Finding of No Significant Impact for the Supplemental Environmental Assessment for Fort Carson Family Housing at Fort Carson, CO March 2021

Introduction

Fort Carson is dedicated to providing adequate housing for Soldiers and their families to improve their quality of life. Fort Carson Family Housing (FCFH) is moving forward with previously proposed construction of new housing on Parcel 14 (Old Hospital Site) and to demolish older housing in the Arapahoe, Cherokee and Choctaw Village neighborhoods (near term replacement plan) and then follow with the replacement of housing in other neighborhoods constructed in the 1950s and 1970s (long term replacement plan). The environmental effects of these projects have been analyzed in previous Environmental Assessments (EAs).

- 1996 Environmental Assessment for the Fort Carson Affordable Housing Program
- 2001 Environmental Assessment for the Accelerated Construction and Demolition of Family Housing, Fort Carson, Colorado (a supplement to the 1996 EA)
- 2012 Fort Carson Family Housing Construction and Operation of New Family Housing Units

In accordance with 32 CFR 651.5(g)(1), the EAs were reviewed to determine if there were any changes in conditions or new information that might change the Findings of No Significant Impact (FNSI). Only those resource areas and impacts that have changed since the previous EAs were analyzed in depth in the supplemental information report. A Record of Environmental Consideration (REC) has been prepared for the portions of the EAs that are still sufficient and accurate as required in 32 CFR 651.5(g)(2) and 12(a)(2).

The analysis in the Supplemental EA showed that there is a need to supplement the analysis concerning cultural resources and solid waste management. Some of the family housing units in the Arapahoe, Cherokee, Cheyenne and Choctaw Villages, and Ute Hill have since been designated as eligible for the National Register of Historic Places. Additional analysis was performed to determine the effects based on the change in conditions.

A Solid Waste Management Unit (SWMU 168) was discovered in 2000 and is located at the intersection of Inchon Circle and Funk Avenue, and is within the Pawnee Village. Additional analysis was performed to determine the effects based on the new information.

Description of the Proposed Action

The FCFH proposes to demolish the family housing units in Arapahoe, Cherokee and Choctaw Villages (near term replacement plan), and follow with the replacement of housing in other neighborhoods constructed in the 1950s and 1970s (long term replacement plan). The housing units have been selected for demolition because an analysis has been conducted that determined that the cost of renovation is greater than constructing new, high-quality housing for Soldiers and their Families. The costs to demolish the existing housing units in those Villages and construct new housing units is more advantageous than renovating the current housing units.

In 1999, FCFH entered into a 50 year ground lease agreement with the Army to provide family housing on Fort Carson. FCFH is currently seeking to modify the ground lease to include Parcel 14 (Old Hospital Site) to construct additional housing for Soldiers and Families (approximately 116 units). Parcel 14 construction is expected to start in 2021, as well as demolition and construction of replacement housing units in Cherokee Village. No projected schedule has been set for the other neighborhoods.

No Action Alternative

The No Action Alternative is for no demolition or construction to take place. This would mean that improvements to housing on Fort Carson would not be completed, and the purpose of improving Soldier quality of life would not be met.

Public Review

Pursuant to 651.14(b), Title 32 Code of Federal Regulations (Environmental Analysis of Army Actions), the Army made the Supplemental EA and Draft FNSI available to the public for review for 30 days prior to a final decision (March 31 - April 30, 2021). No comments were received. A Notice of Availability (NOA) of the documents was announced in local media. The documents are available online at: http://www.carson.army.mil/organizations/dpw.html#three.

Summary of the Environmental Consequences

The housing units slated for demolition were built between 1957 and 1958, which means they are now over 60 years old. Based on the 1996, 2001 and 2012 EAs, the Capehart-Wherry family housing buildings located in the Arapahoe, Cherokee, Cheyenne and Choctaw Village, and Ute Hill neighborhoods were identified as Fort Carson structures, but were not identified as historic properties. However, they are now at an age where they are considered eligible for inclusion in the National Register of Historic Places (NRHP). Demolition of a Capehart-Wherry Housing building could be considered an adverse effect to a NRHP eligible property, but the Army mitigated those adverse effects through a 2002 Advisory Council on Historic Preservation Program Comment.

The Program Comment required the Army to prepare a revised and expanded context study of the Capehart-Wherry Era housing types to specifically address and identify any historically important builders, developers and architects that may have been associated with design and construction of these housing developments. There were no historically important builders, developers or architects identified for the housing at Fort Carson. The revised and expanded context study also provided more detailed information on the various types of Capehart and Wherry housing existing at each installation. The Army prepared design guidelines for use by installations in planning and management of the associated structures and landscape features for these communities.

SWMU 168 was discovered in the year 2000 and is located at the intersection of Inchon Circle and Funk Avenue, and is within the Pawnee Village. Since the proposed action calls for the demolition of existing family housing and construction of new housing in the Arapahoe, Cherokee, Cheyenne and Choctaw Villages, runoff and groundwater from SWMU 168 will not affect the neighborhoods, because SWMU 168 is approximately 1 mile north of Cherokee Village, and greater than that for all the other neighborhoods.

Mitigation Measures

The change in conditions for Capehart-Wherry family housing buildings will require no further mitigation. SMWU 168 will have no effects on the new construction, demolition or leasing actions, therefore no mitigations are needed for this proposed action.

Conclusion and Findings

The attached Supplemental EA was prepared according to 32 Code of Federal Regulations (CFR) 651 and U.S. Council on Environmental Quality (CEQ) Regulations (Title 40, U.S. Code, Parts 1500-1508) for implementing the procedural requirements of the National Environmental Policy Act (NEPA). Based on careful review of the EAs and this supplemental information, I have determined that no significant direct, indirect, or cumulative impacts to the human or natural environment are anticipated because of the implementation of the Proposed Action under the new circumstances. The Proposed Action is not a major federal action that would significantly affect the quality of the environment within the meaning of Section 102(2)(c) of NEPA; and an environmental impact statement is not required, and will not be prepared. My decision is based on the potential environmental impacts associated with the Proposed Action as is analyzed in the Supplemental EA to the 1996, 2001 and 2012 EAs. This decision complies with legal requirements and will take into account all submitted information regarding reasonable alternatives and environmental impacts.

Date: 7 May 2021

NATHAN R. SPRINGER
COL, AR/Garrison Commander
Fort Carson, Colorado

Supplemental Environmental Assessment for the Fort Carson Family Housing at Fort Carson, CO
March 2021

Fort Carson

Directorate of Public Works, Environmental Division

Supplemental Information Report for the
Environmental Assessment for the
Fort Carson Family Housing at Fort Carson, CO
March 2021

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1 Purpose and Proposed Action

1.1 Introduction

Fort Carson is dedicated to providing adequate housing Soldiers and their families to improve their quality of life. Fort Carson Family Housing (FCFH) is moving forward with previously proposed construction of new housing on Parcel 14 (Old Hospital Site) and to demolish older housing to make room for new construction (Proposed Action). The environmental effects of these projects have been analyzed in previous Environmental Assessments (EA) that are incorporated by reference into this Supplemental Information Report (32 CFR 651.12(a)(3)).

- 1996 Environmental Assessment for the Fort Carson Affordable Housing Program (1996 EA)
    - Analysis included leasing properties for privatized management of Fort Carson Family Housing, construction of new housing and renovation of existing housing.
- 2001 Environmental Assessment for the Accelerated Construction and Demolition of Family Housing, Fort Carson, Colorado (2001 EA)
    - A supplemental EA to the 1996 Environmental Assessment for the Fort Carson Affordable Housing Program
    - Analysis addressed alternative construction sites from those analyzed in the 1996 EA and expanded on the analysis for the demolition of existing housing.
- 2012 Fort Carson Family Housing Construction and Operation of New Family Housing Units (2012 EA)
    - The analysis included the actions that would allow the construction of new housing on 24-acre parcel of the Old Hospital Site (Parcel 14) and other parcels previously transferred.

This Supplemental Information Report to the *1996, 2001 and 2012* EAs (Supplemental EA) has been developed in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) *Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act* published in 40 Code of Federal Regulations (CFR) Parts 1500-1508, and the Army's NEPA-implementing procedures published in 32 CFR Part 651, *Environmental Analysis of Army Actions (Army Regulation 200-2)*.

Supplemental NEPA documentation is required when (32 CFR 651.5(g)(1)):

> (i) The Army makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impact.

A hard look review was completed of the *1996, 2001 and 2012* EAs to ascertain the adequacy of the analysis and if any new information or circumstances have been identified. It was determined there were changes in conditions and new information substantial enough that supplemental documentation was needed to facilitate the planning and decision-making. It will assist the Army, stakeholders, and the public to understand the potential extent of environmental impacts of the Proposed Action and alternatives in light of the new conditions and whether there are any changes in effects that are significant. This supplement of information has been prepared, considering the new, modified, or missing information.

1.2 Reason for Supplementation

The analysis in the Supplemental EA showed that there is a need to supplement the analysis concerning cultural resources and solid waste management. Some or all of the family housing units in Arapahoe, Cherokee, Cheyenne and Choctaw Villages, and Ute Hill are Capehart-Wherry era housing. Fort Carson's Capehart-Wherry era housing has since been designated as eligible for the National Register of Historic Places (NRHP). In addition, a Solid Waste Management Unit (SWMU 168) was discovered in 2000 and is located at the intersection of Inchon Circle and Funk Avenue, and is within the Pawnee Village. Additional analysis was performed to determine the effects based on the changed or new information. A Record of Environmental Consideration (REC) has been prepared for those portions of the EAs that are still sufficient and accurate as required in 32 CFR 651.5(g)(2) and 12(a)(2).

1.3 Purpose and Need

The Proposed Action is necessary to provide enough affordable and quality housing for Soldiers and their families, and to reduce the overall number of substandard homes on Fort Carson.

The purpose of the Supplemental EA is to identify that FCFH is projected to demolish Capehart-Wherry family housing units in the Arapahoe, Cherokee and Choctaw Village neighborhoods (near term replacement plan) and Cheyenne Village (the single family officer area is also known as Ute Village West) and Ute Hill (long term replacement plan), then build new family housing units. Through a modification to the existing ground lease, FCFH will acquire Parcel 14 (Old Hospital Site) and construct approximately 116 new family housing units. The Capehart-Wherry family housing units were identified as Fort Carson structures, but were not identified as historic properties in previous EAs. However, they are now at an age where they are considered eligible for inclusion in the NRHP, and this change is covered by this Supplemental EA. This

Supplemental EA is also necessary to identify that SWMU 168 is listed in the Pawnee Village, but was not included in any of the previous EAs.

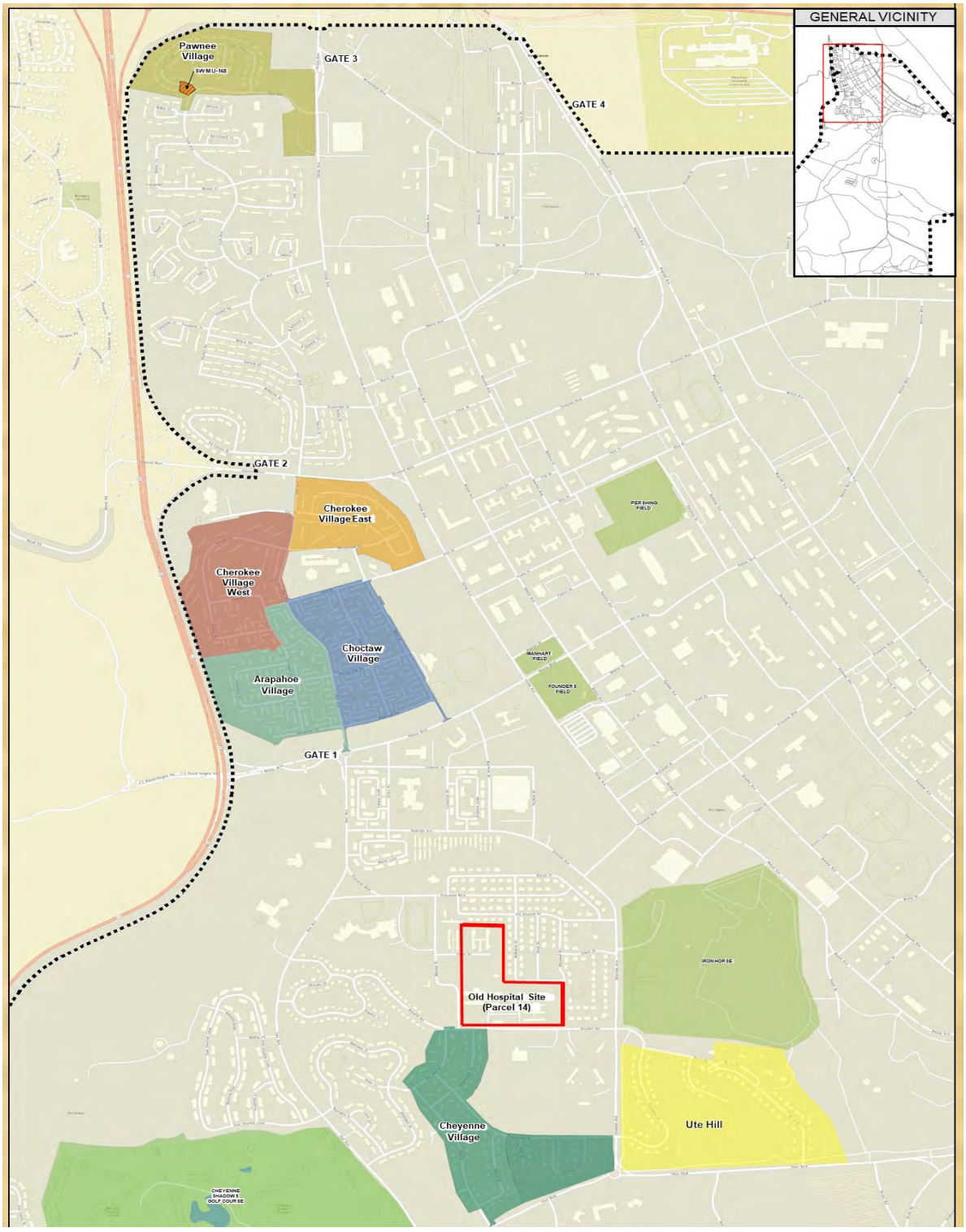

Figure 1: Arapahoe, Cherokee, Cheyenne, and Choctaw Villages, and Ute Hill; SWMU 168 (Pawnee Village); and Old Hospital Site (Parcel 14).

Figure 2: Arapahoe, Cherokee and Choctaw Villages (near term demolition and replacement plan) with Capehart-Wherry Era Housing.

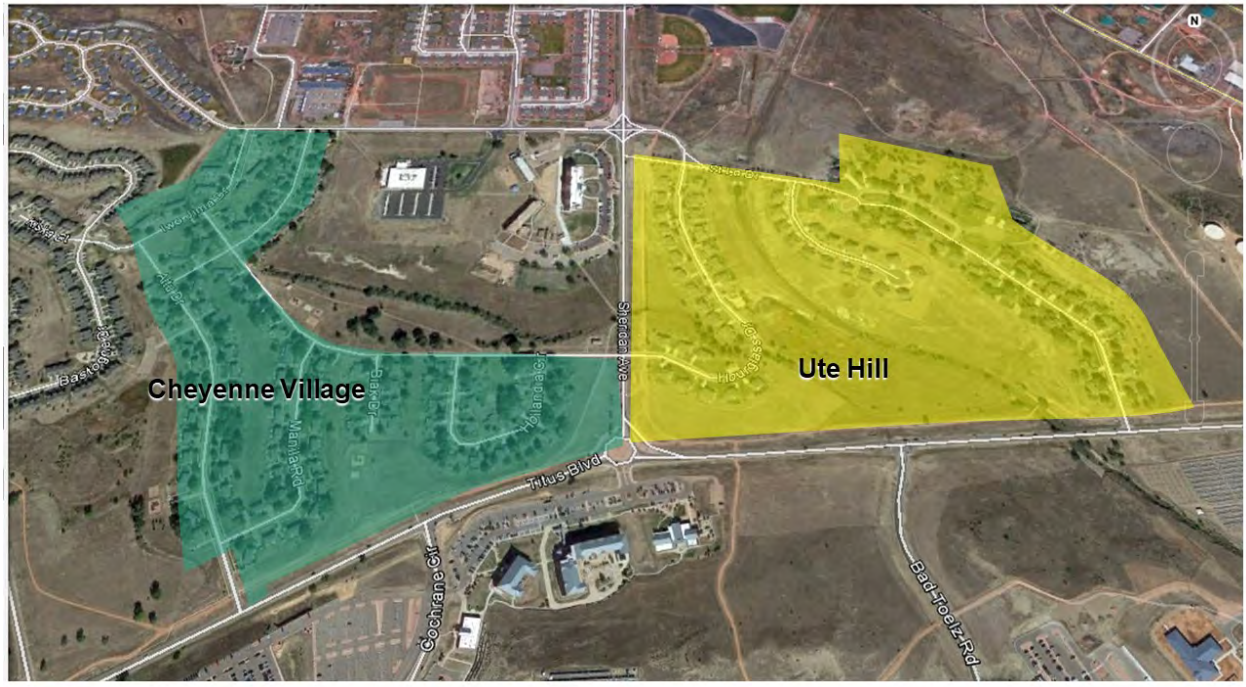

Figure 3: Cheyenne Village and Ute Hill (long term demolition and replacement plan) with Capehart-Wherry Era Housing.

Figure 4: SWMU 168 (Pawnee Village).

1.4 Public Involvement

A Notice of Availability (NOA) was announced in local media, and the documents are available online at: https://www.carson.army.mil/organizations/dpw.html#three. This Supplemental EA was made available to the public for 30 days, along with a Draft FNSI (March 31 - April 30, 2021). No comments were received. Anyone who wished to provide comments on the Proposed Action, Supplemental EA or Draft FNSI, or to request additional information, were advised to provide comments in writing to the USAG Fort Carson NEPA Program Manager, Directorate of Public Works, Environmental Division, 1626 Evans Street, Building 1219, Fort Carson, Colorado 80913-4362 or submit comments via email to usarmy.carson.imcom-central.list.dpw-ed-nepa@mail.mil.

1.5 Agency and Tribal Consultation

In accordance with 32 CFR 651.36 regarding other agency and organizations involvement, USAG Fort Carson has provided a copy of these documents to appropriate local, state, and federal government agencies and Native American tribes for their review and comment. More information concerning other ongoing government agency and tribal consultation is set forth throughout this document.

1.6 Decision to be Made

A decision will be made on whether the changes in conditions will have significant impacts. As part of the decision-making process, the Garrison Commander will consider all new and relevant environmental information and stakeholder and public issues of concern raised as part of the NEPA process. If the process results in a FNSI, the Garrison Commander will document his or her decision on which alternative to implement, which would be signed no earlier than 30 days from the publication of the NOA of the Final Supplemental EA/Draft FNSI (see Section 1.4 above for information on the NOA publications). Upon a determination that there are no significant impacts, the Army would sign the FNSI and carry out the decision.

2 Proposed Action, No Action Alternative, and Alternative Screening Criteria

2.1 Proposed Action

FCFH proposes to demolish the family housing units in Arapahoe, Cherokee and Choctaw Villages (near term replacement plan), and follow with the replacement of housing in other neighborhoods constructed in the 1950s and 1970s (long term replacement plan). These Family housing units consist of single and multi-family unit buildings, with some attached or detached carports and storage sheds. The housing units have been selected for demolition because the cost of housing unit renovation is greater than constructing new, high-quality housing for Soldiers and their Families. The costs to demolish the existing housing units in those Villages and construct new housing units is more advantageous than renovating the current housing units.

In 1999, FCFH entered into a 50 year ground lease agreement with the Army to provide family housing on Fort Carson. Fort Carson's family housing is operated through the FCFH Partnership. The Fort Carson, Directorate of Public Works Housing Office represents the Army, and currently Balfour Beatty Corporation (BBC) manages the operations, maintenance and construction activities on the leased lands. Rents are paid directly to BBC from the tenant Soldier's housing allowances.

FCFH is currently seeking to modify the ground lease to include Parcel 14 (Old Hospital Site) to construct additional housing for Soldiers and their Families (approximately 116 units). Parcel 14 construction is expected to start in 2021, as well as demolition and construction of replacement housing units in Cherokee Village. No projected schedule has been set for the other neighborhoods.

The overall long term plan for the proposed action is to reduce the current number of family housing units from 3,446 down to 3,368. This would be accomplished with

construction of new units on Parcel 14 and demolition of older units across the installation and replacement with new construction in existing neighborhoods.

2.2 No Action Alternative

The No Action Alternative would maintain the family housing units as-is, which would not involve the demolition of old housing units, nor the construction of new housing units. BBC would also not be able to enter into a lease agreement for Parcel 14. The No Action Alternative means that no demolition or construction would take place. This would mean that improvements to housing on Fort Carson would not be completed, and the purpose of improving Soldier quality of life would not be met.

3 Summary of Environmental Consequences and Proposed Mitigations

3.1 Introduction

This document supplements the portions of the analysis in the *1996, 2001 and 2012* EAs with new information or circumstances discovered since the FNSIs were signed (32 CFR 651.5(g)). The findings of the review of the analysis are summarized below.

Table 2 Findings of review of existing analysis in 1996, 2001 and 2012 EA.

Resource/Program Area	Summary of Analysis in 1996, 2001, or 2012 EAs	Analysis is Accurate and Sufficient?
Air Quality	Not Significant	Yes
Water Resources	Not Significant	Yes
Installation Restoration Program	There were no Solid Waste Management Units that would affect the areas for renovation or construction	No
Biological Resources	Not Significant	Yes
Cultural	There were no properties identified eligible for the National Register of Historic Places.	No
Wildlife	No effects to federally listed threatened or endangered species and minor effects to Species At Risk (SAR)	Yes

4 Supplemental Analysis

4.1 Cultural Resources

4.1.1 Affected Environment

The Army and the Advisory Council on Historic Preservation (ACHP) executed a National Historic Preservation Act (NHPA) Section 106 Program Alternative for Capehart-Wherry Army Family Housing in 2002 (Program Comment). In this agreement the Army acknowledged that all Capehart-Wherry buildings, structures and landscapes were National Register Historic Place eligible. The agreement was listed in the 2012 Housing EA for information purposes only (page 120), but was not discussed with regard to construction/demolition activities. The EA failed to identify in the analysis that the Capehart-Wherry family housing units were National Register of Historic Places eligible properties and that mitigation per terms of the agreement had been completed by the Army.

4.1.2 Environmental Consequences

4.1.2.1 No Action

There are no effects to the eligible structures if no action is taken.

4.1.2.2 Proposed Action

The National Register of Historic Places eligible housing units slated for demolition were built between 1957 and 1958, which means they are now over 60 years old. Based on the 1996, 2001 and 2012 EAs, the Capehart-Wherry family housing buildings (300 residential buildings) located in the neighborhoods of Arapahoe, Cherokee, Cheyenne (the single family officer area is also known as Ute Village West) and Choctaw Villages, and Ute Hill were identified as Fort Carson structures, but were not identified as historic properties. However, they are now at an age where they are considered eligible for inclusion in the National Register of Historic Places. Demolition is considered an adverse effect to any historic property, but the Army mitigated those adverse effects through the Advisory Council on Historic Properties Program Comment listed in the Federal Register (Vol. 67, No. 110, June 7, 2002). This Program Comment provides a programmatic approach to NHPA Section 106 compliance in a one-time, Army-wide action that covers the following management actions: maintenance and repair; rehabilitation; layaway and mothballing; renovation; demolition; demolition and replacement; and transfer, sale, or lease from federal ownership. The Program Comment facilitates the Army's compliance with the NHPA with regard to its management of its inventory of Capehart and Wherry Era family housing and associated structures and landscape features.

The Program Comment required the Army to prepare a revised and expanded context study of the Capehart-Wherry Era housing types to specifically address and identify any historically important builders, developers and architects that may have been associated with design and construction of these housing developments. There were no historically important builders, developers or architects identified for the housing at Fort Carson. The revised and expanded context study also provided more detailed information on the various types of Capehart and Wherry housing existing at each installation. The Army prepared design guidelines for use by installations in planning and management of the associated structures and landscape features for these communities.

FR Link: (Federal Register, Vol. 67, No. 110, June 7, 2002: https://www.federalregister.gov/documents/2002/06/07/02-14389/program-comment-for-capehart-and-wherry-era-army-family-housing-and-associated-structures-and

4.1.3 Mitigations

No further mitigation needed.

4.2 Solid Waste Management Units

4.2.1 Affected Environment

A Solid Waste Management Unit (SWMU 168) was discovered in the Year 2000 and is located at the intersection of Inchon Circle and Funk Avenue, and is within the Pawnee Village. SWMU 168 is currently under remediation and stationary. No demolition and replacement construction is proposed for Pawnee Village at this time, since it was previously completed in 2004. Only minor interior renovations are expected in the future.

4.2.2 Environmental Consequences

4.2.2.1 No Action

There would be no effects if no action is taken.

