).

- *Minor.* This term indicates that the environmental impact is readily perceptible and measurable; however, the impact will be temporary and the resource should recover in a relatively short period of time (days to months).
- *Moderate.* This term indicates that the environmental impact is perceptible, measurable, and may not remain localized, thus also impacting areas adjacent to the proposed action. Under the impact, recovery of the resource may require several years or decades.
- *Significant.* This term indicates that the threshold of intensity associated with an environmental impact has been exceeded (i.e. TLS). This threshold is defined by a potentially substantial and permanent adverse change in or loss of resources within the context of the project. In the absence of mitigation or avoidance, a significant impact would trigger the dismissal of the alternative or preparation of an EIS.

3.3 RESOURCES ANALYZED

A total of 17 resource categories were evaluated for their potential to be impacted by the proposed action alternatives: 1) water resources (including surface and ground water quality, wetlands, and floodplains); 2) soils; 3) biological resources (including vegetation and wildlife and protected species); 4) air quality; 5) hazardous and toxic materials and waste; 6) utilities (power, communications, water use, wastewater/sewage); 7) solid waste; 8) land use; 9) recreation and visual resources; 10) cultural resources; 11) noise; 12) transportation; 13) public health and safety; 14) provision for the handicapped; 15) socioeconomics and environmental justice; 16) protection of children; and 17) airspace management. As mentioned earlier, potential cumulative impacts to these resources are discussed in Chapter 4.0.

The environmental resources on Fort Stewart to which no potential effects from the proposed action are predicted (direct, indirect, or cumulative) include air quality, utilities (power, communications, water use, wastewater/sewage), recreation and visual resources, provision for the handicapped, socioeconomics and environmental justice, protection of children, and airspace management. The basis for excluding these resources is presented in Appendix A.

3.4 RESOURCE ANALYSIS

3.4.1 Water Resources

Analysis of water quality generally focuses on the physical, chemical, and biological characteristics of water resources. The Clean Water Act (CWA; 33 USC § 1251 et seq.) of 1972 is the primary Federal law that protects the nation's waters, including lakes, rivers, aquifers, and wetlands. The primary objective of the CWA is to restore and maintain the integrity of the Nation's waters. "Jurisdictional Waters of the U.S." ("Waters") are regulated resources and are subject to Federal authority under Section 404 of the CWA. This term is broadly defined to include navigable waters (including intermittent streams), impoundments, tributary streams, and wetlands.

3.4.1.1 Affected Environment

Introduction. The affected environment for water resources includes surface water, groundwater, wetlands, and floodplains at and near to the action alternative locations. The Preferred Action Alternative and Alternative 2 sites are on flat, wooded terrain. Alternative 3 is at the site of a demolished neighborhood, the proposed site for the second school is at the partially-wooded location of a demolished

school, and the old Brittin Elementary School to be demolished is located in an existing neighborhood. All three alternatives are in the southeastern portion of the Installation and Ogeechee River watershed, specifically, the Liberty Woods Channel Watershed and Central Cantonment Drainage Area Watershed. Figure 3-1 depicts all water resources at or in the vicinity of the action alternative locations.

Note that groundwater is not expected to be affected by the proposed action for any alternative because pollutant loads potentially found in infiltrating water would be limited, would occur primarily during grading, and would be controlled through construction and demolition management measures. Therefore, construction activities would pose little threat to the aquifer water quality. Moreover, operation and maintenance activities associated with the new school also would not affect groundwater. There is a drinking water source (water tower) adjacent to the northern boundary of the existing Diamond site/proposed location for the second school in the Preferred Action Alternative. School site design will ensure that this water tower remains at least 50 feet away from any sewers, drains, standing water, and/or similar sources of contamination.

Water resources at the two alternative potential borrow pit locations were evaluated as part of the operators' GA DNR Surface Mining Permits, which require the approval of a Mining Land Use Plan (GA EPD undated). This Mining Land Use plan is prepared in accordance with the *Manual for Erosion and Sediment Control in Georgia, 5th Edition* (Georgia Environmental Protection Division [GA EPD] 2000) to include maintenance of buffers and various best management practices (BMPs) to ensure that business operations support continued local water quality and quantity standards. Therefore, water resources at the borrow pits are not analyzed in further detail in this section

Surface Water. Within the greater Fort Stewart watershed, surface water resources are diverse and include over 265 miles of freshwater rivers, streams, and creeks, numerous ponds and lakes, and over 12 miles of brackish streams (FSGA 2005b). The majority of the surface waters of Fort Stewart are part of the Ogeechee River drainage system, which forms parts of the eastern boundary of the Installation. The Canoochee River is the main tributary of the Ogeechee and bisects Fort Stewart. Unlike the Ogeechee River, the Canoochee River has not developed large natural levees; thus, the floodplain is generally narrow, with little lateral migration of the stream channel. Portions of the Canoochee on the Installation are being restored for the Fort Stewart wetlands mitigation banking project (FSGA 1999). Taylor's Creek is a tributary of this system and also runs through the Installation, as well as Savage Creek, Mauldin Branch, and Clyde Creek. There are numerous unnamed drainage ditches and canals across Fort Stewart that are identified as "Relatively Permanent Waters" of the United States and thus are also regulated by Section 404 of the CWA.

Taylor's Creek, below the Hinesville/Fort Stewart municipal wastewater treatment plant, was previously listed on the GA EPD 303(d) list of impaired streams for lead, copper, and mercury (U.S. Environmental Protection Agency [USEPA] 2000). Taylor's Creek has also been identified as not meeting dissolved oxygen (DO) or fecal coliform standards (GA EPD 2008). A Total Maximum Daily Load (TMDL) standard has been developed for lead, copper, and mercury as well as DO on Taylor's Creek, and the segment was delisted for lead, copper, and mercury in 2002. Fort Stewart actively monitors the tributaries of Taylor's Creek, performing post-rain visual assessments, collecting samples from automated samplers, and performing annual in-stream water quality monitoring during non-rain events for DO levels, as required under Fort Stewart's existing Municipal Separate Storm Sewer Systems (MS4) and National Pollutant Discharge Elimination System (NPDES) permits. Liberty Woods Channel and Cantonment Area Channel are the two tributaries of Taylor's Creek, classified as "Relatively Permanent Waters", that

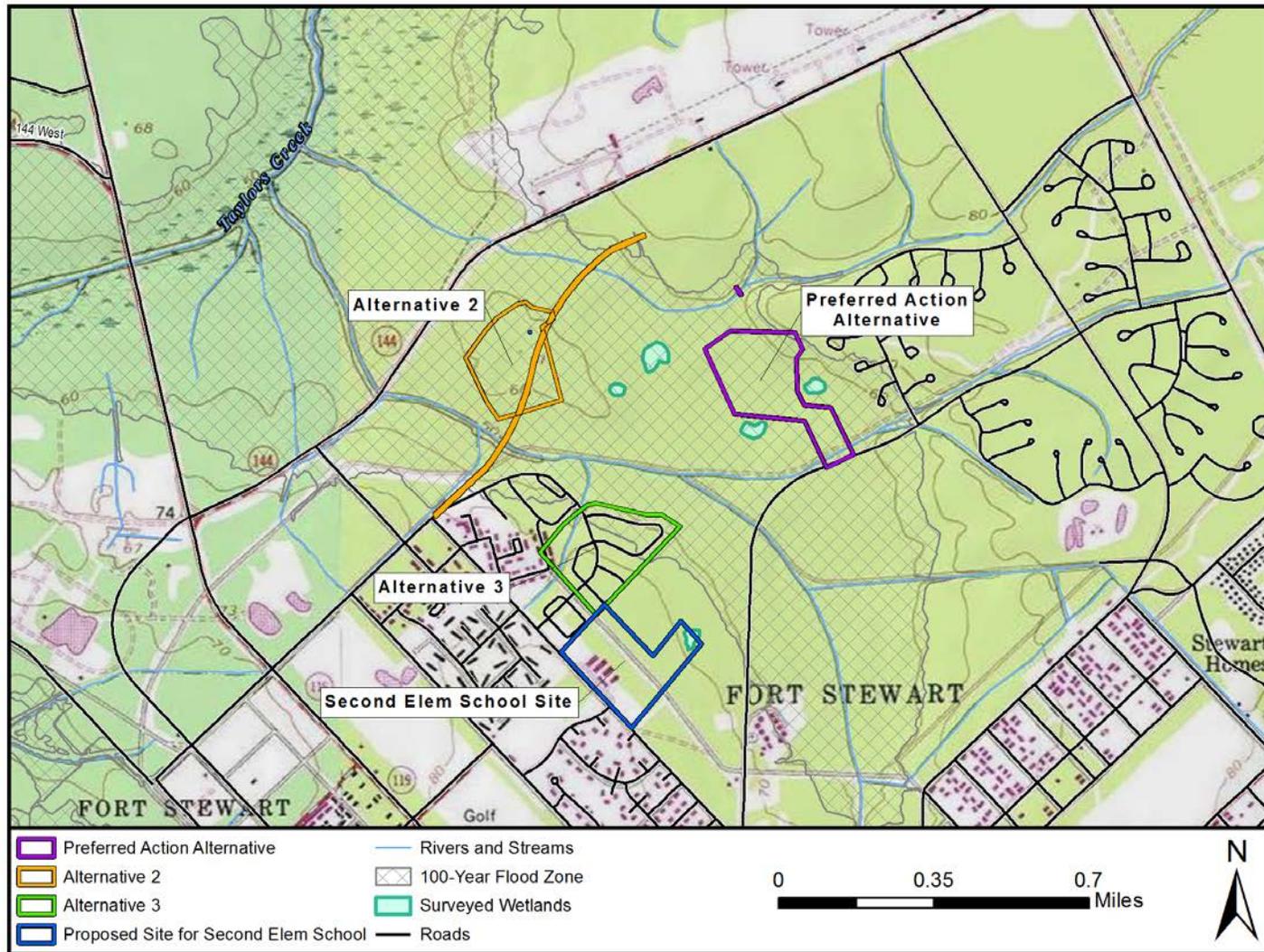


Figure 3-1: Water Resources near Project Area

run to the north and south of the Preferred Action Alternative and Alternative 2 (Figure 3-1). There is a small (first order) stream bisecting Alternative 3, which also runs south to the eastern portion of the expanded area for the second school site at the old Diamond location. The old Brittin location does not have any natural water features in proximity to the site boundaries; although, manmade drainage features and stormwater conveyances are within and adjacent to the old Diamond, old Brittin, and Alternative 3 sites.

The CWA, Georgia Water Quality Act (Official Code of Georgia [OCGA] § 12-5-20), Georgia Erosion and Sedimentation Control Act (OCGA § 12-7-1), and MS4 permitting require erosion and sediment controls during projects that disturb 1.0 acre or more of land although Fort Stewart implements these requirements whenever a minimum of 0.75 acres are disturbed. Site disturbance (inclusive of demolition) of 0.75 acres or greater requires submittal of an \$80/acre Stormwater Permitting Construction Notice of Intent (NOI) to the DPW Environmental Division, which will coordinate the construction activities with the State. A trained individual with at least a Level 1A Erosion & Sedimentation Control certification must be on the site during any land disturbance activity. Continuous implementation of stormwater BMPs and maintenance is required at sites where an NOI is executed until a Notice of Termination (NOT) is submitted to the State through the DPW Environmental Division. The NOT can be submitted upon 70 percent site stabilization of 100 percent disturbed acreage with pervious surfaces and/ or permanent vegetation and upon concurrence from the COR/ PM, NRCS, and the DPW Environmental Division. .

Fort Stewart requires that all contractors chosen to work on Installation projects adhere to Federal, State of Georgia, and local laws and regulations, including obtaining appropriate and necessary construction permits (such as NPDES and CWA Section 404 permits) and preparing a State-approved Erosion, Sedimentation, and Pollution Control Plan (ESPCP) and spill contingency plan. In addition, contractors must reference and comply with the following publications during the design, implementation, construction, and other applicable phases of all work performed on the Installation:

- Fort Stewart (FSGA) Directorate of Public Works (DPW) Stormwater Management Policy #11 (FSGA 2011b; Appendix C),
- FSGA DPW Dry Detention Basin Policy #10 (FSGA 2012i; Appendix C),
- *Georgia Stormwater Management Manual/Coastal Stormwater Supplement Worksheet* (Center for Watershed Protection 2009a and 2009b),
- All applicable EOs,
- Section 438 of the Energy Independence and Security Act (2007),
- *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (USEPA 2009),
- *The United Facilities Criteria LID Manual* (DoD 2010; DoD 2008), and
- *Technical Bulletin LID for Sustainable Installations: Stormwater Design Planning Guidance for Development within Army Training Areas* (USACE 2008b).

Requirements and other stormwater compliance related documents can be found at www.stewart.army.mil/dpw/EN_Downloads.asp (see FSGA 2011b and Appendix C).

EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance, requires that all new construction comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (ISWG 2008). Compliance includes employing design and construction strategies that reduce stormwater runoff. Furthermore, Section 438 of the Energy Independence and Security Act of 2007 requires that any development or redevelopment project involving a Federal facility with a footprint exceeding 5,000 sf shall use site planning, design, construction, and maintenance strategies to maintain or restore the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of water flow. Compliance with this requirement can be met through the implementation of LID technologies. Example BMPs already in use at Fort Stewart that mitigate impervious surfaces and other hydrologic disruption include minimizing total site impervious areas, directing building drainage to vegetative buffers, using permeable pavements where practical, breaking up flow directions from large paved surfaces, and implementing vegetated infiltration swales, dry detention basins, and bio-retention cells (rain gardens) with native plantings (Moncrief 2009).

Wetlands. Lands that are subject to regulation as wetlands under Section 404 of the CWA are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR Part 328(b)). The wetland types occurring on Fort Stewart include blackwater swamps, bay forests, streamhead pocosins (swamp), wet pine flatwoods, and cypress-gum ponds. Given their prevalence on the Installation, Fort Stewart prioritizes the avoidance and minimization of wetlands impacts when siting and developing a new project.

Wetlands in the area of the proposed action were delineated by Fort Stewart personnel in accordance with USACE standards. Wetlands are found near or adjacent to the Preferred Action Alternative and Alternative 2 locations, but are outside project area boundaries (Figure 3-1). No wetlands are identified in proximity to Alternative 3, the old Brittin, or the second school site at the old Diamond location.

Floodplains. Floodplains typically are described as areas likely to be inundated by a particular flood. A flood that has a one percent chance of occurring in any one year is the 100-year flood. Floodplains on Fort Stewart, as in much of the south Atlantic Coastal Plain, are linked to adjacent streams and rivers and serve watersheds through water storage and conveyance, filtration of nutrients and other pollutants, erosion control, groundwater recharge, fish and wildlife habitat, and recreation. Floodplains adjacent to the Ogeechee River, Canoochee River, and the lower reaches of Canoochee Creek, Taylor’s Creek, Mill Creek, and Savage Creek may be inundated for eight months or more annually. The U.S. Geological Service has mapped flood-prone areas on Fort Stewart, and lands lying within the 100-year floodplain have been delineated. Much of the eastern and southeastern portions of the Installation would become inundated by floodwaters from the Ogeechee and Canoochee rivers during a 100-year storm event. The Preferred Action Alternative and Alternative 2 are entirely located within the 100-year event floodplain (Figure 3-1). Approximately 8.6 acres of Alternative 3 are located in the floodplain, taking up 32 percent of the property. The second school site at the old Diamond location is not located in the floodplain.

EO 11988, *Floodplain Management* (1977), and thereby DoD Instruction 4715.03 (DoD 2011), require Federal agencies to avoid construction or management practices that will adversely affect floodplains unless (1) there is no practicable alternative and/or (2) the proposed action is designed to minimize harm to or within the floodplain. There must be a finding of no practicable alternative (FNPA) to constructing in the floodplain and verification that all practicable measures were taken to minimize harm to the floodplain.

The Georgia Stormwater Management Manual/Coastal Stormwater Supplement requires (a) the review of all construction projects within a floodplain and (b) compliance with the Energy Independence Security Act-Section 438. Floodway encroachment, including structures, fill placement, etc. is generally prohibited unless certification with supporting technical data is provided by a registered professional engineer demonstrating the encroachment will not result in any increase in flood elevations upstream or downstream. When constructing within a floodplain, construction contractors must review the USEPA Technical Guidance for Implementation of EISA-Section 438 (USEPA 2009) and select from a series of floodplain-specific BMPs contained within the document. The BMPs chosen must be tailored to a specific project and its unique site characteristics, to best address runoff reduction and flood protection measures and help minimize potential flooding and stormwater concerns in the future. The contractor must also adhere to the standard BMPs provided in the NPDES and other required permits for the site, as well as the Federal and State of Georgia guidelines for the floodplain. A State of Georgia certified Professional Engineer must document all hydrological analyses when preparing the ESPCP and incorporate the selected BMPs, ensuring State and Federal requirements are met for floodplain encroachments and flood controls, including runoff reduction and water quality requirements. In addition, State of Georgia requirements must be met, such as elevating the structures a minimum of 1 to 3 feet above the base flood elevation of the 100-year floodplain level.

TLS. The TLS for water resources will be met if there is an unpermitted discharge to a 303(d)-listed surface water, if the required Clean Water Act and/or associated Erosion and Sedimentation permit is not obtained; or if construction in the floodplain occurs without adherence to floodplain-specific BMPs as identified in the project's associated permitting.

3.4.1.2 Environmental Consequences of the No Action Alternative

Surface Water. Under the no action alternative, there would be no impacts to surface water.

Wetlands. Under the no action alternative, there would be no impacts to wetlands.

Floodplains. Under the no action alternative, there would be no impacts to floodplains.

3.4.1.3 Environmental Consequences of the Preferred Action Alternative

Surface Water. Approximately 28 acres of vegetation would be cleared in association with site preparation. Additionally, the driveway intended to serve the school requires the perpendicular crossing of the Cantonment Area Channel, a small drainage tributary that feeds Taylor's Creek. A second tributary of Taylor's creek, Liberty Woods Channel, is approximately 320 ft from the northern boundary of the Preferred Action Alternative site location. These drainages are classified as "Relatively Permanent Waters" and thus regulated under Section 404 of the CWA. Taylor's Creek is approximately 1 mile from the Preferred Action Alternative. Thus, the Preferred Action Alternative location may be hydrologically connected by the drainages in a way that uncontrolled runoff from construction activities could eventually affect the Creek's water quality. Approximately 11 acres of vegetation would be cleared to site the second elementary school location at the old Diamond campus.

All site clearing for the action alternatives will be accomplished through a tree harvesting contract. Timber harvests, including forestry chip and haul operations, will comply with the *Georgia BMPs for Forestry Manual* (GA Forestry Commission 2009) to minimize non-point source pollution (soil erosion and stream sedimentation) and thermal pollution.

As “Relatively Permanent Waters,” CWA Section 404 permits will be required for potential impacts to the drainages from construction of the driveway, pedestrian bridge, and possibly utility lines associated with implementing the proposed action at the Preferred Action Alternative location (USACE 2012). Final site design will avoid impacts to the small stream running through the second elementary school location at the expanded area of the old Diamond site. If a 25-ft buffer variance cannot be maintained, this stream may also be subject to Section 404 permits, as deemed necessary after the final site design. Current hydrology must be maintained, and filling and dredging activities must be coordinated with the USACE to minimize impacts to water resources.

Impacts to the “Waters” are expected to be covered by a Nationwide Permit (NWP) (e.g., NWP #39 covers "Commercial and Institutional Developments" including schools and their "attendant features," such as roads and utility lines, for up to 1/2 acre of impacts). Fort Stewart will prepare a Preconstruction Notification (PCN) reporting and validating the impacts. The PCN will be sent to the USACE and two divisions of the GA DNR (Environmental Protection Division [EPD] and Coastal Resources Division). The USACE has 45 days to send approval of the NWP or to express concerns. Water Quality Certification from GA DNR EPD is conditionally granted for all NWPs; EPD must be notified of any use of a NWP and is authorized to express concerns. Because the project is in a coastal/tidal county, Fort Stewart will also obtain a Federal Consistency Determination from GA DNR's Coastal Resources Division. It is expected that permits associated with impacts to “Relatively Permanent Waters” would be approved within 60 days of submittal.

During construction, implementation of project-specific BMPs and LID practices as stipulated in the ESPCP would minimize impacts to water quality. BMPs could include erosion control matting, silt fencing, construction exits, temporary and permanent vegetation practices, the application of mulch, buffer zones, and dust control. Due to poor soils and a high water table, excavation/fill activities at the Preferred Action Alternative site and potentially the expanded portion of the old Diamond site may dictate dewatering of the construction site, which may require a settling pond or other BMPs before release to surface water. If deemed necessary for construction or other activities, site dewatering must incorporate adequate and appropriate BMPs to dissipate or disperse the flows to prevent soil loss, sediment displacement, and erosion and must not directly discharge into streams, ditches, or other stormwater conveyance systems. These actions require coordination and approval by the DPW Environmental Office. The application of all BMPs would depend upon precise, specific ground conditions in the areas disturbed by construction. If applicable, all washouts of trucks and excavation must be controlled and discharged with adequate and appropriate BMPs for erosion and sedimentation controls. Waste material and/ or debris is required to be disposed of properly and not in streams, ditches, or conveyance systems. Although the selected contractor(s) would be responsible for implementing and maintaining all erosion and sediment control measures, Fort Stewart is ultimately responsible for ensuring the impact to water resources is mitigated and insignificant.

The existing Diamond Elementary School is adjacent to stormwater conveyance systems; therefore, during demolition of the existing Diamond and Brittin Elementary Schools and the construction of the second elementary school at the old Diamond location, the contractor would adhere to similar ESPCP requirements followed for the new construction phase.

School operations and maintenance activities would not adversely affect surface water quality. However, there is expected to be approximately 9 acres of permanent impervious surface associated with the final school footprint, including rooftops, some playground space, roads, and parking lots. At the new

Diamond location, predevelopment hydrology will be mitigated to the greatest extent possible through the implementation of site-appropriate LID technologies intended to manage the additional impervious surface. With respect to any driveways or access roads associated with the action alternatives, cross drainage that transports stormwater runoff under roadways will meet the 25- to 100-year storm design or be in accordance with GADOT requirements, whichever is more stringent, ensuring the structure will not impact facilities or other structures upstream or downstream during heavy rain events. Finally, the site of the second elementary school at the old Diamond location is within proximity of a drinking water source (water tower); therefore, infiltration and similar stormwater post construction BMPs will not be used (e.g. permeable pavements, bio-retention cells, sand filters, etc.)

It is anticipated that only temporary, minor adverse impacts to surface waters from implementation of the preferred alternative would occur. In its letter dated April 10, 2013, the GA DNR Coastal Resources Division concurred with Fort Stewart's determination of consistency to the maximum extent practicable with the enforceable policies of Georgia's Coastal Management Plan (see Appendix E).

Wetlands. The current design of the proposed action avoids all onsite wetlands, and no direct impacts to wetlands would occur through construction, operation, or maintenance activities associated with the new elementary school or demolition of the existing school. These additional steps will be taken during school design and construction to ensure avoidance: school designs will be reviewed during each stage of the design process, contractors will be required to notify the FSGA DPW Environmental Office within two weeks prior to start of construction so nearby wetlands can be clearly flagged, and a preconstruction meeting will be held with contractors to point out wetland boundaries. Additionally, inspections may be scheduled during construction to verify wetlands are being avoided. Any changes to final site design will require further consultation with the USACE.

There are two wetlands adjacent to the Preferred Action Alternative location, and each of the wetlands will require a 25 ft buffer from all construction and operations activities. Both wetlands have been delineated and submitted to the USACE for final verification and an expanded preliminary jurisdictional determination has been completed (USACE 2012). BMPs would be employed to ensure no indirect impact to adjacent wetlands occurs during construction, and bio-retention cells, grassed channels, and other stormwater detention technologies would ensure existing wetlands are not impacted by increased sedimentation, pollution, or stormwater flow from built surfaces. A small (0.63-acre), isolated wetland is located at the northeast boundary of the second elementary school site at the old Diamond location. Approximately 0.46 acres of this wetland are within the second elementary school site of the Preferred Action Alternative. This wetland would be avoided during design and construction of the second elementary school. There are no wetlands in proximity at the existing Brittin location. As such, no adverse impacts to wetlands are expected under the preferred alternative. In its letter dated April 4, 2013, the USACE confirmed that based upon the information provided to the USACE by Fort Stewart and the Jurisdictional Determination dated May 10, 2012, it is possible that the proposed action may require a USACE Section 404 permit (see Appendix E).

Floodplains. The Preferred Action Alternative site is located within the 100-year floodplain (Figure 3-1), the edge of which is estimated to be at 65-66 ft mean sea level (msl) (Federal Emergency Management Agency [FEMA] 1995). The current elevation at the Preferred Action Alternative ranges from 67 ft above msl at the northeast corner of the site to 55 ft msl along the western edge of the site (NCGC 2012). To meet the minimum standard building code required for this location and to be protective of the new school structure, fill must be placed so that the entire project area is raised a minimum of one foot above

the 100-year floodplain, making the desired Finished Floor Elevation (FFE) approximately 68 ft msl (FSGA 2012). This mitigation will require raising the surface of the ground across the 28-acre development site approximately one to 11 ft depending on the exact, final onsite location. Approximately 117,000 cy of fill will be required to raise the FFE to 68 ft msl and to fill excavated soils (unsuitable for construction) to a depth of 4-5 ft (see Soils, Section 3.4.2) (Davis 2012, Personal Communication; Epps 2012, Personal Communication). Thus, the proposed action alternative would result in the loss of approximately 28 acres of floodplain capacity in the immediate watershed.

Potential impacts to the proposed action from building within a floodplain may include the increased risk of flood damage to the school, which can be mitigated through structural BMPs designed for floodplain construction and careful attention to LID and other engineered landscape hydrologic features. Potential impacts to floodplains are due to reducing the floodplain's capacity and can include the increased risk of flood damage to the surrounding landscape (including wetlands or other potentially sensitive habitat or human-occupied areas). Increasing disruption to floodplain, i.e. decreasing floodplain space, will increase flood heights elsewhere. This can be mitigated to some extent through landscape features that deal with larger stormwater events, such as placing dry detention basins, bio-retention cells and/or grassed channels near natural outfalls from the site (FGSA 2012; Appendix C). Such features are designed to detain stormwater and gradually release it to reduce potential of downstream flooding and erosion.

Since the ideal site selection criteria (see Section 2.3) aspire that the new schools a) be situated within proximity (i.e., one mile) to on-Post Military Family Housing areas, b) be removed from incompatible uses (such as troop training and range activities), and because c) most of the remaining open land within the Fort Stewart cantonment area is within the 100-year floodplain, this alternative remains the Preferred Action Alternative despite its location within the 100-year floodplain boundary. In accordance with EO 11988, new construction would be designed to reduce the risk of flood loss and to minimize the impact of floods on human safety, health, and welfare. The final school design will emphasize drainage and stormwater management practices that minimize impacts to floodplains such as stormwater elevation potential and risk of damage to the school and surrounding infrastructure. The design engineer will be responsible for the preparation and documentation of technical support showing DoD/Section 438 and Fort Stewart Stormwater & Engineering Detention Basin policies (FSGA 2012i; FSGA 2011b; Appendix C) are adhered to for runoff reduction, water quality, aquatic protection, and flood controls. With these considerations and mitigations, negligible-to-minor impacts to floodplains are expected under the preferred alternative.

3.4.1.4 Environmental Consequences of Alternative 2

Due to the geographic proximity and ecologic similarity between the two sites, the environmental consequences, regulatory requirements, BMPs, and other mitigations associated with Alternative 2 are expected to be similar to those described for the Preferred Action Alternative.

Surface Water. Alternative 2 is just over 0.5 mile from Taylor's Creek (Figure 3-1). The northern boundary of Alternative 2 is 620 ft from the Taylor's Creek tributary (Liberty Woods Channel) to the north, and the southern boundary of the site is about 200 ft from a southern tributary to Taylor's Creek (Cantonment Area Channel). Thus, the alternative location may be hydrologically connected by the drainages in a way that uncontrolled runoff from construction activities could eventually affect the Creek's water quality. Thus, it is anticipated that only minor adverse impacts to surface waters from implementation of Alternative 2 would occur.

Wetlands. There are no wetlands within the boundary of Alternative 2; however, there are two wetlands near to the southeastern edge of the site (Figure 3-1). Each of the wetlands will require a 25 ft buffer from all construction and operations activities. Both wetlands have been delineated and submitted to the USACE for final verification and an expanded preliminary jurisdictional determination has been completed (USACE 2012). As such, no adverse impacts to wetlands are expected under Alternative 2. In its letter dated April 4, 2013, the USACE confirmed that based upon the information provided to the USACE by Fort Stewart and the Jurisdictional Determination dated May 10, 2012, it is possible that the proposed action may require a USACE Section 404 permit (see Appendix E).

Floodplains. Alternative 2 is also located within the 100-year floodplain thereby requiring additional building design considerations and costs (Figure 3-1). The site sits approximately 52 to 60 ft msl, and therefore the school footprint must be raised approximately 5 to 13 ft to be considered out of the floodplain (at 64-65 ft msl). Constructing a school at this location would require substantial amounts of fill to bring the site at least 1 ft above the floodplain. As with the Preferred Action Alternative, approximately 28 acres (plus an additional 2.5 acres to accommodate the access road) of floodplain would be impacted if the proposed action was implemented at the Alternative 2 location. As such, negligible-to-minor impacts to floodplains are expected under the Alternative 2.

3.4.1.5 Environmental Consequences of Alternative 3

Surface Water. Due to its recent function as Military Family Housing area, the Alternative 3 location has existing manmade drainage features and stormwater conveyances within its boundaries. Alternative 3 also has a small, first order stream that bisects the property. Implementation of appropriate regulations and BMPs and coordination between all construction contractors and the Fort Stewart Stormwater Program as described above for alternatives 1 and 2 (Appendix C) would ensure water quality is maintained through all phases of construction and operation; thus, no adverse impacts to surface water are expected under Alternative 3.

Wetlands. No wetlands are located on or adjacent to the property; thus, no adverse impacts to wetlands are expected under Alternative 3.

Floodplains. 8.6 acres or 32 percent of Alternative 3 is located within the 100-year floodplain. However, the school could be situated on the property so as to place no permanent structures, fill, stormwater detention features, or additional disturbance in the portion that is in the floodplain.

However, due to the provisions of a land-exchange with Balfour Beatty, the RCI initiative would require Fort Stewart to locate an equal or greater parcel of land in proximity to the existing housing area infrastructure for the trade. As noted in Section 2.5.3, there are no large, open parcels of land within the Fort Stewart cantonment area that are considered out of the 100-year floodplain. Thus, it is likely that the only land available for exchange would be in the Preferred Action Alternative or Alternative 2 locations. Due to these connected actions, similar mitigated impacts to floodplains are expected under Alternative 3 as described for the Preferred Action Alternative.

3.4.2 Soils

3.4.2.1 Affected Environment

Introduction. The affected environment for soils includes those areas that would be impacted both directly and indirectly by construction, operations, or maintenance activities of the proposed action. The

affected environment also includes the land immediately adjacent to the construction site, which could experience erosion impacts, and streams and/or water bodies, which could be indirectly impacted by sedimentation and/or erosion.

Soils are the unconsolidated earthen materials overlying bedrock or other parent material. At Fort Stewart, the parent material for all soils is water-lain sediments deposited during and prior to the Pleistocene era. Generally, the soil types most common at Fort Stewart are classified as sandy and infertile.

The land surface on Fort Stewart consists of gently rolling terraces separated by broad, low-lying areas with poor drainage (FSGA 2009). Because of Fort Stewart’s mild climate, the cycles of freezing and thawing during season change have little impact on soil weathering. However, rainfall infiltrates through the soil and moves dissolved and suspended materials downward. As described in Table 3-1, soils within the Preferred Action Alternative consist of Ellabelle loamy sand and Pelham loamy sand (Figure 3-2) (U.S. Department of Agriculture [USDA] 2012). Soils within Alternative 2 consist of Ellabelle loamy sand, Mandarin fine sand, Mascotte fine sand, and Pelham loamy sand (USDA 2012). The soil within Alternative 3 is Mandarin fine sand and Mandarin-Urban land complex. Soils at the old Diamond location are Eshaw-Urban land complex, Eshaw and Centenary fine sands, and Rutlege fine sand. Both Alternative 3 and the second elementary school proposed location are generally considered disturbed, and the sites have likely been previously filled to provide for the original Marne Terrace neighborhood and Diamond elementary school structure.

Table 3-1. Soil Types Expected to Occur in the Project Area

Map Unit Name	Drainage Class	Depth to Water Table	Frequency of Flooding
Ellabelle Loamy Sand	Very poorly drained	0 inches	Frequent (and frequent ponding)
Pelham Loamy Sand	Poorly drained	0 to 12 inches	Frequent
Mandarin Fine Sand	Somewhat poorly drained	18 to 42 inches	None
Mascotte Fine Sand	Poorly drained	6 to 18 inches	None
Mandarin-Urban Land Complex	Somewhat poorly drained	18 to 42 inches	None
Eshaw-Urban Land Complex	Moderately well drained	30 to 60 inches	None
Eshaw and Centenary Fine Sands	Moderately well drained	30 to 60 inches	None
Rutlege Fine Sand	Very poorly drained	0 to 6 inches	None

Source: USDA 2012

TLS. The TLS for soils will be met if ground disturbance or other activities would violate applicable Federal or state laws and regulations, such as the Georgia Erosion and Sediment Control Act (ESCA).

3.4.2.2 Environmental Consequences of the No Action Alternative

Under the no action alternative, there would be no impacts to soils.

3.4.2.3 Environmental Consequences of the Preferred Action Alternative

The soils at the Preferred Action Alternative are considered poor and are not suitable for construction. To meet the minimum standard building code required for this location and to protect the new school structure, the school site must be excavated to a depth of 4-5 ft and existing Ellabelle and Pelham soils replaced by more stable fill material. Additionally, fill must be imported and placed so that the site is raised a minimum of 1 foot above the 100-year floodplain. Approximately 117,000 cy of carefully compacted fill will be required to amend the soils and raise the site above the floodplain (Davis 2012, Personal Communication; Epps 2012, Personal Communication). Fill material will be certified as suitable

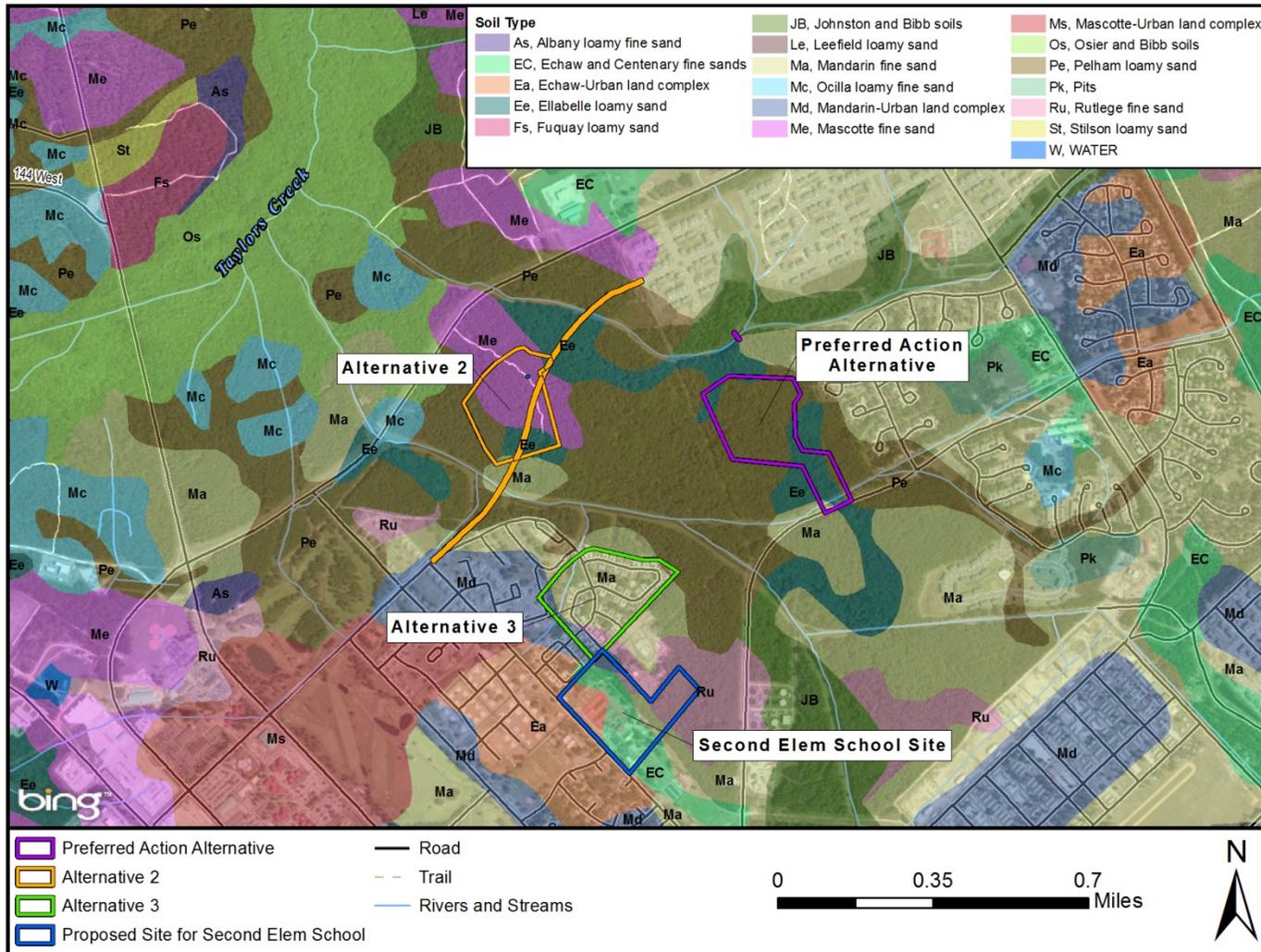


Figure 3-2: Soils Surrounding the Project Area

by the design engineer and free of contaminants, and all excavated soil will be dewatered and either recycled or disposed of off-site (see Section 3.4.5, Solid Waste).

Approximately 28 acres of currently forested land will be cleared to accommodate the proposed action. Prior to any site disturbance, the contractor would develop and have approved an ESPCP, a notice of intent submitted for any disturbance in excess of 0.75 acres, and the acreage disturbance fees paid to the State under the construction NPDES permit process (see also Section 3.4.1, Water Resources). Obtaining and adhering to all State and Federal construction-related permits and plans will be the responsibility of the construction contractors; ongoing maintenance will be the responsibility of Fort Stewart.

Potential short-term minor effects to soils could result from ground disturbance leading to soil erosion, fugitive dust propagation, sedimentation to water resources, and pollutants such as hazardous materials and/or waste. Temporary construction activities may result in the migration of soil particles through air, water, or truck traffic and the loss of petroleum, oil, and lubricants from equipment.

Adherence to the ESPCP would include measures to minimize impacts to soils, including erosion and sedimentation control and soil conservation measures. As part of the ESPCP, Spill Prevention, Control, and Countermeasure (SPCC) Plan measures would also be implemented during construction activities to prevent and/or minimize release of hazardous materials onto the ground. This would include using proper drip pans and/ or secondary containment during equipment staging, storing, fueling, maintenance, and repair. In addition, the ESPCP would describe, and the NPDES permit would require, regularly scheduled site inspections, BMPs, maintenance, and reporting to the Georgia Environmental Protection Division. BMPs specified in the ESPCP could include erosion control matting, channel stabilization, silt fencing, brush barriers, stormwater drain inlet protection, stone check dams, rock filter dams, construction exits, temporary and permanent seeding, the application of mulch, buffer zones, and dust control. The application of any or all of these BMPs would depend upon precise, specific ground conditions in the areas disturbed by construction, excavation of unsuitable soils and replacement with fill. The selected contractor(s) would be responsible for continually maintaining all erosion and sediment control measures during the project. These measures would prevent and/or minimize soil erosion. It is anticipated that only minor adverse impacts to soils from implementation of the preferred alternative would occur. After construction, the site will be landscaped in order to ensure that there will be no further affects to soils.

To construct the second elementary school, approximately 11 acres of trees would be cleared from the existing Diamond school site. Due to poor quality and drainage characteristics, the Rutlege soils found at the forested, 11 acre expanded area of the old Diamond site may need to be excavated and replaced or otherwise amended should the final school design locate any permanent structures in this area. During demolition of the old Diamond Elementary School and construction of the second elementary school in its place, as well as demolition of the existing Brittin school, the contractor would adhere to similar requirements as described for the construction phase at the Preferred Action Alternative location.

In conclusion, with adherence to the ESPCP and implementation of BMPs, only minor, short-term adverse impacts are expected to soils from implementation of the Preferred Action Alternative.

3.4.2.4 Environmental Consequences of Alternative 2

Up to 30.5 acres of currently forested land will be cleared to accommodate the proposed action at this location. The soils profiles found at the Alternative 2 location may be slightly more suitable for construction activities and may possibly require less excavation activity and thereby less imported fill

material. However, a substantial amount of fill would still be required to lift the school campus above the floodplain.

For the reasons described under the Preferred Action Alternative, Alternative 2 would have similar minor, short-term adverse impacts to soils.

3.4.2.5 Environmental Consequences of Alternative 3

While no fill activities would be required for construction at this location, potential short-term minor effects to soils could result from ground disturbance associated with clearing, grading, and other construction activities as discussed for the Preferred Action Alternative. Thus, Alternative 3 would have minor, short-term adverse impacts to soils similar to those described for the Preferred Action Alternative.

3.4.3 Biological Resources

3.4.3.1 Affected Environment

Introduction. Biological resources include native and naturalized plants and animals and the habitats in which they occur. The dominant plant species in plant communities are used to define the vegetation of an area. Habitat is defined as the area or environment where the resources and conditions are present that cause or allow a plant or animal to live there. Biological resources addressed in this EA include vegetation, wildlife, and special status species.

Vegetation and Wildlife, Including Migratory Birds. The Preferred Action Alternative and Alternative 2 sites lie directly adjacent or close to suburban/industrial areas in the partially undeveloped southern portion of the Installation. These undisturbed forested areas are characterized by a closed-canopy of loblolly pine (*Pinus taeda*), with an understory of sand laurel oak (*Quercus hemisphaerica*), water oak (*Q. nigra*), sweet-gum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), blueberries (*Vaccinium spp.*), and bracken fern (*Pteridium aquilinum*). The old Diamond location and Alternative 3 sites are in already developed cantonment areas, but they are adjacent to the undeveloped/undisturbed forested areas described above. The existing Brittin facility to be demolished is completely surrounded by existing Military Family Housing area.

Common wildlife that would be expected to occur at the undeveloped alternative site locations includes white-tailed deer (*Odocoileus virginianus*), wild boar (*Sus scrofa*), fox (*Vulpes* and *Urocyon spp.*), bobcat (*Lynx rufus*), rabbit (*Sylvilagus spp.*), squirrel (*Sciurus spp.*), and smaller mammals. In addition to a diverse assemblage of forest songbirds, game birds such as wild turkey (*Meleagris gallopavo*) and northern bobwhite (*Colinus virginianus*) occur on the Installation (Fort Stewart 2005b).

Approximately 170 species of birds protected under the Migratory Bird Treaty Act (MTBA) could occur on Fort Stewart, either seasonally or year-round, and many of these species can be expected to occur at least temporarily in the areas potentially affected by the proposed action alternatives (FSGA 2005a). Fort Stewart complies with the MBTA by implementing Army Policy Guidance (17 August 2001) and EO 13186, *Responsibilities of Federal Agencies to Migratory Bird Treaty Act*.

Special Status Species. There are seven Federally-listed species known to occur on Fort Stewart: red-cockaded woodpecker, shortnose sturgeon, Atlantic sturgeon, wood stork, Eastern indigo snake, frosted flatwoods salamander, and smooth coneflower. None of the seven Federally-listed species are known to occur within or near the alternative areas proposed for construction.

TLS. The TLS for biological resources would be met if an alternative disrupts a protected species and/or its habitat at a level that substantially impedes Fort Stewart's ability to meet goals outlined in the Integrated Natural Resources Management Plan (INRMP).

3.4.3.2 Environmental Consequences of the No Action Alternative

Vegetation and Wildlife, Including Migratory Birds. Under the no action alternative, there would be no impacts to wildlife, including migratory birds.

Special Status Species. Under the no action alternative, there would be no impacts to special status species.

3.4.3.3 Environmental Consequences of the Preferred Action Alternative

Project impacts would primarily result from the 28 acres of tree clearing required to construct the school and its associated facilities and the loss of ecological functions associated with this otherwise undisturbed forested area. The loss of this habitat would be minor given the abundance of similar habitat in surrounding areas.

During construction and demolition activities, standard management practices would control erosion and sedimentation, limiting the potential for indirect effects and degradation of surrounding habitat. Noise and construction-related activities would result in a temporary disturbance to wildlife primarily directly adjacent to the construction footprint. However, this short-term increase in noise would only represent a minor impact to biological resources.

Vegetation and Wildlife, Including Migratory Birds. Implementation of the Preferred Action Alternative would result in short- and long-term minor adverse impacts. Noise associated with construction and demolition activities would temporarily disturb wildlife in and adjacent to the immediate project area. The permanent removal of 28 acres of mixed pine/hardwoods would be minor given the abundance of similar habitat in surrounding areas, and common wildlife species would likely relocate to comparable adjacent habitat. Additionally, both the Preferred Action Alternative and Alternative 2 are located in Training Area A-20, which is currently functioning as a contiguous 230-acre parcel inset into the northern boundaries of the cantonment area. While developing this parcel will permanently fragment the area from the greater forest ecosystem, developing A-20 as “infill” is likely to prevent the need to further sprawl the cantonment area and therefore may help reduce fragmentation of forestland across the Installation.

The majority of construction activities required for the second elementary school would infill the old Diamond location, although the current school footprint would be expanded to include approximately 11 acres of vegetation removal to the north and east of the property. These 11 acres are in approximately the same ecosystems as described for the Preferred Action Alternative location, and development of this area would have essentially the same effects.

Therefore, impacts to vegetation and wildlife from implementation of the Preferred Action Alternative would be minor.

Special Status Species. No direct or indirect effects to Federally-listed threatened or endangered species is expected because none are known to occur within or in proximity to potential alternative boundaries (Carlile 2012 personal communication).

3.4.3.4 Environmental Consequences of Alternative 2

Up to 30.5 acres of currently forested land will be cleared to accommodate the proposed action at this location. Impacts under Alternative 2 would be the same as those described for the Preferred Action Alternative.

3.4.3.5 Environmental Consequences of Alternative 3

The demolished Marne Terrace neighborhood includes human-manipulated landscaping using both common native species and planted exotic or naturalized species, which have likely become home to various birds and other human-tolerant animals. Noise associated with construction and demolition activities would temporarily disturb wildlife in and adjacent to the immediate project area, and development of the site would likely cause resident animals to relocate. Implementation of Alternative 3 would result in negligible to short-term minor adverse impacts to vegetation and wildlife.

3.4.4 Hazardous and Toxic Materials and Waste

3.4.4.1 Affected Environment

Introduction. The Fort Stewart Environmental Division oversees the management of hazardous waste on behalf of the military units and activities that generate the waste. Centralized Accumulation Points and Satellite Accumulation Points are maintained in various locations across the Installation to facilitate the collection of hazardous wastes and to ensure that the wastes are transported off Post in accordance with applicable Federal, State, and DoD regulations.

As a designated Large Quantity Generator of hazardous waste, such wastes generated by Fort Stewart are collected and transferred to a central storage area, where they may be stored for no longer than 90 days before being transported off-site for treatment or disposal. Fort Stewart arranges for the transport and disposal of its hazardous waste by appropriately licensed waste management and transportation companies through a Defense Reutilization and Marketing Office (DRMO) contract.

Lead-based paint (LBP) is considered hazardous material and must be managed as such. LBP was often used in facilities built prior to the 1970's and requires specially qualified contractors to remove. The existing Diamond Elementary School (Building 5602) and its associated facilities (Building 5605) were surveyed for LBP on 16 and 17 August 2012, respectively. No LBP was found or is otherwise expected to occur at these locations (FSGA 2012b; 2012c). Brittin Elementary School (Building 7392) was constructed in 1983, after LBP was banned in this country, and thus does not contain LBP (Craig 2012).

Asbestos-containing material (ACM) is another hazardous substance commonly found in older buildings that must be managed as a hazardous waste. Friable and non-friable ACM is known to occur at the current Diamond Elementary School Building 5602, but does not occur in Buildings 5603 and 5604 (DODEA 2010b). Non-friable ACM is present at the existing Brittin Elementary School Building 7392 (DODEA 2010c). In accordance with Asbestos Hazard Emergency Response Act (AHERA) regulations, schools must update their asbestos reports every three years. A new report is scheduled for March 2013. School officials are annually trained to identify ACM and are made aware of the procedures to manage or have the ACM removed from the school.

In addition to LBP and ACM, demolition activities have the potential to disturb mercury and polychlorinated biphenyls found within the existing buildings. Buildings may contain liquid mercury in thermostats and thermometers, and fluorescent lighting fixtures typically contain elemental mercury in the

fluorescent light bulb; compact fluorescent lamps also contain mercury. In addition, fluorescent lighting fixtures have potential to contain ballasts containing poly-chlorinated biphenyls.

TLS. TLS would be met if hazardous materials and hazardous waste substantially increase the potential to impact human health or the environment through faulty storage, use, transportation, or disposal of these substances. An increase in the quantity or toxicity of hazardous materials and/or hazardous waste handled by a facility may also be deemed significant if a facility were not equipped to handle the new waste stream.

3.4.4.2 Environmental Consequences of the No Action Alternative

Under the no action alternative, there would continue to be moderate negative impacts associated with ACM at the current school facilities, including exposure to students and faculty, as well as time and money spent training and managing ACM at the school.

3.4.4.3 Environmental Consequences of the Preferred Action Alternative

Construction activities may require use of hazardous materials such as paints; solvents; petroleum, oils, and lubricants (POLs); and pesticides, but contractual obligations would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. The only hazardous materials anticipated for school operations may be certain cleaning materials, which would be stored in secured areas to prohibit use of such materials by anyone not authorized to do so. Furthermore, EO 13101, *Greening the Government through Waste Prevention, Recycling and Federal Acquisition*, dictates that non-toxic and/or non-hazardous cleaning materials shall be substituted through green-purchasing/acquisition practices where possible. Therefore, any wastes generated during cleaning would be minimal and disposed of according to State and local regulations. The amount of these materials generated would not be at a level that would significantly impede the ability of local disposal sites to handle such wastes.

In addition, a historical records review shows that no practices at any of these sites are likely to have produced unsafe environmental conditions; likewise, no unsafe conditions are known to exist at any of these sites (e.g., soil, water, or munitions contamination due to historic land uses) (USACE 2007 *draft final*). Both the first school site in the Preferred Action Alternative and Alternative 2 are in areas that were designated for training purposes (Training Area A-20). A finalized review of Training Area A-20 is in progress and is required to determine the absence of Explosives of Concern (EOC) and/or military munitions constituents of concern prior to any further planning or land disturbing activities. As described in Sections 3.4.6 Land Use, these two action alternatives/Training Area A-20 must proceed through the Army Regulation (AR)-350-19 process to ensure the site is properly re-classified and restored, if necessary. Land use category changes for the Preferred Action Alternative area are under way per AR-350-19 and awaiting final approval. Land use category changes would be initiated for the Alternative 2 site if it is selected instead of the Preferred Action Alternative. If hazardous materials are located at either of these two sites the level of contamination would be assessed and remediated as directed by the Fort Stewart Environmental Division. Any hazardous material found onsite would be removed and disposed of in a permitted off-site facility by appropriately-licensed waste management and transportation companies through a DRMO contract.

Approximately 5.8 acres of forested area to the east of the current Diamond School site and included in the new Brittin footprint is located within the boundaries of the Hero Road Military Munitions Response

(MMR) Solid Waste Management Unit (SWMU) restoration area (Kiefer 2013) (Figure 3-3). Portions of this area are thought to include old landfills, and the site is thought to be contaminated with munitions and Explosives of Concern (EOC). The area underwent a preliminary site investigation in July 2012 and is in the process of further analysis and remediation. As the proposed rebuilding of the second elementary school at the site of the to-be demolished Diamond Elementary School is projected to occur in FY 2016, it is possible that the MMR site or a portion thereof could be remediated and cleared for development within the given four-year timeframe. If the site is not remediated by that time or land use controls prohibit the development of school facilities, other options would include: a) final site design would only encroach upon the MMR site with compatible structures or activities, or b) total avoidance of the MMR site, i.e. dropping the 5.8 acre-expansion into the MMR site developing the school on the existing, old Diamond site only (Figure 3-4). If the boundary is altered to avoid the MMR site (to include a 15-foot buffer from the MMR site access road), the proposed second school site would be reduced to 24.5 acres (rather than the ideal 28; see Section 2.3), impacted forested area would be reduced to less than 3 acres (rather than 11; see Section 3.4.3.3), and wetland impacts (see Section 3.4.1.3) would be completely avoided. Site design and contractor personnel must coordinate with the FSGA Restoration program prior to further design and earth-moving activities at this location, and it is possible that a supplemental analysis of this location may be required as further information is obtained and the design phase begins.

Both demolition sites at the existing Diamond and Brittin Elementary Schools will likely have pesticide contaminants from previous construction efforts to address termites. Soil testing may need to be completed to fully delineate potential contaminants at these sites, and all contaminated material -- potentially including soils, concrete rubble, or timber -- would be handled by trained and certified personnel and sent to an approved disposal facility.

The ACM found at the existing Diamond Elementary School Building 5602 and existing Brittin Elementary School Building 7392 would be properly removed and disposed of prior to demolition in accordance with applicable laws and regulations (e.g. 40 CFR 61.40 through 157) and only by EPA-certified personnel. All fluorescent light tubes/bulbs and high-intensity discharge lamps requiring removal would be considered a non-Resource Conservation and Recovery Act hazardous waste (i.e., universal waste) and should be removed and sent to an approved recycling facility; however, broken or crushed fluorescent and high-intensity discharge lamps would be managed as hazardous waste. In addition, any mercury-containing thermostats could be sent to an approved recycling facility or disposed of as hazardous waste. The removal of toxic substances as part of demolition activities would be conducted in accordance with all applicable regulations. Therefore, negligible impact to human health is anticipated from the removal of toxic substances under the Preferred Action Alternative.

3.4.4.4 Environmental Consequences of Alternative 2

Because the proposed action is the same for both alternatives and both alternatives are in the same A-20 Training Area, the environmental consequences expected for Alternative 2 are the same as described above for the Preferred Action Alternative.