4.2.2.2 Proposed Action

Since demolition and renovation actions will occur in the Arapahoe, Cherokee and Choctaw Villages (near term replacement plan), and other neighborhoods to the south (long term replacement plan), groundwater and runoff from SWMU 168 will not affect these neighborhoods. SWMU 168 is approximately 1 mile north of Cherokee Village, 1.22 miles north of Choctaw Village, and 1.25 miles north of Arapahoe Village. The closest neighborhood with proposed demolition and reconstruction is Shoshoni Village (long term replacement plan), to the south, which is adjacent to the remediation activities of SWMU 168. The future demolition and construction actions in this neighborhood are not expected to be affected by the SWMU, because the contamination is deeper than construction disturbance and mainly in the groundwater.

The contaminant is pentachlorophenol (PCP), which is a semi-volatile compound. It is soluble in water, but doesn't volatilize towards the surface. The direction of the groundwater flow is East, Southeast. The only well that continues to have PCP present is POWMW19, which is towards the up gradient part of the site.

4.2.3 Mitigations

SWMU 168 is undergoing remediation and is being closely monitored by Fort Carson's Installation Restoration Program. There are no additional mitigations required to ensure no significant effects on the family housing proposals being analyzed in this Supplemental EA.

5 Acronyms

ACHP	Advisory Council on Historic Preservation
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
FCFH	Fort Carson Family Housing
FNSI	Finding of No Significant Impact
ICRMP	Integrated Cultural Resource Management Plan
NEPA	National Environmental Policy Act
NHPA	National Historical Preservation Act
NOA	Notice of Availability
NRHP	National Register of Historic Places
PCP	Pentachlorophenol
REC	Record of Environmental Consideration
ROD	Record of Decision

6 List of Persons Consulted

Name	Installation/Affiliation	Role
Bell, Angie	Fort Carson/Environmental	NEPA Program Manager
Conquest, Tyler	Fort Carson/Environmental	Stormwater Program Manager
Lehmicke, Anna Joy	Fort Carson/Environmental	Wildlife Biologist
Kolise, Jennifer	Fort Carson/Environmental	Cultural Resource Program Manager

Thomas, Wayne	Fort Carson/Environmental	NEPA/Cultural Branch Chief
Reed, Shannon	Fort Carson/Environmental	Air Program Manager
McLemore, Jeffrey	Fort Carson/Environmental	Forestry
Gallegos, Joseph	Fort Carson/Environmental	Prevention and Restoration Program Manager
Gerhard, Leslie	Fort Carson/Environmental	Pest Control Program Manager
Kulbeth, James	Fort Carson/Environmental	Wetlands and Watershed Specialist

RECORD OF ENVIRONMENTAL CONSIDERATION

Fort Carson Family Housing Environmental Assessments

INTRODUCTION

Fort Carson is dedicated to providing adequate housing for Soldiers and their Families to improve their quality of life. Fort Carson Family Housing (FCFH) is moving forward with previously proposed construction of new housing on Parcel 14 (Old Hospital Site) and to demolish older housing to make room for new construction (Proposed Action). The environmental effects of these projects have been analyzed in previous 1996, 2001, and 2012 Environmental Assessments (EAs).

PURPOSE, NEED AND PROPOSED ACTION

The purpose and need of the Proposed Action is necessary to provide enough affordable and quality housing for Soldiers and their Families, and to reduce the overall number of substandard homes on Fort Carson.

FCFH proposes to demolish the military family housing units in Arapahoe, Cherokee and Choctaw Villages (near term replacement plan), and follow with the replacement of housing in other neighborhoods constructed in the 1950s and 1970s (long term replacement plan). The housing units have been selected for demolition because the cost of renovation is greater than constructing new, high-quality housing for Soldiers and their Families.

In 1999, FCFH entered into a 50 year ground lease agreement with the Army to provide military family housing on Fort Carson. FCFH is currently seeking to modify the ground lease to include Parcel 14 (Old Hospital Site) to construct additional military housing for Soldiers and their Families (approximately 116 units). Parcel 14 construction is expected to start in 2021, as well as demolition and construction of replacement housing units in Cherokee Village. No projected schedule has been set for the other neighborhoods.

REVIEW PROCESS

32 CFR 651.5 provides guidance on reviewing existing NEPA documents and determining if supplemental information is needed.

> "(g) Army NEPA documentation must be periodically reviewed for adequacy and completeness in light of changes in project conditions.
>
> (1) Supplemental NEPA documentation is required when:
>
> (i) The Army makes substantial changes in the proposed action that are relevant to environmental concerns; or
>
> (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impact.
>
> (2) This review requires that the proponent merely initiate another ''hard look'' to ascertain the adequacy of the previous analyses and documentation in light of the conditions listed in paragraph (g)(1) of this section. If this review indicates no need for new or supplemental documentation, a REC can be produced in accordance with this part. Proponents are required to periodically review

relevant existing NEPA analyses to ascertain the need for supplemental documentation and document this review in a REC format."

"A Record of Environmental Consideration (REC) is a signed statement submitted with project documentation that briefly documents that an Army action has received environmental review. RECs are prepared for actions covered by existing or previous NEPA documentation." (32 CFR 651.19)

EXISTING NEPA DOCUMENTS

The actions proposed are covered in three existing NEPA documents:

- 1996 Environmental Assessment for the Fort Carson Affordable Housing Program (1996 EA)
    - Analysis included leasing properties for privatized management of Fort Carson Family Housing, construction of new housing and renovation of existing housing.
- 2001 Environmental Assessment for the Accelerated Construction and Demolition of Family Housing, Fort Carson, Colorado (2001 EA)
    - A supplemental EA to the 1996 Environmental Assessment for the Fort Carson Affordable Housing Program.
    - Analysis addressed alternative construction sites from those analyzed in the 1996 EA and expanded on the analysis for the demolition of existing housing.
- 2012 Fort Carson Family Housing Construction and Operation of New Family Housing Units (2012 EA)
    - The analysis included the actions that would allow the construction of new housing on 24-acre parcel of the Old Hospital Site (Parcel 14) and other parcels previously transferred.

ANALYSIS AND SUPPLEMENTATION

A hard look review was completed of the *1996, 2001 and 2012* EAs to ascertain the adequacy of the analysis and if any new information or circumstances have been identified. It was found that the analysis concerning cultural resources and solid waste management required supplemental information to the EAs. A Supplemental EA and updated Finding of No Significant Impact (FNSI) were prepared and are incorporated by reference into this REC.

This REC was developed to document the finding that the remaining analysis in the EAs was accurate and sufficient. Below is a summary of changes since the completion of the EAs for air, biological, water and wildlife resources.

Air Resources

At the time of completion of the EAs, Fort Carson was considered a Title V major source due to the potential to emit more than 100 tons per year of the following criteria pollutants: particulate matter, volatile organic compounds, CO, and nitrogen oxides, which would be emitted from stationary equipment such as boilers, generators, and parts cleaners. Significant net increases of these pollutants would invoke Prevention of Significant Deterioration review requirements, which are implemented by the State of Colorado Air Quality Control Commission, Regulation 3, Part D. The EAs include discussion that Fort Carson is in attainment for all Clean Air Act Criteria

Pollutants, except for carbon monoxide (CO) for which the area has been designated as a maintenance area. This is still the case for Fort Carson and there is no change to the analysis on air resources or findings in the FNSIs.

Noise

There was a Noise Analysis completed in 2018. The updated analysis did not change the noise zones or the metrics for the Fort Carson cantonment as described in the EAs. There is no change to the analysis on noise or the findings in the FNSIs.

Biological Resources

Since the EAs were written, the list of noxious weeds has grown to 30 state-listed species that are known to invade the urban landscape of Fort Carson. Since the EAs were written, the Colorado Noxious Weed Act (C.R. 35-5.5) has mandated the control of invasive species on all public and private lands. The Pest Management Plan was also updated in 2015, which included more details on treatment options for noxious weeds on Fort Carson. These changes do not affect the documented impacts of the Proposed Action on the risk of spreading noxious weeds. Noxious weeds are being managed in the residential area. There is no change to the analysis on biological resources or findings in the FNSIs.

Water Resources

There were no changes to the status of water resources, such as wetlands or streams since the finalization of the EAs.

The 1996 and 2001 EAs do not mention requirements or recommendations made in the Stormwater Management Plan nor the requirements under the Municipal Separate Storm Sewer System (MS4) and Construction General Permit. The 2012 EA does include requirements under the MS4 or Construction General Permit and cites the best management practices in the 2010 Stormwater Management Plan. The Stormwater Management Plan was updated in 2017. These changes do not change the analysis on stormwater or findings in the FNSIs.

Wildlife Resources

The Integrated Natural Resource Management Plan (INRMP) was updated in 2020, which includes an updated analysis of human-wildlife conflict risk that has increased since the completion of the EAs. The EAs discuss the black-footed ferret, the swift fox and the Preble's meadow jumping mouse as species at risk. Wildlife surveys that have been completed since the EAs were finalized showed no evidence that these species are found in the cantonment. These changes do not change the analysis on wildlife resources or findings in the FNSIs.

MITIGATIONS AND BEST MANAGEMENT PRACTICES

The mitigations and best management practices (BMPs) are found in each resource discussion in Chapter 5 Environmental Impacts in the 1996 EA. There are no mitigations or BMPs outlined in the 2001 EA, but as a supplement to the 1996 EA, the mitigations and BMPs in the 1996 EA are applicable. The 2012 EA outlines mitigation and BMPs in Table 3.14-1 on page 82. Proposed Action specific mitigations and BMPs are appendix A of this REC.

CONCLUSION

The Proposed Action is covered by existing NEPA documentation. There are no substantial changes to the Proposed Action as analyzed in the 1996, 2001 or 2012 EAs. There was significant new information regarding the National Register of Historic Places eligibility of buildings proposed for demolition, as well as the discovery of a new solid waste management unit. A Supplemental EA has been prepared for these two topics. This REC documents that the analyses concerning air, water, biological, and wildlife resources were found to be sufficient and accurate and no further analysis is needed for these topics per 32 CFR 651.5.

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Carlos Rivero-DeAguilar

Environmental Division Chief

Directorate of Public Works, Fort Carson

Appendix A: Proposed Action Specific Mitigations and BMPs.

Mitigation and Best Management Practices
Air Resources **Shannon Reed 719-526-9249** Any agent engaged in overlotting, excavating, grading, filling, or other construction activities of areas over 1 acre may be required to comply with air quality permitting requirements listed below. 1. Application for the Construction Activity Permit shall be made to El Paso County Public Health when: Land development is equal to or greater than one (1) acre, but less than twenty-five (25) acres and construction activities will not exceed six (6) months in duration. See link below for permit application. http://www.elpasocountyhealth.org/service/air-quality/construction-activity-application. 2. Application for the Construction Activity Permit shall be made to the Colorado Department of Public Health and Environment, Air Pollution Control Division when: Construction activities greater than 1 acre may exceed six (6) months in duration, and/or land development is equal to or greater than twenty-five (25) acres. https://www.colorado.gov/pacific/cdphe/general-air-permits. Additionally, this project is in the carbon monoxide maintenance area and requires an emissions assessment prior to starting the project. Complete the attached AQA and return to the Air Program for analysis. The proposed activity has the potential to stir up dust so please review and follow dust recommendations set forth in the Fort Carson Fugitive Dust Plan (https://www.carson.army.mil/assets/docs/dpw/NEPA/2016-fugitive-dust-control-plan.pdf).
WASTEWATER/DRINKING WATER **John Wachter 719-526-1694** **Jeff Farmer 719-526-1730** None
STORMWATER **Tyler Conquest 719-526-1697** **Jack Haflett 719-526-6206** The limit of disturbance is equal to or exceeds one acre, a Stormwater Pollution Prevention Plan (SWPPP) will be required. The contractor must prepare the SWPPP and have it approved by the Fort Carson Stormwater Manager before construction may begin. A template for the SWPPP is available at https://www.carson.army.mil/organizations/dpw.html. The contractor must comply with the Fort Carson stormwater management policy and the 2017 EPA's Construction General Permit, and must implement Best Management Practices to prevent impacts to stormwater.
ASBESTOS/LEAD/TOXICS **David Martin 719-526-1725** Properly remove and dispose of all asbestos containing materials prior to demolition. Complete State permit for demolition. I have a copy of pre-demolition asbestos sampling if needed.
IRP **Joe Gallegos 719-526-8001** Any monitoring wells in the area must remain undisturbed. Coordinate with Joe Gallegos on locations.
AST/UST/SPILL **Terry Eberle 719-526-9411** None
RCRA **Cheryl Frischkorn 719-526-1686**

Typically, the disposal of hazardous waste (HW) is a requirement of contracts on Fort Carson, where the contactor is responsible for the proper handling and disposal. However, if this is not the case or if this project is conducted by noncontractor personnel, please contact the HW PM, the RCRA PM, or an ECAT member for proper handling and disposal.

INVASIVE PLANTS/PEST MANAGEMENT

Leslie Gerhard 719-526-1329

In order to prevent the spread of invasive species, equipment brought to the site shall be clean and free of the seeds, roots, or vegetative parts of invasive weeds. Likewise if noxious weeds are present on the site, equipment used on site must be cleaned thoroughly prior to moving to other locations.

Minimize soil disturbances that could cause an increase of weedy vegetation. Any imported soils, gravels, and fill need to be from sources free of invasive species. Ensure that any removed soils with invasive species present are buried as deep as possible and covered with 18 inches of uncontaminated soils, or hauled to appropriate disposal locations where there is no concern about the propagation of invasive species from seeds or roots present in the debris. Pre-emergent herbicides should be considered for dirt or gravel lots where vegetation or weeds are not desired.

Submit information on the long term weed management of the site to the Installation Pest Management Coordinator (IPMC) (719-217-4887).

CULTURAL RESOURCES

Jennifer Kolise 719-526-4484

Kari Pittman (PCMS) 719-503-6136

SOP#4: Inadvertent Discovery of Archaeological, Cultural, or Paleontological Materials and SOP#5 Discovery of an Inadvertent Entry found in the 2017 Integration Cultural Resources Management Plan (https://www.carson.army.mil/assets/docs/dpw/Cultural/2017-2021-icrmp.pdf)

FORESTRY/ARBORIST

Jeff McLemore 719-526-1667

Protect on-site trees from trunk, branch or root system damage while demolishing building. Project manager will need to erect barriers around trees to comply. PM must contact Forester for guidance on correct placement and erection of barriers well before demolition takes place.

WATERSHEDS/WETLANDS/404

James Kulbeth 719-526-1685

None

WILDLIFE

Anna Joy Lehmicke 719-526-3975

Amanda Luper 719-524-5393

Michelle Blake 719-503-6538 (PCMS)

To minimize Migratory Bird Treaty Act (MBTA) conflicts, removal, disturbance, or destruction of trees/shrubs, cattails and riparian areas, and/or prairie grass should occur between 16 Sept and 14 April. Outside of this time period, active nests of protected species may not be removed without a permit. It is the responsibility of FCFH to survey areas of disturbance to determine if there are any active nests, to obtain a take permit from the US Fish and Wildlife Service (USFWS) and ensure that all permit and reporting requirements are met. FCFH must provide the Fort Carson wildlife biologist with copies of any MBTA permits and information about the disposition of the bird or nest.

NEPA POCs

Angie Bell 719-526-4666

Marcus Gray 719-526-2752

Wayne Thomas 719-526-1852

The Fort Carson NEPA Office must be notified of any change to the scope, location, or size of the project. Project proponent is responsible to ensure coordination, monitoring, and mitigation requirements listed in this document are implemented. Further Coordination May Be Required:

** Subject to requirements listed in the Mitigation Measures/Requirements Table. If project is not initiated within 180 days from the date the REC was signed, and/or there is a change in scope of work or location this document becomes null and void. Contact the NEPA Section for re-submittal. **

Any environmental information needed to meet permit requirements (i.e. historic properties, T&E Species, Air Quality. etc) can be obtained from the Fort Carson Program POCs listed above.

CAUTION: IF THIS FORM IS PROVIDED AS AN ATTACHMENT TO, OR OTHERWISE AS A PART OF, A CONTRACT, THE FOLLOWING APPLIES:

The above information represents assessments from the Fort Carson DPW Environmental Division concerning environmental requirements relating to this project. These assessments are provided for the Contractor's information only. The Government does not warrant that these assessments are accurate or comprehensive. The Contractor remains responsible to determine and comply with all applicable federal, state, local, and military environmental laws and regulations.

All personnel performing work for or on behalf of Fort Carson must be aware of and understand Fort Carson's environmental requirements. For information regarding specific requirements, contact the Fort Carson environmental POC at 719-526-8893.

Appendix A: 1996 EA FNSI RCI Housing

ENVIRONMENTAL ASSESSMENT FOR THE FORT CARSON AFFORDABLE HOUSING PROGRAM, FORT CARSON, CO

HEADQUARTERS, FORT CARSON
FORT CARSON, COLORADO 80913-5000

June 1996

Prepared By:

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Directorate of Environmental
Compliance and Management

Reviewed By:

Thomas L. Warren
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Approved By:

John M. Keefe
Lieutenant Colonel, Engineer
Office for Partnership XXI

Approved By:

John M. Pickler
Major General, USA
Commanding

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT FOR THE FORT CARSON AFFORDABLE HOUSING PROGRAM, FORT CARSON, CO

Commander, Headquarters Fort Carson, ATTN: AFZC-ECM
Fort Carson Colorado 80913-5023

Phone: (719) 526-4666/2022

1. To all interested agencies, groups, and persons:

PROPOSED ACTION: The proposed action is privatize family housing management, maintenance, renovation and new construction activities at Fort Carson. A private contractor would construct up to 840 new family housing units and renovate 1,824 existing family housing units by using private sector financing. The private contractor would rent the units to soldiers assigned to Fort Carson for no more than their Basic Housing Allowance and Variable Housing Allowance. The advantage to this structure is that the Army would have to go through contracting procedures only one time and the construction and renovation could be completed within four years of project initiation.

Note: One existing family housing unit would be retained by Fort Carson due to its location and potential historic value.

PURPOSE OF THE ACTION: The purpose of the Fort Carson Affordable Housing Program (FCAHP) is to alleviate a shortage of on-post family housing and improve existing housing to current living standards.

ALTERNATIVES CONSIDERED:

1. No action. Fort Carson would continue to maintain the existing 1,825 units.

2. Military Construction and Renovation. Fort Carson would construct and maintain up to 840 new housing units and revitalize and maintain the existing 1,825 housing units. The Army would provide the infrastructure and utilities. Construction and renovation funding would be obtained using the traditional appropriated funding process. The renovation and construction of such units would take more than eight years if completed using traditional methods.

ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION: The anticipated environmental impacts of the proposed action are considered to include neither significantly positive or negative impacts.

It has been determined that this proposed action would not constitute an action significantly affecting the quality of the

environment. Accordingly, the Commander, Fort Carson has decided not to prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act of 1969 (PL 91-190). Reasons for the decision not to prepare such a statement are as follows:

a. There will be no adverse impacts on threatened or endangered species or their critical habitats.

b. The proposal will not significantly affect air or water quality nor increase current noise levels.

c. The proposal will not significantly affect the social or economic structure of adjacent communities.

d. There will be no adverse impacts on significant historic properties or cultural resources.

e. The proposal will not significantly affect environmental quality or public health or safety.

2. An environmental assessment that addresses environmental impacts of the proposed action and why an EIS is not required is available for public examination, upon request at the below address, the Penrose Public Library, Colorado Springs, CO and the Grant Library, Building 1528, Fort Carson, CO. All requests should be directed to the telephone number listed above. All interested agencies, groups and individuals not in agreement with this decision are invited to submit written comments for consideration by the Commander, Fort Carson within 30 days after publication of this document. The proposed action will not be implemented prior to this date.

Comments should be directed to:

Commander, Fort Carson
ATTN: AFZC-ECM (Building 302)
Fort Carson, CO 80913-5000

ENVIRONMENTAL ASSESSMENT
FOR THE FORT CARSON AFFORDABLE
HOUSING PROGRAM, FORT CARSON, CO

1. Purpose and Need of the Proposed Action.

1.1. Purpose of the Action. The purpose of the Fort Carson Affordable Housing Program (FCAHP) is to alleviate a shortage of on-post family housing and improve existing housing to current living standards.

1.2. Need for the Action. Fort Carson historically has had a shortage of on-post family housing. The most recent Department of the Army study (1995) validated that additional family housing was required in order to support the installation's authorized strength through fiscal year (FY) 2001. Over 3,700 families are on the current waiting list for family housing units on Fort Carson with an average wait time of over 32 months. Therefore, the majority of soldiers locate housing off-post. During the last recession in Colorado Springs in the late 1980's and early 1990's this was not a problem since the vacancy rate was in double digits (14% in 1990) and landlords offered many incentives such as free utilities in order to fill apartments. Since then, the local economy has improved dramatically, causing vacancy rates to fall to near 2% and rents to increase by as much as 50% as the population has increased. The average rent for a three bedroom apartment is between $515 and $959 per month (not including utilities). This exceeds the basic allowance for quarters[1] (BAQ) and variable housing allowance[2] (VHA) for enlisted personnel through the grade of Sergeant First Class.

Existing Fort Carson family housing was constructed from 1957-1974 but there have been few renovations over the years. Mechanical and electrical systems have deteriorated, increasing maintenance requirements. Energy goals are difficult to achieve due to the lack of insulation and modern equipment. Renovations

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[1] Basic Allowance for Quarters: Flat rate based on rank paid to soldiers living in non-government housing.

[2] Variable Housing Allowance: Allowance for non-government housing based on the cost of living in the area the soldier is assigned. The goal of VHA is to make up the difference between the BAQ and the actual cost of housing for that particular area.

are required to improve on-post family housing to meet current standards and extend the useful life of the structures.

1.3. Scope of the Environmental Assessment. This environmental assessment (EA) has been prepared in accordance with the National Environmental Policy Act (Public Law (PL) 91-190), and Army Regulation 200-2, Environmental Effects of Army Actions. The EA will assess the known and potential environmental and socioeconomic impacts, both positive and negative, and possible mitigation measures associated with the FCAHP. Only the resources and consequences relevant to the proposed action are addressed in this EA.

2. Description of the Proposed Action. In order to solve the affordable family housing problem and upgrade existing family housing at Fort Carson, the installation has developed the FCAHP. The key element of this is to contract for a private entity to manage the family housing program. This would include at least the following:

- Out-lease of existing renovated housing and new housing to the contractor to manage, maintain, and operate for a specified number of years.

- Renovation of 1,824 out of 1,825 existing units of family housing at Fort Carson. Note: One existing family housing unit would be retained by Fort Carson due to its location and historic value.

- Construction of up to 840 new units.

- Use of all or a portion of the financing tools available under the Military Housing Privatization Initiative (Title XXVII, General Provisions, Subtitle A, Military Housing Privatization Initiative, Section 2801, Alternative Authority for Construction and Improvement of Military Housing).

- Rent the units to soldiers for no more than their BAQ and VHA allowances.

Constructing military family housing using private sector financing rather than appropriated funds is not a new process. Housing constructed on Fort Carson in the 1950's and 1960's was accomplished through the Wherry and Capehart Housing Programs. Over 200,000 military family housing units nation-wide were constructed under these programs. Newer housing finance legislative authorities (801 Build-to-Lease {10 USC 2835}, Section 802 Rental Guarantees {10 USC 2836}, and 10 USC 2667) exist and have been used with some success, however, none of these options are viable today due to changes to budget scoring rules or to legal authorities that now make these approaches

unattrative to financers and/or the federal government. Therefore, the Military Family Housing Privatization Initiative was enacted in order to provide viable private sector financing options. A copy of the Initiative is at Tab A.

The proposed structure for accomplishing the required new construction and renovation of housing at Fort Carson is to select a private contractor through a competitive bidding process. The contractor would be the entity that would obtain financing for the new construction and renovation.

Affordability is the critical objective of the proposed program at Fort Carson. The housing would be made affordable at the current BAQ and VHA rates for the soldiers. This would be accomplished by out-leasing vacant land and existing family housing to the contractor. This would further leverage down the costs ensuring that the housing can be made affordable at the soldiers BAQ and VHA rates.

2.1. Type of and Number of Family Housing to be Constructed. Units would consist of a mix of two, three, and four bedroom units in a combination of detached, attached and stacked units to include apartments, townhouses, single-family, and multiplex units that would include carports and garages. They would be of an attractive first class construction for multifamily projects and create a community atmosphere by incorporating such amenities as community centers, recreation areas, and multi-use facilities. Types of units and amenities to be included are listed in Table 2.1.

2.2. Phasing of New Construction and Renovation. It is anticipated that within nine months of the ground breaking the first 100 units would be made available for occupancy. At that point families would move out of occupied housing into the new units. The renovation of approximately 100 units per three months would commence. The renovation of existing units would be phased in complementing new construction. New construction would be completed by the third year after commencement of the program and renovation would be completed by the fourth year. Table 2.2-1 illustrates the sequence of renovation and construction and the number of available units throughout the project. Table 2.2-2 shows projected project costs. A total of 2,664 family housing units would be available at the end of the construction/ renovation period.

2.3. Potential Construction Sites. Possible sites have been identified for future family housing construction (Table 2.5). A map showing these locations is at Tab B. These sites evolved as a result of discussions between the Directorate of Public Works (DPW), the Directorate of Environmental Compliance and Management (DECAM) and the Partnership XXI Office. Sites were considered based on suitability for family housing

construction, distance to utilities, and topography. Sites A, B, F, G, I and L were identified as being suitable for family housing development. Final site boundaries may vary slightly and are not shown to scale on the map. The following sites were eliminated from further consideration:

Site C. Site to be used for recreation.

Sites D, E and J. Due to loss of scrub oak habitat on the west side of Highway 115 from housing development, DECAM wildlife managers felt that development of Sites D and E would lead to excessive loss of this valuable wildlife habitat in the area. The drainage adjacent to these sites is also a critical wildlife travel corridor for migrating animals. This hill contains a variety of wildlife including mule deer, black bear, coyote, and mountain lion. Development of this area would result in loss of valuable habitat and the potential for increased human contact with black bear and mountain lions. Due to these concerns, sites E, D and J were eliminated from further consideration.

Sites H and K. Eliminated from consideration due to land uses in the vicinity that were incompatible with family housing and topography.

2.4. Scope of Renovations for Existing Family Housing. See Table 2.4 for scope of renovations.

2.5. Management and Maintenance. Management and maintenance would be the responsibility of the contractor. Certain responsibilities would be retained by Fort Carson, such as providing police and fire protection, etc. The level of responsibilities to be transferred to the contractor is being studied at the present time. The contractor would begin to receive BAQ and VHA from the occupied units upon conveyance of the units. Projected revenue from BAQ and VHA is listed in Table 2.5 and is based upon FY96 levels and does not account for any changes to BAQ and VHA in future years.

2.6. Real Estate Transfer. A real estate transfer and assumption agreement would be used to convey an interest in real estate to the corporation. This mechanism would require that the contractor assume certain responsibilities with regard to affordable housing and would contain protective covenants designed to ensure that the objectives of the program are achieved. Fort Carson would retain certain approval rights, such as the right to approve the terms of any mortgage or encumbrance upon the real estate granted by the corporation or others to lenders providing financing for affordable housing, phasing, design, conveyance approvals, and input to ensure that proper operation and maintenance services are provided. Certain details of the real estate transfer would be negotiated with the

contractor such as ownership of the units upon termination of the lease.

2.7. Regulatory Controls. Maintenance, repair, replacement, construction, operation and management of buildings shall, as a minimum conform to the regulatory controls and requirements in Table 2.7.

2.9. Public Involvement. This proposal is the result of a working group created by Fort Carson and involving representatives of Fort Carson, the City of Colorado Springs, El Paso County, private developers and other private sector representatives.

3. Alternatives Considered.

3.1. No action. Fort Carson would continue to maintain the existing 1,825 units.

3.2. Military Construction and Renovation. Fort Carson would construct and maintain up to 840 new housing units and revitalize and maintain the existing 1,825 housing units. The Army would provide the infrastructure and utilities. Construction and renovation funding would be obtained using the traditional appropriated funding process. The renovation and construction of such units would take more than eight years if completed using traditional methods. At the present time there are only two family housing projects in planning phases that would replace units, not add to the inventory.

4. Affected Environment. This section contains background information and describes environmental components that may be impacted by the proposed action and alternatives. Where possible, the most recent statistics for a subject were utilized. However, the year of the data will vary depending upon how often the statistics are compiled and published. For example information on Fort Carson is usually from Fiscal Year 1995 (October 1994 - September 1995), but census data is from 1990 since that data is collected only every 10 years. The region of influence (the area receiving most of the impacts of the proposed action) has been defined to coincide with the way local agencies collect statistics: El Paso County. This includes the city of Colorado Springs and surrounding local communities. Although other counties such as Pueblo and Teller county have people that are employed at Fort Carson or would be impacted by the proposed action, including these entire counties in the impact analysis would dilute the impacts over too wide an area.

4.1. Location. Fort Carson is located in the east-central portion of Colorado at the foot of the Rocky Mountain Range and lies in portions of three counties (El Paso, Pueblo, and Fremont). It is situated between two major highways; Colorado 115 on the west and Interstate 25 on the east.

4.2. Size and configuration. The installation occupies a total land area of 137,403 acres, measuring from 2 to 15 miles east-to-west and 24 miles along the north-south axis. The built-up (cantonment) area is located at the northwest tip of the reservation, about eight miles south of the center of Colorado Springs and 35 miles from downtown Pueblo. Fort Carson lies within portions of El Paso, Fremont and Pueblo counties.

4.3. Population of Fort Carson. The average 1995 resident population, including military dependents residing on-post, was 12,713. Active duty military assigned to Fort Carson in FY 95 was 15,628. Civilian employees numbered 3,330 (Department of the Army and Non-appropriated Fund). The post serves over 105,000 people on a monthly basis.

4.4. Regional Demographics. Over the past 50 years, or since the Fort was established, the Pikes Peak region has grown nearly tenfold. Approximately 444,500 persons lived in El Paso County in 1995. Table 4.4 shows racial breakdown by communities in the area. There is only a slight variation in racial breakdown between local communities.

4.5. Socioeconomics of the Colorado Springs Area. The state's and region's economic growth is expected to continue through the next year, although at a slower rate according to several sources. Migration to Colorado has continued and retail sales have remained strong. Housing costs are slightly above the national average. State and local income taxes are above average when compared to the other metropolitan areas in the country (places rated Almanac). Three Department of Defense (DOD) installations and the Air Force Academy are among the top ten employers for the area with Fort Carson being the largest with over 18,500 employees (military and civilian personnel) in 1995. When permanent military and military-connected civilians at the DOD facilities in the area are considered, they make up approximately 20% of the local population. Approximately 40% of the local economy is directly or indirectly related to DOD spending. See Table 4.5 for expenditure related to management of Fort Carson family housing.

In 1993 and 1994, over 3600 single family and multi-family housing starts were recorded in El Paso County. Residential construction in 1993 and 1994 was valued at approximately $315 million and $349 million respectively.

4.6. Facilities and Land Use. The 5,892 acre cantonment area contains most of the facilities on Fort Carson such as troop and family housing, administrative, maintenance, community support, recreation, supply and storage, utilities, and some training. Butts Army Airfield and the cantonment area contain most of the installation's support activities and capital improvements. The 97,201 acres of unimproved or open operations lands are utilized for live fire artillery, small arms practice, maneuver operations, and bivouac training. The remainder is designated for recreation and other use.

4.7. Housing.

4.7.1. On-post.

- Family Housing. Currently there are 1,825 units of family housing located at Fort Carson, 226 units for officers and 1,599 for enlisted soldiers. Most family housing units were constructed in several phases: 1957-58; 1965; and 1971-74. The oldest family housing unit is the Command Sergeant Major's house (Building 1919) which was acquired when Fort Carson was established in 1942. This unit will not be included in the transfer. Space does not allow each family housing unit to be listed with a date of construction, however, this information is maintained in the Real Property office, Directorate of Public Works. A map of Fort Carson Family Housing is at Tab C. Family Housing on Fort Carson is fully occupied except for a small number of units at any given time that are being repaired or renovated between occupancies. A project to renovate approximately 83 officer units began in late 1995. The first phase to renovate 59 units is expected to be completed by mid-summer 1996. Renovation of the remaining units would start in late summer 1996 and be completed within a year. Information on the percentage of personnel living on post is in Table 4.7.1-1.

- Services Provided to Family Housing. Maintenance and other services provided to family housing occupants are similar to what a landlord and the local municipality would provide off post. Maintenance and repair (interior and exterior) of housing units, infrastructure repairs (sewer, road, sidewalks), mowing of common areas, fire and police protection, refuse collection, and entomology services are provided to family housing occupants. Fort Carson also pays for electricity, water and natural gas for family housing. Fort Carson receives funding for these services through the appropriated fund process based upon the number of units and occupancy rate of on post family housing. Expenditures for utilities, services and maintenance and repair in FY95 was $4,394,204 (Table 4.7.1-2). Soldiers living on post do not receive BAQ and VHA nor do they pay rent for on-post family housing. Family housing occupants are responsible for maintaining the yard outside their quarters, including mowing the

grass and pruning trees and shrubs. Occupants must pay for their own telephone and cable services.

4.7.2. Off-post. Military personnel make up a large portion (approximately one quarter) of the rental market in the Colorado Springs area. However, according to the Housing Market Analysis for Colorado Springs, the percent of military tenants versus total occupants varies widely depending on the location. Military tenants make up to 70% of the total occupants in the southeast area of Colorado Springs, while they make up only a very small percentage in the northern areas of the city. The two top employers in the area, Fort Carson and Peterson Complex are located in the southern portion of the city.

A wide variety of rental units are available in the area, including apartments, mobile homes, and houses. The number of rental units in El Paso County is approximately 70,200. Most apartment complexes in the region are located within the Colorado Springs city limits. Vacancy rates are slightly lower in areas closest to Fort Carson (1.56 - 2.74%, Apartment Survey), most likely due to the demand for rental units by soldiers. Rents vary widely throughout the region ($200-1,145 per month) depending on the size and location of the unit. Due to the low vacancy rates, average apartment rents have increased $147, or 42.6% over the past three years, and are still increasing at rates above the average rate of inflation. Approximately 23% of Fort Carson personnel living off post own their house. El Paso County housing statistics are located in Table 4.7.2.

Few multi-family housing units have been built since the late 1980's. As rents have risen in the area, it has once again become profitable for developers to construct apartment housing. Building permits issued for this type of housing increased more than 100% between 1993 and 1994 and still more new developments are planned in the near future. About 1,000 units were started in 1995 with another 2,000-3,250 units in various stages of planning and approval processes. Some of these may not be built for various reasons. However, as Doug Carter of Palmer McAllister, states in the Apartment Market Report:

"With few exceptions, new developments are ... communities seeking rents in the $600 to $1,000 range" and "most developers are seeking sites proximate to job growth, job quality and the highest rents - North. A couple of developments are planned for the Southwest and airport areas. Moderate income communities (are) under construction in the airport area".

Richard Sullivan, executive director of the Colorado Springs Housing Authority, also concurred that most new apartment units under construction are intended for high-income tenants. Affordable housing is not just a concern of military personnel as recently members of a local activist group, the Housing Advocacy

Coalition, demanded that "more public and private effort be focused on finding housing for the working poor" and "told the (Colorado Springs) City Council that affordable housing is at a crisis proportion in the city" (Gazette Telegraph, December 23, 1995). Other industry experts agree that most apartments being constructed are targeted at high-income renters and that little affordable housing is being added to the market. Demand for affordable housing is also reflected in that approximately 1,800 are on the waiting list for federally subsidized apartments with an average wait of three years (Gazette Telegraph, December 23, 1995).

4.8. Schools.

4.8.1. On-post. Fountain-Fort Carson School District 8 operates and maintains three elementary schools and one middle school on Fort Carson. These schools are located in the vicinity of Family Housing. Student population at these four schools totaled 1,940 in 1994. High school students living on-post must travel by bus to Fountain-Fort Carson High School in Fountain.

4.8.2. Off-post. The number of military dependents in off-post local school districts is directly related to the proximity of the district's schools to DOD installations. Based on 1994 data, Districts 2, 3, and 8 have the largest number of military dependents from Fort Carson. Other school districts in the area may have up to 30% of their students from military families, however, the number of students whose parents are stationed at Fort Carson represents only a small fraction of total enrollment. With the inactivation of the 4th Infantry Division and the incoming 3rd Armored Cavalry Regiment during 1995-1996, the number of military dependents associated with Fort Carson is in a state of flux and is not expected to stabilize until the end of 1996. Due to the realignment of Fort Carson, Districts 2 and 8 reported enrollment and/or funding decreases in 1995.

4.8.3. Public Law (PL) 81-874 Funding. School districts receive federal funding for children whose parents are in the military or for federal property that falls within their school district since families living on military bases do not pay local property taxes. Due to the unresolved federal budget, local school districts have not yet received PL81-874 funding for the 1995-96 school year. However, local school districts (Districts 2, 3, 8, 11, 12, 20 and 49) expect to receive about $6.3 million dollars for the 1995-96 school year.

4.9. Law Enforcement and Fire Protection.. The Provost Marshall is responsible for providing security and law enforcement at Fort Carson. There are no law enforcement agencies providing services to Fort Carson directly; however Fort Carson military police routinely coordinate with local civilian

agencies. Police protection services to family housing cost $52,000 in FY95.

The Fort Carson Fire Department is operated as part of the Directorate of Public Works. Fort Carson maintains mutual aid agreements with several cities in the area and also maintains a mutual firefighting assistance agreement with the North American Aerospace Defense Command. Fire protection services to Fort Carson family housing cost $199,200 in FY95.

4.10. Medical Services. Fort Carson military medical facilities include the Evans Army Community Hospital, and various health and dental clinics. Medical services are provided to all active duty on a priority basis, and to their family members; and military retirees and their family members on a space available basis.

4.11. Community Services. The Army and Air Force Exchange Service (AAFES) provides a wide range of commercial services to all active duty and retired military personnel normally supported by the installation. The Main Exchange is centrally located and offers a range of goods and services comparable to those found in a large metropolitan department store such as a retail sales store and garden center, barber and beauty shops, laundry, dry cleaning shop, watch repair, shoe repair shops, etc. The restaurant area contains a variety of fast food specialty establishments. Other community services available are an auto retail store, gas stations, car wash, military clothing sales store, furniture and appliance outlet and two shoppettes. Several national fast food restaurants operating under an AAFES contract are also located on post. The commissary provides supermarket facilities. Other community services available include a library, theater, bank and credit union.

4.12. Child Care. Child care programs on Fort Carson are offered through Child Development Services (CDS). Programs include full day care, hourly care, and part day pre-school and part day school age. The programs are licensed and are operated by Fort Carson in on post facilities. Licensed day care homes operate in Fort Carson family housing. The CDS provides training, inspection and referral services for day care homes. At the present time, there is a waiting list for on-post child care. These services are available for families living on or off post. A project to replace an outdated child care facility is in the initial planning phases. This project would not expand the number of child care spaces.

4.13. Transportation. Access to Fort Carson is primarily from Highway 115 (Gate 1), B Street (Gate 4) and I-25 (Gate 20). Most family housing can be accessed from Gates 2, 3, and 5. All major roads in the cantonment area have bituminous surfaces and are generally in good condition and are capable of handling all

types of wheeled vehicles. Traffic congestion is commonly experienced on weekdays during the morning and evening rush hours.

According to the traffic assessment in the Fort Carson Master Plan Report access to Fort Carson through gates in the cantonment area are adequate, except for Gate 20. Rush hour traffic especially in the mornings is slow and often backed up across the overpass at I-25, due to increased population in the Fountain Valley area and the operation of the Apple computer plant just south of the interchange of I-25 and Highway 16.

Overall, primary and secondary roads and road intersections at Fort Carson are adequate to handle existing traffic loads. However, traffic congestion is experienced at several intersections near maintenance areas and community activities parking lots. Adequate parking is available for family housing resident vehicles in most of the family housing areas, except for the enlisted personnel family housing areas of Arapaho Village and a portion of Cheyenne Village.

4.14. Air.

4.14.1. Carbon Monoxide Emissions. Overall air quality in El Paso county is good. However, carbon monoxide standards (CO) have been occasionally exceeded in the urbanized section of Colorado Springs (which includes the Fort Carson cantonment area). Due to the exceedances, this area is classified as being in non-attainment for CO. Most violations occurred during winter months in conjunction with temperature inversions. Vehicular sources account for over 93% of carbon monoxide concentrations. The last exceedance for CO occurred in 1991.

4.14.2. PM_{10} Emissions. According to the "PM_{10} Control Plan" (Pikes Peak Area Council of Governments, June 1993), this area has also been identified by both the EPA and the Colorado Department of Public Health and Environment (CDPHE) as having a high probability of violating the National Ambient Air Quality Standard (NAAQS) for Emissions of Particulate Matter 10 microns (PM_{10}) or less in diameter. PM_{10} emissions are generally man-made particulates which are inhalable into the lungs. Health problems, especially respiratory problems, have been associated with high levels of PM_{10}. The area is presently unclassified, but monitoring requirements are continuing indefinitely due to some exceedances. Major sources of PM_{10} are street sanding and woodburning. Dust and large particulates are not direct sources of PM_{10}, but they can contribute to the problem in the long run since they are subject to mechanical breakdown on road surfaces. The Plan recommends modifying street sanding practices, reducing woodburning, and dust control measures, in order to reduce PM_{10}.

(PM_{10} Control Plan). The last exceedance of PM_{10} occurred in December 1993.

4.14.3. Radon. Army Regulation 200-1, Environmental Protection and Enhancement, requires Army owned structures to be surveyed for radon and requires mitigation for readings above 4 picocuries per liter. Family housing units have been surveyed for radon and 63 units require mitigation. Three of the buildings have been abated and the remaining buildings are scheduled for mitigation in the future. Radon mitigation contracts are managed by the DECAM. Records pertaining to surveys and mitigation are also maintained by the DECAM.

4.15. Soil and Topography. Five different soil types or complexes are found on existing family housing and proposed construction sites. Information about each soil type is from the Soil Survey of El Paso County by the Soil Conservation Service. Complete soil descriptions are not listed here but can be found in the soil survey.

4.15.1. Terms.

- Erosion: The wearing away of the land surface by running water, wind, ice or other geologic agents and by such processes as gravitational creep.

- Frost action: Freezing and thawing of soil structure. Frost action can damage structures and soil roots.

- Permeability: The quality that enables that soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Important characteristic for installation of septic systems.

- Shrink-swell: The shrinking of soil when dry and swelling when wet. Shrinking and swelling can damage roads, building foundations and other structures.

4.15.2. Soil Types.

- Manzanola clay loam. Deep, well drained soil, slow permeability, high shrink swell potential, high erosion hazard.

- Nunn clay loam. Deep, well drained soil, moderately slow permeability, shrink-swell potential, slight erosion hazard.

- Razor stony clay loam. Moderately deep and well-drained soil, slow permeability, shrink-swell potential, moderate erosion hazard.

- Razor-Midway complex. Soil types in this complex have the following characteristics: Moderately deep and well-drained, slow permeability, shrink-swell potential, moderate to high erosion hazard, and difficult to very difficult to revegetate. Shallow depth to shale can also be a limiting factor in urban use.

- Schamber-Razor complex. Several soil types comprise this complex, with some variations in characteristics. Soils in this complex are deep to moderately deep, well drained, with slow to rapid permeability, difficult to revegetate, and moderate to high erosion hazard

- Truckton sandy loam. Deep, well drained soil, moderately rapid permeability, moderate hazard for erosion and soil blowing with bare soil. The main limitation of this soil is frost-action potential with road construction.

4.15.3. Elevations in the cantonment area range from 5800 to 6200 feet. Most of the construction sites are level. Site I has elevation differences of 20 - 100 feet according to U. S. Geological Survey topographic maps.

4.16. Noise. In general, ambient background noise and non-hearing hazardous environmental noise on Fort Carson are within federal standards. Numerous sources of hearing hazardous noise, associated with military training operations, aircraft and traffic, exist on Fort Carson. Specific information is included in the 1986 Installation Compatible Use Zone (ICUZ) study. The most significant noise at Fort Carson comes from the firing of weapons and operation of military aircraft. The noise from these activities does not, at the present time, create significant impacts on surrounding communities and the cantonment area.

4.17. Water/Wetlands.

4.17.1. Fort Carson is located within the Arkansas river basin. In this basin, Fountain Creek (a tributary of the Arkansas River) and its tributaries provide the dominant surface drainage in the northeastern half of the installation. The cantonment area is located in the Lime Kiln Valley watershed. Tributaries of the Arkansas river drain the remainder of the post. Principal stormwater drainages in the cantonment area are B Ditch, Clover Ditch and I Ditch. Principal drainages south of the cantonment area are Rock, Little Fountain, and Turkey Creeks. The nearest surface waters to the cantonment area are Haymes and Northside Reservoirs, both several miles south of the cantonment area. Groundwater in the cantonment area typically flows northwest to southeast.

4.17.2. Wetlands.

4.17.2.1 Definitions.

- Riverine: Wetlands contained within a channel (an open conduit either naturally or artificially created which periodically or continuously contains moving water).

- Intermittent: Channel that contains flowing water for only part of the year.

- Emergent: Plants that can tolerate some standing water but not complete submersion.

- Palustrine: Vegetated wetlands such as marshes, swamps and bogs. These types of wetlands are dominated by trees, shrubs, and other persistent wetland vegetation.

- Seasonally flooded: Standing water that covers the land surface for part of the year.

4.17.2.2. Wetland Locations. Most of the cantonment area is upland and does not contain permanent water resources, however wetlands do exist in some areas, usually in drainages. A drainage south of Site C is classified as a wetland (riverine intermittent). A drainage north of site A is classified as "palustrine emergent seasonally flooded excavated".

4.17.3. Flood Plain. A 100 year flood plain is associated with drainages north of site A and east of site G. Flood plain maps are available at the DECAM.

4.17.4. Ground Water Monitoring Wells. Ground water monitoring wells are located throughout the cantonment area in order to monitor ground water quality and determine if contaminated sites (solid waste management units) are impacting groundwater. Several ground water monitoring wells are located on the west side of the cantonment area in order to determine background water quality as it flows beneath Fort Carson. Background wells are located on Sites A and I.

4.18. Wildlife. Wildlife in the cantonment area consists of species adapted to human activities such as cottontail rabbits, rock doves (pigeons), English sparrows, starlings, robins, magpies, squirrels, etc. Open areas on the west side of the cantonment area still contain pockets of undisturbed scrub oak, grasslands, and natural drainages that support wildlife such as: jackrabbits, various species of burrowing mammals, mule deer, black bear, white-tailed deer, coyote, mountain lion, mourning dove, and blacktailed prairie dog. Waterfowl populations are limited due to the lack of available water. Predatory birds found at Fort Carson include golden eagle, prairie falcon, great

horned owl, redtailed hawk, Swainson's hawk, etc. The installations's reservoirs and ponds contain both cold- (trout) and warm-water (channel catfish) fish species. The 1989 Land Condition/Trend Analysis Installation Report for Fort Carson contains a comprehensive listing of animal species found on Fort Carson.

Prairie dog colonies were present on sites C and F. Soil disturbance by burrowing mammals was present on all construction sites. Raptors were observed near sites A and G. Owl pellets (undigested food material) were found on Site F.

4.19. Vegetation. Native vegetation in the Cantonment Area has largely been replaced by landscaping in existing family housing areas. The construction sites contain grassland type vegetation such as blue grama, sand dropseed, and buffalo grass. Nongrass species include curly dock, wood rose, musk thistle, yellow sweet clover, and prickly pear. Several of the sites also contain non native or introduced plants that are listed as noxious weeds by the State of Colorado. The 1989 Land Condition/Trend Analysis Installation Report for Fort Carson contains a comprehensive listing of plant species found on Fort Carson.

4.20. Threatened and Endangered Species. The species of concern listed in Tables 4.20-1 and 4.20-2 have been documented on Fort Carson. Species such as swift fox, black footed ferret, Preble's meadow jumping mouse, and Ute's ladies tresses (an orchid) have the potential to exist on Fort Carson, but on-going surveys have not identified these species on the installation.

4.21. Cultural Resources. Archeological and historical studies have been conducted intermittently on the Fort Carson military reservation for the past 50 years. A comprehensive review of the work is contained in the 1987 Historic Preservation Plan (HPP) for Fort Carson.

In general, both prehistoric and historic sites are known to occur throughout the installation. The built-up area of the installation has been surveyed for cultural resources and is generally devoid of prehistoric materials and sites. Significant prehistoric and historic resources are identified in the HPP and other documents at the DECAM. These include sites listed or eligible to be listed in the National Register of Historic Places (NRHP), including a rock art district, the Old Hospital Complex, Turkey Creek Recreation Area, the sewage treatment plant and individual prehistoric and historic localities, and historic industrial and architectural remains. In order to meet the requirements of the National Historic Preservation Act and the HPP, structures at Fort Carson approaching 50 years of age are evaluated for eligibility for the National Register of Historic Places.

All of the proposed construction sites have been surveyed for cultural resources. Only two sites were identified in or near these construction areas. A portion of the World War II Prisoner of War Camp is located on site A. After the deactivation of the camp in 1946, many buildings were dismantled or moved, and a portion of the remaining structures were destroyed in a fire in 1950. Some structural remnants such as concrete foundations and drainage depressions are still visible in site A. This site is not eligible for the NRHP. Other areas that were part of the POW facility currently contain family housing. A site near Highway 115 is not located in any of the construction sites and is not eligible for the NRHP.

No family housing units are listed on the NRHP. Building 1919 was acquired when Fort Carson was established in 1942. The eligibility status of this building has not been determined.