3.4.4.5 Environmental Consequences of Alternative 3

Because Alternative 3 would situate a new school on the site of demolished Military Family Housing, this area will have the potential for pesticide residues from previous construction (termiticides) and years of pesticide and herbicide applications for lawn and turf pests. Some of the insecticides would likely include

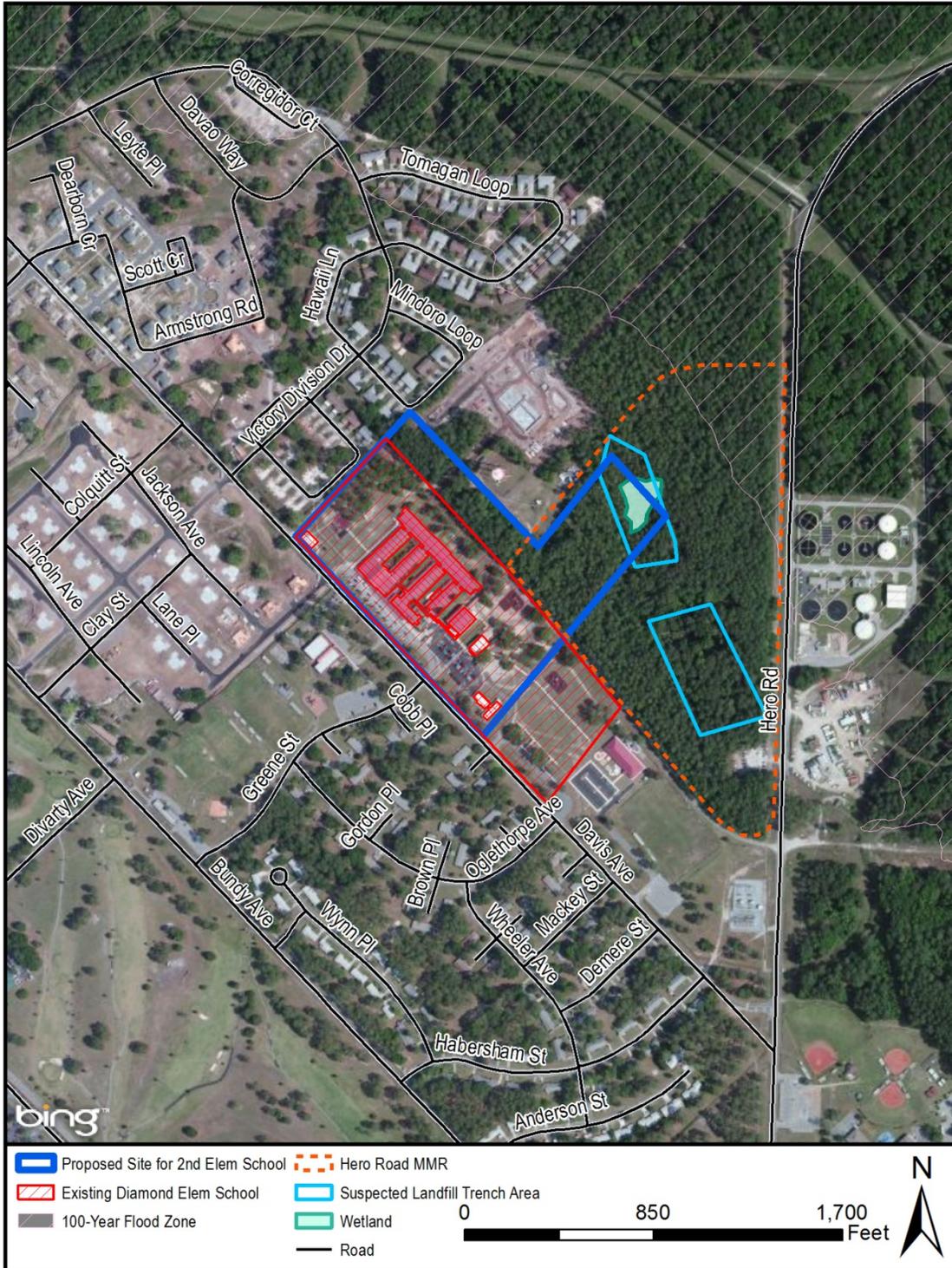


Figure 3-3: Hero Road MMR Site



Figure 3-4: Amended Boundary for Second Elementary School Site

products that persist in environment, such as lindane or chlordane. Soil testing may need to be completed to fully delineate potential contaminants at this site.

Because the proposed action is the same as for the Preferred Action Alternative, contractual obligations would require contractors to adhere to all applicable State and Federal regulations pertaining to toxic substances and hazardous materials. As such, negligible impacts to human health are anticipated from Alternative 3.

3.4.5 Solid Waste

3.4.5.1 Affected Environment

Introduction. Solid waste is the nonhazardous waste generated through both construction activity as well as normal operations of the school facilities. Construction and demolition debris is maintained as a separate solid waste stream and includes excavated soil as well as scrap from the demolished structure.

There are a total of five active landfill areas at Fort Stewart and Hunter Army Airfield. Fort Stewart has four active landfills: the South Central Sanitary Landfill, Non-Putrescible Landfill, Inert (Rubble/Concrete) Landfill, and Inert (Yard Waste) Landfill. All are located in the South Central Landfill Complex in the northwest corner of the cantonment area (FSGA 2009). Under Fort Stewart recycling policy (FSGA 2007; FSGA 2010c; Appendix B), Army personnel, on-Post housing and other community members, and contractors are required to actively participate in the recycling program. Recyclable items include paper, cardboard, metals, glass, plastic, electronics, and printer cartridges; materials are turned in to the Installation's recycling facility for processing.

TLS. The TLS for solid waste would be met if waste is generated from the proposed alternative in a way that overwhelms local landfill capacity or recycling capabilities.

3.4.5.2 Environmental Consequences of No Action

Under the no action alternative, there would be no additional impacts from solid waste generation or to current on-Post solid waste management or recycling programs (Appendix B). Waste would continue to be managed as it is currently at the Diamond and Brittin Elementary School locations.

3.4.5.3 Environmental Consequences of the Preferred Action Alternative

Although limited amounts of construction-related solid waste would be generated during construction of the school facilities themselves, as part of the proposed action 114,314 sf of building space will be demolished at the existing Diamond Elementary School site, which corresponds to approximately 17,400 cy of debris (FSGA 2012). Likewise, 72,863 sf of building space will be demolished at the existing Brittin Facility, which corresponds to approximately 11,090 cy of debris. Additionally, in order to provide a stable foundation for the school facilities, an average of 4 (3 to 5) vertical feet of soil will be excavated through the Preferred Action Alternative (see Section 3.4.2 Soils), which is considered, and thereby treated as, solid waste. Site clearing will be accomplished through a tree harvesting contract; thus, cleared vegetation is not part of solid waste considerations.

The contractor(s) performing the construction, demolition, and excavation are required to salvage or recycle as much of the materials as possible. Achievement of *at least* 50 percent diversion, by weight, of all non-hazardous construction and demolition waste debris is required at Fort Stewart (FSGA 2012; FSGA 2007). The excavation, construction, and demolition contractors must track and report all

potentially recyclable materials, to include excess soils, cardboard, concrete, asphalt, and scrap metal. The data collected plays an important role in the Installation achieving the measures of merit established by Federal mandates. This data is consolidated with other solid waste data and reported to the Department of the Army in the Solid Waste Annual Reporting System (SWARS). All recyclables generated through construction projects must be kept separate from other waste and may be delivered to the Processing Station/Building 1384 (cardboard) or the Recycling Center/Building 1143 (scrap metal). If concrete crushing/ recycling is operational during demolition activities, the FSGA landfill may accept inert concrete, asphalt, and excess soil (if the soil is clean and not contaminated with oils or any hazardous constituents that would prevent its use as daily cover at the landfill).

Any unrecyclable material must be disposed of off-Installation at an approved disposal facility in accordance with all Federal, State, and local regulations. All contractors must provide a copy of landfill scale tickets or engineering estimates to their Contracting Officer's Representative (to be forwarded to the Directorate of Public Works Environmental Division) for all waste disposed at a location outside the Installation boundaries. The large amount of demolition debris could impact the accepting landfill's available capacity if construction and demolition debris policies are not followed and debris is not carefully tracked and reused or recycled.

Per capita solid waste generation specific to typical elementary school activity is conservatively estimated to be half a pound per child a day (MN 2010) or up to three pounds per child per week (City of NY 2001). For the proposed action, less than approximately 1,750 to 2,100 pounds of solid waste would be expected from 700 students through weekly school operations. Additionally, rather than being sent to a landfill, much of this solid waste would be diverted to the Fort Stewart recycling program. The school's interior will have designated trash and recycling collection amenities, including means to collect and separate used cooking oil at the cafeteria or at an outside satellite accumulation point. The proposed action will include the construction of gated, segregated dumpster pads that will accommodate two collection dumpsters measuring a minimum of 12 ft by 24 ft. These new dumpsters will facilitate trash collection (including a safe receptacle for used cooking oil from cafeteria operations) and facilitate collection of recyclable items.

The existing schools maintain a satellite accumulation point for used cooking oil. Instead of this collection point being outside the building, it is preferable that the kitchens at the new schools include a storage tank for used cooking oil. The recommended kitchen tank has a caddy system that receives oil from the deep fryers and has the capability to pump the oil into the collection tank. This type of system has numerous benefits over an exterior collection point, including being safer to operate and maintain.

Potential negative impacts to local landfills from the large amount of solid waste generated through excavation, construction, and demolition activities can be mitigated to a minor amount through strict adherence to the Fort Stewart Command Recycling Policy (FSGA 2007; FSGA 2010c; Appendix B) and diversion of construction and demolition waste. Operations at the new school would be expected to have minor positive indirect impacts to solid waste as receptacles and other technologies would be built into the new building making it increasingly convenient to participate in the recycling program. Therefore, implementation of the Preferred Action Alternative would have minor impacts on solid waste generation.

3.4.5.4 Environmental Consequences of Alternative 2

As the proposed action is the same for all alternatives, including the demolition of the existing Diamond and Brittin Elementary Schools, the environmental consequences associated with solid waste expected for Alternative 2 are the same as described above for the Preferred Action Alternative.

3.4.5.5 Environmental Consequences of Alternative 3

No excavation and fill activities are associated with Alternative 3. However, since the proposed action is the same for all alternatives, including the demolition of the existing Diamond and Brittin Elementary Schools, (with the exception of the need to dispose excavated fill), the environmental consequences associated with solid waste expected for Alternative 3 are essentially the same as described above for the Preferred Action Alternative.

3.4.6 Land Use

Land use generally refers to human modification of land, often for residential, commercial, industrial, agricultural, recreational, and economic purposes. Land use also refers to the use of land for preservation or protection of natural resources such as wildlife habitat, vegetation, or unique features. The Army Real Property Master Plan (RPMP) process is specified in AR 210-20 (DA 2005b), and the RPMP Technical Manual (DA 2008) provides assistance in developing an RPMP at Army Installations. An Army RPMP determines the types of activities that are allowed or that protect specially designated or environmentally sensitive uses. In compliance with AR-210-20, Fort Stewart maintains an RPMP that assists efficient and appropriate land use and development decisions across the Installation (FSGA 2009).

3.4.6.1 Affected Environment

Introduction. There are approximately 279,200 acres of land within the boundaries of Fort Stewart. Fort Stewart began in the 1940s as an anti-aircraft artillery training center and has since seen its mission changed or expanded to provide tank, field artillery, helicopter gunnery, and small arms training, as well as a high quality of life for the Garrison community. The existing Land Use Plan for Fort Stewart/Hunter Army Airfield classifies all land into one of seven appropriate use and development categories (FSGA 2009). Each category can contain multiple Facility Category Groups in order to reflect the dominant use of a given area. Figure 3-5, reproduced from the Fort Stewart RPMP, illustrates current land use designations at Fort Stewart.

The majority of land use at Fort Stewart (68 percent, or 191,000 acres) is classified as Ranges and Training, which is divided into 120 training areas (including live-fire ranges, non-live-fire ranges, and special training areas such as confidence courses, driver's training, or land navigation). The remainder of the land base is used for airfield, troop, industrial, headquarters, residential, or community purposes. The process through which lands historically used for training activities may be transferred to other uses (AR-350-19) involves Garrison Command, environmental and planning staff, and the Installation Management Command (IMCOM) (DA 2005a). This extensive process ensures the continued safety of the site as the Army's needs transform.

TLS. The TLS for land use would be met if the proposed future use is incompatible with surrounding land uses or results in a change of land use that would degrade mission-essential training.

3.4.6.2 Environmental Consequences of the No Action Alternative

Under the no action alternative, there would be no impacts to land use.

3.4.6.3 Environmental Consequences of the Preferred Action Alternative

Both the Preferred Action Alternative and Alternative 2 are in a 230-acre area currently designated for Training purposes (A-20) (Figure 3-5). This parcel is bordered on 3 sides by cantonment area and to the northwest by GA HWY 144. Training area A-20 represents approximately 0.1 percent of available training lands on Fort Stewart.

Historically, the hazardous materials required for training operations were not regulated, and these materials are occasionally still found at some training areas (FSGA 2009). All known contaminated sites have been restored or are in the process of restoration and none are known to occur at the Preferred Action Alternative location (U.S. Army Environmental Command [USAEC] 2005). Materials commonly found at former training areas include munitions and EOC and munitions constituents. Due to routine surveys, extensive restoration efforts, and continued use of many of the training areas it is possible, but not likely, that unexploded ordinances or other EOC could be found on the Installation. Other contaminants that may be found in the soil or groundwater at former training areas as a result of training operations are typically metals and petroleum hydrocarbons.

Because the Preferred Action Alternative site is on land classified as range/training land, construction of an elementary school on such land would be considered a significant impact if the land use designation is not changed to Cantonment/Residential. However, the Fort Stewart Master Planning Division is changing the land use category for the Preferred Action Alternative location within the A-20 Training Area to Cantonment/Residential so the community may be assured school facilities can be safely sited and appropriately maintained. Land use category changes for the Preferred Action Alternative area are under way per AR-350-19 and awaiting final approval. After the screening process associated with AR-350-19, the risks of changing uses of the land from historical activities are reduced to less than significant (i.e., negligible impacts). The land use change is expected to be complete well in advance of construction. Because of the proximity of the A-20 parcel to residential and other cantonment functions, as well as the volume of training lands available elsewhere at Fort Stewart, this potential land use redesignation would have negligible impacts to the continued availability of training opportunities at Fort Stewart.

Both the existing Diamond and existing Brittin Schools are in areas already designated as “Residential”; therefore, there would be no impacts to land use as the existing schools are demolished or if a new school was constructed at the site of the old Diamond. Rebuilding Brittin on the expanded portion of the old Diamond site would extend "Residential" space into "Community Open Space" approximately 11 acres. FSGA Real Property Management does not differentiate between Community and Residential categories with regard to the rules about building a school in either category, and no additional action would be required.

3.4.6.4 Environmental Consequences of Alternative 2

Because the proposed action is the same for all alternatives and both Alternative 2 and the Preferred Action Alternative are in the same A-20 Training Area, the environmental consequences expected for Alternative 2 are the same as for the Preferred Action Alternative. Land use category changes per AR-350-19 would be initiated and finalized well in advance of construction activities for the Alternative 2 site if it was selected instead of the Preferred Action Alternative.

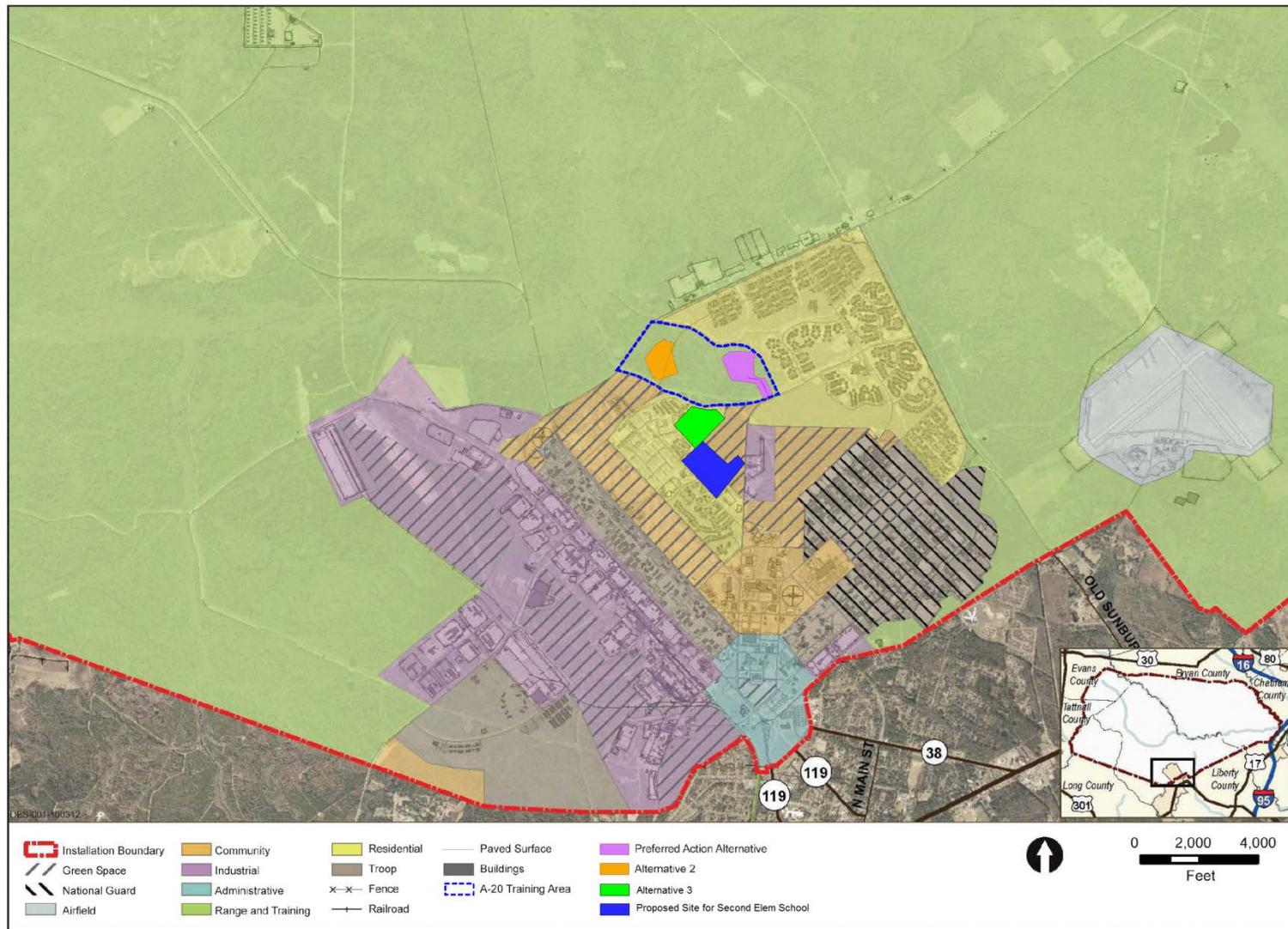


Figure 3-5: Land Use Designations at Fort Stewart (Reproduced from FSGA 2009)

3.4.6.5 Environmental Consequences of Alternative 3

Alternative 3 is in an area already designated as Residential; therefore, under Alternative 3 there would be no impacts to land use.

3.4.7 Cultural Resources

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into three major categories: archaeological resources (prehistoric and historic), architectural resources, and traditional cultural/tribal properties. Archeological resources include but are not limited to sites, pottery, baskets, basketry, weapons, weapon projectiles, tools, stone flakes, graves, or bottles. The Integrated Cultural Resources Management Plan (ICRMP) for Fort Stewart and Hunter Army Airfield describes numerous cultural resource investigations that have been conducted since the 1970's (Maggioni *et al.* 2009 draft).

3.4.7.1 Affected Environment

Archaeological Resources. As of 2012, 234,033 acres of Fort Stewart and Hunter Army Airfield have been surveyed for archaeological resources or excluded from survey through categorical exclusions outlined in the Installation's Programmatic Agreement with the Georgia State Historic Preservation Office (SHPO) for Section 106 of the National Historic Preservation Act Compliance. These surveys resulted in the identification of 3,974 archaeological sites at Fort Stewart and Hunter Army Airfield. These sites include prehistoric archaeological sites through recent 20th century historical components. Of these sites, 3,561 were determined not eligible, and 51 are considered eligible for listing in the National Register of Historic Places (NRHP). One site, Fort Argyle at Fort Stewart, is listed on the NRHP. The remaining 361 archaeological resources are potentially eligible and have not been fully evaluated. All unevaluated resources are treated as eligible for the National Register until determined otherwise. In areas with concerns or that have not been surveyed, Fort Stewart Cultural Resources Management (CRM) will survey the area and identify potential eligible resources prior to any disturbance/alteration to the landscape. Projects with potentially eligible resources, in or near the proposed construction area, would then be marked in order to avoid them. If sites cannot be avoided, then sites are tested and mitigated in accordance with formal consultation with the SHPO on a case-by-case basis prior to project commencement.

Architectural Resources. In 2002 and 2004, Fort Stewart and Hunter Army Airfield completed building surveys for all buildings built through 1990, which included consideration for exceptional significance under the U.S. Army Cold War Military-Industrial Historic Properties Context (Fortune & Maggioni 2002; Maggioni 2004 Draft). As buildings approach their 50-year mark, further SHPO consultation is required to assess buildings under standard criteria. As such, Building Survey "Codicils" are submitted to the SHPO each year with appropriate re-assessments. As of 2012, 309 National Register-eligible buildings are on Fort Stewart and Hunter Army Airfield, of which 91 percent have been mitigated by a series of Army/DoD Programmatic Agreements and/or individual Memorandum of Agreements between the Installation and the SHPO. Results of these building surveys confirmed no existing structures of architectural significance at any alternative locations. None of the alternatives will directly impact NRHP-eligible buildings, nor will the alternatives be within the viewshed of unmitigated NRHP-eligible buildings. The current Diamond Elementary School campus and the current Brittin Elementary school

main building to be demolished as part of the proposed action (built in 1963 and 1983, respectively), have both been determined ineligible for the National Register.

Tribal Resources. Specific American Indian Tribal resources or sacred sites or areas on Fort Stewart where such sites may be situated have not all been identified to date. Fort Stewart, however, routinely consults with American Indian Tribes (Tribes) having an ancestral affiliation with the Fort Stewart area on a case-by-case basis, specifically when projects arise with the potential to affect Tribal resources.

TLS. The TLS for cultural resources would be met if the proposed action results in the violation of local, state, and/or Federal law, such as the National Historic Preservation Act, and/or if it is not consistent with management plans identified in the Installation's ICRMP or PA. Examples include unmitigated impacts to resources eligible for listing on the NRHP, adverse impacts to cultural items protected under the Native American Graves Protection and Repatriation Act, limiting access to sacred sites, traditional cultural properties, or restricting free exercise of Native American religious practices, and/or loss or destruction of significant scientific, cultural, or historical resources.

3.4.7.2 Environmental Consequences of the No Action Alternative

Under the no action alternative, there would be no impacts to cultural resources (See Appendix D).

3.4.7.3 Environmental Consequences of the Preferred Action Alternative

No archaeological, architectural, or Tribal resources have been documented as occurring at or near the Preferred Action Alternative site or at the existing Diamond or Brittin School locations. If cultural archaeological sites or human burials are inadvertently discovered by construction contractors, especially during excavation work, activities would cease and the discovery would be immediately reported to Fort Stewart's CRM in accordance with ICRMP guidance and procedures (Maggioni *et. al* 2009 *Draft*). Impacts would be minimized by complying with the existing consultation procedures called for under the ICRMP and following the Programmatic Agreement.

Because construction activities would not involve the disturbance of historic properties (cultural resources eligible for listing on the NRHP), no impacts to cultural resources are anticipated under the Preferred Action Alternative. The Georgia SHPO provided a letter dated February 21, 2013, that stated that the preferred action alternative would have no effect on archaeological resources or historic structures that are listed in or eligible for listing in the NHRP (see Appendix C).

3.4.7.4 Environmental Consequences of Alternative 2

The results of ongoing consultation with the Georgia SHPO suggest that one archaeological site that may be eligible for listing on the NRHP has been identified within the boundaries of Alternative 2, and implementing the proposed action at the Alternative 2 location has the potential to adversely affect these resources. If Alternative 2 is selected, further consultation will be conducted to resolve adverse effects in accordance with 36 CFR 800 prior to the undertaking (Epps 2012b). In the same letter noted above, the Georgia SHPO that stated that alternative 2 will have no effect on historic structures that are listed in or eligible for listing in the NHRP. If alternative 2 is chosen, additional consultation will be necessary to evaluate effects on archaeological site 9LI1547 which may be eligible for inclusion in the NRHP (see Appendix C).

3.4.7.5 Environmental Consequences of Alternative 3

No archaeological, architectural, or Tribal resources or historic properties have been documented as occurring at or near Alternative 3, thus, no impacts to cultural resources are anticipated under Alternative 3.

3.4.8 Noise

Noise is often defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, diminishes the quality of the environment, or is otherwise annoying (NIOSH 1998; FICON 1992). Human response to noise varies by the type and characteristics of the noise source, distance from the source, receptor sensitivity, and time of day. Noise can be intermittent or continuous, steady or impulsive, and it may be generated by stationary or mobile sources. Sound levels are expressed in decibels (dB), usually weighted for human hearing (dBA). To describe “average” sounds on a 24-hour basis, the day-night sound level (DNL) metric is used. The DNL provides a single measure of overall noise impact and is the accepted single measure for determining human annoyance.

The Army uses the DNL measurement to measure environmental noise levels for their activities. This metric is recommended by the USEPA, used by most Federal agencies when defining their noise environment, and applied as a land-use planning tool for predicting areas of potential annoyance both inside and outside of an Installation. The DNL describes the average daily acoustic energy over an entire year—meaning that the whole spectrum of sound, from quiet to loud noises, is averaged across the year. The DNL metric also incorporates a “penalty” for nighttime noise (normally 10:00 p.m. to 7:00 a.m.) when loud sounds are more noticeable and annoying. However, when measuring noise levels from small arms and large caliber sources, weighted noise metrics are used.

The weighted measurements screen out the very high and low sound frequencies that cannot be heard by humans. A-weighted noise measurements reflect what people hear, noted as dBA or ADNL. A weighting is typically applied to measuring noise for small arms activities. For low-frequency sounds that can cause vibrations, a C weighting metric is used; noted as dBC or CDNL. Many find that these lower frequency sounds like artillery and explosions are more annoying than other noises so that is taken into account in this metric.

3.4.8.1 Affected Environment

Introduction. To assist the community in land-use planning and zoning, the Army uses planning zones where noise levels are separated into four categories associated with noise level contours: Land Use Planning Zone (LUPZ), Zone I, Zone II, and Zone III. Fort Stewart’s Installation Environmental Noise Management Plan (FSGA 2003) and the Joint Land Use Study (FSGA 2005a) measure these noise contours, illustrated in Figure 3-6. The paragraphs below discuss these zones and the compatibility level associated with them (FSGA 2005b). All existing schools and proposed alternative sites are within the LUPZ noise contour.

- **LUPZ** is an area around a noise source with a DNL that is between 60 and 65 dBA, or 57 and 62 dBC. These areas are a buffer in Zone I where the noise could reach Zone II levels during periods of increased operations. This zone is used to provide the community with additional information regarding land use decisions. LUPZ contours are generally shown on land use planning noise documents.