4.22. Hazardous Materials/Waste. A number of hazardous/toxic materials are used on Fort Carson, including: petroleum, oil, lubricants, chemical agents, explosives and pyrotechnics used in military training and maintenance operations. Pesticides, and other toxic/hazardous chemicals are used in industrial and hospital operations. Pesticides are used in family housing units for insect and rodent control. More information on the types of hazardous waste generated at Fort Carson is contained in the Colorado Department of Public Health and Environment State Resource Conservation and Recovery Act (RCRA) Permit, available for public review at the Penrose Public Library, Colorado Springs, and the Grant Library, Building 1528, Fort Carson. A restoration advisory board that includes members of the local community also participates in the restoration process of contaminated sites at Fort Carson. Building 9248 is used for storage of hazardous waste containers and is operated by the Directorate of Environmental Compliance and Management in compliance with the RCRA permit. Building 9248 is located approximately two miles south of the nearest family housing units.

The existing family housing units contain asbestos and leadbased paint. Surveys have identified asbestos containing materials in pipe wrap in basements and crawlspaces, floor tile, etc. Leadbased paint has been typically found in painted interior trim and on painted doors. Friable asbestos containing materials in poor condition are abated by repair or removal. Non-friable materials are left in place if in good condition. Leadbased paint is also managed in place if it is not chipping or pealing. When renovation or repair projects are going to disturb these materials, they are removed and disposed of at that time by licensed Fort Carson personnel or contractors in accordance with applicable regulations. Asbestos and lead based paint surveys and abatement records are kept on file in the DECAM. DECAM manages most of the abatement contracts on Fort Carson. Family

Housing funds paid $140,000 for asbestos abatement in FY95, and $93,000 to date in FY96.

4.23. Solid Waste. The installation landfill is located approximately one mile from the nearest existing family housing units on Fort Carson. The landfill comprises approximately 240 acres and receives sanitary waste and construction debris. A small impoundment located in the southeastern corner of the landfill area received wastewater containing oil and grease. Plans to expand the Fort Carson landfill are still being negotiated with the Colorado Department of Public Health and Environment (CDPHE). There are over 100 solid waste management units (SWMUs) located throughout Fort Carson that require further investigation and corrective action if necessary. SWMUs located in the cantonment area nearest to existing family housing are former landfills 4, 6, and 7, and the Old Hospital silver recovery unit. Units located near proposed construction sites are the golf course holding pond and the golf course sludge spreading area. Samples from groundwater monitoring wells in the vicinity of the landfills indicate that contaminants may be leaking into the groundwater from the landfills. SWMUs near proposed construction sites and family housing are addressed in the Preliminary Assessment Screenings at Tab C and D. Approximate locations of SWMUs are shown on the map at Tab E.

Refuse from Fort Carson family housing is picked up by a contractor and disposed of in the Fort Carson landfill. Family housing occupants are required to recycle paper, cardboard, steel and aluminum cans, glass, and certain types of plastic. Directorate of Environmental Compliance and Management employees pick up recyclable material once a week.

4.24. Pollution Prevention. New construction and renovation designs are required to incorporate energy saving and sustainable design features such as passive building heating, low-flow shower heads and toilets, energy efficient water heaters and furnaces, recycled carpet and other materials.

4.25. Underground Storage Tanks. There are 100 active underground storage tanks (UST) at Fort Carson. These are located within the cantonment area, mainly at motor pools, Butts Army Airfield, and other maintenance areas. Tanks are used to store gasoline, diesel or other fuels. Aboveground tanks with secondary containment are used to store used oil. Further testing is required at some sites per the RCRA permit. There are no current or former tank sites located on any of the proposed construction sites.

4.26. Utilities and Energy.

4.26.1. On-post. Fort Carson is and has been dependent upon the City of Colorado Springs Utilities Department

for water, heating/cooling fuels, and electricity since the post became active in 1942. According to the Fort Carson Real Property Master Plan existing supply lines for natural gas, electricity and water from the City of Colorado Springs to Fort Carson are adequate to meet existing requirements. Fort Carson provides basic utilities (water, gas, and electricity) to on-post family housing residents at no cost. Residents must pay for cable and telephone service.

The cost of utilities for Fort Carson in FY 95 was $6,417,546 dollars. The cost of utilities for Family Housing was $2,205,226 or approximately 34% of the total utility cost for Fort Carson. Utilities cost per Family Housing unit at Fort Carson averages $100.65 per month based on FY 95 expenditures for 1,825 units.

4.26.2. Off-post. Personnel living off-post must pay for their own utilities. According to the Colorado Springs Utilities, the 1994 average residential monthly utility bill was $106.49. When compared to national averages, utility costs in Colorado Springs are rated at 80.2 with 100 considered average (Colorado Springs, Colorado, Economic Development Corporation). Utilities outside of the city of Colorado Springs are provided by various municipalities and public utility companies.

4.26.3. Sewage Treatment System. The installation operates and maintains a sanitary sewage treatment plant (STP) which services the cantonment area, including family housing. Butts Army Airfield is currently serviced by a separate evaporative lagoon system. Effluent is discharged into a tributary of Fountain Creek and is subject to limitations as specified in the National Pollution Discharge Elimination System permits for Fort Carson. The system was originally constructed in 1942 and has been modified several times to meet discharge requirements. Currently, the system is in compliance with its National Pollution Discharge Elimination System permit. Modifications to the STP are planned for FY96 in order to meet stricter discharge requirements. A project to connect Butts Army Airfield to the STP is scheduled to start in spring 1996. The STP is eligible for the National Register of Historic Places. The existing STP capacity, while meeting NPDES limits is considered to be a wet weather flow of 2.9 million gallons per day and is adequate to meet existing requirements.

5. Environmental Impacts. Impacts from the Fort Carson Affordable Housing Program (FCAHP) (proposed action) and the no action and Military Construction and Renovation (MCR) alternatives will be discussed in this section. When impacts from the proposed action or alternatives are similar, discussion of impacts will be combined.

5.1. Location. No impact.

5.2. Size and configuration. No impact.

5.3. Population of Fort Carson.

5.3.1. Authorized strength. No impact from the FCAHP, no action, or MCR alternatives.

5.3.1. Civilian staffing.

5.3.1.1. No action. No impact.

5.3.1.2 MCR. Civilian staffing requirements would increase by one or two inspectors in the DPW Family Housing management office if additional housing was constructed. Staffing requirements for community support activities would also increase due to increased business. The scope of existing contracts would need to be increased in order to include additional housing as it would be constructed.

5.3.1.3. FCAHP. Changes in civilian staffing are expected from the implementation of the program. Duties currently performed by the Family Housing office in DPW would be transferred to the contractor, reducing the workload of the Family Housing Office. Exact responsibilities to be transferred have not be identified, but at a minimum there would be no need for contract management for maintenance and repair and service contracts. There would also be no need for engineering and design support for these contracts. Up to $8 million in contracts may require termination for the convenience of the government.

Fort Carson programs that receive Family Housing funding for reimbursement of services would also be impacted, such as entomology, recycle, and asbestos, leadbased paint and radon management. These programs would expect decreases. For example, Family Housing reimbursed DECAM for approximately $25,000 for entomology services in FY 95. Asbestos, leadbased paint, and radon surveys and abatement are performed by contract therefore, these contracts may be reduced in scope. Recycle services to Family Housing could also be impacted, however, since this is not direct reimbursable cost, recycling services to Family Housing could still continue if negotiated with the contractor.

Other directorates that support work that is performed by Family Housing, such as the Directorate of Resource Management, and other positions in DPW may have a reduced workload which could result in a decrease in personnel requirements. Other contracts that serve Fort Carson such as the post refuse contract and post wide maintenance contract would have their scope reduced.

Phasing of the turn over of existing Family Housing to the contractor would reduce the severity of the impacts and allow normal attrition to reduce the number of positions that may be impacted by the FCAHP. Due to loss of funding from Family Housing, reduction in force may be necessary if permanent civilian employees are impacted. Temporary employees may be terminated at any time, however, permanent employees losing jobs must be retrained and every effort is made to locate jobs for them. It is difficult to estimate how many positions would be impacted by the FCAHP, however it is anticipated that gains in community support services would off set losses in other areas.

5.3.2. Resident population.

5.3.2.1. No action. No impact.

5.3.2.2. FCAHP and MCR. Construction of new family housing at Fort Carson would cause the resident population of the post to increase by approximately 2,600 (or 20% over the FY95 resident population) due to the additional 840 families living on-post. The rate of increase between FCAHP and MCR would differ. The full increase in family housing residents would be phased in over four years for the FCAHP while the population increase from MCR would take eight years or longer.

5.4. Regional Demographics.

5.4.1 No action. No impact.

5.4.2. MCR and FCAHP. There would be no disproportionate adverse impact to minority or low-income populations by the construction and renovation of family housing pursuant to Executive Order 12898 ("Environmental Justice"). The FCAHP would especially benefit enlisted soldiers sergeant first class and lower whose BAQ and VHA does not adequately cover housing expenses in the Colorado Springs area at the present time. Since the proposed action would only relocate families living off post to live at Fort Carson, local population levels would not be impacted by the proposed action or alternatives.

5.5. Socioeconomics of the Colorado Springs Area.

5.5.1. No action. Impacts to the local economy would remain the same.

5.5.2. MCR and FCAHP. Assuming the cost of construction is the same for MCR and FCAHP, approximately $ 147 million in construction and renovation would be added to the local economy over a four year period for the FCAHP and over eight years or more for MCR. Both alternatives would result in additional spending in the local economy assuming contracts are awarded to local contractors. Based on the value of residential construction starts in El Paso County for 1994, and comparing the cost of construction at its highest level in year 2 and 3 of the FCAHP, the value of the project would represent 15% of the yearly construction projects for the county (assuming value of local construction remains at current levels during the construction and renovation phases of the FCAHP). Construction and renovation of family housing would result in a temporary demand for jobs in the construction and renovation industries. The city of Colorado Springs would receive additional revenue from increased utility demand at Fort Carson.

Continued economic and population growth in the Colorado Springs area is expected for the next several years. Due to the phasing of the project and the low vacancy rates in the area, vacated rental units should be filled by new tenants. Since there would be no net population decrease, impacts to local businesses should be negligible since the impacts of 840 families moving to Fort Carson would be spread out over a four year period.

Local contracts for services to existing family housing may be cancelled or reduced in scope, however, this would be off set by contracts or expenditures for services that would be provided by the contractor. Specific service providers may change, therefore, the impact to the overall local economy would be slight..

5.6. Facilities and Land Use.

5.6.1. No action. No impact.

5.6.2. FCAHP and MCR. The impacts from the proposed action and alternative would be similar, since both would result in changes to current land usage. Areas that are currently open space would be converted to family housing, resulting in a net loss of up to 300 acres of open space in the cantonment area. A small gravel parking area in Site F would no longer be available for command post exercises. Area devoted to family housing would increase by a similar amount. Sites A, B, F, G, and L have been identified as being compatible for family housing development in the most recent Master Plan Report for Fort Carson. Site L was designated as community activities for future use, however, family housing is already located in the area so changing it to family housing would not result in a significant change to the Master Plan. In an effort to preserve open space that would be

suitable for recreation and wildlife habitat, an area south of Gate 1 located in vicinity of a water reservoir tank that had been identified for future family housing would not be developed. The topography of the area is not as conducive to development as other nearby flatter areas that were identified for open space. Use of the level areas would reduce construction costs and allow preservation of native wildlife habitat and still provide some open space in the cantonment area. All of the proposed construction sites do not have known contamination and are classified as Category I[3] according to Army guidance. A Preliminary Assessment Screening and an Environmental Survey for Construction Sites for the construction sites are at Tab C. These land use changes would not have significant impacts at Fort Carson.

5.7. Family Housing

5.7.1. On-post.

5.7.1.1. No action. There would be no change in the number of family housing units at Fort Carson. Maintenance costs for the 1,825 existing family housing units would continue to increase as the infrastructure ages with no major renovations.

5.7.1.2. MCR and FCAHP. The number of family housing units at Fort Carson would increase by 840 to a total of 2,664, a 46% increase over the current level in four years for the FCAHP and up to eight years or longer for the MCR alternative. Units are expected to be fully occupied (based upon current staffing levels at Fort Carson, which are subject to change) with a small number vacant at any one time due to families moving in or out or units being repaired between occupants. If family housing units were not fully occupied by soldiers assigned to Fort Carson, the contractor would have the option of offering the housing at its applicable BAQ and VHA rate to other active duty soldiers (other Army, Air Force, etc.), retired service members, Department of Army or DOD civilians, contractor employees, and the general pubic, in that order.

Maintenance costs would decrease if all existing units were renovated and new units were constructed. As the units aged, maintenance costs would gradually increase during the useful life of the structures. Under the FCAHP, maintenance of family housing would be taken over by the contractor and no longer funded by Fort Carson. A Preliminary Assessment Screening for existing family housing is at Tab D.

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[3] A site with no known potential for contamination.

5.7.2. Off-post.

5.7.2.1. No action. No impact.

5.7.2.2. MCR and FCAHP. Construction of 840 new units on Fort Carson would result in a .5% increase in the total number of housing units and a 1.2 % increase in rental type units in El Paso County (based on 1995 data) if all the units were constructed at the same time. However, the new construction would be phased over several years and these additional units, would not result in a significant increase in the total housing stock or rental stock for El Paso County.

5.8. Schools

5.8.1. On-post.

5.8.1.1. No action. No impact.

5.8.1.2. MCR and FCAHP. Both alternatives would result in a net increase in enrollment in on post schools. The increase in enrollment for the FCAHP would take place within four years rather than eight or more for the MCR alternative. Based on correspondence with School District 8, additional school facilities would be required for an estimated 840 additional students. The district anticipates that an addition to the middle school in long range plans could accommodate the increase in the middle school population. Construction of a new high school for the District is planned for 1999 and would also provide enough space for the additional high school students. A new elementary school would be required and land has been set aside on Fort Carson for this purpose. However since the district has a large number of students who reside on non-taxable property, raising funds for new construction is difficult and at the present time the district saves money from operating funds for capital construction projects, which usually takes up to 10 years. Additional sources of funding this facility are required since the facility would be needed within four years. Another concern of the district is the timing of vacating quarters, since federal funding is received according to the number or students enrolled on October 1 of each year. According to the planned phasing of construction and renovation for the FCAHP, there would be no net decrease in the number of occupiable units on Fort Carson. Families could possibly move from off-post in the District to on post during the school year, however, this also would not result in a decrease in enrollment. The district anticipates up to a 25% increase in enrollment due to the FCAHP. Significant negative impacts to School District 8 could result if a school cannot be constructed in time. Fort Carson officials are coordinating with District 8 at this time in order to ensure that this requirement is met.

5.8.2. Off-post. Off post school districts would experience a slight decrease in the number of pupils with parents stationed at Fort Carson. Correspondence from Harrison District 2 expressed concern about potential decreases in enrollment and funding. It is estimated that no more than 25% of the 840 housing units, or 210 families would be former residents of District 2. The net loss to District 2 is estimated at 238 students over four years. Economic growth has been projected for the Colorado Springs area for at least the next four years and should result in any vacated units being filled by other occupants. Other school districts would experience similar impacts. District 3 had no concerns regarding the FCAHP.

5.8.3. PL 81-874 Funding. Federal funding to school districts would be redistributed as 840 military families move to Fort Carson. Districts off post would experience slight decreases in federal impact aid, while District 8 would receive additional funding. Overall funding levels provided to the region would not change significantly.

5.9. Law Enforcement and Fire Protection.

5.9.1. No action. No impact.

5.9.2. MCR and FCAHP. Fire and police protection requirements would increase due to the additional family housing units. At the present time these programs receive direct fund allocation from the Fort Carson family housing budget. Under the MCR and FCAHP alternatives, Fort Carson would receive an increase in funding for these services to cover the additional staffing and services required.

5.10. Medical Services. Medical services would not change as a result of the proposed action and alternatives. However, medical services on Fort Carson would be more conveniently located for more families.

5.11. Community Services.

5.11.1. No action. No impact.

5.11.2. MCR and FCAHP. The AAFES expects an increase in the number of customers on post but feel they can handle the increases. Projects in various planning stages including a new post exchange and renovation of the old exchange would be able to handle any increases in customers. Additional fast food and convenience stores may be planned for the future.

The Directorate of Planning and Community Activities (DPCA) expects an increase in demand for most of their services with a larger resident population on post. Existing facilities are adequate to handle the extra activity, however, increases in

number of soldiers commuting to Fort Carson would be expected to decrease by 840 soldiers or approximately 10%, assuming an off post population of 8,602 soldiers and one person per car. This would result in a slight decrease in cars traveling on and off post during rush hours for physical training (PT), reporting for duty and returning home.

Negative impacts include more traffic on Fort Carson, however traffic would not be added in existing family housing areas but in currently undeveloped areas of Fort Carson. Traffic across post would also increase but would be off set by decreases in traffic entering and leaving gates near motor pools and administrative areas where most soldiers work during the day. Additional traffic control devices may be required. Downrange traffic would not be impacted by the proposed action or alternatives.

5.14. Air.

5.14.1. Carbon monoxide emissions.

5.14.1.1 No action. No impact.

5.14.1.2. MCR and FCAHP. There would be no increase in personnel assigned to Fort Carson for the MCR and FCAHP alternatives, therefore CO emissions from vehicles driven by Fort Carson soldiers would not increase and are expected to decrease slightly under the MCR and FCAHP alternatives, due to more soldiers living closer to their duty station. This would have a slight positive impact to CO emissions in the non-attainment area. The close proximity of many community services to Family Housing would also reduce automobile travel for the 840 additional families on post. CO emissions from construction activities and additional furnances in new family housing are estimated to be below the de minimus level for a moderate non-attainment area and will conform to the Colorado State Implementation Plan (Draft Federal Action Conformity Study for Fort Carson, Colorado).

5.14.2. PM_{10} emissions.

5.14.2.1. No action. No impact.

5.14.2.2. MCR and FCAHP. Temporary air impacts during construction are expected due to the disturbance of soil during the construction period. Due to the size of the disturbed areas and length of disturbance, State or El Paso County fugitive dust permits would be required. Permits require dust control measures such as watering in order to reduce dust emissions that contribute to PM_{10} problems in the area. Although the area is not listed as being in non-attainment, permit compliance is critical

staffing and increased requirements for maintenance funds and replacement equipment would result. Construction of family housing on Site I would require the relocation of the Archery Range.

5.12. Child Care.

5.12.1. No action. The existing child care status at Fort Carson would remain the same.

5.12.2. MCR. Due to additional families living on post, demand for child care is expected to increase. Some of the demand could be met by additional licensed child care providers in new family housing. Licensing requirements would continue to be supported by Fort Carson CDS. Existing facilities would not be able meet the increased demand without additional facilities and staff. Funding to build new child care facilities takes over five years to program and could be concurrently programmed with funding requests for new family housing in order to have adequate child care facilities on post as new housing is constructed. If additional facilities could be constructed, impacts from new family housing would not be significant.

5.12.3. FCAHP. Demand for child care would also increase for the proposed action. Although family housing on Fort Carson would be managed by the contractor, Fort Carson CDS would continue to certify child care in Fort Carson family housing. Additional licensed day care providers in new and existing family housing could meet some of the demand. Since funding for new facilities or renovating existing facilities takes a minimum of five years to program, Fort Carson CDS would not be able to expand child care service facilities within the next four years. This is considered a significant negative socioeconomic impact upon Fort Carson, since it would have an adverse impact upon families who need child care. Waiting lists for on post child care would continue. Parents requiring child care would need to locate it off post. This especially impacts families with children of preschool and elementary school age. However, since assignment to Fort Carson family housing quarters is voluntary, families requiring child care should investigate its availability prior to moving on post.

5.13. Transportation.

5.13.1. No action. No impact.

5.13.2. MCR and FCAHP. Increases in traffic, especially on the west side of the cantonment area are expected, as areas that were formerly vacant are developed for family housing. Traffic increases through Gates 1, 2, 3 and 5 are also anticipated as families travel off-post, however, this traffic would most likely be spread throughout the day. Accordingly, the

for radon monitoring and future mitigation in new family housing units would be negotiated with the contractor. There would be no significant impacts to human health.

5.14.4. Asbestos and Lead Based Paint Emissions.

5.14.4.1 No action. Asbestos and leadbased paint abatement in accordance with applicable regulations would continue if repair or maintenance projects impacted these materials. There would be no significant impacts to air quality or human health.

5.14.4.2. MCR. Asbestos and leadbased paint would be abated as necessary during renovation and maintenance activities. Removal of these materials is regulated and must be performed in enclosed areas or in a manner to prevent release of the materials into the air. Asbestos and leadbased paint abatement in compliance with State of Colorado regulations would not result in significant impacts to air quality. These materials are no longer used in new construction therefore there would be no future requirement for abatement in new units.

5.14.4.3. FCAHP. Asbestos and leadbased paint would be abated in existing family housing by the Army prior to transfer or by the contractor during renovation. In either case, there would be no significant impacts to air quality or human health.

5.15. Soil and Topography.

5.15.1. No impact. No action.

5.15.2. MCR and FCAHP. Most of the sites are located on soils with shrink-swell potential which has the potential to cause structural damage if special construction techniques are not utilized, such as free-floating concrete slabs, drainage away from the structure, keeping water requiring vegetation away from the foundation, etc. Fort Carson Army construction projects utilize techniques to minimize the impacts of expansive soils. Use of these techniques is at the discretion of the contractor, however, if any damage results from expansive soils they are also responsible for any maintenance and repair. Since all family housing units would be connected to the Fort Carson sewage treatment plant, soil permeability is not an issue for new construction. New construction would be sited according to existing terrain features to reduce the amount of cut and fill required. Excess soil may be stockpiled on Fort Carson near the landfill. There would be no significant impacts to soil and topography.

in order to not further contribute to PM_{10} emissions. However, this source of PM_{10} emissions would be temporary and would cease once construction is completed and disturbed areas are revegetated. Construction would have no long term impacts to PM_{10} emissions in the Colorado Springs area.

New roads constructed for family housing would result in additional surfaces that could receive sanding during inclement weather. Studies conducted in Colorado Springs have shown that approximately 44% of particulate emissions can be attributed to street sanding, therefore any additional roads that could be sanded can contribute to the increase in particulates in the area. However, using the following mitigation methods in the PM_{10} Control Plan would reduce the amount of emissions:

- Use of more durable sand which will not break down into dust easily
- Reducing the amount of sand applied to roads
- Thoroughly removing the sand as soon as possible (prevents being ground into dust)

These measures are voluntary at the present time since the Colorado Springs area is in attainment, however, increased street sanding is considered a slight negative impact to air quality when considering the cumulative impacts of all additional development in the Colorado Springs area.

5.14.3. Radon.

5.14.3.1. No action. Existing family housing units with elevated radon levels would be mitigated per Army regulations. There would be no significant impacts to human health.

5.14.3.2. MCR. Facility designs and construction techniques are used in new Army construction projects at Fort Carson to prevent radon infiltration into buildings. Techniques utilized include, but are not limited to, impermeable membranes under all new buildings, subgrade depressurization and sealing of all routes of entry. Radon monitoring and mitigation would be required in any new Army owned structures. Radon mitigation would take place in existing structures as planned. There would be no significant impacts to human health.

5.14.3.3. FCAHP. Radon abatement would be accomplished by the Army prior to transfer or during the renovation phase of the existing family housing by the contractor. Radon prevention measures during construction would be voluntary since they are not required by law. Responsibility

5.18.2. MCR and FCAHP. Development of Site F would result in the loss of a prairie dog colony which can be food sources for birds of prey. Due to the location this site near developed areas, this colony is not considered to be a critical habitat. A survey of the colonies for the presence of burrowing owls is required since they are protected by the Migratory Bird Treaty Act. All of the areas to be developed are open areas and adjacent to other developed areas. Animals that typically inhabit these areas are already adapted to human presence. Areas that contain valuable wildlife habitat would be avoided by the new construction. By avoiding these areas, there would be no significant impacts to wildlife.

5.19. Vegetation.

5.19.1. No action. No impact.

5.19.2. MCR and FCAHP. The proposal calls for minimal removal and destruction of existing trees. Excessive cutting and filling is not desired and paved areas are to be minimized. An integrated landscaping plan for the entire site would be provided for the project. Landscaping would provide trees, shrubs, and ground cover of adequate quantity and grouping to ensure a completely landscaped and aesthetically pleasing project. Trees for landscaping should be sited to the maximum extent practicable in open areas. Plants or shrubs which are potentially toxic if ingested or irritating to the skin would not be used. Use of native, drought resistant plants which have little or no irrigation requirements is encouraged. Proposals that incorporate these requirements would receive preference over proposals that do not. Development for new construction would result in changes to the type of vegetation that currently occupy the construction sites. In addition some areas would be paved. However, these areas have already been disturbed and landscaping would not create significant impacts to vegetation. The contractor may haul soils containing noxious weeds seeds to the Fort Carson sanitary landfill for incorporation in that day's cover material. This would reduce the potential for contaminating other sites with noxious weeds.