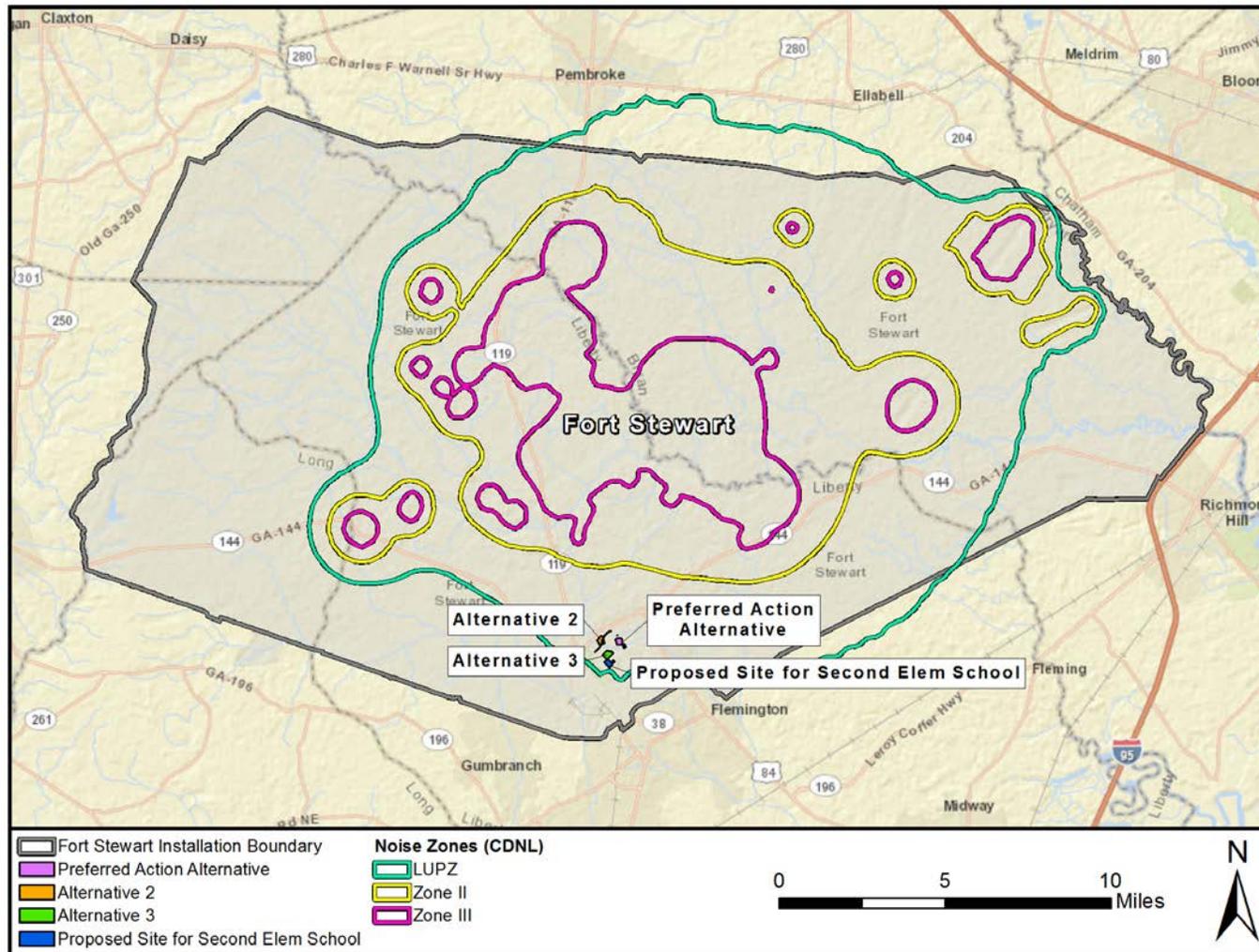


Figure 3-6: Noise Contours at Fort Stewart in Relation to Proposed Action

- **Zone I** includes all areas around a noise source in which DNL is less than 65 dBA, or 62 dBC. This area is usually suitable for all types of land use activities (homes, schools, and hospitals).
- **Zone II** consists of an area where the DNL is between 65 and 75 dBA, or 62 and 70 dBC. Exposure to noise within this area is normally incompatible with noise-sensitive land uses (residences, hospitals, churches, educational facilities), and use of the land within the zone should normally be limited to activities such as industrial, manufacturing, transportation, and resource production (industrial parks, factories, and highways). In situations where noise-sensitive land uses occur within Zone II, guidance recommends noise level reduction features be incorporated in design and construction.
- **Zone III** is an area around the source of noise in which the DNL is greater than 75 dBA, or 70 dBC. The noise level within this zone is considered incompatible with noise-sensitive land uses, such as churches, schools, parks, playgrounds, residences, and hospitals.

TLS. The TLS under noise analysis is the determination of whether noise (either during construction or demolition activities or operation of the new elementary school) would rise to such a level to be incompatible with adjacent noise receptors or increase the number of people annoyed by the heightened noise levels both on- and off-Post. Note that the USEPA categorizes construction noise as an intermittent noise source (USEPA 1972) and will therefore not result in a significant impact.

3.4.8.2 Environmental Consequences of the No Action Alternative

Under the no action alternative, there would be no impacts from noise.

3.4.8.3 Environmental Consequences of the Preferred Action Alternative

Noise would be experienced by excavation, construction, and demolition crews. Noise from some activities associated with excavation and construction may be noticed by residents of Eisenhower Village housing area located in proximity or directly adjacent to the site. Likewise, demolition activities at the existing Diamond and Brittin Elementary Schools may be noticed by adjacent neighborhoods and other community activities. All construction-related noise would be considered intermittent and temporary.

Noise from construction activities varies with the types of equipment used and the duration of use. The U.S. Department of Transportation (USDOT) Federal Highway Administration (FHA) compiled noise levels generated by individual pieces of construction equipment and specific construction operations from both stationary and mobile sources and for steady, intermittent, and impulse-type generators of noise. Stationary sources include pumps, generators, and compressors; these sources are considered nonimpact-type noises. Stationary sources considered impact-type noises include pile drivers, jackhammers, pavement breakers, and blasting operations. Mobile sources include dozers, scrapers, graders, etc. (USDOT FHA 2006). Table 3-2 lists construction-related noise emission values for various pieces of equipment. As shown in the table, construction-related noise emissions can range from 73 to 101 dBA when measured 50 feet from the respective piece of equipment.

Table 3-2. Construction-Related Noise Emissions

Equipment Description	Actual Measured L _{max} at 50 feet (dBA)	Equipment Description	Actual Measured L _{max} at 50 feet (dBA)
Generator (<25KVA, VMS Signs)	73	Rock Drill	81
Refrigerator Unit	73	Dozer	82
Flat Bed Truck	74	Horizontal Boring Hydraulic Jack	82
Welder/Torch	74	Vacuum Street Sweeper	82
Man Lift	75	Boring Jack Power Unit	83
Pickup Truck	75	Compactor (ground)	83
Dump Truck	76	Gradall	83
Paver	77	Warning Horn	83
Backhoe	78	Auger Drill Rig	84
Compressor (air)	78	Chain Saw	84
Slurry Plant	78	Scraper	84
Concrete Mixer Truck	79	Pneumatic Tools	85
Drill Rig Truck	79	Vacuum Excavator	85
Front End Loader	79	Clam Shovel (dropping)	87
Rivet Buster/Chipping Gun	79	Grapple (on backhoe)	87
Ventilation Fan	79	Vibrating Hopper	87
Drum Mixer	80	Jackhammer	89
Roller	80	Concrete Saw	90
Slurry Trenching Machine	80	Mounted Impact Hammer (hoe ram)	90
Vibratory Concrete Mixer	80	Pavement Scarifier	90
Concrete Pump Truck	81	Sand Blasting (single nozzle)	96
Crane	81	Sheers (on backhoe)	96
Excavator	81	Impact Pile Driver	101
Generator	81	Vibratory Pile Driver	101
Pumps	81		

Source: USDOT FHA 2006.

Commonly, use of heavy equipment occurs sporadically throughout the daytime hours. Under any of the action alternatives, noise levels that would be generated during the earth moving phase (site clearing activities involving pieces of equipment, such as compactors, front loaders, backhoes, tractors, scrapers/graders, pavers, and trucks) could range from 77 to 84 dBA or more at 50 feet from the equipment. However, noise impacts to surrounding communities are expected to be negligible because construction would occur during normal business hours and the equipment would be used for a short period of time. As such, negligible impacts to residents of adjacent communities from noise are expected.

It is possible that individuals off-Post may notice noise from increased dump truck traffic (76 dBA) associated with excavation and fill activities, but otherwise it is not likely that noise associated with the proposed action would be noticed off-Post.

With regards to worker exposure to noise during construction activities, the National Institute for Occupational Safety and Health (NIOSH) published a criteria document in 1972 with a recommended exposure limit of 85 dBA as an eight-hour time-weighted average. This exposure limit was reevaluated in 1998 when NIOSH made recommendations that went beyond conserving hearing by focusing on the prevention of occupational hearing loss. Following the reevaluation using a new risk assessment technique, NIOSH published another criteria document in 1998 that reaffirmed the 85 dBA recommended

exposure limit (NIOSH 1998). For non-government construction personnel, compliance with Occupational Safety and Health Act (OSHA) regulations would minimize the potential for hearing loss. For government personnel, compliance with OSHA regulations; DoD Instruction 6055.12, *Hearing Conservation Program*; and U.S. Department of the Army Pamphlet 40-501, *Hearing Conservation Program*, would minimize the potential for hearing loss. Because compliance with regulations and policies would minimize the potential for hearing loss, negligible impacts to on-Post personnel from noise are expected during excavation, construction, or demolition activities under the proposed action.

The proposed action alternative is located within the LUPZ, meaning the area is generally Noise Zone I but could occasionally reach Noise Zone II levels. Exposure to noise within Noise Zone II is normally incompatible with noise-sensitive land uses such as schools, and The Federal Interagency Committee on Urban Noise (FICUN) suggests that educational services be sited in areas that experience 65-dB or less of DNL noise levels (FICUN 1992). As shown in Figure 3-6, the Preferred Action Alternative site would be located within the LUPZ, an area that is generally less than 65 dBA and 62 dBC. Therefore, there would be negligible impacts from noise under the Preferred Action Alternative.

3.4.8.4 Environmental Consequences of Alternative 2

Noise from some activities associated with excavation and construction activities may be noticed by residents of Marne Terrace and Liberty Woods housing areas located in close proximity to the Alternative 2 site. Noise would be experienced by excavation, construction, and demolition crews; neighborhoods adjacent to demolition activities at the existing Diamond and Brittin Elementary School sites; and individuals off-Post as described for the Preferred Action Alternative. The environmental consequences expected for Alternative 2 would be as described above for the Preferred Action Alternative. Therefore, there would be negligible impacts from noise under Alternative 2.

3.4.8.5 Environmental Consequences of Alternative 3

Noise from some activities associated with construction activities may be noticed by residents of Marne Terrace, Coastal Ridge, and Marne Homes housing areas located in close proximity to the Alternative 3 site. Noise would be experienced by construction and demolition crews; neighborhoods adjacent to demolition activities at the existing Diamond and Brittin Elementary School sites; and individuals off-Post as described for the Preferred Action Alternative. The environmental consequences expected for Alternative 3 would be as described above for the Preferred Action Alternative. Therefore, there would be negligible impacts from noise under Alternative 3.

3.4.9 Transportation

3.4.9.1 Affected Environment

Introduction. Transportation resources refer to the infrastructure and equipment required for the movement of people, manufactured goods, and raw materials in geographic space. For purposes of this EA, transportation resources surrounding Fort Stewart are the focus of the analysis. Guidelines for school site selection recommend avoiding sites adjacent to heavily traveled streets and highways. The site should also be accessible to community services needed by the school and be appropriately located with respect to the population to be served (GDE 2008). Installation traffic studies were conducted in 2007 and 2010 (FSGA 2010b; 2007b).

The ROI for transportation includes ACPs and on-Post roads since these elements could be potentially impacted by increased traffic from both school construction and its operation. Although the fill trucks associated with the Preferred Action Alternative and Alternative 2 will originate from off-Post locations, approximately 15 miles (Dunham) or 4 miles (Osteen) from Fort Stewart (Figure 3-7), the temporary nature of the fill activity with respect to local, rural traffic patterns is expected to be minor. Fill trucks are authorized to use the closest gate to the borrow pit and the most convenient route to the project site; the on-Post route is only limited by physical training (which ends after 7:30am) and occasional road closures in conjunction with tree dedication ceremonies at Warrior's Walk. Recommended on-Post transportation routes for construction equipment, especially fill trucks, avoid already congested or otherwise noise-or traffic-sensitive areas (Figure 3-8). Thus, impacts to traffic from fill trucks are not analyzed further in this EA. A traffic analysis will be accomplished during the school design to determine the proper site entry/exit for fill trucks.

TLS. The TLS for traffic is the determination of whether the proposed action would increase traffic congestion to the extent that emergency vehicles could not meet adequate response times because of traffic stacking or volume increases, especially during Installation rush hours, or that continued congestion may spur the need for costly road infrastructure extensions and improvements.

3.4.9.2 Environmental Consequences of No Action

There is heavy traffic congestion associated with rush hour at the existing Diamond Elementary School, especially due to the overcrowding situation and requirement to bus students to Diamond Elementary from across the Installation. Under the no action alternative, this traffic situation would continue and egress of emergency response vehicles in the vicinity may be impacted as vehicles stack in roadways during drop-off and pick-up times. Failure to amend the current traffic situation may result in a potentially moderate adverse impact to transportation resources at Fort Stewart. Traffic congestion at the existing Brittin is currently elevated, but is expected to diminish as the elementary school at Austin Road comes online and alleviates overcrowding at Brittin Elementary School. As such, the No Action Alternative would have a potentially moderate negative effect to transportation.

3.4.9.3 Environmental Consequences of the Preferred Action Alternative

For the proposed action alternative access roads and circulation routes would need to be constructed. Hero Road is the existing collector road that may be affected through the proposed action alternative. No ACPs or off-Post roadway systems would be impacted after construction activities were complete.

For construction activities, traffic at ACPs may be slowed as construction equipment and materials are brought into the Installation. Proposed traffic routes for fill trucks and other construction traffic are illustrated in Figure 3-8.

The proposed action alternative is in proximity to housing areas off a secondary, low-traveled roadway, meaning all students could safely walk to school. The preferred placement of the four elementary schools is intended to eliminate the presence of school buses on the roads, and the reduction of these buses is expected to decrease vehicular volume and alleviate flow in comparison to existing on-Post traffic. The second elementary school at the old Diamond location would extend and reconfigure the campus in order to better accommodate parent, bus, and emergency vehicles. In general, transportation at Fort Stewart is expected to undergo a positive impact under the Preferred Action Alternative as the proposed action would redistribute overflow students to attend the school closest to their homes and specifically engineer

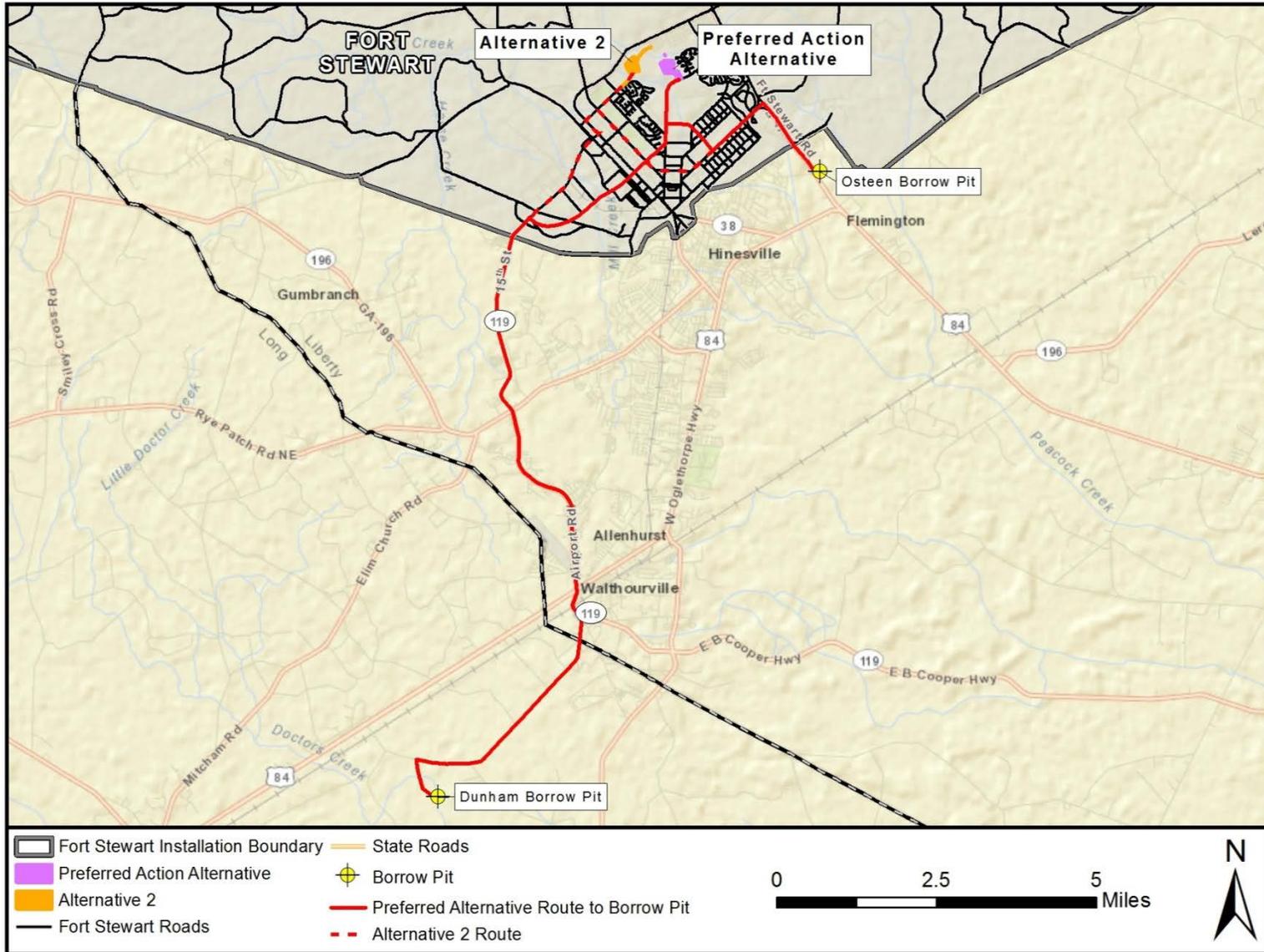


Figure 3-7: Recommended Fill Truck Transportation Routes Between the Potential Borrow Pit Locations and Action Alternatives

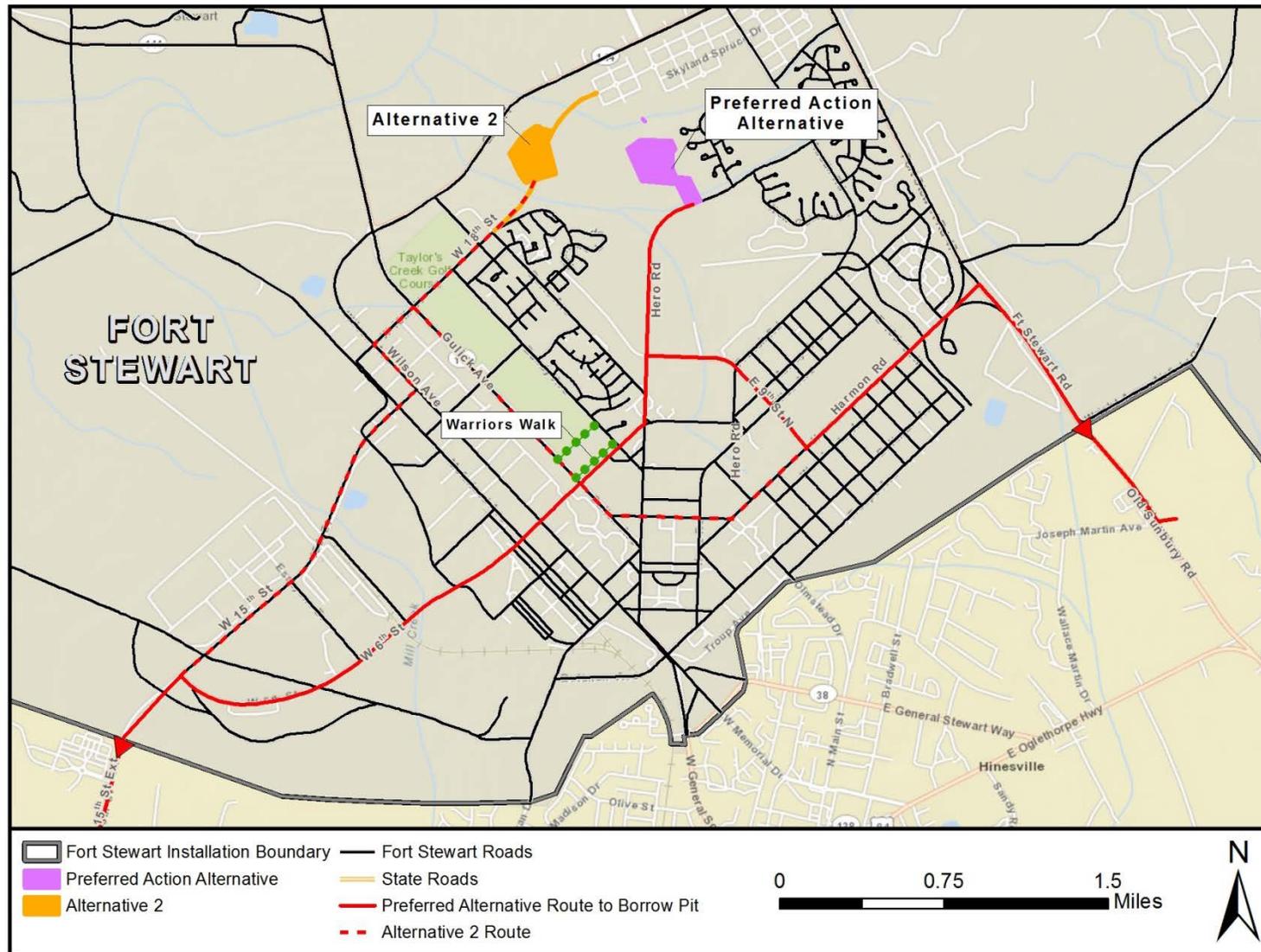


Figure 3-8: Recommended On-Post Fill Truck Transportation Routes

roadways to efficiently collect and move school-related traffic, and the close proximity of housing areas would mean the overall reduction or elimination of busing requirements. As such, the Preferred Action Alternative is expected to have a minor positive effect to transportation.

3.4.9.4 Environmental Consequences of Alternative 2

The access road associated with Alternative 2 would extend Victory Division Drive to directly link the school with local housing areas on the northeast and southwest borders. Additionally, construction of the access roads required as part of Alternative 2 may alter or slow short-term traffic flow at the new intersections with existing roads.

As the location is further from the population centers to the east and west of the property, it is likely that most students would have to be bused to this location. Thus, although access and egress and rush hour flow and stacking would be improved through site design for both the Alternative 2 and the second elementary school at the old Diamond site, buses would still be required and effect on-Post rush hour traffic. As such, Alternative 2 is expected to have negligible to minor negative effects to transportation.

3.4.9.5 Environmental Consequences of Alternative 3

The Alternative 3 site is in the middle of the Marne Terrace housing community. Some students still living in adjacent neighborhoods and at any reconstructed areas of Marne Terrace Housing area would likely be able to walk to school. However, the larger housing areas, and feeder neighborhoods for the new schools, are located to the east of the cantonment. Both new schools at the Alternative 3 site and the old Diamond site must serve 650-700 students, each, and thus Alternative 3 would require that nearly all students be bused. As such, Alternative 3 would have minor negative impacts to transportation across Fort Stewart.

3.4.10 Public Health and Safety

3.4.10.1 Affected Environment

Introduction. Occupational health and safety applies to on-the-job safety and implements the requirements of 29 CFR 1926 *et seq.* All construction and demolition is performed in accordance with applicable OSHA regulations to protect human health and minimize safety risks. Before starting, all activity is coordinated between contractors and the Safety Office.

Public health includes fire and police protection, health services, traffic hazards, and surface danger zones associated with on-Post training ranges. On Post, the Directorate of Public Safety commands the Military Police Units, the Fort Stewart Fire Prevention and Protection Division, and the Post Safety Office. This directorate ensures unity of effort among Fort Stewart emergency services for a safe and secure environment to work, train, live, and play. Winn Army Community Hospital and the Lloyd C. Hawks Medical Clinic provide health services for active and retired military personnel and their Families. Off-Post, police and fire protection are provided by the City of Hinesville. Liberty Regional Medical Center in Hinesville provides the nearest health care facility.

TLS. The TLS for safety is met when construction or operations would not comply with OSHA requirements or if construction or operation of the proposed action would result in disabling the exit of public safety responders.

3.4.10.2 Environmental Consequences of the No Action Alternative

The current Diamond and Brittin Elementary schools are old and do not meet Building Code and current AT/FP standards. Likewise, water infiltration from gutter, downspout, and roof leaks can lead to unhealthy mold growth, and the schools were built with various asbestos-containing materials. As such, continuation of the existing condition through the no action alternative would result in moderate adverse impacts to health and safety.

3.4.10.3 Environmental Consequences of the Preferred Action Alternative

Construction and demolition activities may expose workers to construction-related risks including toxic substances (see Section 3.4.4, Hazardous and Toxic Materials and Waste). However, the proposed activities would not introduce any unique or unusual risks. Specific practices and policies to protect human health and minimize safety risks would be coordinated prior to initiation of construction activities. Furthermore, activities would follow all applicable OSHA requirements and the project-specific accident prevention plan. Negligible adverse impacts to public health and safety are anticipated from construction and demolition activities.

There is a potential risk of finding unexploded ordnance or EOC at the Preferred Action Alternative as it is currently designated for Training and Range land use purposes (see Section 3.4.6, Land Use) and has not been officially surveyed and re-designated for Residential purposes.

During normal school operations, no unusual safety risks would be presented. Therefore, if the preferred alternative were implemented, negligible impacts to health and safety are anticipated.

3.4.10.4 Environmental Consequences of Alternative 2

The impacts under Alternative 2 would be the same as those described for the Preferred Action Alternative: negligible impacts to health and safety are anticipated.

3.4.10.5 Environmental Consequences of Alternative 3

As it is already designated as Residential by Fort Stewart, there is little risk of EOC at Alternative 3. With the exception of the potential for finding EOC, the impacts under Alternative 3 would be the same as those described for the Preferred Action Alternative: negligible impacts to health and safety are anticipated.

4.0 CUMULATIVE EFFECTS

4.1 INTRODUCTION

This chapter defines cumulative effects; defines an ROI applicable for each resource; lists past, present, and reasonably foreseeable actions relevant to cumulative effects in the analysis area; analyzes the incremental interaction that the proposed action may have with other actions; and evaluates cumulative effects potentially resulting from these interactions. The resources that would potentially receive cumulative impacts by implementing the proposed action are the same as presented in Chapter 3.

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental impacts resulting from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). CEQ guidance in *Considering Cumulative Effects Under NEPA* (CEQ 1997) affirms this requirement, stating that the scope of cumulative effects analysis must consider geographic and temporal overlaps and interactions among the proposed action and other actions that affect the same environmental resources. Cumulative impacts are thus defined and analyzed from the perspective of resource impact zones and the life cycle of effects, rather than projects, using best data available and adaptive management strategies where necessary.

Cumulative impacts are those that may be individually minor but collectively significant and can be additive or interactive upon a resource. The TLS for cumulative impacts is generally more landscape-oriented (such as contributing incrementally to acid rain, climate change, ecosystem fragmentation/loss of biodiversity, watershed function, sustainable consumption, etc.) but can also be localized in the event that synergistic effects occur or repeated impacts are compounded (such as interactions between different pesticides or continued, short-term minor stream sedimentation from concurrent development activities in a watershed). The scope of the cumulative analysis is thus unique to each project, and the scope is adapted as relevant to community, regional, state, or national resource issues.

4.2 RESOURCE ANALYSIS

To appropriately analyze cumulative effects for this proposed action, the geographic and temporal boundaries are identified and a list of past, present, and reasonably foreseeable projects that may interact upon similar resources as the proposed action and the alternatives are listed. Please note that the ROI, timeframe, and specific projects that may affect a particular resource can vary based on the resource being evaluated and are further described in Section 4.3 as necessary.

4.2.1 Region of Influence (Geographic Scope of Analysis)

As described in Table 4-1, the ROI for cumulative effects analysis is expanded as appropriate for each resource with respect to the proposed action. Please note that many boundaries described in Table 4-1 are biologically oriented because environmental resources generally cross government jurisdictions.

Table 4-1: Region of Influence for Cumulative Effects of Proposed Action

Resource	Level of Cumulative Affects Analysis
Water (surface water, groundwater, wetlands, floodplains)	Ogeechee River basin / Canoochee Watershed; Taylor’s Creek (USEPA 2012); Georgia Humanities Council 2012) , the Liberty Woods Channel Watershed and Central Cantonment Drainage Area Watershed Floridan Aquifer
Soils (especially Fill Material)	Atlantic Coastal Plain Region; Atlantic Coast Flatwoods Soil Provence (UGA 2011; NRCS 2013)
Biological	Southern Coastal Plain, Sea Island Flatwoods Ecoregion; Pine Flatwoods Habitat Assemblage (GADNR 2005, 2001)
Hazardous and Toxic Materials and Waste	Localized/compounding with respect to contamination potential Installation-wide with respect to ability to handle hazardous and toxic materials and wastes
Solid Waste	Landfill availability in Liberty County
Land Use	Installation-wide
Cultural	Regional and Installation-wide
Noise	Localized to/compounding within area around construction sites (area expected new noise impacts will travel)
Transportation	Localized to fill truck transportation routes Installation-wide (with respect to school commuter traffic that does not take advantage of walkable community accessibility)
Public Health and Safety	Cantonment-wide based on FSGA responsibility to provide services (or can extend to regional service boundary for EMS)

4.2.2 Regional Trends

Liberty County is the area nearest and affected most by cantonment-centered construction activities at FSGA. Liberty County includes the cities of Allenhurst, Fleming, Flemington, (Fort Stewart), Gum Branch, Hinesville, Midway, Riceboro, and Walthourville with most of the population (40 percent) in Hinesville (Liberty County 2011; 1999). Bryan County, which shares the Lower Canoochee watershed with Liberty County, is to the east of Liberty. Another local town affected directly or indirectly by activities at FSGA is Richmond Hill in Chatham County. Similar to other coastal Georgia cities, the population of Liberty County has generally grown faster than the State of Georgia during the past 40 years. The extreme rate of growth in Liberty County during the past two decades is largely attributed to a general population migration to the Georgia coast, the construction of I-95 and improvements to US HWY 84, and the build-up of Fort Stewart.

The Southern Coastal Plains Ecoregion encompasses approximately the southeastern quarter of the state (USEPA 2012). An analysis of land use changes from 1974 to 1998 indicates the following general trends in the Southern Coastal Plains ecoregion (GADNR 2005; UGA 1998):

- decrease in row crop/pasture (from 9.74 percent of total land cover to 8.52 percent)
- increase in urban development (from 1.52 percent of total land cover to 2.63 percent)
- increase in clearcut/sparse vegetation land cover types (from 8.54 percent of total land cover to 11.70 percent)

- decrease in forested wetlands (from 30.57 percent of total land cover to 26.11 percent)
- little apparent change in evergreen forest (from 35.28 percent of total land cover to 35.97 percent)

4.2.3 Temporal Scope of Analysis

The timeframe for cumulative effects associated with this proposed action starts in 2014 and would continue into the reasonably foreseeable future. For example, the time frame for most construction-related (compounding) cumulative effects, such as effects to surface water quality and soils, starts when construction begins and would end when the structure is complete and landscaping is in place—about a 14-month timeframe. Some effects -- such as vegetation disturbance, floodplain alteration, and land use -- would be ongoing because the school will be a permanent and operational structure.

4.2.4 Past, Present, and Reasonably Foreseeable Actions

Another factor influencing the scope of cumulative effects analysis involves identifying other potentially compounding or synergistic actions. Beyond determining that the geographic scope and timeframe for the actions interrelate with the proposed action, the analysis employs the measure of “reasonably foreseeable” to include or exclude other actions. For the purposes of this analysis, public documents prepared by Federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions included notices of intent for EISs and EAs, management plans, land use plans, and other NEPA studies. Excluded past, present, and reasonably foreseeable projects include those projects in an area at a sufficient distance that would not cause an incremental impact to similar resources.

Numerous other activities exist in the ROI. The activities listed here are by no means all-inclusive, but they serve to highlight some major influences in the region and to provide perspective on the contribution to any impacts generated by the proposed action. These projects are listed in Table 4-2 along with the status of the project.

Table 4-2 Fort Stewart Past, Present, and Reasonably Foreseeable Actions

Action	Project Status
Recent Past Actions	
Hero Road Extension Through A-20	Complete
New CDC at Austin Road	Complete
New Army and Air Force Exchange Service (AAFES) shopping center (Harmon Avenue Shoppette)	Complete
Range Control Operations Facility	Complete
Modular Child Development Center off Davis Avenue	Complete
Marne View Housing Community (94 Officer Homes)	Complete
Chip and Haul Initiative	Ongoing
Infantry Brigade Combat Team (IBCT) Complex	Complete
Implement the Army Campaign Plan Decision at Fort Stewart	Ongoing
Training Range and Garrison Support Facilities Construction and Operation at Fort Stewart, Georgia (construction of 12 Ranges and 2 Garrison Support Facilities)	Construction Pending by Individual Project

Table 4-2 Fort Stewart Past, Present, and Reasonably Foreseeable Actions

Action	Project Status
24 hour Child Development Center of Coe Avenue	Complete
Present and Reasonably Foreseeable Future Actions	
Construction of Elementary School at Austin Road	Ongoing
Winn Hospital Additions-Phase I and Phase II	Ongoing
New Liberty County Middle School on Fort Stewart	Pending/Future
Privatization of Army Lodging Initiative (PAL)	Ongoing
B-5 Cantonment Area Expansion	Ongoing
Taylor's Creek Golf Course Maintenance Facility, including Wash Rack	Ongoing
Construction, Operation, and Maintenance of a Military Working Dog Complex at Fort Stewart, Georgia	Ongoing
Remagen Landing Zone Improvements	Pending/Future

Sources: FSGA 2012d; FSGA 2010; FSGA 2012e; FSGA 2012f

4.3 CUMULATIVE EFFECTS SUMMARY

The cumulative effects discussion is limited to those resources for which the proposed action may have any affect, even if the potential effect is expected to be negligible or minor. The proposed action has been determined to have no direct, indirect, or cumulative effects on air quality, utilities (power, communications, water use, wastewater/sewage), recreation and visual resources, provision for the handicapped, socioeconomics and environmental justice, protection of children, and airspace management at any of the alternative site locations. Thus, these resources have been eliminated from further analysis for cumulative impacts. Justification for the elimination of these resources is presented in Appendix A. Through the in-depth analysis discussed in Section 3.0, the proposed action was found to have no expected direct or indirect effects to wetlands, special status species, and hazardous materials and hazardous waste through any of the action alternatives and is likewise not expected to contribute to any additional cumulative effects in each resource's respective ROI. Additionally, transportation, cultural resources, and solid waste were found to have potential impacts, but through FSGA policy or other required mitigation would contribute no direct, indirect, or additional cumulative (incremental or compounding) effects in the applicable ROI. As such, these resources were not subsequently carried forward for full cumulative impacts analysis. For example:

- **Transportation.** Any increased adverse impact from continued infill development in the cantonment area and outside the Installation may be offset by positive traffic alleviation through incorporating transportation needs into these upgrades and site designs and through the policy to continually provide pedestrian-friendly community options to vehicular travel.
- **Cultural Resources.** Although the Preferred Action Alternative and Alternative 3 would have no impacts to cultural resources, Alternative 2 may have moderate impacts to these resources. Because of the site-specific nature of potential effects of Alternative 2 to cultural resources, it is likely that if these effects cannot be mitigated to a negligible effect, this alternative will be dismissed from further consideration. Thus, there is not likely to be any additional direct, indirect, or cumulative effects to cultural resources through implementing the proposed action.
- **Solid Waste.** Because of demolition and excavation activities, the proposed action may cause short-term, minor adverse impacts to solid waste through the action alternatives. However,

impacts to solid waste management from all Fort Stewart projects are required to be mitigated to a negligible amount through Fort Stewart solid waste and recycling policies (Appendix B), and thus none of the projects in the ROI are expected to cause negative impacts to solid waste. After the schools are operational, recycling rates are expected to increase and a net positive impact to solid waste may be observed because of specific design accommodations.

The only resources thus carried forward for in-depth cumulative impact analysis are water (surface water and floodplains), soils, vegetation and wildlife, and land use, and these resources are only analyzed with respect to the proposed action and action alternatives.

The No Action Alternative is not analyzed further with respect to the potential cumulative effects of continuing to operate the two existing schools as status quo. The only direct or indirect impacts associated with the No Action Alternative would be to hazardous materials and hazardous waste because of continued ACM management, and public health and safety and transportation because of poor traffic flow at rush hour (Section 3 and Table 6-1). ACM management at the existing schools does not contribute to any cumulative impacts in the ROI and thus is eliminated from cumulative effects analysis. When incrementally considering impacts of past, present, and future actions, it is determined there could be minor cumulative impacts to transportation if adequate flow and stacking routes are not established at the school and population and traffic pressures continue to rise across the cantonment area.

4.3.1 Water Resources

4.3.1.1 Affected Environment

In general, the incremental and compounded effects of increased regional development upon water resources can include

- increased impervious surface causing increased stormwater volume and pollutant loading;
- increased floodplain development causing increased storm damage, decreased ability to attenuate the effects of storms, and general nutrient disconnection between rivers and uplands affecting overall stream ecological health;
- increased aquifer extraction and sewage management; and
- increased stream sedimentation from forest conversion.

The Ogeechee River basin and Canoochee Watershed are experiencing pressure from the cumulative impacts associated with increasing population as well as forestry and agriculture practices (GA EPD 2001). The Coastal Georgia Regional Water Planning area includes nine southeast Georgia Counties, including Bryan, Bulloch, Chatham, Effingham, Glynn, Liberty, Long, and McIntosh (GAEPD CGC 2011). The population of this region is expected to double by 2050 to 1.3 million residents. For the Coastal Region, there are 52 impaired stream reaches (total impaired length of 582 miles) in the Coastal Region, and 36 of the impaired stream reaches have established TMDLs. The majority of impairments are due to low dissolved oxygen and fecal coliform.

All development in the cantonment area has the potential to contribute to adverse cumulative impacts related to water resources in the Liberty Woods Channel Watershed and Central Cantonment Drainage Area Watershed. Although both smaller watersheds are within the cantonment area on-Post, they feed the larger reaches of the greater Canoochee and Ogeechee watersheds downstream.

Most of unincorporated Liberty County east of Interstate 95 is within the 100-year floodplain zone, and smaller floodplain areas are found throughout the County (Liberty County 1999). Flemington, Midway, Riceboro, and Hinesville contain a significant amount of floodplain area within their municipal boundaries. There are no restrictions to floodplain development in Liberty County although participation in the National Flood Insurance Program recommends development be limited in floodplain areas. Some development is occurring in floodplains in Liberty County and its municipalities, and the increasing floodplain development without proper restrictions and limitations is expected to have a negative economic impact in the event of major flooding.

4.3.1.2 Environmental Consequences

Cantonment-area watershed impacts include stormwater discharge into local surface water and aquatic ecosystems, increased impervious surface from roadways and buildings, and construction activities in the floodplain. Stormwater volume will increase as additional impervious areas are added to the Fort Stewart footprint (the school building, access roads, sidewalks, parking lots, and portions of the playground/sports facilities, etc.). Additionally, floodplains may lose their ability to effectively disperse stormwater as they are filled and constructed upon. The proposed construction of roadways and buildings, when combined with other earth-moving activities in the main cantonment area, has the potential to further increase turbidity and degrade surface water quality. When added to population growth, forest conversion, agricultural practices, and other reasonably foreseeable projects in the greater Ogeechee/Canoochee watershed, compounded negligible impacts to surface water resources can translate to continued failure for streams to buffer and recover from water quality impacts and potential failure to meet water quality standards throughout the watershed.

Surface Water. All current or reasonably foreseeable projects in the Liberty Woods Channel Watershed and Central Cantonment Drainage Area Watershed (Table 4-1), will occur as cantonment infill projects and are in areas that, at least to some extent, have been previously disturbed or constructed upon. Likewise, any additional construction activities in the ROI that may cause temporary surface water impacts are not likely to occur at the same time as the implementation of the proposed action. Additionally, the geographically and temporally isolated, site-specific nature of construction activities means that any impacts that do occur will be local to the site of impact and are not expected to migrate and mingle with any past, present, and future actions in the region.

Surface water may experience minor cumulative impacts through the proposed action and action alternatives. Construction and operation actions are all expected to be mitigated to the point that effects on these resources will be minor to negligible. There is minor potential for a cumulative increase in stormwater and sedimentation impacts from the rise in cantonment construction activity to accommodate the growing Fort Stewart population as well as continued population increase in the Liberty County area. These impacts can remain cumulatively minor if local, state, and Federal regulations are met and LID BMPs are applied for all new projects. Impacts to stormwater may be reduced if all new projects prioritize reduction of impervious surface and LID BMPs in design plans.

Floodplains. No projects that diminish floodplain capacity are planned or have been implemented in the Liberty Woods Channel Watershed and Central Cantonment Drainage Area Watershed. Any future projects with no practicable alternative to floodplain construction will mitigate and thereby reduce to a negligible level all adverse impacts to floodplains. Therefore, no additional, cumulative impacts to the floodplain's ability to locally mitigate storm events are expected.

Overall, when incrementally considering impacts of past, present, and future actions, it is determined there would be minor adverse cumulative impacts to water resources from the implementation of the proposed action at FSGA through any of the action alternatives.

4.3.2 Soils

Within Liberty County, soils have limited value for agricultural uses and moderate value for forestry uses (Liberty County 1999). Land modifications or restrictions for development activity are generally required to build on most of the soils in the region. Because only a small portion of Liberty County contains soils that are well suited for urban uses, some development is occurring in areas with soils that are not well-drained or are susceptible to erosion, leading to on-site flooding and poor drainage, failing septic systems, and other related problems. As the County continues to experience growth, soils not suitable for urban uses will be increasingly used for development.

Unfortunately, quantitative data regarding local availability of borrow pit resources does not exist at this time; thus, the cumulative effect of borrow pit operations and of amending soils at construction sites across the Atlantic Coast Flatwoods soil province and Liberty County is largely unknown.

As discussed in Section 4.3.1.1, impacts from soil disturbances from all Fort Stewart projects are expected to be mitigated to a negligible amount through BMPs and Fort Stewart policies (Appendix C). Additionally, construction-related, soil-disturbing activities associated with this and all projects in the ROI are site-specific and temporary in nature. Therefore, when incrementally considering impacts of past, present, and future actions, it is determined there would be negligible adverse cumulative impacts to or from soil resources from the implementation of the proposed action at FSGA through any of the action alternatives.

4.3.3 Vegetation and Wildlife

4.3.3.1 Affected Environment

FSGA contains some of the best examples of natural habitats in Georgia's Southern Coastal Plain, including extensive longleaf pine-dominated uplands, isolated depression wetlands, wet pine flatwoods, and nonalluvial river swamp (GADNR 2001). The Pine Flatwoods habitat assemblage, common at FSGA and potentially affected by the proposed action, is a recognized high value ecosystem within Georgia's Southern Coastal Plain ecoregion. Surrounding communities are, to some degree, incrementally experiencing a trend toward the increase of forest conversion to meet the demands of rising population and associated infrastructure requirements.

Under the proposed action, each of the two new schools would ideally occupy approximately 28 acres, and each alternative would undergo some degree of timber removal, clearing, grubbing, and/or grading. Additionally, both the new Diamond school location in the Preferred Action Alternative and Alternative 2 are in Training Area A-20, which is currently functioning as a contiguous 230-acre parcel inset into the northern boundaries of the cantonment area.

4.3.3.2 Environmental Consequences

Construction of the training range and garrison support facilities would impact approximately 1,700 acres of forest, the IBCF would impact approximately 400 acres of longleaf and/or loblolly pine forest, and construction of the MWD Complex would remove 10 to 14 acres of merchantable timber (Fort Stewart 2011; 2012g; 2012h). The majority of the remaining current or reasonably foreseeable projects in the

ROI, as listed in Table 4-1, will occur as cantonment infill projects and are in areas that, at least to some extent, have been previously disturbed or constructed.

Removing up to 28 acres of Pine Flatwoods ecosystem and other natural vegetation on Fort Stewart would have corresponding impacts to resident wildlife because developing open land permanently removes habitat and displaces resident wildlife. However, land use planning would ensure the preservation of natural land and control growth on the Installation. Likewise, A-20 is already surrounded by cantonment on three sides and bordered to the north by GA HWY 144; therefore, developing A-20 is likely to prevent the need to further sprawl the cantonment area and reduce fragmentation of forestland across the Installation. As such, when incrementally considering impacts of past, present, and future actions, it was determined there would be negligible cumulative impacts to vegetation and wildlife from the implementation of the proposed action.

4.3.4 Land Use

To reduce impacts from the proposed action to Land Use and Health and Safety and thus find negligible impacts associated with the proposed action, Fort Stewart must complete the reclassification of the current land use category assigned to the proposed action alternative areas. Currently, the 28 acres associated with both the Preferred Action Alternative and Alternative 2 are in a 230-acre parcel designated as A-20 Training and Ranges land. In addition, approximately 1,072 acres of Fort Stewart Training land are proposed for reclassification to cantonment as a part of the IBCT project.

Although the land use change associated with the proposed action alternatives would result in the loss of 28 acres of training lands, this area is not currently actively used for training purposes. The 230 acres associated with Training Area A-20 represent approximately 0.1 percent of available training lands at Fort Stewart, and only 28 acres of this parcel are proposed for redesignation. Thus, although the land use change associated with the IBCT complex may impact training opportunities at Fort Stewart, zoning a portion of A-20 to Housing or Community Services would not cumulatively affect the ability of training activities or training readiness at Fort Stewart. Overall, when incrementally considering impacts of past, present, and future actions, it was determined there would be negligible cumulative impacts to land use from the implementation of the proposed action.

5.0 OTHER NEPA CONSIDERATIONS

5.1 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Implementation of the proposed action would require removal of standing timber, clearing, grubbing, grading, improving drainage, and establishing vegetative ground cover on 28 acres of land at one site and 11 acres at the second school site and subsequent displacement of wildlife. Although vegetation would be lost, no significant adverse effects are anticipated because of the abundance of suitable vegetation immediately adjacent to the project area. The Fort Stewart RPMP recommends the use of native species in landscape design, and some in situ vegetation could be left on site to reduce the cost of landscape plantings (FSGA 2009).

5.2 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA requires analyzing the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Choosing one option may reduce future flexibility in pursuing other options, or committing a resource to a certain use may eliminate the possibility for other uses of that resource.

Implementation of the proposed action would result in both short- and long-term environmental effects. However, the proposed action is not expected to result in impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to human safety, or the general welfare of the public.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Primary irreversible effects result from permanent use of a nonrenewable resource (minerals or energy). Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the proposed action or consumption of renewable resources that are not permanently lost. Secondary impacts could result from environmental accidents. Natural resources include minerals, energy, land, water, forestry, and biota. Nonrenewable resources are those resources that cannot be replenished by natural means, including oil, natural gas, and iron ore. Renewable natural resources are those resources that can be replenished by natural means, including water, lumber, and soil.

The preferred alternative would involve irretrievable commitments of nonrenewable and renewable resources and could involve 1) general industrial resources, such as capital, labor, and fuels and 2) project-specific resources such as forests and other land uses within the project footprint. The resources necessary would not be retrievable if any of the proposed action were implemented. However, the total amount of resources required for this action is relatively small when compared to the resources available in the region.

EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, set goals for Federal agencies in energy efficiency, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, and water conservation. EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, expands on the requirements set forth in EO 13423 and requires that all new construction comply with the *Guiding Principles for Federal Leadership in High*

Performance and Sustainable Buildings. This includes employing design and construction strategies that increase energy efficiency, eliminate solid waste, and reduce stormwater runoff. One strategy for reducing stormwater runoff is implementing LID technologies. The goal of LID technologies is to maintain or restore the natural hydrologic functions of a site and reduce the runoff rate, filter out pollutants, and facilitate the infiltration of water into the ground. Following improvement-related activities at the project area, military training operations would continue to use nonrenewable resources such as fuel at similar present levels. The energy required for these improvements is not in short supply. This energy use would not have an adverse impact on the continued availability of these resources and is not anticipated to be excessive in terms of region-wide usage. Furthermore, compliance with the requirements set forth in EOs 13423 and 13514 would minimize any irreversible or irretrievable effects to multiple non-renewable and renewable resources.

In terms of greenhouse gases and global climate change, EO 13423 sets as a goal for all Federal agencies the improvement of energy efficiency and the "reduction of greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline to the agency's energy use in fiscal year 2003." The U.S. Army Energy Strategy for Installations (U.S. Army Energy Strategy for Installations, 2005) contains strategies to reduce energy waste and improve efficiency. The proposed action does not represent a net incremental addition to the global climate change problem. Although the proposed action may contribute to more greenhouse gases being released into the earth's atmosphere by removing trees (because trees absorb carbon dioxide), the localized construction and demolition impacts of the new elementary schools and the old elementary schools, respectively, would not result in a change to greenhouse gas conditions over baseline conditions. Furthermore, the Army's continued compliance with EO 13423 would minimize any irreversible effects from greenhouse gas emissions.

6.0 CONCLUSIONS

This EA analyzed the potential impacts of the Army replacing the existing Diamond and Brittin Elementary Schools with two new elementary school campuses, as well as the demolition of the existing Diamond and Brittin schools at Fort Stewart, Georgia. DoD Regulation 4500.36, *Management, Acquisition, and Use of Motor Vehicles*, states “the walking distance for grades 6 and below shall not normally exceed one mile from their primary residence to the school or designated bus stop.” Therefore, it is ideal that the schools be located within one mile to housing areas as this enables all students to walk to school, decreases busing of students, and develops a sense of community for the Soldiers and Families living in these areas. Likewise, the Preferred Action Alternative serves adjoining neighborhoods and the schools are sized in an effective and balanced manner so that all students attend a school located within their community. Alternative 2 is in the floodplain, and it is farther removed from the neighborhoods, which would result in the need to bus students. Alternative 3 is out of the floodplain and represents an area large enough to accommodate the school, but, as it is located on the less populated western portion of the cantonment area, is not ideally sited to provide logical neighborhood service and continuity to Military Families. Alternative 3 would also have an RCI land-exchange connected to it, which would likely involve a similar-sized or larger parcel in the floodplain as no other suitable land is available for the exchange. No other remaining, adequately-sized open tracts of land in the cantonment area are within proximity to Military Family Housing and are outside the 100-year floodplain. As such, the Preferred Action Alternative is most suited to the long-term configuration of Housing and School facilities at Fort Stewart and there is no practicable alternative to building in a floodplain.

Because it is likely that land use restrictions will persist for the Hero Road MMR that will prohibit the encroachment of an elementary school within the site, the second elementary school site (new Brittin location) in the Preferred Action Alternative must completely avoid the site as recommended in Figure 3-4. The proposed second school site would be reduced to 24.5 acres (rather than the ideal 28; see Section 2.3), impacted forested area would be reduced to less than 3 acres (rather than 11; see Section 3.4.3.3), and the wetland area within the MMR site (see Section 3.4.1.3) would be avoided. No further impacts are expected within the portion of the new boundary that is expanded into the existing Diamond footprint.

Implementation of the Preferred Action Alternative will not have a significant environmental impact if: a) land use is reclassified through AR-350-19, b) certification with supporting technical data is provided by a registered, State of Georgia-certified Professional Engineer demonstrating floodplain encroachment will not result in any increase in flood elevations upstream or downstream, and c) the second elementary school is designed to avoid the MMR site (Figure 3-4). Following an analysis and comparison of impacts of the proposed action and no action alternatives, it was determined that none of the action alternatives will result in significant impacts, and the preparation of a Finding of No Significant Impact and Finding of No Practicable Alternative are appropriate. The Army will, therefore, proceed with the preparation of both for this action.

Table 6-1 provides a summary of anticipated environmental effects associated with this EA. Impacts are assumed in the table to be “negative” unless listed as positive.

Table 6-1. Summary of Anticipated Environmental Effects

Type of Impact	No Action	Preferred Action Alternative	Alternative 2	Alternative 3
Water Resources (Surface Water, Wetlands, Floodplains)				
Direct / Indirect	No Impact	Minor/Minor	Minor/Minor	Minor/Minor
Cumulative¹	No Impact	Minor	Minor	Minor
Soils				
Direct / Indirect	No Impact	Minor/Minor	Minor/Minor	No Impact
Cumulative¹	No Impact	Negligible	Negligible	No Impact
Biological Resources				
Direct / Indirect	No Impact	Minor/Minor	Minor/Minor	Minor/Minor
Cumulative¹	No Impact	Negligible	Negligible	Negligible
Hazardous and Toxic Materials and Waste				
Direct / Indirect	Moderate	Negligible	Negligible	Negligible
Cumulative¹	No Impact	No Impact	No Impact	No Impact
Solid Waste				
Direct / Indirect	No Impact	Minor/Minor Positive	Minor/ Minor Positive	Minor/ Minor Positive
Cumulative¹	No Impact	Negligible	Negligible	Negligible
Land Use				
Direct / Indirect	No Impact	Negligible	Negligible	No Impact
Cumulative¹	No Impact	Negligible	Negligible	No Impact
Cultural Resources				
Direct / Indirect	No Impact	No Impact	Moderate/Moderate	No Impact
Cumulative¹	No Impact	No Impact	Negligible	No Impact
Noise				
Direct / Indirect	No Impact	Negligible	Negligible	Negligible
Cumulative¹	No Impact	No Impact	No Impact	No Impact
Transportation				
Direct / Indirect	Moderate	Minor Positive	Negligible/ Minor	Minor
Cumulative¹	Minor	Minor Positive	Minor	Minor
Public Health and Safety				
Direct / Indirect	Moderate	Negligible	Negligible	Negligible
Cumulative¹	No Impact	No Impact	No Impact	No Impact

Notes: ¹ Cumulative impacts reflect the incremental impact the proposed action may have when added to other past, present, and reasonably foreseeable actions. As such, the severity of potential direct/indirect impacts for an individual resource is not indicative of the severity of potential cumulative impact to that same resource

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**APPENDIX A
RESOURCES CONSIDERED BUT NOT ANALYZED**

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As discussed in Section 3.0, the seven resources that were considered but not analyzed include: air quality, utilities (power, communications, water use, wastewater/sewage); recreation and visual resources, provision for the handicapped; socioeconomic/environmental justice, protection of children, and airspace management. The basis for excluding these resources is described below.

Air Quality. Air quality in a given location is described by the concentration of various pollutants in the atmosphere. The significance of the pollutant concentration is determined by comparing it to the Federal and State ambient air quality standards. The Clean Air Act (CAA) and its subsequent amendments established the National Ambient Air Quality Standards (NAAQS) for six “criteria” pollutants: 1) ozone, 2) carbon monoxide, 3) nitrogen dioxide, 4) sulfur dioxide, 5) particulate matter less than 10 and 2.5 microns, and 6) lead. These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare with a reasonable margin of safety. Fort Stewart is in a regional air quality district that is in attainment for all criteria pollutants.