5.20. Threatened and Endangered Species.

5.20.1. No Action. No impact.

5.20.2. MCR and FCAHP. There are no known threatened and endangered species that reside in the cantonment area. There are no permanent water resources in the affected region of the proposed action that could support Greenback Cutthroat trout or Arkansas darter. Species that could possibly forage in the vicinity of the affected areas are the ferruginous hawk, mountain plover or peregrine falcon. Since the cantonment area does not contain suitable nesting habitat for any of the species, their

5.16. Noise.

5.16.1. No action. No impact.

5.16.2. MCR and FCAHP. Construction and renovation operations would cause temporary increases in noise in family housing areas during the day. Permanent increases in noise would result when family housing is constructed in previously open areas, however, the sources of noise would be from increased traffic and people living in the area and would be similar to noise levels in existing family housing areas at Fort Carson. The additional increase in noise is not considered significant and would not impact receptors on or off post. New housing sites are not located near significant noise sources such as firing ranges. The most significant noise source would be traffic from Highway 115 on the west side of sites. At the present time noise from Highway 115 does not significantly impact existing family housing areas.

5.17. Water/Wetlands.

5.17.1. No action. No impact.

5.17.2. MCR and FCAHP. None of the proposed construction sites contain wetlands that would be directly disturbed by family housing construction. Increased storm runoff is expected due to an increase in paved surfaces. Due to the size of the construction sites (greater than five acres) State storm water permits would be required. The storm water prevention plan that is part of the permit contains provisions to prevent erosion. Once disturbed areas are revegetated, storm water runoff should decrease, however, permanent increases in runoff would result due to additional paved surfaces. Stormwater runoff would be properly coordinated so that runoff does not damage surrounding properties. The system should also provide and maintain positive crown or sheet drainage for all streets, roads and sidewalks. The stormwater drainage system on Fort Carson is adequate to handle the additional runoff. Construction of new family housing would not take place within 100 year floodplains. Groundwater monitoring wells located on the edge of Sites A and I should not be impacted by construction activities. A groundwater monitoring well located in Site I would be impacted by construction activities. This well must be closed in accordance with State of Colorado standards prior to construction. There would be no significant impacts to water and wetlands.

5.18. Wildlife.

5.18.1. No action. No impact.

5.22. Hazardous Materials/Waste.

5.22.1. No action. No impact.

5.22.2. MCR and FCAHP. Hazardous waste management at Fort Carson would not be impacted by additional family housing construction and operation at Fort Carson. None of the family housing sites are in close proximity to the hazardous waste storage site (Building 9248) and would not be impacted by its operation.

Hazardous materials used during the course of the construction and renovation must be in compliance with the Occupational Health and Safety Act. Hazardous waste generated by the contractor during construction and renovation may not be disposed of at Fort Carson. The contractor would be responsible for disposal of any hazardous waste off post in compliance with the Resource Conservation and Recovery Act and State hazardous waste laws.

5.23. Solid Waste.

5.23.1. No action. Solid waste from Family Housing would continue to be disposed of at the Fort Carson sanitary landfill. However, the installation landfill is approaching capacity and disposal of sanitary waste off post may be required in the future if the landfill expansion is not approved by the CDPHE.

5.23.2. MCR and FCAHP. Additional family housing on post would increase the amount of sanitary waste generated by family housing up to 46% for both the MCR and FCAHP. Recycling for family housing would minimize the quantity, however, waste disposal costs would still increase. Renovation and construction activities would also cause temporary increases in the amounts of sanitary waste and construction debris generated. Reuse and recycling of as much material as possible would reduce the total requiring disposal. The rate of increase would be during eight years for MCR and four years for the FCAHP. Due to the limited remaining capacity of the installation landfill, the location of waste disposal would be negotiated with the private contractor. The increase in waste generated by Fort Carson is a slight negative impact.

5.23.3. Solid Waste Management Units. Investigations and corrective actions of solid waste management units would not impact any of the construction sites or renovation of existing housing.

presence in these areas would be transitory. The drainages west of Sheridan Avenue will be surveyed in 1996 for Utes ladies tresses and Preble's meadow jumping mouse prior to any construction. If either of these species are found, consultation with the U. S. Fish and Wildlife Service would be required and there could be restrictions on family housing development.

5.21. Cultural Resources.

5.21.1. No action. Existing family housing would be evaluated for eligibility for the National Register of Historic Places as structures approached 45 years of age. Structures determined to be eligible would require compliance with Section 106 of the NHPA prior to any undertakings that would affect the structures. Structures determined not eligible would have no further Section 106 compliance requirements. Management of family housing in accordance with the National Historic Preservation Act and the Fort Carson Historic Preservation Plan would not result in significant impacts to cultural resources.

5.21.2. MCR and FCAHP. There would be no impact to cultural resources at the any of the proposed construction sites since all have been covered by previous surveys and no NRHP eligible resources were found. In the event new resources were discovered during excavation, the project may be delayed since compliance with Section 106 of the National Historic Preservation Act (NHPA) would have to be completed and could result in project delays or work stoppages.

As existing family housing units approach 50 years of age, a determination of eligibility for the National Register of Historic Places will be required if the Army retains control of family housing in the MCA alternative. Under the FCAHP, a private contractor would be leasing the units on federal property. Compliance with the National Historic Preservation Act would still be required in this situation. If the buildings are determined to be eligible for the National Register of Historic Places, any modifications to the structures would have to comply with Section 106 of the NHPA prior to the undertaking.

Building 1919 would not be transferred to the private contractor, however, it may be used as an office by the contractor. If renovations of the building are required, a determination of eligibility for the National Register of Historic Places would be required prior to any undertaking. If the building is eligible, compliance with section 106 of the NHPA would be accomplished prior to structural alterations

Compliance with the Historic Preservation Act and the Fort Carson Historic Preservation Plan would result in no significant impacts to cultural resources.

can also off set any potential increases in water usage. However, since Fort Carson would be paying for all water, natural gas and electricity consumption, the incentives produced by saving money on utility bills are not available to the family housing residents.

Newly constructed and renovated family housing would not have air conditioning. In order to attain maximum economy, natural gas should be used for space heating, domestic water heating, and cooking. Electricity should only be used for lighting and general appliances. Use of current energy efficiency standards for construction of new units would result in greater efficiency than existing units and renovation of existing units would increase energy efficiency. Increased utility usage due to additional housing is a slight negative impact.

6. Conclusion. Implementation of the FCAHP would provide 1,824 newly renovated units and an additional 840 units of affordable family housing to soldiers assigned to Fort Carson within four years. Construction of new housing and renovation of existing housing using traditional military construction funding would take eight years or longer and would not provide a timely solution to the lack of affordable family housing in the Pikes Peak region. Impacts of both alternatives are similar in that there would be slight positive impacts to the local economy and slightly less vehicle emissions due to decreased traffic traveling to Fort Carson. Negative impacts to Fort Carson include lack of available child care, increased potential for PM_{10} emissions, increased utility usage, loss of open space, and displacement of Fort Carson civilian employees. None of these impacts are considered significant except for the lack of child care at Fort Carson. Since assignment to Fort Carson family housing is voluntary, these impacts could be avoided by families if they investigate child care availability prior to accepting on post housing. Fountain-Fort Carson School District 8 would experience significant negative impacts only if an elementary school cannot be built in time to meet the projected increase in pupils.

Construction and renovation activities would comply with applicable federal, state, and local building codes and environmental regulations. Operation and management of family housing by the contractor would be in accordance with the negotiated agreement between the Army and the contractor.

Implementation of the FCAHP would not cause significant impacts to the environment. Preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact will be published in accordance with Army Regulation 200-1, Environmental Effects of Army Actions.

5.24. Pollution Prevention.

5.24.1. No action. No impact.

5.24.2. MCR. Pollution prevention requirements would be incorporated into Army construction and renovation contracts.

5.24.3. FCAHP. As part of the design criteria for the contractor, proposals should consider products and materials which would afford initial and long range reductions in consumption of water, electricity, raw materials and waste accumulation and emphasize environmental quality and conservation of energy resources.

5.25. Underground Storage Tanks. No impact from no action, MCR or FCAHP.

5.26. Utilities and Energy.

5.26.1. No action. No impact, current utility usage is expected to remain the same.

5.26.2. MCR. Increased utility usage is expected since 840 additional families would live at Fort Carson. Fort Carson pays for utilities for family housing and would receive additional family housing funds to pay for the increase. Using FY95 expenditures as a baseline, family housing utility costs would increase by $1,014452 dollars a year. Total installation utility usage would increase approximately 16% assuming current usage rates stay the same. Energy saving designs utilized in construction and renovation could reduce energy usage on a per unit basis. Increased utility use is considered to be a slight negative impact.

5.26.3. FCAHP. A similar increase in utility usage is also expected. Fort Carson would continue to pay for utilities under private contractor management. The proposal calls for installing individual electrical and natural gas meters at each family housing unit. The proposal also calls for irrigation systems to be installed through out the family housing units, however, this may result in increased water usage. At the present time family housing residents must water grass using above ground hoses and sprinkler systems. This method of lawn watering is prone to overwatering since it is more difficult to obtain even coverage and requires the occupant to move the sprinkler around the yard. Sprinkler systems can promote better watering practices by having timed watering and more uniform coverage, however, since everyone would have a sprinkler system there may be greater numbers of people watering lawns. Restrictions on time of watering during the day and how many days a week watering is allowed could off set any increase in water usage above current levels. Use of drought tolerant landscaping

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Deborah Meredith, Family Housing, DPW

LTC John Keefe, Partnership XXI Office, Fort Carson

Shirley Ackerman, Directorate of Resource Management, Fort Carson

Chuck Hewins, Harrison School District 2, Colorado Springs, CO

Widefield School District 3

Fountain-Fort Carson School District 8

Directorate of Planning and Community Activities, Fort Carson

Directorate of Public Works, Fort Carson

Directorate of Environmental Compliance and Management, Fort Carson

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Table 2.2-1. Planned Phasing of Construction

Month	Old Occupied	Under Renovation	Completed Renovation	New Occupied	Total
1	1824	0	0	0	1824
2	1824	0	0	0	1824
3	1824	0	0	0	1824
4	1824	0	0	0	1824
5	1824	0	0	0	1824
6	1824	0	0	0	1824
7	1824	0	0	0	1824
8	1824	0	0	0	1824
9	1724	100	0	100	1824
10	1724	100	0	100	1824
11	1724	100	0	100	1824
12	1624	100	100	100	1824
13	1524	200	100	200	1824
14	1524	200	100	200	1824
15	1404	200	220	200	1824
16	1404	200	220	200	1824
17	1404	200	220	300	1924
18	1404	80	340	300	2044
19	1404	80	340	300	2044
20	1404	80	340	300	2044
21	1284	120	420	400	2104
22	1284	120	420	400	2104
23	1284	120	420	400	2104
24	1164	120	540	400	2104
25	1164	120	540	500	2204
26	1164	120	540	500	2204
27	1044	120	660	500	2204

Month	Old Occupied	Under Renovation	Renovation Completed	New Occupied	Total
28	1044	120	660	500	2204
29	1044	120	660	600	2304
30	924	120	780	600	2304
31	924	120	780	600	2304
32	924	120	780	600	2304
33	804	120	900	700	2404
34	804	120	900	700	2404
35	804	120	900	700	2404
36	684	120	1020	700	2404
37	684	120	1020	800	2504
38	684	120	1020	800	2504
39	564	120	1140	800	2504
40	564	120	1140	800	2504
41	564	120	1140	840	2544
42	444	120	1260	840	2544
43	444	120	1260	840	2544
44	444	120	1260	840	2544
45	324	120	1380	840	2544
46	324	120	1380	840	2544
47	324	120	1380	840	2544
48	204	120	1500	840	2544
49	204	120	1500	840	2544
50	204	120	1500	840	2544
51	98	106	1620	840	2558
52	98	106	1620	840	2558
53	98	106	1620	840	2558
54	0	98	1724	840	2564
55	0	98	1724	840	2564
56	0	98	1724	840	2564
57	0	0	1824	840	2664

Table 2.4. Scope of Renovations to Existing Family Housing

New vinyl replacement windows

All new plumbing fixtures

All new cabinets

All new drywall painting

All new interior trim, doors, and hardware

New water heater and furnace

New light fixtures and upgraded wiring

Environmental hazard abatement

Minor exterior building repair

Additional parking spaced and sealcoat to existing surfaces

All new appliances to include range/oven, dishwasher, disposal and refrigerator

Addition of sprinkler system and landscape repairs

Patios and/or decks

Conversion of carports to garages where appropriate

Repairs to existing infrastructure to include sewer, water, and electrical lines as necessary

Table 2.2-1 (continued)

Assumptions:

- It takes four months to construct 100 new units.
  It takes approximately three months to renovate 120 units.
  Inventory can never fall below 1824.
  Inventory can never decrease from month to month.

Table 2-5. Revenue to Nonprofit Corporation from BAQ & VHA

Year	Estimated BAQ & VHA to Nonprofit Corporation
1	$ 927,200
2	5,795,000
3	11,382,600
4	16,079,600
5	19,515,120 (2,664 units)

Table 2.7. Regulatory Controls - Applicable El Paso County Building Codes and Ordinances

Current issues of National Fire Code and National Fire Protection Association Standards Nos. 501A and 501C, and National Fire Protection Association Publications No. NFPA-70, National Electrical Code

American Water Works Association National Standards

Institute of Electrical and Electronics Engineers (IEEE) Standard: National Electrical Safety Code (ANSI C2)

All other Federal, State, and local laws, codes, ordinances and regulations pertaining to the construction, operation, occupancy, repair and maintenance of non-military residential complexes

Manual on Uniform Traffic Control Devices, U.S. Department of Transportation

In order to prevent, abate, and control any environmental pollution arising form the construction activities of the successful offeror and his contractors in the performance of this contract, each shall comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement

Where codes and standards conflict, State of Colorado Codes will prevail.

Table 4.4. Regional Demographics

Regional Demographics[1]			
Race/Ethnicity	Fort Carson	Colorado Springs	Fountain Valley[2]
White	66%	86%	82%
Black	24	7	10
American Indian/ Eskimo	1	1	1
Asian/ Pacific Islander	4	2	4
Other	5	4	4
Hispanic[3]	11	9	10

[1] Totals will not add to 100% due to rounding. Data from 1990 U.S. Census.

[2] Communities of Fountain, Widefield and Security.

[3] Hispanic classification can include persons of varied origin and race, and therefore reflects an ethnic rather than racial distinction and are tallied separately from racial categories.

Table 4-5. Fort Carson Expenditures (FY 95)[1]

Military Pay and Allowances	$469,909,962
DA Civilian Payroll	52,125,224
Non-appropriated Fund Civilian Payroll	11,158,743
Military Construction	24,483,400
Local Purchases and Contract	79,095,936
Utilities	6,417,546

[1] This is not a complete list of Fort Carson expenditures but those that are related to the proposed action.

Table 4.7.1-1. Fort Carson Housing Statistics

Assigned Strength	15,628
Barracks Occupied	5,200
Family Housing[1]	1,825
Total Military Personnel Living On Post	7,026 or 45%
Total Military Personnel Living Off Post	8,602 or 55%

[1] Occupants in family housing include: 1) families whose military sponsor is on a dependent restricted tour, i.e., the sponsor was assigned to Fort Carson previously but does not reside at Fort at the present time and 2) families with two military members ("military married to military"). These numbers are subject to change and only represent a small fraction of family housing occupants, therefore, it was assumed one Fort Carson assigned soldier per family housing unit for the purposes of computations.

Table 4.7.1-2. Family Housing Infrastructure Expenditures for FY 95

Utilities	$2,205,226
Services	
Fire Protection	199,200
Landfill	20,147
Police Protection	52,000
Refuse Collection	124,956
Entomology Services	25,200
Maintenance and Repair	1,768,475
Total	$4,395,204

Table 4.7.2. El Paso County Housing Statistics[1]

Total Housing Units in El Paso County	176,000 - 178,000
Owner Occupied Units (% of Total)	57-59%
Renter Occupied Units	41-43%
Vacancy Rate for Rental Units	3%

[1] Government and private sources were consulted for these statistics, hence estimates vary slightly

Table 4.20-1. Fort Carson Animal Species of Concern

Animals

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS[1]	RESIDENT STATUS[2]
Greenback Cutthroat Trout	*Oncorhynus clarki stomias*	T	R
Arkansas Darter	*Etheostoma cragini*	C1	R
White-faced Ibis	*Plegadis chihi*	C2	M
Northern Goshawk	*Accipiter gentilis*	C2	W
Ferruginous Hawk	*Buteo regalis*	C2	R
American Peregrine Falcon	*Falco peregrinus anatum*	E	M
Spotted Owl	*Strix occidentalis lucida*	T	W
Bald Eagle	*Haliaeetus leucocephalus*	E	WT
Mountain Plover	*Charadrius montanus*	C1	S
Long-billed curlew	*Numenius americanus*	C2	M
Loggerhead Shrike	*Lanius excubitor*	C2	S

[1] E - Endangered: A species that is in danger of becoming extinct throughout most of it's range.

T - Threatened: Taxa that has a high probability of becoming an endangered species.

C1 - Federal Category 1: Taxa for which substantial information exists to support a proposal for listing as a threatened or endangered species.

C2 - Category 2: Taxa is being investigated for possible listing as an endangered or threatened species under the Endangered Species Act.

[2] R: year-round resident W: winter resident
WT: winter transient S: summer resident M: migrant

Table 4.20-2. Fort Carson Plant Species of Concern

Plants

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS[1]
Arkansas feverfew	*Bolophyta tetraneuris*	C2
Roundleaf four-o-clock	*Oxybaphus rotundifolius*	C2

C2 - Category 2: Taxa is being investigated for possible listing as an endangered or threatened species under the Endangered Species Act.

Table 2.1. Types of Units to be Constructed and Amenities

Unit/Type	Number
3 BR/2 Bath Single Family	27
4 BR/2 1/2 Bath Single Family	28
2 BR/2 Bath Apartment	53
3 BR/2 Bath Apartment	7
4 BR/2 1/2 Bath Apartment	132
2 BR/2 Bath Townhouse	187
3 BR/2 Bath Townhouse	286
4 BR/2 1/2 Bath Townhouse	120

* Square footage for units must be commensurate with community norms for the Colorado Springs area.

Each unit shall have kitchen, bathroom, and other amenities such as coat closets, washer/dryer hook-ups, etc., normally found in rental apartment units.

Each kitchen shall contain suitable cabinetry, and will be furnished with refrigerator, range with vent hood, dishwasher, and garbage disposal

Fire hydrants

Adequate storm drainage system

Security street lighting, automatically controlled, sufficient to illuminate dark or shadowed areas that create safety or security hazards

Drought resistant park landscaping

Tot-Lots and playgrounds

Dwelling unit numbers

Minimal removal or destruction of existing trees

Interior streets with curbs and sidewalks

Full time resident management and maintenance personnel

Mail boxes acceptable to U.S. Postal Office

Community Center for use by Occupants

Table 2.1 (cont.). Types of Units to be Constructed and Amenities

Community barbecue and picnic facilities

Standard apartment utility services, such as electric power, natural gas, water, cable TV, telephone, etc., shall be provided in each unit

Optional facilities:

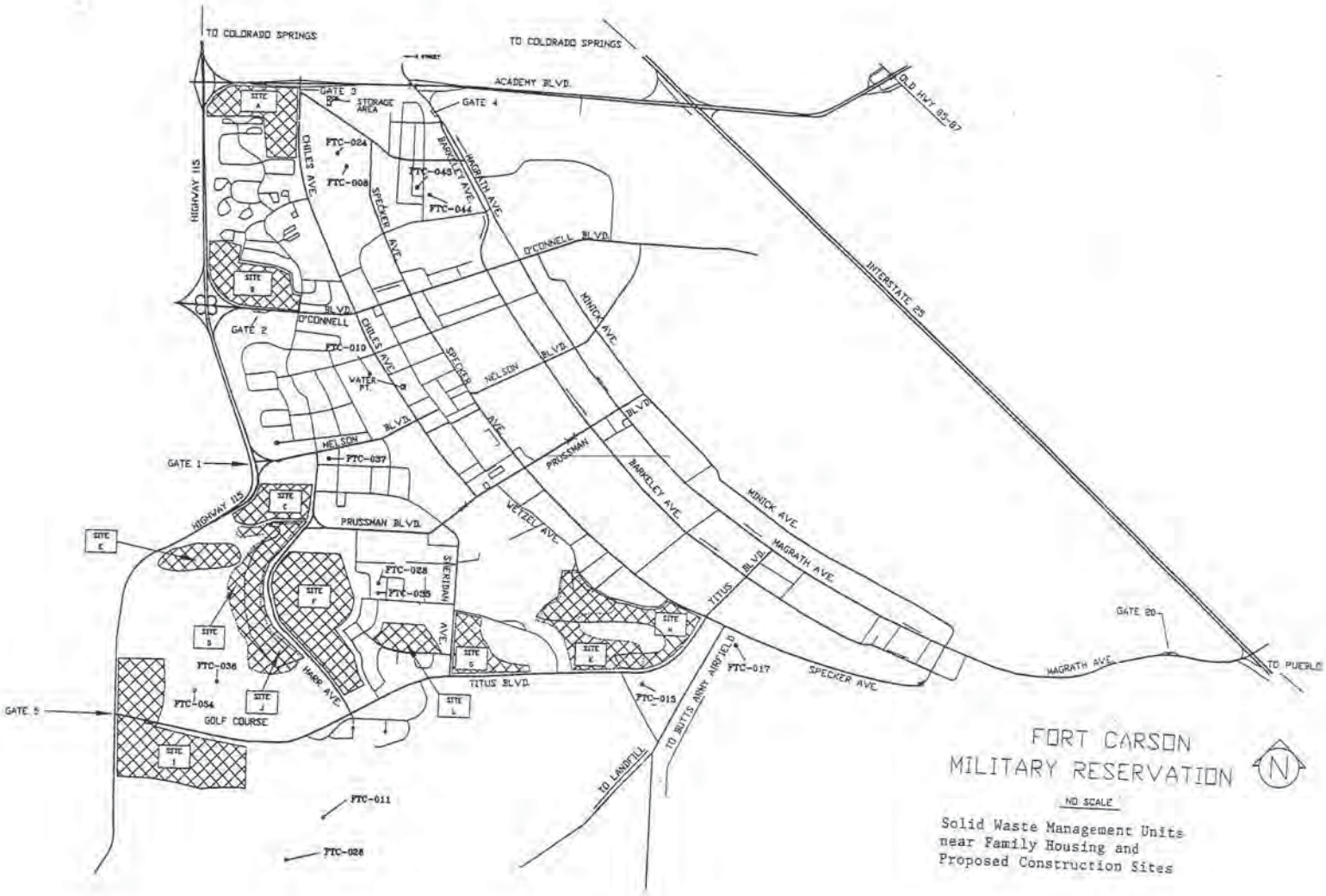
Jogging/bicycle paths

Pet exercise areas

Laundromat

Additional recreation and education facilities such as those which would house racquetball courts, weight rooms, gymnasiums, computer rooms, libraries, etc.

Other facilities may be proposed



FORT CARSON MILITARY RESERVATION

NO SCALE

Solid Waste Management Units near Family Housing and Proposed Construction Sites

Appendix B: 2001 EA FNSI Family Housing

Finding of No Significant Impact
Environmental Assessment
for the
Accelerated Construction and Demolition
of Family Housing, Fort Carson, Colorado

Fort Carson, Colorado
7th Infantry Division

1.0 Name of Action. Accelerate construction and demolition of family housing.

2.0 Description of Proposed Action. Modify Fort Carson's contract and the Department of the Army's lease with Fort Carson Family Housing, L.L.C (FCFH, LLC) to allow acceleration of the construction and demolition schedule for family housing, allow reduction of the density of existing housing areas, and allow construction of enhanced community facilities for the family housing area. Although the total number of housing units (2663) would remain the same as described in the 1996 EA, the process of adding new units to the housing inventory would be accelerated by approximately 14 years, providing up to 250 new housing units (instead of renovated older units, which will be demolished instead) to soldiers at a faster rate than previously anticipated.

3.0 Alternatives. Two action alternatives were identified, along with the No Action alternative.

- The Proposed Action is the preferred alternative. The action is to modify the contract and lease to allow additional construction areas for family housing, a community center and school.
- The Contract Acceleration alternative would allow accelerating the contract and construction schedule, but would not provide the benefit of lowering density within existing units, enhanced community facilities, and new housing would be built at a slower pace.
- The No Action alternative would be to adhere to the original contract and lease, and would not provide the above- mentioned benefits to soldiers and their families.

The proposed action included analysis of three alternative areas to lease for construction. Some alternatives are combinations of areas (and partial areas) in different configurations, based on acreage required.

Alternative 1: Areas M, N - Lease approximately 73 acres located on two areas separated by the Limekiln Valley watershed, approximately 59 acres west of Harr Avenue north of Cheyenne Shadows Golf Course (partial Area M), and approximately 14 acres west of Harr Avenue north of the Limekiln Valley watershed (Area N).
Alternative 2: Area M - Lease one contiguous area, approximately 80 acres located west of Harr Avenue, north of the Cheyenne Shadows Golf Course and south of the Limekiln Valley watershed. Area M is bordered on the north by a westward extension of Prussman Avenue, on the east by Harr Avenue, on the south by the golf course, and on the west by open space (7 acres is reserved for green space).
Alternative 3: Areas M south, N, O- Lease approximately 73 acres located on 3 separate parcels, approximately 19 acres west of Harr Avenue mainly along northern boundary of Cheyenne Shadows Golf Course (partial Area M), 14 acres north of the Limekiln Valley watershed (Area N), and approximately 40 acres east of Harr Avenue and north of Prussman (Area O). This alternative would require re-siting of some planned Public Private Ventures.