NAAQS standards would be maintained throughout construction, operation, and maintenance activities associated with the proposed action alternatives. For the proposed action, only 28 acres of land would be disturbed during land clearing activities plus another 11 to extend the existing Diamond location for the second new school, which could result in the temporary production of large-particulate matter (PM10) in the form of dust. Even though there would be minor short-term fugitive dust impacts from construction at both the elementary school site and the borrow pit, conformity with PM10 NAAQS standards would be maintained and local air quality would not be adversely impacted. Likewise, increased emissions from fill material transport vehicles as they complete the series of round-trips from the borrow pit site to the construction site and the emissions expected from construction equipment would be temporary and negligible as compared to the cumulative exhaust from regional traffic. Finally, following construction, for all but the Preferred Action Alternative, new bus routes would be required to service student transportation at regular routes throughout the Installation. However, siting the school among housing and child services will minimize the transportation requirements, increase pedestrian options, and thereby promote the conservation of fuel and air quality resources.

In addition, Fort Stewart is actively engaged in monitoring and reducing on-Post Greenhouse Gas (GHG) Emissions. While the school will include a computer lab and air conditioning systems, the technology procured to equip these needs will be new and low- to no-GHG impact. A GHG Study is currently underway at Fort Stewart, and its results are not expected to be impacted by the construction or future daily operations of the elementary school.

The CAA designated the Prevention of Significant Deterioration program whereby Congress established land classification schemes for those areas of the country (like Fort Stewart) with air quality better than the NAAQS. Class I allows very little deterioration of air quality; Class II allows moderate deterioration; and Class III allows more deterioration. In all cases, though, the pollution concentrations shall not violate any of the NAAQS. Mandatory Class I areas include: 1) international parks and 2) national wilderness areas and national memorial parks in excess of 5,000 acres, and national parks in excess of 6,000 acres existing as of August 7, 1977. On November 30, 1979, the *Federal Register* announced that 48 mandatory Class I national park areas (the Great Smoky Mountains National Park in Tennessee is the nearest Class I area to Fort Stewart) were designated for management by the National Park System. The USFWS was identified as managing 21 mandatory Class I wilderness areas (Wolf Island National Wildlife Refuge and Okefenokee National Wildlife Refuge are 30 and 80 miles from Fort Stewart, respectively). In Class I areas, visibility impairment is defined as a reduction in visual range and atmospheric discoloration.

Because aircraft operations would not change under the proposed action, no changes to long-term pollutant emission rates would occur, and this resource is not carried forward for further analysis.

Utilities. Reconstructing the existing Diamond Elementary School at a new location on Fort Stewart property and reconstructing the old Brittin Elementary School at the existing Diamond site would not affect utilities (power, communication, water use, wastewater/sewage) availability or service. Since the existing schools are being replaced/demolished, there should be no new demands on the current utility delivery system. Utility resource consumption is actually intended to decrease through the implementation of low-impact, sustainable technologies. Any minor increases in utility use would be due to projected student population increases, but any increases would be offset by the installation of LEED technologies in comparison to the older technology that is currently operational at the existing Diamond and Brittin Elementary Schools. Furthermore, any unexpected increases that may be experienced would not increase demand to such an extent that cannot be provided through existing suppliers and infrastructure.

All utilities would be supplied from on-Post utility networks. Existing utilities are available to all of the alternative locations, although utility lines to support the Preferred Action Alternative and Alternative 2 would have to be extended 500' to 3700' beyond the elementary school footprint. This construction is not expected to disrupt the continuity of service as provided to other on-Post offices and activities. Fort Stewart would continue to be responsible for supplying, maintaining, and paying for all requisite utilities at the school.

In accordance with DoDEA specifications (DoDEA 2012b; DoDEA 2010); EO 13514 *Federal Leadership in Environmental, Energy, and Economic Performance* (2009), EO 13423 *Strengthening Federal Environmental, Energy, and Transportation Management* (2007); The Energy Independence & Security Act of 2007; and *the Leadership in Energy and Environmental Design (LEED) Implementation Guide* (USACE 2008a), Fort Stewart will employ efficient, low-energy and low-water use appliances, fixtures, and practices throughout the new facilities as well as consider alternative energy sources as available and applicable. The schools will be built and maintained to LEED-Silver specifications. Heating and air conditioning would be provided by a hybrid geothermal system. A “dashboard” will be constructed at each new school to illustrate energy demand as a sustainability instructional tool.

The Army ensures implementation of LEED practices through the Bid-Design proposal process by requiring contractors to list which LEED measures will be implemented in their proposals. These measures are itemized in the bid, and the proposals are awarded points for incorporation of the LEED features – the proposal with the highest number of points wins the bid. The latest, mandatory set of energy conservation tools and recommendations will be incorporated into the final planning and design of the proposed action (DoD 2008).

Energy: All cantonment areas use electricity supplied from Canoochee Electric Membership Corporation (EMC) as the main power source with diesel-powered generators used for emergency situations.

Water Use/Wastewater Generation: The Upper Floridian aquifer provides most of the fresh water for cities and communities throughout southeastern Georgia. Water service to the main cantonment area is provided from six wells with a combined maximum rated capacity of 6.84 million gallons per day (mgd). Fort Stewart’s permitted drinking water capacity is 4.9 mgd with a current use of 2.46 mgd. The Georgia Department of Natural Resources (GA DNR) Environmental Protection Division (EPD) has identified

Fort Stewart as one of the top 10 water users in the southeastern region of Georgia (Army and USACE 2008).

Fort Stewart operates an Industrial Wastewater Treatment Plant that treats a monthly average of 0.50 mgd with a monthly maximum of 1.50 mgd of wastewater in accordance with a National Pollutant Discharge Elimination System (NPDES) permit (issued by GA DNR EPD). It currently treats 0.29 mgd and removes all regulated constituents to below permit limits (Army and USACE 2008). The Installation is tied into and uses the Hinesville Wastewater Treatment Plant. By agreement, Fort Stewart can generate a maximum of 3.79 mgd of wastewater. Fort Stewart's average daily flow into the wastewater treatment plant for Calendar Year 2009 was 2.17 mgd (Norby 2009). Water and wastewater services for the schools' operations would be supplied by Fort Stewart, which is ultimately obtained from and returned to the Ogeechee River watershed.

At the old Diamond/new Brittin location, the construction contractor should be able to use the existing wastewater infrastructure. If the new Diamond is built according to the Preferred Action Alternative or Alternative 2, there is currently a wastewater force main that runs through the area, but there are no existing wastewater lines that can be tied into easily. For this force main to be used, the wastewater main may need to be extended and/or modified to accommodate the project. If this wastewater main is to be modified/extended and/or a lift station is installed, it is required that the contractor submit applications for GA EPD approval through the FSGA DPW Wastewater program manager. The contractor must also submit three copies of the sewer main and/or lift station drawings and specifications to the DPW Wastewater Program. It is required that all these drawings and specifications be stamped by a Georgia-certified P.E. and sent to the DPW Environmental Division Prevention and Compliance Branch 100 days prior to construction of the sewer main and/or lift station. If installing a lift station is determined to be necessary, along with a permit from GA EPD, an alarm and fence surrounding the perimeter of the lift station are required to include a Supervisory Control and Data Acquisition System compatible with the current system used on the Installation (thermostat-controlled panel heaters will need to be included on transmitter units). Also, an emergency electric generator is required for all wastewater lift stations. The standby generator must be commissioned in accordance with applicable OSHA, EPA, NEC, and NFPA 110 Section 16620 Sanitary Sewer Pump Station Emergency Pump Station Standards. If diesel fuel generators are used (rather than natural gas), the fuel storage tanks must be aboveground.

As the schools are being rebuilt, it is expected that water use will occur at approximately the same rate if not less than is occurring at the two existing elementary school sites. Regardless, under all alternatives, providing water use to supply 650-700 students, staff, operations, and landscaping for 8-hour days, 9 months a year would constitute a negligible increase as compared to water resources consumed across the Installation and would not increase to an extent that would be considered significant or outside of the delivery capability of existing infrastructure. For schools with a cafeteria only (no gym or showers), EPA estimates that wastewater generation is 15 gallons per student per day, i.e. 10,500 gallons a day for a school with 700 students (EPA 2002). Additionally, water use would be reduced through implementation of the requirements outlined in the Georgia Water Stewardship Act of 2010 and the installation of LID technologies, such as low-flow fixtures (low flow toilets [max 1.28 gpf], urinals [max 0.5 gpf], laboratory faucets [max 1.5 gpm], and kitchen faucets [max 2 gpm], and implementation of conservation practices, such as appropriate regional landscaping. The LID measures and current landscaping guidelines will be part of the final planning and design for the proposed action.

In general, the provision of resource-consumptive utility services would not be affected by replacing the old Diamond or old Brittin Elementary Schools with two new schools. Due to the installation of LEED and LID technologies, utility use is actually expected to decrease dramatically as compared to the existing school's demand. Therefore, no further analysis of utility resources is carried forward in this EA.

Recreation & Visual Resources. Visual resources include the natural and man-made physical features that give a particular landscape its aesthetic character and value. Viewer perceptions are formed through the impression of scenic quality in elements such as landform, vegetation, water, color, adjacent scenery, and man-made (cultural) modifications. Visibility and visual sensitivity evaluations are based on public viewing opportunities and concern for the potential for changes to the landscape. Although the loss of approximately 28 acres of forested lands plus an additional 11 for the second school location would occur under the proposed action, these changes would be minor because the tree removal would be consistent with adjacent housing-developed viewsheds. In addition, the schools will be constructed with LID strategies and will to include landscaping and outdoor classroom elements, which are intended to help blend the schools' footprints into the surrounding areas. Therefore, impacts would be negligible because viewsheds would remain consistent with the existing environment.

Recreation on Fort Stewart primarily includes hunting and fishing activities. Fort Stewart has been open to public hunting and fishing since 1959 and is the second largest single public hunting and fishing entity in the State. All hunters on the Installation must possess a hunter safety course certificate, a valid Georgia hunting license, and the appropriate Fort Stewart hunting permit. White-tailed deer, feral hog, and wild turkey are prominent game species on Fort Stewart, and largemouth bass and redbreast sunfish are popular species targeted by anglers. Additional outdoor recreation activities include wildlife observation, hiking, camping, shooting sports (including archery, skeet, and paintball), volleyball, horseshoes, and playgrounds (located in the Holbrook Pond Recreational Area). Existing fishing facilities include Installation ponds and waterways. Access to the Canoochee and Ogeechee rivers is provided by a limited number of landing sites.

The recreational resources at Fort Stewart would not be impacted by the proposed action because, due to the proximity of the alternative locations to housing, troop, and industrial areas (see Section 3.4.6, Land Use) the proposed action alternatives are not located in areas of regular recreational activity (FSGA 2009).

Provision for the Handicapped. The Americans with Disabilities Act guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, State and local government services, and telecommunications. Construction of the 2 elementary schools would conform with and enforce this Act and any other Federal and State disability regulations; thus this provision has been eliminated from further analysis in this EA.

Socioeconomics and Environmental Justice. Socioeconomics focuses on the general features of the local economy that could be affected by the proposed action alternatives. Completion of this construction project (including demolition and fill provision and transport), initial landscaping, and some ongoing school maintenance would be accommodated by a private contractor. Various ongoing facility and road maintenance activities would be provided by Fort Stewart Logistics Division's existing workforce. Following construction, it is intended that the new school would be staffed with current Diamond Elementary School employees and teachers. Conventional or green-designated construction materials and operations products (paper, landscaping products, parks and recreation products, etc.) would need to meet

the requirements of EO 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*. Any required materials would likely be purchased locally, including fill material and its transport, resulting in a temporary, but minor increase to the local economy. Few to no new jobs would be created, regional population demographics are not expected to change, and the small scale of the proposed construction expenditures would not result in noticeable regional direct or indirect effects to socioeconomic indices.

Implementation of the proposed action would comply fully with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. This policy outlines appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects to the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Because the proposed locations are entirely within Installation boundaries and no low-income or minority populations or their operations are adjacent to or in the vicinity of the proposed action alternatives, environmental justice has been eliminated from further analysis.

Protection of Children. Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires each Federal agency to identify and assess environmental health and safety risks that may disproportionately affect children and ensure that the agency address these risks. Environmental health and safety risks are those that are attributable to products or substances a child is likely to come into contact with or to ingest. As was mentioned for hazardous materials (Section 3.4.4), any substances stored or used onsite that may pose a risk will be secured and access tightly controlled. In addition, construction activities would ensure that health and safety risks would be negligible or non-existent.

Airspace Management. This resource relates to the structure and use of the airspace in which aircraft training is conducted. Due to the proximity to cantonment residential and community areas, flight operations are already restricted at the proposed action alternatives locations. Therefore, no impacts are anticipated to airspace operations or management from the implementation of any alternative.

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**APPENDIX B
RECYCLING POLICIES**

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DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
954 WILLIAM H. WILSON AVENUE
FORT STEWART, GEORGIA 31314

REPLY TO
ATTENTION OF

FEB 12 2007

IMSE-STW-IC

MEMORANDUM FOR All Personnel, US Army Installation, Fort Stewart / Hunter Army Airfield, Georgia

SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

1. REFERENCES.

- a. Executive Order 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition, 14 September 1998.
- b. Office of the Under Secretary of Defense, Acquisition and Technology, DoD Pollution Prevention Measure of Merit, 13 May 1998.
- c. Assistant Chief of Staff, Installation Management, Memorandum, Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, 6 Feb 06.
- d. Fort Stewart /Hunter Army Airfield, Directorate of Public Works (DPW), Environmental Division Recycling Information Sheet, 31 Mar 06.

2. PURPOSE. To provide guidance to all civilian (and/or military) personnel assigned to and/or under the operational control of the Installation Management Command, tenant organizations, contractors and personnel living and/or working at Fort Stewart / Hunter Army Airfield on the Command Recycling Program.

3. APPLICABILITY. These procedures are applicable to all civilian (and/or military) personnel assigned to and/or under the operational control of the Installation Management Command, tenant organizations, contractors and personnel living and/or working at Fort Stewart / Hunter Army Airfield.

4. POLICY. Executive Order 13101 and this policy are the guidelines for personnel on this installation when purchasing supplies and materials for all operations and contracts. Only designated products meeting the requirements of Executive Order 13101 will be purchased. These product categories include paper, construction products, landscaping products, paper products, non-paper office products, parks and recreation products, transportation and alternative fuel vehicles, and miscellaneous items. All office paper purchased must contain no less than 20 percent recycle content. However, 50 percent recycle materials is encouraged. Contact the DPW, Environmental Waste Management Section for a full list of required items or refer to www.epa.gov/cpg/products.html.

5. PROCEDURES.

- a. All military units, installation activities, tenant organizations and contractors will:

- (1) Establish a Recycling Program Standard Operating Procedure tailored to their organization for the management of recyclable materials. (Recycling programs will be randomly assessed by DPW Environmental Division for compliance).

- (2) Appoint a Recycling Compliance Person/s (RCP). The RCP must attend the Installation ECO (Environmental Compliance Officer) course for training and instruction on current recycling procedures. Contact the DPW Environmental Division Office for ECO Course dates/times and location. DPW, Environmental personnel will be available for participation in contract site visits and kick-off meetings to clarify requirements as needed. All appointed RCP's will work directly with the DPW, Environmental Division to ensure program requirements are met. Short-term contractors (less than one year) will schedule a 1 hour briefing with the DPW, Environmental Division to receive policy letter and guidance in lieu of the ECO course.

IMSE-STW-IC

SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

(3) Provide clearly marked recycling cans/containers (available through SSSC) and establish collection points inside all buildings/facilities and work sites for the collection of commingled recyclable materials. (For further information refer to Environmental Division Recycling Information Sheet, 31 Mar 06 – contained on the Fort Stewart Intranet, DPW Page).

(a) Office paper, junk mail, newspaper, magazines, cardboard, aluminum/bi-metal cans (i.e. vegetable cans), plastic containers (#1, 2 and 5 only), glass bottles/containers (clear, brown, green).

(i) Ensure all “unclassified” documents/paper products are placed in a transparent plastic bag and tied closed prior to placing in blue dumpsters to facilitate the separation process and protect the integrity of the commodity. Can liners are not required for other recyclable material, but if used, they too must be transparent liners/bags.

(ii) Ensure all recyclable cans and bottles are emptied and rinsed (if possible) prior to placing in collection container.

(iii) Ensure that all commingled (mixed) recyclable materials from barracks, motor pools and administration buildings are placed in blue dumpsters provided. (Note: If collections personnel discover trash in recycling dumpsters or recyclables in trash dumpsters, the containers **will not** be emptied. Violators will be reported to the DPW Environmental Division for coordination with offending entity for corrective action.

(b) Ink/toner cartridges, scrap metal, bulk cardboard and serviceable pallets. Deliver these items to the installation recycling facility (Fort Stewart - Bldg. #957 on McFarland Ave or on Hunter Army Airfield - Bldg. TR-727 on Westley Ave); do not place these items in or beside the dumpsters.

(c) Coordinate collection/delivery of bulk cardboard, scrap metals and pallets with the installation recycling facility. Organizations generating large amounts of cardboard scrap metal, and pallets on a continuous basis should contact the DPW, Environmental Division Section for assistance.

(d) Household Movement/Packing Materials. Coordinate the pickup of recyclable packing material (paper and cardboard) generated by newly arriving soldiers and ensure they are made aware of this recycling policy.

(4) Unit Training Exercises. Continue to enforce the recycling policy during unit field training exercises. Provide a means to collect recyclable materials and process these materials upon return IAW with this policy and specific ECO training guidance regarding petroleum, oil, and lubricant containers (i.e. triple rinse).

(5) Collect and deliver yard waste (limbs, leaves, pine straw, pine cones, grass clippings, etc.) to the landfill for proper disposal/composting – do not deposit these items in/near any dumpster.

b. Government Military Housing (GMH) and Housing Residents.

(1) GMH will:

(a) Provide each family housing unit with a blue recycling poly cart and a copy of this recycling policy.

(b) Provide weekly curbside collection of commingled recyclables. (Note: If collection personnel discover trash mixed with recyclables or recyclables mixed with trash, the containers **will not** be emptied and violators will be reported to DPW, Environmental Division for enforcement actions).

(2) Housing Residents will:

(a) Place all bulk household packing material (paper and cardboard) in the identified locations as designated by GMH for collection upon arrival/assignment to housing.

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SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

(b) Place all recyclable materials (i.e., cardboard, junk mail, magazines, writing paper, newspaper, glass bottles/containers (clear, brown, green), plastic containers (#1, 2 and 5 only), aluminum/bi-metal cans, etc.) in the blue poly carts provided. All paper products must be placed in a transparent plastic bag which must be tied closed prior to being placed in the blue poly carts. Can liners are not required for other recyclable material; but if used, they must be transparent liners/bags.

(c) Place their blue poly carts at the curb before 0800 on their assigned collection day.

(d) Place large items, such as bicycles, "privately owned" washers, dryers, refrigerators, etc. on the curb beside their blue poly carts on their assigned collection day to be collected by the contractor.

c. Installation and tenant organizations will:

(1) Ensure that all contracts include the requirement for contractors to adhere to the Fort Stewart/Hunter Army Airfield Recycling Policy, and ensure through inspections that contractors are adhering to policy. Contracts will require contractors to provide a copy of landfill scale tickets to their COR (Contracting Officer's Representative /QA for all waste disposed of off the installation. The COR will ensure that the copy of the landfill scale tickets are provided to DPW, Environmental Division, and all recyclables from construction, renovation, and demolition sites will be kept separate from other waste. (Note: This applies even if the contract requires the waste to be hauled off the installation for disposal).

(2) Ensure contracts that involve adding or replacing furniture, fixtures, mattresses, and other such items or in general generate large amounts of cardboard include provisions to collect and transport the cardboard to the installation recycling facility. (Note: The DPW Environmental Division has limited resources and will assist with collection and transporting this material until resources are expended, there are drop-off facilities available that are expected to be utilized when such service is not available. Contractors need to be aware of the limited resources and coordinate further assistance with the COR. (For further information refer to Environmental Division Recycling Information Sheet, 31 Mar 06 – contained on the Fort Stewart Intranet, DPW Page).

(3) Custodial service contracts will include the requirement to deposit the contents collected from any recycling containers in the nearest blue dumpster. Provisions will also be included in the contracts to not service trash receptacles when recyclables are not segregated from the waste stream, and to notifying the COR of the discrepancy. The COR will perform random inspections to ensure these requirements are being met and coordinate with the DPW, Environmental Division upon notification.

d. DPW will: Ensure refuse and recycle collection drivers do not service any trash dumpsters with recyclable materials present, or any recycle dumpsters with trash present. If either of these conditions exists, the driver will notify the DPW, Environmental Division for corrective action.

(1) Ensure all contracts state that contractors must separate, collect and deliver recyclable material generated during the life of the contract to the installation's recycling facility.

e. Self-Service Supply Center will:

(1) Stock clear plastic bags and blue recycling containers marked "We Recycle."

(2) Stock office paper with a minimum of 20% recycled content.

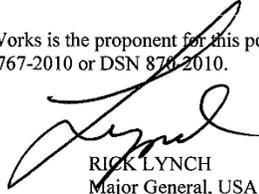
(3) Stock items made from recycled material, and ensure those items are clearly marked and labeled as such.

(4) Ensure that signs are posted stating that customers should purchase items made from recycled material when available.

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SUBJECT: US Army Installation, Fort Stewart / Hunter Army Airfield Policy Memorandum # 8, Command Recycling Policy

6. PROPONENT: The Directorate of Public Works is the proponent for this policy. The point of contact is DPW, Environmental Division, at commercial (912) 767-2010 or DSN 876 2010.



RICK LYNCH
Major General, USA
Installation Commander

**52.000-4061 RECYCLING, SALVAGE, AND DISPOSAL OF MATERIALS
FORT STEWART AND HUNTER ARMY AIRFIELD**

Disposal: All waste generated from construction, demolition, and renovation contracts must be disposed of off the installation in a permitted disposal facility and in accordance with all Federal, State, and Local rules and regulations unless otherwise stated in the contract. At the end of each month, the contractor will provide copies of all disposal weight/scale tickets to the Contracting Officer's Representative (COR) showing the in, out, and tare weights of each load taken from the installation. The COR will provide copies of these tickets to the DPW Environmental Division, Solid Waste Management Section for tracking and regulatory reporting requirements.

Recycling/Salvage: Fort Stewart and Hunter Army Air Field has a mandatory recycling program. The Installation Command Recycling Policy Memorandum #8 can be accessed at <http://www.stewart.army.mil/dpw/recycle.asp>. All recyclable materials (listed in the recycling policy) generated during the entire term of any construction, demolition, or renovation contract will be turned over to the Fort Stewart or HAAF Recycling Program. Contractors must contact the COR who will coordinate with the DPW Environmental Waste Management Section (912-767-2010) to arrange for turn-in of recyclable/salvageable materials. In areas where large amounts of scrap metal or cardboard will be generated, it is possible that a collection bin/container could be provided by the Contractor at no cost to deposit these materials. Salvage materials, unless otherwise specified, become the property of the contractor upon removal from the job site and should be taken into consideration in formulating bids.

Hauling/Transport Requirements: All vehicles and containers used to transport waste or recyclables on or off the Installations will meet all Federal and State DOT requirements. All waste or recyclable materials being transported will be loaded, tied, and covered in such a manner that will prevent any of the materials from leaking, spilling, falling or blowing from/off the vehicle or container. It is the contractor's responsibility to ensure immediate pick-up/clean-up of any material that is accidentally dropped, spilled or blown from a vehicle or container while in transit on and off the Installation.

Custodial Contract: If this contract is for custodial services or will include a custodial service requirement, the Contractor shall empty or otherwise transfer the contents from the blue recycling containers located inside buildings/facilities to the nearest blue recycling dumpster located outside. The contractor will ensure that all recycled paper products are first placed inside a clear plastic bag and the top is tied closed before it too is placed inside the nearest blue recycle dumpster.

Payment/Funding: If any of the conditions listed under the Recycling, Salvage, and Disposal section are not met, it will be considered a failure to comply with the terms of the contract as discussed in the inspection clause herein.

Guidance/Question: Anyone requiring further guidance, recycling training for contractors, or has additional questions on this section should contact the DPW Environmental Division, Solid Waste Management Section at 912-767-2010.

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**APPENDIX C
STORMWATER POLICIES**

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REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314

IMSH-PW

MEMORANDUM FOR CONTRACTORS

SUBJECT: DPW Policy Letter #10 – Dry Detention Basins (Revised 14 March 2012)

1. REFERENCES.

- a. Federal Clean Water Act (CWA), as amended (33 U.S.C.1251 et seq.), and Clean Water Act stormwater regulations 40 CFR 122.26.
- b. Executive Orders #13423 Energy Independence and Security Act-2007, and #13514 Federal Leadership in Environmental, Energy, and Economic Performance-2009; Section 438-Stormwater.
- c. Policy Memo 19 JAN 10, Office of the Under Secretary of Defense, DoD Implementation of Stormwater Requirements under Section 438 of the Energy Independence and Security Act.
- d. Georgia Water Quality Control Act, as amended, O.C.G.A. §12-5-20, *et seq.*, and the Rules for Water Quality Control, Chapter 391-3-6, promulgated pursuant thereto, as amended
- e. Erosion & Sedimentation Control Act, as amended, O.C.G.A §12-7-1, *et seq.*, and the Rules for Erosion & Sedimentation, Chapter 391-3-7, promulgated pursuant thereto, as amended

2. PURPOSE. This memorandum replaces the former Policy Letter #10 and re-establishes the Directorate of Public Works policy concerning erosion and sedimentation controls, standards, and specifications for dry detention basins and stormwater controls for flooding.

3. APPLICABILITY. This policy applies to all contractors and government employees at Fort Stewart and Hunter Army Airfield.

4. RESPONSIBILITIES. The following are the minimum standards for contractors to use to ensure uniformity of the use of dry detention basins throughout the Installation.

- a. Fort Stewart/Hunter Army Airfield (FS/HAAF) must comply with the State of Georgia National Pollutant Discharge Elimination Systems Permitting reference; the DPW Stormwater Policy #11, FS/HAAF Construction Site Runoff Control and FS/HAAF Post-Construction New-Redevelopment requirements which can be found with other Stormwater Management documents at the following web link: http://www.stewart.army.mil/dpw/EN_Downloads.asp.

Therefore, overall stormwater designs must focus on maintaining or restoring the hydrologic performance of the watershed in its pre-development condition. Traditional, centralized stormwater management connects impervious surfaces to efficiently route stormwater to regional or site specific detention facilities to mitigate peak flow. Although these facilities may be successful in reducing the peak flow rate to the pre-development level immediately downstream of these facilities they serve, this approach may become ineffective in addressing the water quality of surface runoff and reducing downstream flooding since a greater volume of stormwater still runs off from these developed areas below the peak flow rate.

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As noted above, centralized stormwater practices must now be replaced with *Low Impact Development (LID)* and *Green Infrastructure (LID/GI)* stormwater control practices. The LID/GI approach focuses on disconnecting the impervious surfaces and intercepts and treats surface runoff at the source. LID/GI stormwater control practices utilize *Best Management Practices (BMPs)*, such as bio-retention, rain gardens, vegetative enhanced swales, and other infiltration practices, which increase groundwater recharge, and improves surface water quality along with detention and extended detention basins, which protect stream channels, and reduces downstream flooding. The objective of the LID/GI method is to reduce the volume of stormwater required to be detained and effectively improve water quality via the treatment train LID/GI BMPs.



Dry Detention Basins-Description:

A dry detention basin is a surface storage basin or facility designed to provide water quantity control through detention of stormwater runoff.



Extended Detention Basins (EDBs)-Description

An extended detention basin (EDB) is a basin designed to detain stormwater for many hours after storm runoff ends. This BMP is similar to a detention basin used for flood control, however; the EDB uses a much smaller outlet that extends the emptying time of the more frequently occurring runoff events to facilitate pollutant removal. The EDBs drain time for the water quality volume (WQv) is recommended to remove a significant portion of total suspended solids (TSS).

- b. As referenced within the *Georgia Stormwater Management Manual and Coastal Stormwater Supplement (GASWMM/CSS)*, water quantity management practices can only be used to *manage* the post-construction stormwater runoff rates and volumes generated by larger, less frequent rainfall events (e.g., 1-year, 24-hour event, 25-year, 24-hour event). They provide little, if any, stormwater runoff reduction or stormwater quality protection (Storm Water Management [SWM])

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Criteria #1 & #2, respectively). Consequently, it is recommended they be used in conjunction with LID/GI practices and general application stormwater management practices to completely satisfy the aquatic resource protection (SWM Criteria #3), overbank flood protection (SWM Criteria #4) and extreme flood protection (SWM Criteria #5) criteria presented in the GASWMM/CSS. Two (2) of the water quantity management practices that may be used in coastal Georgia with LID/GI treatment trains include:

- Dry Detention Basins
- Extended Detention Basins

c. General Description

Dry detention basins or Extended Detention basins (EDBs) are surface facilities intended to provide for the temporary storage of stormwater runoff to reduce downstream water quantity impacts. These facilities temporarily detain stormwater runoff, releasing the flow over a period of time. They are designed to completely drain following a storm event and are normally dry between rain events.

Dry detention basins are intended to provide overbank flood protection (peak flow reduction of the 25-year storm) and can be designed to control the extreme flood (100-year) storm event.

Dry EDBs provide downstream channel protection through extended detention of the channel protection volume, and can also provide 25-year and 100-year control.

Both dry detention and EDBs provide limited pollutant removal benefits and are not intended for water quality treatment. Detention-only facilities must be utilized with a treatment train approach with other LID/GI structural control BMPs which provide treatment of the water quality volume requirements. Compatible multi-objective use of dry detention facilities is strongly encouraged.

d. Design Criteria and Specifications

Dry Detention and EDBs should be incorporated into the overall stormwater design for development and redevelopment projects as follows:

e. Location

Dry detention and EDBs are to be located downstream of other LID/GI general application structural controls (*bioretention, sand filters, infiltration trench and enhanced swale*) which are typically used in combination with detention controls for treatment of the water quality volume (WQv). The detention facilities are located downstream from the water quality controls either on-site or combined into a regional or neighborhood facility. See Section 3.1 GASWMM/CSS and the United States Environmental Protection Agency Technical Guidance for Implementation of Section 438 for more information on the use of multiple structural controls such as LID/GI in a treatment train.

- The maximum contributing drainage area to be served by a single dry detention or EDB is 75 acres.
- EDBs are well suited for watersheds with at least five impervious acres up to approximately one square mile of watershed. Smaller watersheds can result in an orifice size prone to clogging. Larger

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watersheds and watersheds with base flows can complicate the design and reduce the level of treatment provided. EDBs are also well suited where flood detention is incorporated into the same basin. The depth of the seasonable high groundwater table should be investigated. Groundwater depth should be one (1) or more feet below the bottom of the basin in order to keep this area dry and maintainable.

- Always maximize the distance between the inlet and the outlet. It is best to have a basin length (measured along the flow path from inlet to outlet) to width ratio of at least 2:1. A longer flow path from inlet to outlet will minimize short circuiting and improve reduction of TSS. To achieve this ratio, it may be necessary to modify the inlet and outlet points through the use of pipes or swales.

f. General Design

- Dry detention basins are sized to temporarily store the volume of runoff required for a minimum of 24 hours and to provide overbank flood protection (i.e., reduce the post-development peak flow of the 25-year storm event to the pre-development rate), and control the 100-year storm.

EDBs are sized to provide extended detention of the channel protection volume for a minimum of 72 hours and can also provide additional storage volume for normal detention (peak flow reduction) of the 25-year and 100-year storms.

Routing calculations must be used to demonstrate that the storage volume is adequate. Hydraulic considerations are needed to ensure the basin is sized to store the entire (or remaining volume after installation of LID/GI BMPs) water quality design volume (removal of Total Suspended Solids [TSS] by 80%) and the outlet structure must be sized as to provide desired hydraulic detention time of 24 hours as a minimum for the 1-year, 24-hour storm.

- Storage volumes greater than 100 acre-feet are subject to the requirements of the Georgia Safe Dams Act (see Appendix H of the GASWMM) unless the facility is excavated to this depth.
- Vegetated embankments shall have side slopes no steeper than 3:1 or 4:1 (horizontal to vertical). The basin side slopes should be stable and gentle to facilitate maintenance and access. Slopes that are flatter should be utilized to allow for conventional maintenance equipment, and for improved safety and aesthetics. Riprap-protected embankments shall be no steeper than 3:1.
- The maximum depth of the basin should not exceed 4 feet. The final grade of the basin floor shall be no deeper than one (1) foot above seasonal high water table.
- Areas above the normal high water elevations of the detention facility should be sloped toward the basin to allow drainage. Careful finish grading is required to avoid creation of upland surface depressions that may retain runoff. A low flow or pilot channel across the facility bottom from the inlet to the outlet (often constructed with geotextile underlayment and riprap) is recommended to convey low flows and prevent standing water conditions.
- Forebay Designs for EDBs: The forebay provides an opportunity for larger particles to settle out in an area that can be easily maintained. The length of the flow path through the forebay should be maximized, and the slope minimized to encourage settling.

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- a) The appropriate size of the forebay may be as much a function of the level of development in the tributary area as it is a percentage of the WQv.
- b) When portions of the watershed may remain disturbed for an extended period of time, the forebay size will need to be increased due to the potentially high sediment load. The forebay outlet should be sized to release 2% of the un-detained peak 100-year discharge.
- c) A soil riprap berm with 3:1 side slopes (or flatter) and a pipe outlet or a concrete wall with a notch outlet should be constructed between the forebay and the main EDB.
- d) Micropool EDBs: Micropool extended detention basins are a variation of the standard wet extended detention pond that have only a small permanent pool (i.e., micropool). The "micropool" provides enough storage for approximately 10% of the stormwater runoff volume generated by the target runoff reduction rainfall event (e.g., 85th percentile rainfall event). The remainder of the stormwater runoff volume generated by the target runoff reduction rainfall event is managed in an extended detention zone provided immediately above the "micropool" and released over an extended 24-hour period.

- The following areas will be sodded: (1) Bottom of the detention basin, (2) Inside side slopes of the detention basin, and (3) Outward, ten feet from the edge of the detention basin. All other disturbed areas will be seeded with temporary and permanent grasses; contact the Natural Resources Conservation Service for appropriate seasonal seed mixes. Utilization of erosion control blankets, permanent and/or temporary, as required, for prevention of erosion rills is required.

- Adequate maintenance access must be provided for all detention basins.

- All detention basins within one-thousand (1000) feet of any housing and/or school facility shall be secured with a four (4) foot chain link style fence.

- During construction of any project on FS/HAAF the following erosion and sedimentation best management practices are not permitted:

- 1) Man made "haybales"
- 2) The use of slotted board dams as a retrofit on less than 30 acres is not allowed. Instead, a perforated half-round pipe with a stone filter ring must be utilized.

g. Inlet and Outlet Structures

There are a wide variety of outlet structure types, the most common of which are, orifices, perforated risers, pipes/culverts, sharp-crested weirs, broad-crested weirs, V-notch weirs, proportional weirs, and combination outlets. Reference Section 2.3 of the GASWMM/CSS for more information on the design criteria for *Outlet Structures*.

Each of the above outlet types has a different design purpose and application:

- 1) Water quality and channel protection flows are normally handled with smaller, more protected outlet structures such as reverse slope pipes, hooded orifices, orifices located within screened pipes or risers, perforated plates or risers, and V-notch weirs.

2) Larger flows, such as overbank protection and extreme flood flows, are typically handled through a riser with different sized openings, through an overflow at the top of a riser (drop inlet structure), or a flow over a broad crested weir or spillway through the embankment. Overflow weirs can also be of different heights and configurations to handle control of multiple design flows.

- Inflow channels are to be stabilized with flared riprap aprons, or the equivalent. A sediment forebay sized to 0.10 inches per impervious acre of contributing drainage should be provided for dry detention and EDBs that are in a treatment train with off-line⁽¹⁾ water quality treatment structural controls.

⁽¹⁾ Structural stormwater controls are designed to be either “on-line” or “off-line.” On-line structural controls must be able to handle the entire range of storm flows. Off-line facilities such as bioretention areas, and infiltration trenches on the other hand are designed to receive only a specified flow rate through the use of a flow regulator (i.e. diversion structure, flow splitter, etc). Flow regulators are typically used to divert the WQv to an off-line structural control sized and designed to treat and control the WQv. After the design runoff flow has been treated and/or controlled meeting this WQv, it is returned to the conveyance system or “on-line” structure.

A key decision whether to locate a BMP on-line or off-line. On-line refers to locating a BMP such that all of the runoff from the upstream watershed is intercepted and treated by the BMP. A single on-line BMP should be designed to treat both onsite runoff and upstream (offsite) runoff. Locating BMPs off-line requires that all onsite catchment areas flow through the BMP(s) prior to combining with flows from the upstream (offsite) watershed.

Designers should also be aware that WQv BMPs, especially those that promote infiltration, could result in volume reductions for flood storage. These volume reductions are most pronounced for frequently occurring events, but even in the major event, some reduction in detention storage volume can be achieved if WQv-reduction BMPs are widely used on a site.

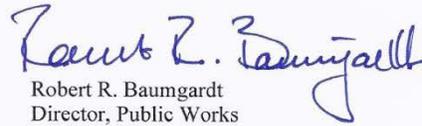
- For a dry detention basin, the outlet structure must be sized as to provide desired hydraulic detention time of 24 hours as a minimum for the 1-year, 24-hour storm (based upon hydrologic routing calculations) and can consist of a weir, orifice, outlet pipe, combination outlet, or other acceptable control structure. Small outlets that will be subject to clogging or are difficult to maintain are not acceptable.

The Inlet and Outlet structures must be separated as much as possible to avoid short-circuiting and the positioning of these structures and/or orifices should be above the dry detention basin bottom to provide space for captured sediments and to minimize resuspension of any TSS captured in the basin. The inlet must be designed to safely bypass flows which would exceed the design volume and dissipate flow energy at concentrated points of inflow. This also will limit erosion and promote particle sedimentation.

- For EDBs, a low flow orifice capable of releasing the channel protection volume over 24 hours must be provided. The channel protection orifice should have a minimum diameter of 3 inches and should be adequately protected from clogging by an acceptable external trash rack. The orifice diameter may be reduced to 1 inch if internal orifice protection is used (e.g., an over perforated vertical stand pipe with 0.5-inch orifices or slots that are protected by wirecloth and a stone filtering jacket). Adjustable gate valves can also be used to achieve this equivalent diameter. Reference Section 2.3.1 (*Outlet Structures*) of the GASWMM/CSS for more information on the design of outlet works.

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- Seepage control or anti-seep collars should be provided for all outlet pipes.
 - A conveyance shall be installed from all inlets to outlets. The inlet and outlet conveyance final grade is to be a minimum of one (1) foot above the seasonal high water table elevation. The conveyance is required to be lined with geo-textile and with four inches (4") of stone over same (Graded 2"- 4" stone). The conveyance is to be a minimum of 4 feet wide.
 - Riprap, plunge pools or pads, or other energy dissipators are to be placed at the end of the outlet to prevent scouring and erosion (See Section 4.5 of the GASWMM, *Energy Dissipation Design*, for more guidance).
 - An emergency spillway is to be included in the stormwater basins design to safely pass the extreme flood flow. The spillway prevents pond water levels from overtopping the embankment and causing structural damage. The emergency spillway must be designed to State of Georgia guidelines for dam safety (see Appendix H of the GASWMM) and must be located so that downstream structures will not be impacted by spillway discharges.
 - A minimum of 1 foot of freeboard must be provided, measured from the top of the water surface elevation for the extreme flood, to the lowest point of the embankment not counting the emergency spillway.
5. PROponent: The Directorate of Public Works (DPW) is the proponent for this policy. The point of contact is DPW, Environmental Division, at commercial (912) 767-2010 or DSN 870-2010.


Robert R. Baumgardt
Director, Public Works

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NOV 04 2011

MEMORANDUM FROM DPW

MEMORANDUM FOR CONTRACTORS AND TENANTS

SUBJECT: DPW Policy Letter # 11 - Stormwater Management Program

1. REFERENCES.

a. Federal Clean Water Act (CWA) at 33 U.S.C. §1251, *et seq.*; and its implementing regulations found at 40 CFR § 122.26, *et seq.*

b. Section 438 of the Energy Independence and Security Act at 42 U.S.C. §17094.

c. Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 5 October 2009.

d. Georgia Water Quality Control Act, O.C.G.A. §12-5-20, *et seq.*, and its implementing rules found at Ga. Admin. Comp. ch. 391-3-6, *et seq.*

e. Georgia Erosion & Sedimentation Control Act, O.C.G.A. §12-7-1, *et seq.*, and its implementing rules found at Ga. Admin. Comp. ch. 391-3-7, *et seq.*

f. Deputy Under Secretary of Defense (Installations and Environment) Memorandum, DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act, 19 January 2010.

g. AR 200-1, Environmental Protection and Enhancement, 13 December 2007.

2. APPLICABILITY. This policy is applicable to Contractors and Tenants on Fort Stewart/Hunter Army Airfield.

3. PURPOSE. To provide guidance on the Stormwater Management Program.

4. POLICY. The Installation's stormwater systems are regulated under National Pollutant Discharge Elimination System (NPDES) Permits, as defined in above references.

a. To protect water quality, the Installation is required to have a stormwater management program that reduces the discharge of pollutants from industrial activities, construction activities, and

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SUBJECT: DPW Policy Letter # 11 - Stormwater Management Program

the Municipal Separate Storm Sewer System (MS4) to the "maximum extent technically feasible."

b. For any new development and redevelopment that occurs on the Installation, the stormwater management program must include best management practices (BMPs) for construction site stormwater runoff control and post-construction stormwater management.

c. For new development or redevelopment of 5,000 sq ft or greater that occurs on the Installation, the stormwater management program must include, to the "maximum extent technically feasible," additional stormwater low impact development BMPs.

d. All personnel are required to comply with the Installation's Stormwater Management Plan, as detailed in the following documents located on the Team Stewart web site at http://www.stewart.army.mil/dpw/EN_Downloads.asp.

(1) Stormwater Pollution Prevention Plan (SWP3) for Industrial Activities

(2) Municipal Separate Storm Sewer Systems (MS4) Notices of Intent

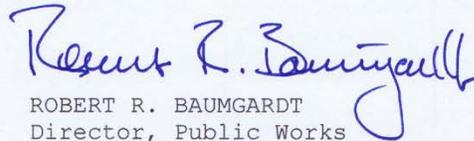
(3) Illicit Discharge, Detection and Elimination (IDDE) Plan

(4) Stormwater Guidance for Construction Site Stormwater Runoff Control

(5) Post-Construction Stormwater Management Guidance for New Development and Redevelopment

(6) Stormwater Maintenance Standard Operating Procedures

5. PROPONENT. The DPW Environmental Division is the proponent for this policy at commercial (912) 767-2010.


ROBERT R. BAUMGARDT
Director, Public Works

**APPENDIX D
SHPO COORDINATION**

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REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 VETERANS PARKWAY
FORT STEWART, GEORGIA 31314

Office of the Directorate

Dr. David Crass
Deputy State Historic Preservation Officer
Historic Preservation Division
Georgia Department of Natural Resources
254 Washington Street SW
Ground Level
Atlanta, Georgia 30334

Dear Dr. Crass,

The purpose of this letter is to consult with your office regarding the proposed construction of two elementary schools at Fort Stewart, Georgia to replace both the existing Diamond Elementary School, built in 1963, and the existing Brittin Elementary School, built in 1983. Three alternatives are being considered for the proposed construction of the new elementary schools (see Figures 1 & 2). The preferred action, Alternative 1 (see Figure 3), would establish the new Diamond Elementary School north of Hero Road near the Marne Woods and Isenhower Village housing areas. Fort Stewart Cultural Resource Management (FSCRM) previously consulted with the Historic Preservation Division (HPD) for this location and it was determined to have no adverse effect to historic properties (Project Number HP-121025-001).

Alternative 2 (see Figure 4) would establish a new elementary school south of Georgia Highway 144 East, between Marne Terrace and Liberty Woods housing areas. As with the preferred alternative, FSCRM previously consulted with your office regarding this location under the above referenced Project Number and determined that it would require further consultation if selected.

Alternative 3 (see Figure 5) would establish the elementary school at the Marne Terrace and Liberty Woods housing area. The housing area was recently demolished and comprised of the following 58 buildings (Building Numbers 6928 through 6985) which were all constructed in 1976 and determined ineligible for the National Register (NR) (Maggioni 2012). The area of potential effect is in the Fort Stewart Cantonment and is therefore excluded from archaeological survey per the terms of the 2011 Programmatic Agreement between Fort Stewart and the HPD. No previously recorded resources have been identified within the area of potential effect. The area is currently held within the Residential Community Initiative (RCI) leased housing program and is controlled by Balfour Beatty. A land-swap exchange between RCI and Fort Stewart would be negotiated if the alternative is selected.

As part of the proposed construction for all three alternatives, after the new Diamond Elementary School facilities are operational, the old Diamond Elementary

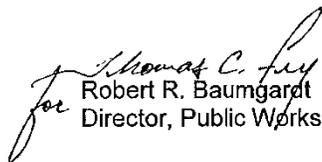
- 2 -

School at Davis Avenue would be demolished and the new Brittin Elementary School would be built in its place (see Figure 6). The existing Diamond Elementary School complex is comprised of the following buildings: 5601 (constructed in 1988 and determined ineligible for the NR); 5602 (constructed in 1963 and determined ineligible for the NR); 5603 (constructed in 1995 and determined ineligible for the NR); and 5604 (constructed in 1989 and determined ineligible for the NR) (Fortune & Maggioni 2002; Maggioni 2004, 2008, 2012). Once the new Brittin Elementary facilities are operational, the demolition of the existing Brittin Elementary school complex would be required. The existing complex is comprised of the following buildings: 7392 (constructed in 1983 and determined ineligible for the NR); 7393 (constructed in 1989 and determined ineligible for the NR); 7395 (constructed in 1989 and determined ineligible for the NR); and 7396 (constructed post-1990 and determined ineligible for the NR). As a result, there would be no adverse effects to historic properties by the proposed demolition of the existing school complex.

The Army is preparing a Draft Environmental Assessment (EA) for the proposed modifications. The Draft EA and Draft Finding of No Significant Impact will be mailed to your office for review. Cultural resource impact evaluations will be included as part of the EA, which will provide an opportunity for the public to comment on the proposed action's impact to cultural resources.

Per 36 CFR 800, the Army requests your comments within 30 days of receiving this letter. If you have any questions or require further information, please contact Mr. Brian Greer, M.A. Consulting Archaeologist, Directorate of Public Works, Environmental Division, Prevention & Compliance Branch, Cultural Resources Management at (912) 767-0992/2010. Email correspondence can be directed to Brian.K.Greer2ctr@mail.mil.

Sincerely,


for Robert R. Baumgardt
Director, Public Works

Enclosures

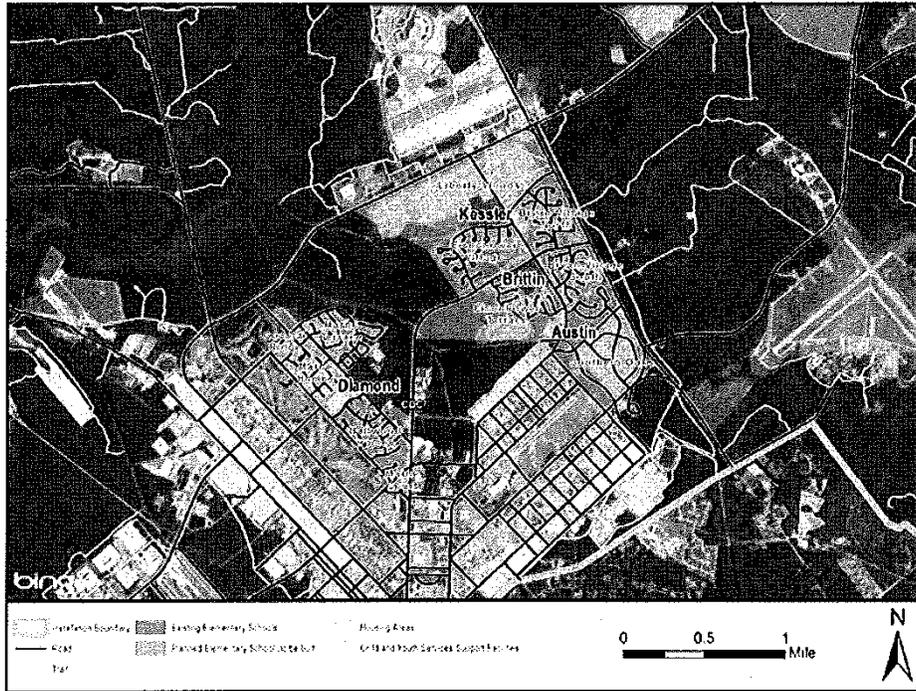


Figure 1: Existing Elementary School Locations at Fort Stewart, Georgia

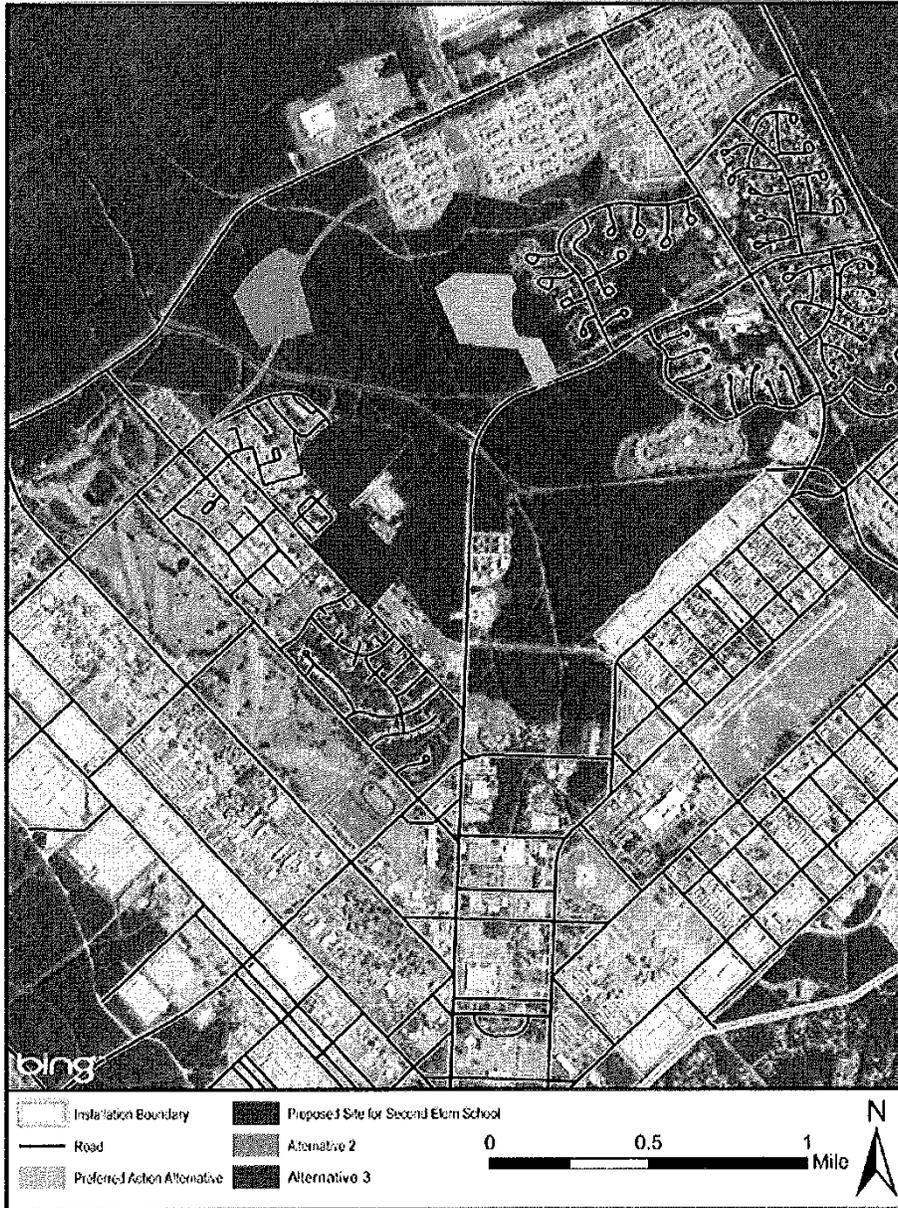


Figure 2: Geographic Relationship of Proposed Alternatives



Figure 3: Proposed Location, Preferred Action Alternative 1

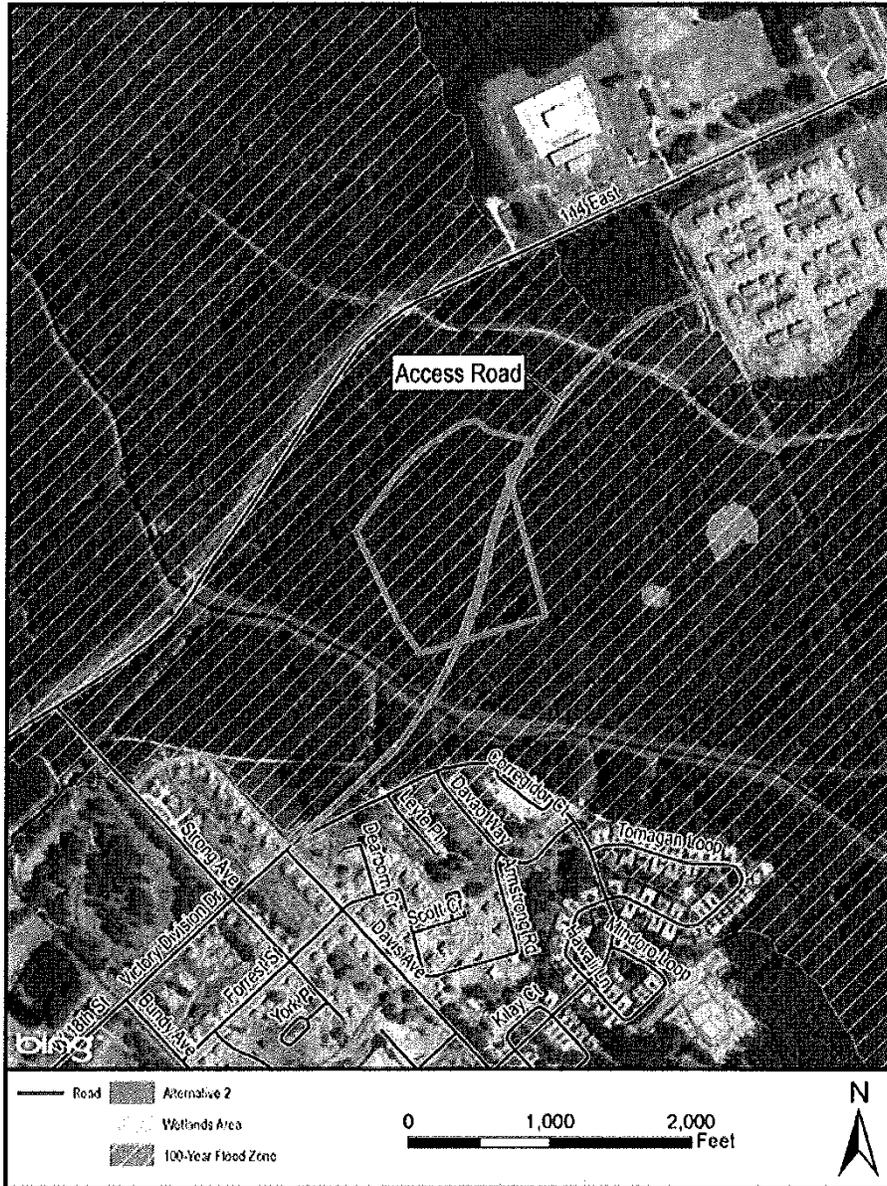


Figure 4: Proposed Location, Alternative 2



Figure 5: Proposed Location, Alternative 3

References:

Fortune, Molly & Joseph P. Maggioni.