Alternative 1 is the preferred area to include in the modified lease.

Only the land referred to as "partial Area M" analyzed in Alternative 1 will be included in the modified lease (approximately 60 acres). Area N will not be included in the modification of the lease to FCFH, LLC.

4.0 Environmental and Socioeconomic Consequences. The Environmental Assessment (EA) evaluates the impacts of the proposal to modify the contract and lease. Positive impacts from the preferred alternative will be to provide to soldiers and their families enhanced community facilities, higher quality housing at a faster rate than originally anticipated, parking, and land for a new elementary school. A potential short-term, adverse impact could be an increase in elementary students above levels that schools on Fort Carson can accommodate until the new school is built. Proper construction and demolition timing and planning would help alleviate this. Utilities infrastructure (sewage lines, electric lines) would need to be upgraded or installed.

The siting alternative chosen (as modified) will not have a significant impact on the environment, although some adverse impacts will occur. These impacts are less than siting alternative 2, and more than siting alternative 3. Impacts are summarized as follows:

- Construction around the base of the hills, and cutting back of a smaller hill to the north would impact some wildlife movement, habitat and native vegetation. Some wetlands will be impacted, although this will be minimal (approximately .5 acre).
- No cultural resources will be impacted.
- Utilities are not on site, but are in close proximity. Housing development in this area will exacerbate the sewage line choke point affecting Cheyenne Village, etc.
- Wildlife vs. human interaction will be potentially increased.
- Impacts to air quality depend on the annual construction schedule, i.e. how quickly houses are built and demolished. Conformity analysis concluded no significant impacts to air quality will occur under the currently defined schedule.
- This siting alternative will result in an irreversible and irretrievable commitment of resources, greater than siting Alternative 3, but to a lesser degree than siting Alternative 2. Undeveloped land which has served as plant and wildlife habitat will be removed from the cantonment area; shortgrass prairie will be destroyed along with some hillside vegetation (approximately 60 acres), and wetlands (approximately .5 acre). Developing the eastern portion of Area M, and the southern portion bordering the golf course will help minimize these impacts.

5.0 Conclusion. On reviewing the EA, the Commander, Fort Carson has concluded that the effects of the proposed action are not significant and will not adversely affect the quality of the environment. Fort Carson will implement necessary mitigation measures and will consult with regulatory agencies, as necessary, to ensure compliance with all federal, state, regional, and local regulations and guidelines. Environmental review of site design and layout will ensure protection of natural resources. Therefore, an environmental impact statement will not be prepared. All interested agencies, groups, and individuals not in agreement with this decision are invited to submit written comments to the Directorate of Environmental Compliance and Management, 5010 Tevis Street, Fort Carson, CO 80913-4000, by sending a telefax to (719) 526-1705, or by e-mail to Robin.Romero@carson.army.mil within 30 days after publication of this notice. The EA is available for public examination, upon request, by writing to the above address or by calling (719) 526-0912. The EA is also available for review at the Penrose Public Library, Colorado Springs, and the Grant Library, Building 1528, Fort Carson, CO.

2 Oct 01

Date

Edward Soriano
Major General, USA
Commanding

Environmental Assessment for the Accelerated Construction and Demolition of Family Housing

For Headquarters 7th Infantry Division & Fort Carson
Directorate of Environmental Compliance & Management

September 2001

Table of Contents

1.0 Purpose and Need for the Proposed Action

1.1 Introduction

This Environmental Assessment (EA) will analyze the environmental impacts of the proposal to modify Fort Carson's contract and the Department of the Army's lease with Fort Carson Family Housing, L.L.C (FCFH, LLC). This proposal would allow acceleration of the construction and demolition schedule for family housing, allow reduction of the density of existing housing areas, and allow construction of enhanced community facilities for the family housing area. A brief history of the Fort Carson family housing privatization process follows.

Prior to award of a 50-year contract to FCFH, LLC in 1999, Fort Carson had a severe shortage of family housing, and much of the existing housing was in poor condition. Under the contract, which included lease of the existing housing areas plus several vacant parcels of land to FCFH, LLC, within five years 840 new units were to be constructed and all of the existing units were to be renovated. Starting fifteen years into the contract, the existing units were to be demolished and replaced with new units, generally within the same land areas. During the life of the contract, it was hoped that amenities such as a community center, recreation areas, and multi-use facilities were to be built in the housing areas.

Funding for the project comes from rent paid by unit tenants from their Basic Allowance for Housing (BAH). In January 2001, Congress significantly increased BAH rates. This resulted in revenue flows in excess of those contemplated when the contract was awarded. As a result, the project has been re-evaluated and changes proposed that would both accelerate the timing of and enhance the improvements to Fort Carson's family housing.

At the time of contract award, the number, size, and type of community facilities were only considered at a conceptual level, to be further developed when it became more definite that the project would generate sufficient revenue to fund their construction. Also, construction of another elementary school in the area was very indefinite based on resolution of the issue of federal or local funding. However, the additional revenue from the increased BAH and the intervening decision of District 8 to fund the new school are changes in conditions. These changes have resulted in the planning of larger-sized facilities with sufficiently high probabilities of actual construction in the relatively near future to warrant examination as part of this EA.

Construction of new housing commenced in March 2000. Five parcels of land, for a total of 309.69 acres were leased to FCFH LLC for construction of the 840 new units. All existing family housing areas were also leased to FCFH, LLC, a total of 467.18 acres. To date, over 190 units have been constructed and over 260 units have been renovated.

This EA supplements the *Environmental Assessment for the Fort Carson Affordable Housing Program* (June 1996) that covered the original Fort Carson family housing privatization project. Fort Carson proposes to modify its current contract with FCFH, LLC to accelerate by approximately 14 years the construction of up to 250 new family housing units and the demolition of a like number of existing family housing units and to permit the construction of a greatly enhanced community center. In conjunction with these projects and the construction of a new elementary school by District 8 to serve residents of the family housing areas, Fort Carson also proposes the lease of additional land to FCFH, LLC to allow greater dispersal of the housing and community facilities. This proposal would enhance the neighborhood community and improve quality of life of its residents. This EA will discuss various alternative locations for the additional leased land, as well as an alternative not involving additional land.

This EA is being conducted under the requirements of the National Environmental Policy Act (NEPA) (Public Law 91-190). NEPA is the nation's charter for protection of the environment. It establishes environmental policy, provides an interdisciplinary framework for federal agencies to prevent environmental damage, and contains "action enforcing" procedures to ensure federal agency decision makers take environmental factors into account. Under NEPA, Congress authorizes and directs to the fullest extent possible, federal agencies to carry out their regulations, policies, and programs in accordance with NEPA's policies of environmental protection. An EA is a document prepared when a proposed action is not categorically excluded from NEPA analysis and the magnitude of impacts from the project are unknown. The EA is the primary tool used to determine whether it is necessary to prepare an Environmental Impact Statement (EIS) prior to implementation of a project. The Proposed Action cannot be implemented until the NEPA process is completed.

The lease of land to FCFH, LLC for construction of family housing and the contract for the construction, renovation and operation of family housing are both vital to the Fort Carson Family Housing privatization program. In order to help readers understand the applicability of the (NEPA) to the proposed action in accordance with Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*, the following explanation from the ***NEPA Manual for Installation Operations and Training,*** June 1998, is provided.

> NEPA applies to proposed actions involving acquisition, granting use, and disposal of federally supported real property. Granting use of real estate includes transactions such as leases, licenses, permits, easements, and consents. In some instances, a Report of Availability will precede a grant of use of federal real property by the Army. Mere transfer of title or interest in real property does not, in and of itself, cause environmental effects. Rather, it is the use to which newly acquired property might be put that must be the focus of a NEPA analysis, along with any “encumbrances” (or the lack thereof) associated with transfer and the effects of the “no action.”

The lease of Army real estate is covered by Army Regulation 405-80, *Management of Title and Granting Use of Real Property*. This regulation “also serves as the source of instruction for preparation of the Report of Availability of property for non-Army use. Paragraph 4-8 (Environmental, Cultural, and Historical Factors) provides that the Army will not authorize the use of real property, water, or other natural resources when the use conflicts with the goals and intent of overall federal policy on environmental quality and historical preservation. Compliance with AR 200-2 is required.”

Contracting actions are similar to leases in that the granting of a contract in and of itself does not cause environmental impacts; rather it is the actions caused by the contract that may require a NEPA analysis. In the instance of the Fort Carson family housing privatization contract, the environmental impacts of contracting out construction, renovation and operation of family housing were analyzed in the 1996 EA. The EA also covered the environmental impacts anticipated from the lease of previously vacant land to a private contractor for construction of new housing.

As outlined in paragraph 15-6 of AR 200-1, it is Army policy to prepare an Environmental Baseline Survey (EBS) to determine the environmental conditions (mainly contaminants) of properties being considered for acquisition, outgrants, and disposal. The EBS is used to identify the potential environmental liabilities associated with federal real property transactions. The EBS supports the Finding of Suitability to Lease and Finding of Suitability to Transfer, documents used to record specific determinations related to hazardous waste and other types of contamination that may be present on federal property intended for disposal or grant of use. If an EBS is required based on the decisions made after NEPA analysis is complete, it will be prepared in accordance with AR 200-1 and AR 405-80.

1.2 Purpose and Need

The purpose of and need for the proposed action is to accelerate the construction of new family housing units, to reduce the density of existing housing areas, and to allow construction of enhanced community facilities for family housing residents on Fort Carson, all with the purpose of improving the quality of life for soldiers and their families.

1.3 Scope of EA

This EA has been prepared in accordance with NEPA, Council on Environmental Quality (CEQ) regulations implementing NEPA in 40 CFR 1500, and Army Regulation (AR) 200-2, *Environmental Effects of Army Actions.* The EA will assess the known and potential environmental and socioeconomic impacts, both positive and negative, and possible mitigation measures associated with the Proposed Action and Alternatives. This EA is to be considered a supplement to both the *Environmental Assessment for the Fort Carson Affordable Housing Program* (June 1996) (hereinafter referred to as the "1996 EA.") This EA will address changes to the existing environment since the 1996 EA, and the potential for future, connected actions and cumulative impacts. As determined from scoping, only those resource areas and impacts that have changed since the 1996 EA will be analyzed in depth here. Information on impacts not determined to have changed since the original analysis can be found in the above-referenced EA.

2.0 Description of the Proposed Action and Alternatives Considered

This section describes the Proposed Action examined in this EA. Army Regulation 200-2, NEPA, and CEQ regulations require the identification of reasonable alternatives to the proposed action, including the No Action alternative.

The alternatives to the Proposed Action are organized in the following manner. The Proposed Action is described first, followed by a description of three alternative site locations and configurations, each with different environmental impacts. Following that are the No Action and the Contract Acceleration alternatives. The proposed action is the preferred alternative. However, for purposes of this EA, the alternative land sites for executing it will be analyzed on the merits and drawbacks of each, with no decision made until all impacts are documented and provided to the decision maker, in this case, the Installation Commanding General. The preferred alternative, with the chosen construction site will be identified in the Finding of No Significant Impact (FNSI), if applicable, to be prepared after approval of this EA.

2.1 Description of the Proposed Action

The proposed action is to modify the existing contract and lease with FCFH, LLC. Although the total number of housing units (2663) would remain the same as described in the 1996 EA, the process of adding new units to the housing inventory would be accelerated by approximately 14 years, providing up to 250 new housing units (instead of renovated older units, which would be demolished instead) to soldiers at a faster rate than previously anticipated.

Portions of some of the sites (approximately 25 acres) originally leased to the contractor (Fig. 1) and analyzed in the 1996 EA have subsequently been determined to be undesirable for construction of housing, and would be removed from the lease. These sites are: Area A (East), G (East), and L (Fig. 1). These sites have significant water table, drainage, and/or grade level separation problems that make construction on these sites not feasible due to extensive site preparation.

These undesirable areas would be kept as open space or for uses other than construction. The additional leased land would replace the undesirable sites plus provide extra acreage to replace demolished units. This extra acreage would allow decreasing the density of existing housing areas and allow siting of enhanced community facilities in logical, convenient locations. The actions that would be brought about by the proposed modifications to the contract and the lease include:

- Providing additional land to FCFH, LLC for the construction of up to 250 new family housing units in multi-family configurations and a 45,000 square foot community center complex. Construction would commence in the short term, i.e., within one year. The housing units to be constructed would consist of a mix of two, three, four and five bedroom units in a combination of detached and attached units to include townhouses, single-family, and multiplexes with each unit including two-car garages. The current contractual construction schedule would be revised to provide new housing at the accelerated rate and to appropriately reduce renovation requirements.
- Providing additional land to School District 8 to construct a 75,000 square foot elementary school, a softball field, and a soccer field. Approximately 10.5 acres of land is needed for an elementary school, playgrounds, and parking.

- Demolishing a similar number of housing units within the existing Arapahoe, Choctaw, and Cherokee housing areas to relieve the density in those areas. This will keep the total number of family housing units at 2663.

2.2 Alternative Construction Sites for the Proposed Action

Alternative Construction Sites. The Directorate of Public Works, FHFC, LLC, and the Directorate of Environmental Compliance and Management developed criteria to evaluate vacant areas on Fort Carson for suitability as housing sites. The criteria consisted of:

- Location in the cantonment area
- Proximity to community facilities and existing schools
- Compatible adjacent land use
- Suitable topography and water table
- School and family housing community center be co-located
- Close to installation perimeter for ease of conversion to civilian use, if necessary in the future

The following alternative construction sites were identified as meeting the criteria for family housing construction. Some alternatives are combinations of areas (and partial areas) in different configurations, based on acreage required

Alternative 1: Areas M, N - Lease approximately 73 acres located on two areas separated by the Limekiln Valley watershed, approximately 59 acres west of Harr Avenue north of Cheyenne Shadows Golf Course (partial Area M), and approximately 14 acres west of Harr Avenue north of the Limekiln Valley watershed (Fig. 2).

Alternative 2: Area M - Lease one contiguous area, approximately 80 acres located west of Harr Avenue, north of the Cheyenne Shadows Golf Course and south of the Limekiln Valley watershed (Fig 3). Area M is bordered on the north by a westward extension of Prussman Avenue, on the east by Harr Avenue, on the south by the golf course, and on the west by open space (7 acres is reserved for green space).

Alternative 3: Areas M south, N, O- Lease approximately 73 acres located on 3 separate parcels, approximately 19 acres west of Harr Avenue mainly along northern boundary of Cheyenne Shadows Golf Course (partial Area M), 14 acres north of the Limekiln Valley watershed (Area N), and approximately 40 acres east of Harr Avenue and north of Prussman (Area O) (Fig. 4). This alternative would require re-siting of some planned Public Private Ventures as shown on the Master Plan.

Figure 5 contains photographs of each area: M, N and O.

Public Private Ventures are projects planned by the Directorate of Community Activities (DCA) that involve partnering with private companies to build, own, operate and maintain community oriented facilities to provide services for soldiers and their families on land leased from Fort Carson. Some of these types of projects, and a DCA military construction project (a planned community center), are currently sited in Area O subject to availability of future funding. As part of Alternative 3, these projects would need to be re-sited; most likely to the Old Hospital Complex area after anticipated demolition of buildings is completed (Fig. 6).

Area M was identified in the 1996 EA as Areas D, E, and J. These areas (now consolidated into the current Area M) were considered as potential family housing construction sites (page 4, 1996 EA) but discarded from further analysis due to concerns about impacts to wildlife. Area N (identified as area C in the 1996 EA) was also discarded from further analysis due to its potential use for recreational purposes. At the time of the original Fort Carson Family Housing privatization proposal, enough other suitable sites were available that Areas D, E, J, and C could be discarded. Area M is the largest undeveloped open area in the cantonment area and met the criteria for family housing construction, therefore it will be carried forward as a potential construction site, as will Area N.

2.3 Description of Alternative Sites Considered But Rejected

Several other alternative construction sites were considered but not selected for further analysis. These are summarized in Appendix 2. The alternative new housing locations considered within this EA process essentially encompass all available, accessible non-range and training area and industrial land in the cantonment area on Fort Carson.

2.4 Contract Acceleration Alternative

Fort Carson would modify the contract but leave the lease unchanged. Within the first five years of the contract, rather than starting in 2014, FFC LLC would demolish up to 250 selected existing housing units and replace them with a like number of new multifamily housing units. This construction would occur within the same boundaries as the existing lease with only minor siting changes to account for building dimensions and infrastructure considerations, resulting in 1,090 new units (vice 840) and 1,573 renovated units (vice 1,823) by 2004. No further new construction would occur until 2014. Future community facilities would be constructed within the land area already leased by FCFH, LLC.

2.5 No Action Alternative

Fort Carson would not modify the contract or the lease. By 2004, 840 new units will be built and the 1823 existing new units will be renovated. No further construction would occur until 2014. Future community facilities would be constructed within the land area already leased by FCFH, LLC. As stated above, this project received a Finding of No Significant Impact as a result of the EA in June 1996. There has been no change in circumstances to warrant reexamination of that finding. Thus, this EA is primarily to assess proposed modifications to the current situation, not to remedy defects in it. As a result, the No Action alternative will not be referred to below except as necessary to clarify a discussion of the other alternatives.

3.0 Affected Environment

This section contains background information on the current environmental conditions of the area(s) that may be affected by the proposed action, alternatives, and no action. Where possible, the most current data available for a subject have been utilized. Only information relevant to the proposed action, alternatives, and no action alternative has been included. Sources for information are cited within the text. This EA is intended as a supplement to the *Fort Carson Affordable Housing Initiative Environmental Assessment* (June 1996) and will utilize the Affected Environment Section as the baseline conditions. This section updates the Affected Environment where the changes to the existing conditions are enough to warrant a new analysis of environmental impacts. Based on the description of the proposed action and alternatives, the following subjects from the 1996 EA did not need to be re-analyzed since any changes were determined to be negligible and the original analysis was still sufficient: Population on-post and off-post, Off-post housing, Law Enforcement, Fire Protection, Medical Services, Community Services, and Local Economy. Due to the scope of the proposed action, the region of influence is limited to the Fort Carson cantonment area and land adjacent off-post. Additional information on baseline conditions at Fort Carson is contained in the *Environmental Assessment (Programmatic) for Military Installation Land Use at 7th Infantry Division and Fort Carson* (March 2001) (hereafter referred to as the Land Use EA for both this chapter and Chapter 4).

3.1 Population and Employment

Population

The 2000 total population served by Fort Carson (including active duty, National Guard and U.S. Army Reserve, dependent family members, and military retirees) was 106,582 people. The troop projection, excluding Base Realignment and Closure (BRAC) considerations, is expected to remain generally unchanged for the foreseeable future. See Table 3-1 for resident population totals.

Table 3-1: Fort Carson Population

Active Duty Military	15,769
Civilian Employees (including civilian contractor, Appropriated Fund, and NAF)	4,055
Other (Credit Union Post Office, etc.)	364
Dependents (on-post)	5,469
Total	**25,769**
Per the U.S. 2000 Census, Fort Carson has a *daily* resident population of 10,566.	

Employment

The total maximum daily population on post is 25,769 (military/civilian personnel, contract personnel, dependents, and others [credit union, post office, etc.]) (Director of Resources Management, 2001). This total can vary widely depending on unit deployments to and from Fort Carson.

3.2 On-Post Housing

According to the 2000 U.S. census, 10,566 personnel live on post, including single soldiers, married soldiers, and family members. Most family housing units were built during several construction phases as shown below. On-post housing includes 1,823 family quarters (not including new units which have already been built under the current privatization contract), which were built during several construction phases. The below numbers do not total 1,823 because some facilities contain more than one family housing unit.

- 1957-58: 301 facilities
- 1965: 53 facilities
- 1971-74: 196 facilities.

The average family housing unit at Fort Carson is over 37 years old. (Fort Carson Real Property Inventory, 2001). A small percentage of units were renovated in the 1980s. Detached storage units were added in 1990. Pictures of existing housing can be found at Figure 7. Existing housing is in poor shape from decades of neglect due to inadequate funding (Crisis in Military Housing, AUSA, September 2000). Prior to the renovations under the current contract, virtually everything in the interior of units, such as walls, carpeting, light fixtures, countertops, appliances, was old and worn and in many cases in dire need of replacement. Quarters in the Arapahoe, Choctaw, and Cherokee Villages (5000 area) were built very close together. Parking is limited because when the units were built, space for only one vehicle was provided. Side streets serve as overflow parking.

The original schedule for renovation calls for all units to be renovated by 2004. Over 260 existing units have been renovated. Renovations currently underway include:

- Two parking Spaces Per unit
- Environmental Abatement (asbestos and/or lead based paint)
- New Light Fixtures and Upgraded Wiring
- New Plumbing Fixtures
- New Cabinets and Countertops
- New Doors and Interior Trim
- New Paint
- New Appliances
- New Floor Coverings
- Additional Fencing
- Exterior Storage Units
- Additional Landscaping

The housing privatization initiative to date has constructed approximately 100 new units in Area A. Construction of 90 units for junior enlisted (E1-E6) in Area B has been completed. Construction is underway in areas C1, C2, I north and I south. New units are 5 to 34% larger than existing units depending on the type of housing. Since Fort Carson's family housing is privatized, it is not required to meet Military Construction standards for rank to square footage, however, the new construction exceeds the standards by up to 40%. See Table 3-2 for a comparison of square footage in existing housing to square footage in new housing. When construction of the 840 new housing units is completed, it will account for 32% of the inventory on-post.

Table 3-2: Comparison Of Housing Units Square Footage			
Type of housing	Existing Housing Square Footage	840 New Construction Square Footage	Percent Difference
2 bedroom- junior enlisted	1058	1274-1396	+ 20-32%
3 bedroom junior enlisted	1224	1415-1640	+16-34%
4 bedroom junior enlisted	1472	1550-1808	+5-23%
3 bedroom senior enlisted	1384	1515-1896	+9-37%
4 bedroom senior enlisted	0	1738-2117	---
3 bedroom company grade	1356	1548	+14%
4 bedroom company grade	1486	1868	+26%

3.3 Utilities and Infrastructure

This section will focus on infrastructure information related to the proposed action and alternatives. Additional information regarding infrastructure can be found in the Land Use EA.

Fort Carson purchases natural gas, potable (domestic) water and electricity from Colorado Springs Utilities. According to the Fort Carson Real Property Master Plan, existing incoming supply lines for natural gas, electricity and water from the City of Colorado Springs to Fort Carson are adequate to meet existing requirements. As new housing in some areas is occupied, some existing lines may not be adequate and may need to be added. These same distribution systems provide Fort Carson with an acceptable level of service and reliability. Fort Carson currently pays for gas, water, and electric for family housing residents.

The Installation operates and maintains a sanitary sewage treatment plant that services the Cantonment Area, the family housing area, Butts Army Airfield, and the Range Control complex. The original system, constructed in 1942, has been modified several times to meet discharge requirements. The sewage treatment plant had a major renovation completed in 1999, and additional equipment is being installed. Effluent discharges from the sewage treatment plant are regulated under a National Pollution Discharge Elimination System permit Number CO-00221181, effective October 1, 2000 with a primary term of five years. Discharge occurs into Clover Ditch. A portion of the effluent is used to irrigate Fort Carson's Cheyenne Shadows Golf Course. The Installation wastewater system also services Cheyenne Mountain Air Force Base under an Interservice Support Agreement.

Areas M and N are previously undeveloped areas (except for water reservoirs near Area M), and have little utilities or roads infrastructure. There are utilities nearby, however, that can support the lines. Area O has had structures on it and has some infrastructure already in place. Existing family housing areas have gas, water, sewer and electric distribution lines already in place. Status of utilities and road infrastructure for each alternative follows, and some additonal information is shown in Figures 8 (sanitation and water lines), 9 (gas and electric lines), and 10 (telephone and storm water).

Alternative 1 – Areas M, N.

- Electric – Underground electrical lines are in place currently to support the water reservoirs located nearby. This would be used to support housing and related facilities.
- Water – No drinking water lines are located within Area N. Drinking and fire protection water main lines are buried bisecting Area M.
- Sewer – No existing sewer infrastructure, although sewer mains are located adjacent to Area M.
- Gas – No existing gas lines, although some are located adjacent.

- Roads – No roads currently within the areas, except for a dirt access road leading to water reservoirs. Harr Avenue runs along the eastern portion.

Alternative 2 – Area M.

- Electric - Underground electrical lines are in place currently to support the water reservoirs located nearby. This would be used to support housing and related facilities.
- Water –Drinking and fire protection water main lines are buried bisecting Area M.
- Sewer - No existing sewer infrastructure, although sewer mains are located adjacent to Area M.
- Gas- No existing gas lines, although gas mains are located adjacent to Area M.
- Roads - No roads currently within the areas, except for a dirt access road leading to water reservoirs. Harr Avenue runs along the eastern portion.