2002 *Building Inventory Fort Stewart, Georgia: An Inventory of Department of Defense Buildings Built Prior to 1989*. Directorate of Public Works, Environmental Division, Fort Stewart, GA.

Maggioni, Joseph P.

2004 *Fort Stewart & Hunter Army Airfield Building Survey 2004 Codicil*. Directorate of Public Works, Environmental Division, Fort Stewart, GA.

2008 *Fort Stewart & Hunter Army Airfield Building Survey 2007 Codicil*. Directorate of Public Works, Environmental Division, Fort Stewart, GA.

2012 *Fort Stewart & Hunter Army Airfield Building Survey 2012 Codicil*. Directorate of Public Works, Environmental Division, Fort Stewart, GA.



MARK WILLIAMS
COMMISSIONER

February 21, 2013

DR. DAVID CRASS
DIVISION DIRECTOR

Robert R. Baumgardt
Director, Public Works
Fort Stewart/Hunter Army Airfield
1587 Veterans Parkway
Fort Stewart, Georgia 31314
Attn: Brian Greer, Cultural Resource Program Manager

RE: Fort Stewart: Construct Elementary Schools, 3 Alternatives, North of Hero Road or South of Highway 144 E or at Marne Terrace and Liberty Woods Housing area
Liberty County, Georgia
HP-121025-001

Dear Mr. Baumgardt:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced undertaking. Our comments are offered to assist the U.S. Department of the Army and Fort Stewart in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Thank you for providing the information regarding preparation of a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for modifications to the project as proposed. Based on the information provided, HPD agrees with the U.S. Department of the Army and Fort Stewart. Specifically, HPD agrees that Alternatives 1 and 3 will have no effect on archaeological resources or historic structures that are listed in or eligible for listing in the National Register of Historic Places (NRHP), as defined in 36 CFR Part 800.4(d)(1). HPD further agrees that Alternative 2 will have no effect on historic structures that are listed in or eligible for listing in the NRHP. Additionally, if Alternative 2 is chosen, HPD agrees that further consultation will be necessary to evaluate effects on archaeological site 9LI1547, which may be eligible for inclusion in the NRHP. Finally, HPD agrees that demolition of the existing school complex would result in no adverse effect to historic properties.

Please refer to project number HP-121025-001 in any future correspondence regarding this undertaking. If we may be of further assistance, please do not hesitate to contact me at (404) 651-6624.

Sincerely,

A handwritten signature in cursive script that reads "Elizabeth Shirk".

Elizabeth Shirk
Environmental Review Coordinator

ES:jad

cc: Lupita McClenning, Coastal Georgia Regional Commission

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GEORGIAHPO.ORG

APPENDIX E
AFFIDAVIT OF PUBLICATION OF NOTICE OF AVAILABILITY

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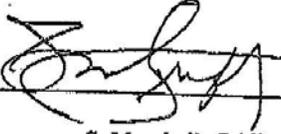
AFFIDAVIT OF PUBLICATION

STATE OF GEORGIA

COUNTIES OF LIBERTY AND LONG

Personally appeared before me, the undersigned Notary Public, *S. Marshall Griffin*, who after being duly sworn stated under oath that he is the Publisher of the **COASTAL COURIER**, the official Legal Organ of Liberty and Long Counties, a newspaper published in the city of Hinesville, and who further states under oath that the advertisement attached hereto and made a part of this affidavit appeared in the **COASTAL COURIER** on the following date(s):

Feb. 21, 2013


S. Marshall Griffin
PUBLISHER

Sworn to and subscribed before me,

This *10* day of *April* *2013*



Notary Public

December 01, 2015
Commission expires



Errors - The liability of the publisher on account of errors in or omissions from any advertisement will in no way exceed the amount of the charge for the space occupied by the item in error, and then only for the first incorrect insertion.

Apr 10 2013 10:29 P.02

Fax: 9123686329

COASTAL COURIER

99n14
**NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL
ASSESSMENT (EA),
DRAFT FINDING OF NO
SIGNIFICANT IMPACT (FNSI), and
DRAFT FINDING OF NO
PRACTICABLE ALTERNATIVE
(FNPA)**

Replacement of Diamond and
Brittin Elementary Schools
at Fort Stewart, Georgia.

Fort Stewart has completed the Draft EA and Draft FNSI/FNPA for the Replacement of Diamond and Brittin Elementary Schools at Fort Stewart, Georgia. The U.S. Army proposes to provide exceptional, modern, efficient, and appropriately-sized educational facilities for Military Families living on Fort Stewart through the construction of two new on-Post elementary schools serving students in prekindergarten through 6th grade. The new schools will replace the existing Diamond and Brittin schools, which are old, inadequately sized, and expensive-to-maintain. The proposed action would alleviate overcrowding, better meet the educational needs of Fort Stewart students, provide more sustainable and energy efficient buildings, and meet current Americans with Disabilities Act, Building Code, Anti-Terrorism/Force Protection, and sustainability policies.

The Draft EA analyzes the potential environmental impacts of a no action alternative and three action alternatives, none of which was determined to result in significant environmental impacts, as documented in the Draft FNSI and FNPA for this action. A copy of the draft documents will be available for public review on/around February 27, 2013 at the public libraries and Post library listed below. All public review comments must be received no later than March 28, 2013.

1LT George P. Hays Library,
Building 411, 316 Lindquist Rd.,
Fort Stewart, GA

Mon. - Thurs. 9:00 a.m. to 7:00 p.m.

Fri. - Sat. 9:00 a.m. to 4:00 p.m.

Sun. closed

Liberty County Public Library, 236

Memorial Drive, Hinesville, GA

Mon. - Thurs. 9:00 a.m. to 8:00 p.m.

Fri. - Sat. 9:00 a.m. to 6:00 p.m.

Sun. closed

Mail Branch Library, 7 Mall Annex,
Savannah, GA

Mon. and Wed. 9:00 a.m. to 8:00
p.m.

Tues., Thurs., and Sat. 9:00 a.m. to
6:00 p.m.

Fri. and Sun. closed

Southwest Chatham Branch
Library, 14097 Abercorn Street,
Savannah, GA

Mon. closed

Tues. and Thurs. 9:00 a.m. to 8:00
p.m.

Wed., Fri.-Sat. 9:00 a.m. to 6:00 p.m.

Sun. 2:00 p.m. to 6:00 p.m.

Request all comments be mailed to

the following address:

Chief, Environmental Division (Mr.
Thomas C. Fry)

Directorate of Public Works

1550 Veterans Parkway, Bldg. 1137

Fort Stewart, GA 31314-4927

34789

(Feb. 27)

AFFIDAVIT OF PUBLICATION
SAVANNAH MORNING NEWS

STATE OF GEORGIA
COUNTY OF CHATHAM

Personally appeared before me, Alaina Fincher, to me known, who being sworn, deposes and says:

That she is the Obituary/Legal Clerk for Southeastern Newspaper Corporation, a Georgia corporation, doing business in Chatham County, GA, under the trade name of Savannah Morning News, a daily newspaper published in said county;

That he is authorized to make affidavits of publication on behalf of said published corporation;

That said newspaper is of general circulation in said county and in the area adjacent thereto;

That he has reviewed the regular editions of the Savannah Morning News, published on:

March 5, 2013, _____, 2013,
_____, 2013, _____, 2013,
and finds that the following advertisement, to-wit:

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT (EA), DRAFT FINDING OF NO SIGNIFICANT IMPACT (FNSI), AND DRAFT PRACTICABLE ALTERNATIVE (FNPA)

Replacement of Diamond and Britlin Elementary Schools at Fort Stewart, Georgia

Fort Stewart has completed the Draft EA and Draft FNSI/FNPA for the Replacement of Diamond and Britlin Elementary Schools at Fort Stewart, Georgia. The U.S. Army proposes to provide exceptional, modern educational opportunities for military families living on Fort Stewart through the construction of two new on-post elementary schools, serving students in Pre-kindergarten through 6th grade. The new schools will replace the existing Diamond and Britlin schools, which are old, inadequate, sized, and expensive to maintain. The proposed action would alleviate overcrowding, better meet the educational needs of Fort Stewart students, provide more sustainable and energy-efficient buildings, and meet current Americans with Disabilities Act (Building Code, Anti-Terrorism Force Protection, and sustainability policies.

The Draft EA analyzes the potential environmental impacts of a no action alternative and three action alternatives, none of which was determined to result in significant environmental impacts. Significant environmental impacts as documented in the Draft FNSI and FNPA for this action. A copy of the draft documents will be available to the public for review on/around February 27, 2013 at the public libraries and post library listed below. All public review comments must be received no later than March 28, 2013.

1 LT George P. Hays Library, Building 411, 316 Lindalust Rd., Fort Stewart, GA.
Mon - Thurs 9:00 A.M. to 7:00 P.M.
Fri., Sat., 9:00 A.M. to 4:00 P.M.
Sun. closed

Liberty County Public Library, GA
236 Memorial Drive, Hinesville, GA
Mon - Thurs 9:00 A.M. to 6:00 P.M.
Fri. - Sat., 9:00 A.M. to 6:00 P.M.
Sun. closed

Wall Branch Library, 7 Wall Annex, Savannah, GA.
Mon. and Tues. 8:00 P.M. to 9:00 A.M. to 8:00 P.M.
Tues., Thurs. and Sat. 9:00 A.M. to 4:00 P.M.
Fri. and Sun. closed

Southwest Chatham Branch Library, 1067 Abercorn Street, Savannah, GA.
Mon. closed
Tues. and Thurs. 9:00 A.M. to 8:00 P.M.
Wed., Fri., Sat. 9:00 P.M. to 9:00 A.M. to 6:00 P.M.
Sun., 2:00 P.M. to 6:00 P.M.

Request all comments be mailed to the following address:
Chief, Environmental Division (Mr. Thomas C. Fry) Director of Public Works 1550 Veterans Parkway Bldg. 1137

Appeared in each of said editions.
Sworn to and subscribed before me

This 16 day of April, 2013

Alaina Fincher
(Deponent)

Eugene J. Cronk
Notary Public, Chatham County, Ga.

EUGENE J. CRONK
Notary Public, Chatham County, GA
My Commission Expires January 25, 2014



COMMUNITY & LEISURE

FEBRUARY 28, 2013

End of era at Stewart, Chapel comes to close

Chap. (Capt.) Joel Giese
6/8 Cav. Regt., 41BCT

February 24 marks the end of an era for the Fort Stewart community when the Lutheran/Liturgical congregation worshiped together for the last time at Heritage Chapel.

The chaplains who led worship have all been assigned to a new Permanent Change of Station or are deployed, so the installation made the decision to disband the congregation. Third Infantry Division chaplains, Chap. (Capt.) Michael Demmon, 3rd Battalion 69th Armor Regiment, 1st Armored Brigade Combat Team and Chap. (Capt.) Richard Thompson, 2nd Battalion, 7th Infantry Regiment, 1ABCT deployed to Afghanistan late last year. Chaplain (Capt.) Joel Giese, 6th Squadron, 8th Cavalry Regiment, 4th Infantry Brigade Combat Team, deploys to Afghanistan in a few days and Chap. (Capt.) Karl Redelsheimer, 26th Brigade Support Battalion, 2nd Brigade Combat Team, has a rapid PCS to cover a unit who deploys in a few months. It is currently uncertain when or if this congregation will be able to reconstitute itself.

"This is the first time since 1975 that this congregation has stopped worshipping together," says Rose Marie Swindle, a founding member of the congregation. "It is hard to see this happen."

There are scores of memories among those who attended the last worship on Sunday. Many in the congregation have faithfully worshiped together for several decades. They come together to support each other and worship God. Baptisms and funerals, celebrations and memorials have punctuated the span of years.

The congregation has been worshipping together without heat since before Christmas. There have been some cold days, but worshipers sit close together and some bring blankets and space heaters to share.

"There have been tough times in the past, but we are generally not the type to complain," said one worshiper with a little smile. "We were told that they would get the heat working for us, but I guess there just isn't the money for it."

Worshipping together at Heritage Chapel has been fitting. There is a great deal of respect for Christian heritage in the Lutheran tradition. Traditional Liturgical worship has its roots in the way the Jews worshiped God in the synagogues before Christ. The chapel itself shares an architectural heritage from that time, the gothic cathedrals of Europe, and the little white churches of America. Heritage Chapel is one of two remaining chapels at Fort Stewart that were built during World War II. The chapel was built at a time when Soldiers built chapels for Soldiers, leaving quite a legacy.

The future of both the congregation and Heritage Chapel itself is uncertain.

For those interested in worshipping with a liturgical community, there is an Episcopal congregation in Hinesville and several Lutheran congregations in Savannah.

Replacement of Diamond, Brittin Elementary Schools

Directorate of Public Works
Fort Stewart

Fort Stewart has completed the draft environmental assessment, impact, and alternatives studies for the replacement of Diamond and Brittin Elementary Schools at Fort Stewart, Ga. The U.S. Army proposes to provide exceptional, modern, efficient and appropriately-sized educational facilities for Military Families living on Fort Stewart through the construction of two new on-post elementary schools serving students in prekindergarten through sixth grade. The new schools will replace the existing Diamond and Brittin schools, which are old, inadequately sized and expensive to maintain.

See SCHOOLS ————— 8B

What do you want to be when you grow up?

Photo by Sgt. Amanda Rengifo

Students talk career day with 'Vanguard' Soldiers

Sgt. Amanda Rengifo
41BCT Public Affairs

Fourth Infantry Brigade Combat Team, Third Infantry Division Soldiers were given the unique opportunity to present and talk about their Military Occupation Specialty during a "Career Day" on Feb. 22 at Bradwell Institute in Hinesville, Ga.

Several Soldiers from the battalions were selected to represent the brigade at the event which hosted a myriad of careers ranging from chefs and nurses to police officers and first responders.

One of the Soldiers present, Staff Sgt. Calvin D. Guice, a mechanic in 4-3 Brigade Special Troops Battalion, spoke fondly of his experience in the military and encouraged students to, above all else, pursue an education. "I told them that education should be there number one priority right now, because without an education you will

not get far," Guice said.

Students who signed up for the presentation were given the opportunity to try on military equipment that Soldiers use while on deployment and back in garrison. They also heard what military life is like for the Soldiers and their Family Members.

After his presentation, Guice, a Troy, Ala. native, answered questions for several of the students. "The thing that interested me most was that the military would pay for college. I didn't know that," said student Andrew D. Facey, a 17 year-old at the school.

Guice, a former recruiter, remarked that when it comes to kids, there is always something to learn. "I've learned to expect the unexpected when it comes to kids. I try to always listen to what they have to say and keep an open mind. It was very fulfilling and I would most definitely do it again."

Staff Sergeant Calvin D. Guice, a mechanic with 4-3 BSTB, 41BCT, 3rd ID, speaks during a "Career Day" at Bradwell Institute, Feb. 22, in Hinesville, Ga.

Soldier's creed cuts both ways at Warriors Walk

COMMENTARY



Amy Proctor
Frontline Contributor

It's always a supreme honor to attend a tree dedication ceremony at the Warriors Walk on Fort Stewart when one of our brave "Dog Faced" Soldiers is memorialized for making the ultimate sacrifice for our nation in combat. The tree dedication along the Warriors Walk, Feb. 21, was

a reminder that there are others in the ceremony who don't get to sit in assigned seats or under the tent. They stand behind the tents, in formation with their unit. And, their loss is real.

Twenty-eight-year-old Sgt. Aaron Wittman was assigned to 3rd Battalion, 69th Armor Regiment, 1st Brigade Combat Team, Third Infantry Division, in the Nangarhar Province of Afghanistan when he and his unit were attacked by the enemy with small arms fire. He died Jan. 10 from his injuries. The tree planting on the Warrior's Walk last Thursday was for him.



Photo by Amy Proctor

See WARRIORS ————— 8B

Youth selected for GMEA District One Honor Band opportunity

Jim Jeffcoat
Fort Stewart Public Affairs

Today is a special day for Sgt. 1st Class Shawn Kennett and wife Pamela as their daughter Dominique, an 8th grader at Snelson Golden Middle School, begin participating in the 2013 Georgia Middle School All-State Band clinic, today through March 2 at the Savannah Civic Center.

Kennett is with Company G, 1st Battalion, 41st Field Artillery; and Pamela is a DoD Civilian employee at Winn Army Community Hospital.

Dominique is one of two selectees to participate in the clinic as part of the 2013 Georgia Music Educators Association District One Honor Band. Shawn Holman is the other selectee from Snelson Golden Middle School. Both Dominique and Shawn are Clarinet players in the school band.

This is Dominique's second year in



Dominique Kennett plays the clarinet.

a row being selected for the district honor band, according to Pamela. She auditioned and was selected to the district honor Band for the second year in a row. Pamela said that out of 53 clarinet selectees, Dominique was selected 11th in the state after competing against hundreds of clarinets that auditioned.

"Shawn and I both are very proud of our daughter, Dominique," Pamela

said. "Life as a military child can be difficult. But, she has been blessed with a tremendous talent."

Dominique became interested in music at age 9. "We (Pamela and Shawn) purchased a keyboard for her and she taught herself how to play by listening to classical and mainstream music," the proud mom said.

With hobbies such as reading, playing the keyboard, drawing and eventually, playing her guitar, Dominique went on to excel in not only music, but in scholastics as well. She is a straight A student. Additionally, Dominique is a member of the band ensemble "Savannah Winds," which consists of mostly college-aged and older adult musicians.

Music is not her only boundaries, however, Dominique says she intends to continue playing the clarinet throughout high school, college and her adult life; But, "I will eventually become a veterinarian," she said.



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APPENDIX F
COMMENTS RECEIVED ON DRAFT EA AND RESPONSE TO COMMENTS

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MARK WILLIAMS
COMMISSIONER

A.G. 'SPUD' WOODWARD
DIRECTOR

April 10, 2013

Mrs. Katrina S. Epps
Fort Stewart Directorate of Public Works
Environmental Division
1587 Veterans Parkway
Fort Stewart, Georgia 31314

RE: Consistency Determination of DEA/DFONSI/DFONPA for Replacement of Diamond and Brittin Elementary Schools at Fort Stewart, Liberty County, Georgia

Dear Mrs. Epps:

Staff of the Coastal Management Program has reviewed your undated letter received February 28, 2013 and attached draft environmental assessment (DEA), draft findings of no significant impacts (DFONSI) and draft finding of no practicable alternative (FONPA) for replacing the Diamond and Brittin elementary schools at Fort Stewart to alleviate overcrowding, better meet the educational needs of Fort Stewart students, provide more sustainable and energy efficient buildings, and meet current American with Disabilities Act, Building Code, Anti-Terrorism/Force Protection, and sustainable policies.

The Program concurs with your consistency determination. This determination ensures that the proposed project has been designed to comply to the maximum extent practicable with the applicable enforceable policies of the Georgia Coastal Management Program. Please feel free to contact Kelie Moore or me if we can be of further assistance.

Sincerely,

A.G. "Spud" Woodward
Director

SW/km

Cc: Ms. Melissa Kendrick, Fort Stewart

ONE CONSERVATION WAY | BRUNSWICK, GEORGIA 31520-8686
912.264.7218 | FAX 912.262.3143 | WWW.COASTALGADNR.ORG



MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

February 21, 2013

Robert R. Baumgardt
Director, Public Works
Fort Stewart/Hunter Army Airfield
1587 Veterans Parkway
Fort Stewart, Georgia 31314
Attn: Brian Greer, Cultural Resource Program Manager

**RE: Fort Stewart: Construct Elementary Schools, 3 Alternatives, North of Hero Road or South of Highway 144 E or at Marne Terrace and Liberty Woods Housing area
Liberty County, Georgia
HP-121025-001**

Dear Mr. Baumgardt:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced undertaking. Our comments are offered to assist the U.S. Department of the Army and Fort Stewart in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Thank you for providing the information regarding preparation of a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for modifications to the project as proposed. Based on the information provided, HPD agrees with the U.S. Department of the Army and Fort Stewart. Specifically, HPD agrees that Alternatives 1 and 3 will have **no effect** on archaeological resources or historic structures that are listed in or eligible for listing in the National Register of Historic Places (NRHP), as defined in 36 CFR Part 800.4(d)(1). HPD further agrees that Alternative 2 will have **no effect** on historic structures that are listed in or eligible for listing in the NRHP. Additionally, if Alternative 2 is chosen, HPD agrees that further consultation will be necessary to evaluate effects on archaeological site 9LI1547, which may be eligible for inclusion in the NRHP. Finally, HPD agrees that demolition of the existing school complex would result in **no adverse effect** to historic properties.

Please refer to project number HP-121025-001 in any future correspondence regarding this undertaking. If we may be of further assistance, please do not hesitate to contact me at (404) 651-6624.

Sincerely,

A handwritten signature in cursive script that reads "Elizabeth Shirk".

Elizabeth Shirk
Environmental Review Coordinator

ES:jad

cc: Lupita McClenning, Coastal Georgia Regional Commission

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GEORGIAHPO.ORG



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 WEST OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

APRIL 04 2013

Regulatory Division
SAS-2012-00439

Mrs. Katrina S. Epps
Fort Stewart Directorate of Public Works, Environmental Division
1587 Veterans Parkway
Fort Stewart, Georgia 31314

Dear Mrs. Epps:

I refer to your Draft Environmental Assessment notice dated February 27, 2013, for the replacement of Diamond and Brittin Elementary Schools. The project site is located in the Fort Stewart Garrison area, near the City of Hinesville, Liberty County, Georgia (Latitude 31.8922, Longitude -81.6131). This project has been assigned number SAS-2012-00439 and it is important that you refer to this number in all communication concerning this matter.

Based on a review of the information you provided and a Jurisdictional Determination from this office dated May 10, 2012, the project as proposed may require a permit from this office. The wetlands/other waters on the subject property may be waters of the United States within the jurisdiction of Section 404 of the Clean Water Act (33 United States Code (U.S.C.) 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). The placement of dredged or fill material into any waterways and/or their adjacent wetlands or mechanized land clearing of those wetlands could require prior Department of the Army authorization pursuant to Section 404.

Information about the U.S. Army Corps of Engineers Regulatory Program is available on our website at <http://www.sas.usace.army.mil/Missions/Regulatory.aspx>.

Thank you in advance for completing our Customer Survey Form. This can be accomplished by visiting our website at <http://per2.nwp.usace.army.mil/survey.html>, and completing the survey on-line. We value your comments and appreciate your taking the time to complete a survey each time you interact with our office.

If you have any questions, please call me at 912-652-6210.

Sincerely,

A handwritten signature in black ink, appearing to read "Donald W. Hendrix". The signature is written in a cursive style with a large, stylized initial "D".

Donald W. Hendrix
Regulatory Specialist, Coastal Branch

#	Reviewer	Comment	Response
1.	GA DNR Coastal Resources Woodward	Staff of the Coastal Management Program has reviewed your undated letter received February 28, 2013 and attached draft environmental assessment (DEA), draft findings of no significant impacts (DFONSI) and draft finding of no practicable alternative (FONPA) for replacing the Diamond and Brittin elementary schools at Fort Stewart to alleviate overcrowding, better meet the educational needs of Fort Stewart students, provide more sustainable and energy efficient buildings, and meet current American with Disabilities Act, Building Code, Anti-Terrorism/Force Protection, and sustainable policies.	Noted. Comment letter included in Final EA Appendix F.
2.	GA DNR Coastal Resources Woodward	The Program concurs with your consistency determination. This determination ensures that the proposed project has been designed to comply to the maximum extent practicable with the applicable enforceable policies of the Georgia Coastal Management Program. Please feel free to contact Kelie Moore or me if we can be of further assistance.	Noted. Comment letter included in Final EA Appendix F.
3.	GA DNR Historic Preservation Shirk	Thank you for providing the information regarding preparation of a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for modifications to the project as proposed. Based on the information provided, HPD agrees with the U.S. Department of the Army and Fort Stewart. Specifically, HPD agrees that Alternatives 1 and 3 will have no effect on archaeological resources or historic structures that are listed in or eligible for listing in the National Register of Historic Places (NRHP), as defined in 36 CFR Part 800.4(d)(1). HPD further agrees that Alternative 2 will have no effect on historic structures that are listed in or eligible for listing in the NRHP. Additionally, if Alternative 2 is chosen, HPD agrees that further consultation will be necessary to evaluate effects on archaeological site 9LI1547, which may be eligible for inclusion in the NRHP. Finally, HPD agrees that demolition of the existing school complex would result in no adverse effect to historic properties.	Noted. Comment letter included in Final EA Appendix F.
4.	Department of the Army Coastal Branch Hendrix	I refer to your Draft Environmental Assessment notice dated February 27, 2013, for the replacement of Diamond and Brittin Elementary Schools. The project site is located in the Fort Stewart Garrison area, near the City of Hinesville, Liberty County, Georgia (Latitude 31.8922, Longitude -81.6131). This project has been assigned number SAS-2012-00439 and it is important that you refer to this number in all communication concerning this matter.	Noted. Comment letter included in Final EA Appendix F.
5.	Department of the Army Coastal Branch Hendrix	Based on a review of the information you provided and a Jurisdictional Determination from this office dated May 10, 2012, the project as proposed may require a permit from this office. The wetlands/other waters on the subject property may be waters of the United States within the jurisdiction of Section 404 of the Clean Water Act (33 United States Code (U.S.C.) 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). The placement of dredged or fill material into any waterways and/or their adjacent wetlands or mechanized land clearing of those wetlands could require prior Department of the Army authorization pursuant to Section 404.	Noted. Comment letter included in Final EA Appendix F.

From: [Amy Potter](#)
To: [Kendrick, Melissa B CIV USARMY IMCOM ATLANTIC \(US\)](#)
Subject: RE: Comments on Environmental Assessment (UNCLASSIFIED)
Date: Thursday, April 25, 2013 9:59:02 AM

Hi Melissa:

I'm so sorry I did not get back to you earlier. I have been swamped. I just wanted to let you know that we did not have any comments on the EA. Thanks!

>>> "Kendrick, Melissa B CIV USARMY IMCOM ATLANTIC (US)" <melissa.b.kendrick.civ@mail.mil>
4/11/2013 12:31 PM >>>
Classification: UNCLASSIFIED
Caveats: NONE

Hi Ms. Potter, just checking to see if you will be responding?

V/R,

Melissa

-----Original Message-----

From: Kendrick, Melissa B CIV USARMY IMCOM ATLANTIC (US)
Sent: Monday, April 08, 2013 12:45 PM
To: 'Amy Potter'
Cc: Epps, Katrina S (Katie) CTR USARMY (US)
Subject: Comments on Environmental Assessment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Ms. Potter,

We recently sent the GA EPD a copy of our latest EA, to the attention of Mr. Dale Caldwell and Mr. Jud Turner, regarding the construction of two new Department of Defense Elementary Schools on FSGA. The new schools will replace the existing Britten and Diamond schools on Post and are scheduled for Fiscal Years 2014 and 2016.

We have not received a comment from the GA EPD and just wanted to be sure you had the opportunity to provide comments, indicate it is in the mail, or that you have no comments on this document. Would you mind confirming this with Mr. Caldwell and Mr. Turner, as I do not have an email or phone number for them. It is most appreciated.

Have a great afternoon,

Melissa

Amy M. Potter
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Department of Defense Facilities Unit
Land Protection Branch
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