Alternative 3 – Areas M, N, O

- Electric- M and N discussed above. Area O has an above ground electrical supply from facilities previously located there.
- Water- Area O has old drinking water infrastructure in place.
- Sewer – Area O has old sewage lines in place.
- Gas- Area O has existing gas lines from facilities previously located there.
- Roads – Area O is bisected by Sheridan Avenue, and bounded by Coleman Avenue to the north , Prussman Avenue to the south and Harr Avenue to the west.

3.4 Schools

Fountain-Fort Carson School District 8 operates and maintains three elementary schools (Abrams, Mountainside and Beacon) and one middle school on Fort Carson. The student population reported by District 8 was 4,772 in the fall of 2000. High school students living on post must travel by bus to Fountain-Fort Carson High School located in Fountain. A new elementary school is proposed for construction on Fort Carson to accommodate the additional pupils anticipated to live in many of the 840 new units as designated in the current housing contract. Building 5510, Beacon elementary, is currently being used for some children in grades 3 through 5 only, and plans are to move these children to the newer facility (Mountainside) at the end of the school year. Community Youth Services administration and school age childcare is also located there currently. Some space at Beacon is also currently being used to house soldiers who will be moving on post within the next year. District 8 receives federal funding (PL 81-874) for children whose parents live on a military installation. The District sets aside a portion of its annual budget for new school construction. To date, District 8 stated that they have $5 million of the $10.5 to $11 million needed to construct a new elementary school. Location of the school and start date for construction have not been determined at this time.

3.5 Community Services/Facilities

Existing community services and facilities are described in the 1996 EA. Changes to community facilities since 1996 include completion of the new Main Post Exchange, renovations of the old Main Post Exchange and the commissary, and an addition to the Youth Services Facility. A new shoppette with fast food service is under construction near Gate 20. The current family housing contract includes indefinite provisions for the future construction of community support centers such as indoor water recreation and basketball court facilities, a ball field and jogging/bicycle paths. Although a relatively small Amenity Fund was instituted at the inception of the contract, the major anticipated source of funding for these types of community facilities was to be a Reinvestment Account. This account would gradually accumulate from a percentage of net profits from the housing project.

3.6 Childcare

Child Development Services (CDS) offers childcare programs on post. Programs include full day care, hourly care, half-day pre-school and half-day school age programs. Childcare programs are licensed and are operated by Fort Carson in on-post facilities. Additionally, licensed day care homes operate in Fort Carson family housing. The CDS provides training, inspection, and referral services for day care homes. These services are available for families living on or off post. Currently, Fort Carson has 578 spaces to support full day and hourly care for children ages 6 weeks through 5 years.

There are three Military Construction, Army (MCA) projects planned to provide additional childcare facilities. Each is a 23, 660 square foot facility. One project (capacity 303) for children 6 weeks to 5 years old has been submitted. Fort Carson anticipates that it will be a Congressional insert for FY03. This facility would be located to the southwest of the intersection of Prussman and Sheridan. The other two planned centers are for school age children, and will be submitted after the U.S. Army Corps of Engineers has developed a standard design. One facility would be located in the Family Housing 4000 area across from Abrams Elementary and the other facility would be located near Prussman and Sheridan. These projects would add 703 childcare spaces to the current 1,460 spaces for a total of 2,163 spaces.

3.7 Facilities and Land Use

Cantonment area land use categories for the western half of the Cantonment Area at Fort Carson are shown in Table 3-2 and in Figure 11. The majority of the remaining land use in the Cantonment Area is industrial/warehousing, barracks/administrative, community facilities, maintenance, and open space. Additional information regarding land use at Fort Carson, size and configuration can be found in the Land Use EA.

Table 3-3: Cantonment Area Existing Land Use (see Appendix 1, Figure 11)

Land Use Category	Acres
Barracks/Administrative	104.4
Community Facility	203.6
Family Housing	594.3
Future Family Housing	277.5
Golf Course	244.7
Industrial	9.6
Medical	177.9
Open Space	113.3
Open Space FY 2000	129.8
Open Space/Hillside	280.9
Recreation/Open Space	98.2
TOTAL SHOWN ON FIGURE 3-2	2,234.2
TOTAL CANTONMENT AREA	5,303
TOTAL FORT CARSON	**137,404**

Source: Fort Carson DPW; the Fort Carson Family Housing contract Quit Claim Deed indicates 467.18 acres of developed land and 309.69 acres of undeveloped land. The above figures are approximate, based on Figure 3-2.

Land use adjacent to the alternative construction sites can also be seen in Fig. 11. Sites M, N, and O are currently vacant. Sites M and N have not been developed in the past. Site O has been vacant since the demolition of WWII wood buildings in the 1990's. Land use in this part of the cantonment area is primarily family housing, open space, and recreation. Carson Middle School is located near Sites N and O. Site M is bordered by Cheyenne Shadows Golf Course on the south and the Limekiln drainage on the north.

3.8 Land Use Off-Post

Land use adjacent to the north and northwest sides of the cantonment area consists primarily of residential housing. Apartments are under construction immediately north of Academy Boulevard near Gate 3. Development is also concentrated to the west and east (Security-Widefield) of the installation. Portions of the towns of Fountain, Widefield, and Security, located within one mile of the installation boundary, consist largely of dispersed residential areas. At the time of the preparation of the Family Housing EA in 1996, the land west of highway 115 at the base of Cheyenne Mountain was being rapidly developed for single and multi-family housing. Development closest to Highway 115 and Academy Boulevard is nearly complete, but residential construction has continued to the south along the west side of Highway 115. Current open areas adjacent to the west side of Highway 115 from Academy Boulevard south to Gate 1 are being developed for housing or will be in the future.

A former ranch, consisting of 1,680 acres, was purchased in 2000 using funding from a variety of sources, including the city of Colorado Springs, and grants from Great Outdoors Colorado and The El Pomar Foundation for creation of a state park. The park will be known as Cheyenne Mountain State Park and is scheduled to be open to the public in 2004. Possible improvements include trails, picnic areas, and an education center and a visitor center. The site contains five ecosystems and gains 2000 feet in elevation from its eastern border on Highway 115 to its western edge at the foot of granite cliffs on Cheyenne Mountain. Currently studies are under way to determine how to balance outdoor recreation with the need to protect and preserve the property and wildlife. The property contains wild turkey, black bear, mountain lion, elk, coyote, bobcat, prairie dog, 60 species of birds including rare warblers and prairie falcons. Several dozen species of butterflies have also been identified along with many native wildflowers (Gazette, August 20, 2001). Cheyenne Mountain State Park is located directly west of Area M (Figure 3). The west, south and north sides of the water tower hill are visible from the park. The major watershed of the park is the Limekiln Valley watershed. The Limekiln Valley watershed crosses under Highway 115 and continues to the east between Site M and N and through Site O.

Vicki McCusker, DECAM NEPA Coordinator contacted Robert Fenwick, Ecologist, who is preparing the natural resource management plan for the park and Heather Brown, Wildlife Biologist who is an independent consultant for the wildlife surveys conducted at the park. Per e-mail (August 13, 2001) from Robert Fenwick and a phone conversation with Heather Brown (September 6, 2001), the Limekiln Valley watershed is considered to be the most heavily used wildlife corridor, especially by elk, in the park.

3.9 Environmental Justice and Protection of Children

The Department of Defense utilizes the National Environmental Policy Act process as the primary mechanism to implement provisions of the Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* The purpose of the order is to avoid disproportionate affects of any adverse environmental or economic impact from federal policies and actions upon minority and low-income populations.

According to the U.S. Environmental Protection Agency[1] El Paso County has an 18.5% (ranked 20th among the 63 Colorado counties) minority population (compared to 19.1% statewide). Fort Carson has a minority population in the 25-50% category, reflecting a typical military community population. Much of the area immediately to the northeast of Fort Carson also has a minority population in the 25-50% category. The urban area immediately to the north is in the 10-25% category, and adjacent areas to the west and east of the installation have less than 10% minority representation.

El Paso County has a 10.0% (ranked 50th of 63 Colorado counties) poverty population[2] (compared to 11.4% statewide). A very narrow band immediately east of Interstate 25, between Security-Widefield and Fountain have poverty levels greater than 20%. There are scattered pockets of poverty levels greater than 20% within Colorado Springs. Fort Carson and other surrounding areas have poverty levels less than 20%.

Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 21, 1997), recognizes a growing body of scientific knowledge that demonstrates that children may suffer disproportionately from environmental health and safety risks. These risks arise because (1) children's bodily systems are not fully developed, (2) children eat, drink, and breathe more in proportion to their body weight, (3) their size and weight may diminish protection from standard safety features, and (4) their behavior patterns might make them more susceptible to accidents. Based on these factors, the Executive Order directed each federal agency to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. Children are present at Fort Carson as residents, in childcare facilities and as visitors (e.g., users of recreational facilities). As part of the NEPA process, disproportionate risks to children that result from environmental health or safety risks must be considered and addressed during the identification and analysis of the potential environmental and socioeconomic effects of the proposed action and alternatives (NEPA Manual, Section 8.8, 1998).

Existing housing contains non-friable asbestos containing materials and small amounts of lead based paint, usually in door frames. Inhalation of asbestos fibers and ingestion of lead based paint by children can cause detrimental health effects. Building materials containing these substances must be maintained in good condition to prevent exposure to occupants, especially children. When units are renovated, these materials are removed in accordance with federal and state regulations and special precautions are taken during removal so as not to create friable asbestos or lead based paint dust. Removal operations are completed when existing units are vacant.

3.10 Transportation

Primary access to Fort Carson and primary and secondary roads on the Installation are unchanged since 1996, with the exception of roads in new family housing areas. Restricted access (i.e. manned gates) to

[1]Information utilizing 1990 Census data obtained from Office of Enforcement, Compliance and Environmental Justice, Region VIII, Denver, CO. At the time this EA was written, 2000 Census data had not been mapped by the Environmental Protection Agency.

[2] National levels established by the U.S. Census Bureau in 1990, ranging from $8,509 per year for a family of two to $20,211 for a family of seven.

the Installation began in August 2001. Vehicles that are not registered with Installation Security are detained at the gates and issued passes when applicable. This causes traffic slowing at the most frequently used gates (1, 4, and 20). When the Department of Army determines an increased potential for threats to security, traffic may be severely restricted and vehicles stopped and searched at the gates, depending on the level of threat. Gates 1 and 5 are located closest to the Areas M, N, and O.

Traffic on the west side of the cantonment area has increased since the construction of new family housing units due to additional family housing residents and construction vehicle traffic. Overall, existing primary and secondary roads and road intersections have been adequate to accommodate the increased traffic. Adequate parking within original family housing areas is lacking, however.

3.11 Air Quality

Six criteria pollutants are regulated by National Ambient Air Quality Standards/Colorado Ambient Air Quality Standards (NAAQS/CAAQS). The criteria pollutants are ozone (O3), CO, nitrogen dioxide (NO2), sulfur dioxide (SO2), lead (Pb), and particulate matter. Particulate matter has been further defined by size. There are standards for particulate matter smaller than 10 microns in diameter (PM10) and smaller than 2.5 microns in diameter (PM2.5). All six criteria pollutants must be calculated to determine compliance with Prevention of Significant Deterioration (PSD) requirements. Net emissions cannot exceed 40 tons per year on Fort Carson without additional PSD permitting. In addition, hazardous air pollutants (HAPs) must be calculated to demonstrate annual emissions do not exceed de minimis levels.

Fort Carson is located in El Paso, Pueblo and Freemont Counties, the Colorado Springs metropolitan Area, and the San Isabel Intrastate Air Quality Control Region. The region is currently in attainment for all criteria pollutants, but has only been in attainment for carbon monoxide (CO) since August 1999. As part of redesignation as an attainment area, the Colorado Springs area is under a maintenance plan for 10 years to demonstrate compliance with the CO standard, as provided for in Section 110 of the Clean Air Act (CAA) (42 U.S.C. Sec 7410). Under this maintenance plan, the Colorado Springs Maintenance Area has a budget of 270 tons per day (98,550 tons per year) of CO.

Conformity thresholds, as defined in 40 CFR 51, Subpart W, are used to determine conformity of Federal actions with a State Implementation Plan (SIP). These thresholds are 100 tons per year of CO, volatile organic compounds (VOC), nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter. As El Paso County is only non-attainment for CO, Conformity applicability must only be determined for CO. Under Conformity rules, emissions would be considered significant if they exceed the 100 ton threshold and/or 10% of the Area's CO emissions budget.

The principal source of CO and SO2 is combustion. The precursors of O3 (VOC and NOx) are also primarily emitted from combustion. HAPs include a wide range of materials or chemicals that are toxic or potentially harmful to human health. While HAPs are found in numerous products and used in many processes, only limited quantities of HAPs are generated during internal combustion processes or earthmoving activities. As the primary activities for the proposed action involve earthmoving activities and automobiles, HAPs are not further considered.

Per the calendar year 2000 emissions inventory, Fort Carson's installation-wide actual criteria pollutant totals are shown in Table 3-4. Since September 1998, the Post has functioned under a Clean Air Act Amendment (CAAA) Major Source Title V Operating Permit from the APCD. Fort Carson is a major source for VOC and NOx, therefore the Installation is subject to PSD review requirements of 40 CFR

52.21 and Code of Colorado Regulations, Title 5, Chapter 1001, Regulation 3, Part B, Section IV.D.3. PSD is not applicable to this proposed action as no permanent, major stationary sources are part of the action.

Table 3-4 indicates Air Pollutant Emissions for Fort Carson in FY 2000.

Table 3-4: 2000 Fort Carson Air Pollutant Summary	
Emission	Tons/Year
PM	27.17
PM_{10}	14.54
CO	10.38
NOx	42.03
SOx	1.25
VOC	81.04
HAPs	9.48

PM - Particulate matter
PM_{10} - Particulate matter less than 10 microns
CO - Carbon Monoxide
NOx – Nitrous Oxides
SOx – Sulfur Oxides
VOC – Volatile Organic Compounds
HAPs – Hazardous Air Pollutants

3.12 Soils

Thirty-four soil categories and sixty-five soil associations have been identified on Fort Carson. Six different soil types or complexes are found on existing family housing and proposed construction sites:

- Manzanol clay loam
- Nunn clay loam
- Razor stony clay loam
- Razor-Midway complex
- Schamber-Razor complex
- Truckton sandy loam.

A high shrink-swell capacity is the result of montmorillonitic clays dominating most soil complexes. Soil erosion, primarily from water run-off, is a significant problem on the installation. Soils of greatest concern for erosion control are clays, silty clays, and clay loams (Land Use EA). Depending on the site chosen, special design precautions may be required to mitigate both erosion and shrink-swell problems. Fort Carson Soils Map can be found in the Land Use EA.

3.13 Radon

Family housing units have been surveyed for radon. The vast majority of housing units were determined to have levels well below the four picocurie threshold. Family housing units found above four picocuries

were mitigated prior to privatization. Levels continue to be checked for mitigation requirements in the new units by FCFH, LLC.

3.14 Topography

Elevations in Area M range from 5,490 at Harr Ave. to 6,015 at the western limit for construction. Areas N and O are relatively flat. The Cantonment Area has an average elevation of 5,835 feet.

3.15 Noise and Aviation Safety

Numerous sources of noise associated with military training operations, aircraft, and traffic exist on the Installation. Specific information is provided in the Fort Carson Installation Environmental Noise Management Plan (U. S. Army for Health Promotion and Preventive Medicine, 1999). The plan defines four noise zones, based on noise generated from the air-to-ground gunnery range and large caliber weapon noise for Fort Carson.

Definitions:

- Noise Zone III: noise-sensitive land uses should not be considered
- Noise Zone II: land uses should be limited to nonresidential and other noise-sensitive uses unless buildings are designed for these levels of noise
- Noise Zone I: usually suitable for all types of land use activities
- Busy Day Zone II: (ADZII) indicates areas where noise-sensitive land uses should not be implemented. The ABDZII is an area that could become Zone II due to climatic effects on noise propagation and due to ramped up training levels associated with mission changes.

See Figure 12 for noise contours. Existing family housing, current construction sites, and Areas M, N and O are not located in noise contour areas with land use restrictions. Noise sensitive land uses include but are not limited to, residences, schools, medical facilities, and churches.

Family housing at Fort Carson (existing and proposed sites) is sited along the northwestern edge of the post. This area is adjacent to Highway 115 on the west and the City of Colorado Springs and Academy Boulevard on the north. Principle sources of noise near family housing areas are from traffic on Highway 115 (west side of cantonment area) and Academy Boulevard (north side of cantonment area). Industrial areas closest to family housing and construction sites are located on the east side of Chiles just south of Gate 3.

In addition to noise concerns, land use planning on a military installation also considers aircraft accident potential and hazards to air navigation. In order to avoid incompatible land use around military airfields, Clear Zone and Accident Potential Zones I or II areas are identified. These classifications rate accident potential from high potential (Clear Zone) to potential for accidents (APZ II). Clear Zone, APZ I and APZ II are located near Butts Airfield. No areas of existing housing, current construction sites or Areas M, N or O are located in these areas.

3.16 Water Resources

Information on surface and ground water, water quality and water rights can be found in the Land Use EA.

3.16.1 Storm water Drainage

The Cantonment Area is drained by three major ditches: B Ditch, Clover Ditch, and Unnamed Ditch, all of which are tributaries to Fountain Creek. Several intermittent streams running generally west to east traverse the housing areas. Two intermittent streams occur adjacent to Area M. A minor drainage runs along the north boundary of the golf course. The northern boundary of Area M and southern boundary of Area N is part of the Limekiln Valley watershed that originates on Cheyenne Mountain, just south of Cheyenne Mountain Air Force Base (Figure 3). The Limekiln Valley watershed is a tributary watershed to Unnamed Ditch which runs through Ironhorse Park and through "the Crowsfoot" on Fort Carson Seventy-five percent of the Limekiln Valley watershed occurs west of Fort Carson. The Limekiln Valley watershed crosses under Harr Avenue and through Area O to Unnamed Ditch, which ultimately drains into Fountain Creek. In parts of Area O, the drainage is mowed. Some erosion occurs in the eastern part.

3.16.2 Ground Water Monitoring Wells

Ground water monitoring wells provide access to monitor ground water to regularly assess effects of land use at Fort Carson on water quantity and quality. Ground water monitoring wells have been installed throughout the Cantonment Area to assess ground water quality and types and concentrations of contaminants (if any) to determine if there are contaminated sites impacting ground water. A groundwater monitoring well is located near the Limekiln Valley watershed on the south side of Area N. There are no groundwater monitoring wells on Areas M or O.

3.16.3 Water Rights

Water rights restrict the amount of water that can be stored in detention ponds and permitting is required for detention ponds over a certain size. Water detention ponds have been constructed in areas of new family housing to contain large amounts of water from storm events. The water is allowed to drain at a slower rate so as not to overwhelm the storm sewer system during storm events. No permanent storage of storm water is permitted without a storage right.

3.16.4 Wetlands

The Limekiln Valley drainage is an intermittent stream and contains water only during storm events. It is natural and has a well-developed riparian area in the Fort Carson cantonment from east of Highway 115 to Harr Ave. Seeps and perched aquifers may be found on the upper slopes on the hill above Area M. There are approximately 6 acres of wetlands occurring mainly on these upper slopes, with approximately .5 acres located at the intersection of Harr Avenue and the existing dirt access road leading to the water reservoirs (Figure 13). Areas N and O do not contain wetlands.

3.17 Flora

The majority of the Cantonment Area is a built-up environment or has undergone considerable man-made ground disturbance. The remaining areas are grasslands, usually classified as shortgrass prairie, with some shrublands with typical grass understory (Land Use EA). No special status plant species have been found in the cantonment area. Searches of wetlands in 1994 and 1995 found no Ute's ladies tresses (*Spiranthes diluvialis*). There are no historic records of Ute ladies tresses on Fort Carson. Descriptions of individual sites follow (see Vegetation Map, Figure 14).

Area M. Area M is the largest remaining undeveloped area in the Cantonment still containing native vegetation. The hill above site M contains 113 acres of scrub oak/mountain mahogany/skunkbush sumac. The bottom slopes of the hill and the areas proposed for construction consist of native grasses such as western wheatgrass, blue grama, stipa, sideoats, big and little bluestem, three awn, muhly and dropseed. Grasslands are estimated at 182 acres. Approximately one-half acre of Canada thistle, a noxious weed is located on the northern portion of site M. The hillsides contain Wood's rose, Indian paintbrush, wild geranium, Astragalus species, coneflower and legume species. The native vegetation on this site is considered to be in good condition, although four acres of scrub oak was recently removed during installation of an underground water line from site I that goes up the west side of the hill, and crosses the top of the hill to connect to a water storage tank on the east side of the hill. Another 1.25 acres of grassland was disturbed from the installation of a water line from the golf course to the same water storage tank. A revegetation plan is currently being developed to reseed disturbed areas with native species. Scrub oak and woody species would be allowed to re-establish on their own.

Vegetation along the Limekiln Valley drainage consists of a well-developed riparian area and understory including narrowleaf cottonwood, plains cottonwood, currants, rose, poison ivy and ninebark. Wetland vegetation in Site M consists of common wetland species, mainly cattails, sedges, and rushes.

Area N. This area is mowed on a regular basis. Vegetation is a mixture of grasses and forbs that tolerate mowing, such as western wheatgrass, cactus, sages, three awn, etc.

Area O. The former sites of World War II buildings contain a mixture of grasses and forbs indicative of landscaped and disturbed areas. Much of the area is still paved; as such vegetative cover is mainly along parking lot perimeters. The site also contains several trees that were planted around buildings prior to demolition.

3.18 Fauna

A current list of special status wildlife species on Fort Carson is found in the Land Use EA and the *Land Condition Trend-Analysis Installation Report, Fort Carson Military Reservation, Colorado* (Gordon, 1989) also contains a listing of wildlife species found on the Installation. Most of these species reside in habitat found downrange at Fort Carson. Since the proposed action and alternatives would take place completely within the cantonment area, discussion will focus on wildlife found in the cantonment area.

The status of threatened and endangered species in the cantonment area has not changed since the 1996 EA or the Land Use EA with the exception of a proposal to list the black tailed prairie dog (*Cynomys ludovicianus)* which is found in the cantonment area. According to the US Fish and Wildlife Service (USFWS), the species "warrants listing", but that higher priority species deserving of more immediate attention "precludes the listing of the black-tailed prairie dog at this time" (a.k.a., a "warranted but precluded" finding). So, for now, the species is officially considered a federal candidate for listing, and USFWS will review its status every 12 months (page 1, Black-Tailed Prairie Dog Study of Eastern Colorado, October 2000, EDAW, Inc.). Threats to the black-tailed prairie dog are habitat fragmentation (from urbanization and conversion of rangeland to farming), sylvatic plague, recreational shooting, and control programs. Urbanization and plague are the most serious threats to prairie dogs along the Front Range (Black-Tailed Prairie Dog Study of Eastern Colorado). The black-footed ferret (*Mustela nigripes*, federal and state endangered), swift fox (*Vulpes velox*, state special concern), mountain plover (*Charadrius montanus*, federal proposed), ferruginous hawk (*Buteo regalis*, state special concern), burrowing owl (*Athene cunicularia*, state threatened), and numerous other species are dependent upon prairie dogs to varying degrees (Federal Register, February 20, 2000, Vol. 65, No. 24, pages 5476-5488). With the exception of the black-footed ferret, all the before mentioned species are found in El Paso County or on Fort Carson training areas. Short-grass prairie, such as found in Area M, is suitable habitat

for prairie dogs. Areas N and O do not contain undisturbed short-grass prairie and do not have suitable habitat for prairie dogs.

Two colonies of black-tailed prairie dog have been documented on Cheyenne Mountain State Park (phone conversations with Heather Brown, September 6, 2001, and Rob Billerbeck, Colorado State Parks, September 14, 2001). Prairie dog dispersal is usually limited to approximately 3 miles (5 kilometers) or less, and individuals dispersing from home colonies generally move into an established colony rather than attempting to initiate a new colony (Federal Register). No prairie dog colonies, existing or abandoned, were observed on Sites M, N, or O on Fort Carson. Prairie dog colonies have been found in or near family housing areas but generally have been controlled due to health concerns regarding plague.

The Bald Eagle (*Haliaeetus leucocephalus*), federal-listed as Threatened, is a winter resident that is most often seen near the Cantonment Area, often in association with prairie dog towns. The Preble's meadow jumping mouse (*Zapus hudsonius*), federal- and state-listed as Threatened, has the potential to exist on Fort Carson, but past and on-going surveys have not identified the species on the installation. The Limekiln drainage was determined not to be suitable habitat for the mouse, and a survey for the mouse is not required (Maynard, Memorandum for Record, August 2001). No threatened, endangered, proposed for listing or candidate species have been found on Areas M, N and O.

Elk heavily use the Limekiln drainage on Cheyenne Mountain State Park according to Heather Brown and Rob Billerbeck. The drainage crossing beneath Highway 115 consists of two approximately 4 foot culverts that are full of sediments. Less than 50% of the culverts are clear. Only small mammals such as coyote or fox could use the culvert to cross back and forth between Fort Carson and the state park. Elk would have to cross Highway 115 to enter Fort Carson. Evidence of elk crossing Highway 115 on or off Fort Carson typically consists of broken fences and road kills at the crossing points. Although elk herds on Fort Carson are mainly found downrange (south of Titus), a cow elk has calved in Area M for the last three years (Tom Warren, Director, DECAM). A cow and calf have also been observed this year just south of Cheyenne Shadows Golf Course. Elk tend to move on and off post during hunting and breeding seasons. Elk cross highway 115 south of the cantonment area (Richard Bunn, DECAM Wildlife). Elk have been occasionally observed on the golf course but they are thought to have come from downrange areas. Family housing residents have observed deer, bears, and mountain lions. These animals either reside in the Fort Carson downrange areas or journey from the slopes of Cheyenne Mountain to the west to the cantonment area. Other small predators such as fox and coyote are frequently seen in the cantonment area.

Wildlife observed on Site M during recent site visits consisted of deer, bear, ground nesting birds in the grassland areas and other birds in the scrub oak. No wildlife activity was observed at sites N and O. Wildlife that would use these sites would be limited to species adapted to human activity such as cotton-tail rabbits, squirrels, small reptiles, and birds such as pigeons, English sparrows, starlings, magpies, etc.

3.19 Cultural Resources

The *Cultural Resource Management Plan for Fort Carson Military Reservation, Colorado* (Zier, *et al*., 1997) contains information on known cultural resources (historic and prehistoric), previous cultural resources investigation, and plans to inventory, evaluate, protect, and mitigate cultural resources on Fort Carson. Unless stated otherwise, the following information is from this document. Areas M, N and O have been surveyed for cultural resources (Grand River Consultants, 1982 and Centennial Archaeology, 1992). None were found.

3.20 Visual Resources

The Military Housing Areas east of Highway 115 and north of Gate 1 either have been renovated or will be replaced with newer housing. This new housing screens industrial views of Fort Carson completely from the highway level and is similar in appearance to nearby off post housing. The housing also screens the middle and far distance views of administrative and industrial land uses of Fort Carson as seen from the slopes of Cheyenne Mountain. Topography south of Gate 1 in general screens the ability to view into Fort Carson from the highway level. Areas of Fort Carson visible from Cheyenne Mountain State Park include the hill at Area M, the golf course, new family housing on Area I, Evans Army Hospital in the distance, and Gate 5.

3.21 Hazardous Materials/Waste

A wide variety of hazardous/toxic materials are used on the installation, including petroleum, oil, and lubricants; chemical agents; explosives; and pyrotechnics. Such products are used in military training and normal maintenance activities/operations. Fort Carson is a Non-National Priorities List installation. Hazardous waste generated by Fort Carson is stored at an approved storage facility operated by the DECAM in compliance with the Resource Conservation and Recovery Act, Part B permit issued by the Colorado Department of Public Health and Environment to Fort Carson. The permit also requires the investigation and remediation (if necessary) of over 160 solid waste management units. None of the solid waste management units are located on the construction sites. Existing family housing contains non-friable asbestos containing materials and minimal traces of lead based paint, usually found in doorframes.

3.22 Solid Waste

The sanitary landfill south of the cantonment area reached capacity in 1999 and no longer accepts municipal wastes. The landfill now only accepts construction debris, petroleum-contaminated soil, and industrial and sewage treatment plant sludges. Household wastes are disposed of at an off-site location. All debris from housing construction and renovation activities is disposed of off-post at approved facilities.

4.0 Environmental Consequences

This chapter identifies potential impacts from the Proposed Action, Alternative construction sites, and the Contract Acceleration Alternative. The potential impacts of the No Action Alternative were evaluated in the June 1996 EA and will be mentioned below only to show contrasts or changes. Where applicable, differences in impacts between the alternative construction sites will be discussed separately. Direct, indirect and cumulative impacts are identified. To help ensure protection of natural resources, mitigation measures for the Proposed Action, regardless of site alternative chosen, would be environmental review of site design and layout, including need and location of detention ponds, green areas, etc. Fort Carson Family Housing, LLC would be responsible for infrastructure installations and upgrades, required environmental permits, and mitigation actions identified in this EA.

4.1 Population

4.1.1 Proposed Action

Construction of 250 new, replacement military family housing units would increase the on-post population until demolition of existing units brings the total family housing units to 2,663. The exact size of the increase cannot be determined because the size of families moving into the units is not known. Units to be constructed would have two to five bedrooms, while units to be demolished are two or three bedroom units. The increase in population is expected to consist mainly of children because larger families would be able to live on-post. There would be no differences in impacts to total population due from construction of housing in Alternative Sites 1, 2 or 3. Increases in total population are not significant, however impacts from increases in children living on post will be discussed in Section 4.6, Child Care and Section 4.4, Schools.

4.1.2 Contract Acceleration

The Construction Acceleration alternative would cause slight temporary decreases in the on post population because units would be demolished then replaced, however upon completion of the construction and demolition, population levels would be approximately the same as anticipated with the original construction and demolition schedule. Important to keep in mind, though, is that the end state of either the Proposed Action or the Construction Acceleration Alternative is roughly the same number and size of quarters as would exist under the No Action Alternative, which was the subject of the 1996 EA. The only differences are the timing of the new construction and the location of some of the new units.

4.2 Employment

4.2.1 Proposed Action

Some changes in Fort Carson housing contractor staffing are expected from the implementation of new housing and infrastructure construction depending on its phasing. The scope of existing construction contracts would also be increased in order to include the new housing, the scope of the renovation effort would be decreased, and there would be new demolition work. It is difficult to estimate how many positions would be impacted overall. No Department of Army civilians

would be affected by the proposed action. The Proposed Action would result in additional spending and jobs in the local economy, assuming contracts are awarded to local contractors. There would be no differences in impacts to employment from Alternatives 1, 2 or 3.

4.2.2 Contract Acceleration

This Alternative would result in generally the same employment effects as the Proposed Action, with different locations and somewhat different timing. No Department of Army civilian employee positions would be affected by this alternative.

4.3 On-Post Housing

4.3.1 Proposed Action

The addition of 250 new, replacement military family housing units on Fort Carson would be a positive impact to the Fort Carson housing inventory by replacing old, smaller units with larger, modern units. In the proposal, the square footages proposed are: 2-bedroom – 1,396 net square feet, 3-bedroom - 1,545 net square feet, 4 bedroom - 1,695 net square feet and 5 bedroom - 1,845 net square feet. The unit sizes proposed are comparable to what is currently being constructed. The proposed action would also add 5 bedroom units to the inventory based upon family need. After completion of the additional new units and demolition of old units, the on-post housing inventory would consist of 41% new units. The effect on on-post housing would be the same regardless of which alternative construction site is chosen.

Units would be expected to be fully occupied (based upon current staffing levels at Fort Carson and the size of the waiting list for family housing) with a small number vacant at any one time due to families moving in or out or units in maintenance between occupants. If family housing units were not fully occupied by soldiers assigned to Fort Carson, the housing contractor would have the option of offering the housing at its applicable BAH rate to other active duty soldiers (other Army, Air Force, etc.), retired service members, Department of Army or Department of Defense civilians, contractor employees, and the general public, in that order. Fort Carson maintains a large referral list of military families requesting on–post housing so it does not appear lower priority families would occupy the units in the foreseeable future.

The newly constructed units should have lower maintenance costs initially. As the units age, maintenance costs would gradually increase during the useful life of the structures. Since housing would be spread out over a larger area, there would be increased roadway maintenance costs and possibly increased mowing and insect control requirements. Maintenance of family housing is the responsibility of the contractor and no longer funded by Fort Carson.

Construction of new units instead of renovating small, older units would improve the overall quality of on-post family housing at a faster rate. Since Fort Carson family housing is now operated and maintained by a contractor, soldiers with families are not required to live in on-post housing. Improved quality of housing may help to retain soldiers with families in the Army. Advantages of living on-post such as easy access to community facilities, schools, work sites, not having to pay for utilities, and cost of housing equal to BAH rates would continue and be improved.

4.3.2 Contract Acceleration

This alternative would commence demolition of older units that would be replaced in the existing housing areas. Within the bounds of several of the existing military family housing areas, space is at a premium to construct the additional housing and associated facilities. Since replacement units would be larger than original units, yards and other open space areas would be smaller. The delay between the demolition and construction phases would also reduce total housing inventory for that period, to the detriment of soldiers and families on the large waiting list for on-post housing. This would also have an adverse affect on the surrounding community as those soldiers compete for the small pool of affordable housing. In comparison to the Proposed Action, this alternative would also negatively affect the overall housing project's economic status and impact long range housing replacement plans.

4.3.3 No Action

After completion of the additional new units, the on-post housing inventory would consist of 32% new units. In comparison, the Proposed Action would result in 41% new units at a faster rate.

4.4 Infrastructure and Services

4.4.1 Proposed Action

This section will focus on infrastructure impacts related to the alternative construction sites for the proposed action. Additional information regarding infrastructure can be found in the Land Use EA. Areas M and N are previously undeveloped areas (except for water reservoirs), and have little utilities or roads infrastructure. The main infrastructure issue is with the proposed action itself, addition of family housing units. A sewage “choke point” in the existing 7000 housing area (Cheyenne Village), and in one of the existing construction areas (G) would be exacerbated by new housing causing sewage back ups in this area. This results from inadequate sized sewage lines to handle the increased capacity from additional housing that would tie into lines in that area (e.g. currently leased areas C1 and C2 which are under construction), which also includes Area M. This issue was not identified in the original housing proposal. At that time, the lines were considered adequate. The Sewage Treatment Plant was upgraded as an MCA project in 1998 and is adequate to handle increased flows at the plant.

Alternative 1 – Areas M, N.

- Electric – Additional electrical lines would be buried underground in accordance with Installation policy.
- Water – These areas are not supported with a drinking water system. Water lines would need to be installed within these areas.
- Sewer – Sewage lines would need to be installed. Addition of lines from Area M would exacerbate the “choke point” which will occur at Cheyenne Village when new family housing units (up to 250) are completed and hooked up to the existing system. Lines from Area N (school and community center) would be routed through a different collection system that would not go through Cheyenne Village. A study of the capacity of the existing lines is currently underway, but will not be completed until fall of 2002. A parallel interceptor would need to be installed to alleviate the “choke point”. Fort Carson Family Housing, LLC would be responsible for upgrading the sewer lines.
- Gas – Gas lines would need to be installed.

- Roads – The dirt road leading to the water reservoirs would be re-routed to make better use of housing design and layout. New roads would be added according to the contractor's planned site layout.

Alternative 2 – Area M.

- Electric - Electrical lines would be buried underground in accordance with Installation policy. Underground electrical lines are in place currently to support the water reservoirs located nearby. This would be used to support housing and related facilities.
- Water – This area is not supported by a drinking water system. Water lines would need to be installed.
- Sewer - No existing sewer infrastructure. Under this alternative, the number of housing units (up to 250), school and community center would all tie in to the lines going through Cheyenne Village. Addition of these lines would exacerbate the "choke point" at Cheyenne Village more than Alternatives 1 and 3. A study of the capacity of the existing lines is currently underway, but will not be completed until fall of 2002. A parallel interceptor would need to be installed to alleviate the "choke point".
- Gas- Gas lines would need to be installed.
- Roads - The dirt road leading to the water reservoirs would be re-routed to make better use of housing design and layout. New roads would be added according to the contractor's planned site layout.

Alternative 3 – Areas M, N, O

- Electric- Underground electrical lines are in place currently in Area M to support the water reservoirs located nearby. Area O has an above ground electrical supply from past facilities located there, and could service Area N also but replacement or upgrades may be required to support housing. Above ground electric supply may need to be buried.
- Water- Drinking water infrastructure in place in Area O but may require upgrade or replacement to support housing.
- Sewer – Old sewage lines from past facilities are in place in Area O. Some of the sewage infrastructure may be usable. Most would likely need to be upgraded and replaced. The existing collection system from Area O is not routed through Cheyenne Village, and would not cause increased back ups in that area. Area N would tie in to the Area O collection system also. Only the housing units built along the southern portion of Area M (72 units) would add to this problem.
- Gas- Area O has existing gas lines from past facilities located there. Upgrades may be required.
- Roads – Area O is bisected by Sheridan Avenue. This road could be used depending on the design and layout of the area for housing. The road to the water reservoirs would not need to be re-routed under this alternative. New roads accessing the 72 units built in the southern portion of Area M would be constructed according to the contractor's planned site layout.

Total installation utility usage would remain essentially unchanged from that anticipated in the original contract, assuming current usage rates stay the same. Total usage is looked at because individual housing units are not currently metered. Energy saving designs utilized in new construction may reduce energy usage on a per unit basis. Community infrastructure and availability of services would be improved with the addition of the community center and associated infrastructure. The Proposed Action would require extension of infrastructure into area previously undeveloped.

If there is a lag time in demolition of existing units, the housing inventory at Fort Carson may exceed the 2,663 units ceiling with some transitory effect on utility costs. However, these costs would be assumed by FCFH, LLC.

Fort Carson is dependent upon the City of Colorado Springs Utilities Department for water, natural gas, and electricity. Energy saving designs (e.g., fluorescent lighting, foam-filled exterior walls, etc.) utilized in new construction could reduce energy usage on a per unit basis.

4.4.2 Contract Acceleration

Current infrastructure and utility usage and trends will remain the same as anticipated in the original contract. Overall demand would likely drop somewhat temporarily as units are demolished and before new units are constructed. Total, long-term installation utility usage would remain unchanged from the original analysis assuming current usage rates stay the same. Energy saving designs utilized in new construction may reduce energy usage on a per unit basis.

4.5 Schools

4.5.1 Proposed Action (No significant differences among the alternative sites)

Co-location of the proposed new elementary school with community facilities would enable sharing of parking lots and recreational space. The proposed action is expected to create an increase in the short term in the number of children living on-post due to earlier construction of new housing that would accommodate larger families, and the lag time for demolition of the older units. Without a new school, District 8 has forecast overcrowded classrooms, additional busing to off-post schools, adjusting busing times for junior and senior high schools, and instituting busing for elementary school students living on-post. According to Jan McConnell, Fort Carson Child/Youth Service Division, it is estimated that there would be an increase of over 740 elementary age children as a result of the additional housing on post under the current contract. The acceleration of construction of housing would add some of those children sooner than originally anticipated. The District is unsure of when the new school would be constructed so increasing the number of elementary and middle school children living on post may require the district to bus children to other schools, or adopt alternate schedules.

Federal funds are provided to District 8 based on a one-day count of students each year, on 1 October. Therefore the timing of occupation of the new houses and demolition of the old housing could negatively impact funding to the school, or positively impact the funding if the timing for demolition of old housing began after 1 October, i.e. the highest student population on post would coincide with 1 Oct.

Re-use of Beacon School is not being considered instead of constructing a new elementary school. Mountainside elementary was constructed to replace Beacon. Beacon is a forty-year old facility that would require major upgrades and renovation. Children would have to be bussed between the schools, requiring more buses. Decisions would need to be made as to which children would be provided the new facilities at Mountainside, and which would be provided the poorer, substandard facilities. The children that are currently in classrooms at Beacon are being moved to the new facilities at the end of the school year. The decision was made not to move them in the middle of the year. The soldiers being housed in Beacon would need to be housed elsewhere.

4.5.2 Contract Acceleration

Under this alternative, during the demolition phase, there would be a decline in the number of children living on-post. This decline would be temporary and would not affect funding for District 8 in the long run. A proposed location for the school was not identified for this alternative because finalization of a land lease and construction of the school are separate actions. However, a location for the school in the cantonment area would be assigned. Construction of the school is planned when adequate funds have been allocated by District 8.

4.6 Community Services

4.6.1 Proposed Action (Same for all alternative sites)

The Army and Air Force Exchange Service expects no impact in the number of customers on post. The recently constructed Main Post Exchange and the renovated old main post exchange are able to handle any increases in customers. Additional fast food and convenience stores may be planned for the future. Having a nearby affordable community center and other community facilities would add to the advantages of living on-post.

4.6.2 Contract Acceleration

Community facilities are planned in the out-years of the contract. At the present time, these facilities would be located in existing leased areas, just constructed sooner than originally anticipated. Size and type of facilities constructed would be limited by available space.

4.7 Childcare

4.7.1 Proposed Action

The proposed action is expected to increase the number of children living on-post in the short term due to the faster addition of units that accommodate larger families and the temporary increase in the overall number of quarters (after new units are constructed and before old ones are demolished). Since construction of new facilities or renovation of existing facilities takes a minimum of five years to program, fund and complete, Fort Carson Child Developmental Services would not be able to expand childcare service facilities until the mid-term. This delay is a negative socioeconomic impact upon Fort Carson, since it would have an adverse impact upon families who need childcare. Waiting lists for on post childcare would continue. Parents requiring childcare would need to locate it off post. This action especially impacts families with children of preschool and elementary school age. However, since assignment to Fort Carson family housing quarters is voluntary, families requiring childcare could investigate its availability before moving on post. To help alleviate this, Family Child Care (FCC) Providers (family members living on post who care for children in their homes) would be expanded. This is not expected to completely meet the increased demand.

4.7.2 Contract Acceleration

Under this alternative, during the demolition phase, there would be a decline in the number of children. As new units are constructed, the numbers would then increase. Demolition and construction under this alternative would be completed in roughly the same time as the

construction and demolition under the proposed action, after which the affects would be the same as described above.

4.8 Facilities and Land Use

4.8.1 Proposed Action

The impacts from the Proposed Action would result in changes to current land usage from open space to housing (Areas M and N), and community services to housing (Area O). The proposed action would result in a net loss of 73, 80, or 73 acres of open space in Alternatives 1, 2, and 3 respectively. Demolition of existing units would provide open space of 38.5 acres in Arapahoe Village, 88 acres in Cherokee Village, and 38.8 acres in Choctaw Village. However, loss of natural areas in Area M would only be replaced with open urban areas in housing, causing a net loss of natural area in the cantonment area. The type of open space lost in Areas N and O which are currently more urban in nature would be balanced by the creation of open urban space in the housing areas.

Growth in urban communities has consistently been ranked as a top concern by Coloradans. Thousands of acres of open land are lost every year to development along the Front Range and throughout the state. Preservation of open space and natural areas, including lands that separate communities, lands with valuable wildlife habitats, and urban open lands are a top priority of non-profit organizations such as the Nature Conservancy, and multiple public agencies and private interests. Requests to purchase open space have far exceeded funding to purchase (Denver Post, September 23, 2001). These preservation issues were a driving force behind the purchase of the land for Cheyenne Mountain State Park.

4.8.2 Contract Acceleration

There would be no changes to current land use except approximately 11 acres required for construction of an elementary school. This alternative would not cause loss of open space or natural areas.

4.9 Land Use Off-Post

4.9.1 Proposed Action

Construction of housing in previously undeveloped areas, especially Area M, adjacent to Cheyenne Mountain State Park would not directly impact the use of the park. Impacts to visual resources and wildlife will be discussed in the appropriate section.

4.9.2 Contract Acceleration

There would be no impact to land use off-post from demolition and replacement construction of family housing.

4.10 Environmental Justice and Protection of Children

4.10.1 Proposed Action (Same for all alternative sites)

There would be no disproportionate adverse impact to minority or low-income populations by the construction of new replacement family housing. The majority of the planned new units (up to 250) would especially benefit enlisted soldiers whose BAH does not adequately cover housing expenses currently experienced in the Colorado Springs area. New housing would be available to all soldiers regardless of race or income, in accordance with Army housing rules and policies. The Proposed Action would not impact the local population.

4.10.2 Contract Acceleration

There would be no identifiable disproportionate impacts to any minority or low-income persons from this alternative since housing would continue to be assigned in accordance with Army housing policy.

Protection of Children

Impacts would be the same for all alternatives, including the site alternatives. The planned renovation of existing units or replacement with new units would reduce and eventually eliminate any potential for exposure of children to asbestos containing materials and lead based paint.

4.11 Transportation

4.11.1 Proposed Action

Traffic would increase both in the short term and long term for Alternatives 1, 2 and 3. Details on traffic impacts from construction vehicles are not known since the construction schedule for the proposed action has not been developed. Traffic counts were taken on Harr Avenue in spring 2001 that showed Harr Avenue is utilized at relatively minimal rates (Appendix 5).

4.11.1.1 Alternative 1 – Areas M, N

Traffic from construction vehicles would increase at Gates 1 and 5 in the short term and from housing residents in the long term. Traffic on Harr Avenue and Titus Boulevard would increase. Damage to the roads would need to be repaired after construction is completed.

4.11.1.2 Alternative 2 – Area M

Impacts would be similar to Alternative 1.

4.11.1.3 Alternative 3 – Areas M, N, O

Gate 1 would experience more traffic because of the proximity of Areas N and O. Traffic on Harr Avenue (north), Prussman Boulevard and Nelson Boulevard would increase in the long term. This alternative provides closer proximity to existing and planned childcare facilities and other commercial facilities located along Nelson and Prussman.

4.11.2 Contract Acceleration

In the short-term, construction traffic would increase and residential traffic would decrease. After completion of demolition and construction, residential traffic would return to levels anticipated in the original proposal.

4.12 Air Quality

4.12.1 Significance Criteria

The significance of impacts to air quality is based on federal, state, or local pollution regulations or standards. As Fort Carson is located within a CO maintenance area, an initial indication of potential significance is regional significance and conformity with the SIP for CO. Regional significance thresholds and conformity thresholds are defined in 40 CFR 51 Subpart W.

A significant impact would be a violation of a NAAQS criteria pollutant standard, an exceedance of the 40-ton per year PSD baseline threshold, or an exposure of sensitive receptors to excessive quantities of fugitive dust. A beneficial impact to air quality would be a reduction in baseline emissions.

The analysis was based on a review of existing air quality in the region, information on Fort Carson air emission sources, projections of emissions from the proposed activities, a review of Air Pollution Emission Notices (APENs), conformity, PSD and permitting thresholds, and the use of air emission factors from the US Environmental Protection Agency or similar sources. Analysis Methods can be found in Appendix 5.

4.12.2 Proposed Action

The proposed action changes the annual emissions which Fort Carson is primarily concerned with under Conformity and PSD. In addition, the original EA did not document the calculated emissions or document the conformity review, so those impacts are analyzed in this EA. Emissions from the school are not included in the scope of this EA due to lack of information, and, if determined insignificant will be documented in a Record of Environmental Consideration when the school is sited and designed.

Impacts from the Proposed Action would result from the land development in all three alternatives and increased vehicles from the additional housing units. Initial emission calculations (Appendix 5) have concluded the Proposed Action would have both long term and short term adverse, but not significant impacts on air quality as defined under the General Conformity Rule, NAAQS, or PSD. Criteria pollutant emission estimates conclude neither an Air Pollution Emission Notice (APEN) nor PSD Permit would be required. Since impacts to air quality would be the same under all three leasing alternatives, they are consolidated here to avoid redundancy.

Alternatives 1-3

Impacts from the three leasing Alternatives would be similar, would not be significant, and would conform to the SIP. There would be increased CO emissions from the increased construction

equipment, increased automobiles from construction related workers, increased automobiles from the additional housing, schools, and community center. Emissions from construction equipment would be generated, fugitive dust would be generated during construction, and automobile emissions would be generated during and after the construction. The Proposed Action is not regionally significant and the total direct and indirect emissions would be below the 100 tons per year de minimis threshold for CO. Therefore this project is exempt from further conformity analysis pursuant to 40 CFR 93.153.

There would be increased PM emissions from land disturbance. These emissions would not be significant, given the projected net annual emissions. Therefore this project is exempt from further APEN and PSD requirements. A State Land Development Permit would be required for the additional acreage and modification from the current Land Development Permit

4.12.3 Contract Acceleration

This Alternative would result in even lower annual and net emission impacts than those identified under the Proposed Action as development would disturb fewer acres, and require fewer construction equipment operating hours. Calculations are shown in Appendix 5.

4.13 Soils

4.13.1 Proposed Action (Same for all alternatives)

The Proposed Action is located on soils with shrink-swell potential, which has the potential to cause structural damage if special construction techniques are not utilized, such as free-floating, post-tensioned concrete slabs; drainage away from the structure; keeping water-requiring vegetation away from the foundation; etc. Fort Carson Family Housing, LLC construction projects use these techniques to minimize the impacts of expansive soils. Additionally, if any damage results from expansive soils, the contractor is responsible for any maintenance and repair. Since all family housing units would be connected to the Fort Carson sewage treatment plant, soil permeability is not an issue for new construction. New construction would be sited according to existing terrain features to reduce the amount of cut and fill required.

Soil erosion could significantly affect the capability of the land to support its current uses. Such soil loss could also increase waterways sediment loading and erosiveness in a cumulative fashion. The Proposed Action would protect soils through various restrictions such as storm water protection and, when necessary, would expeditiously repair damages to these resources, minimizing the potential for cumulative effects.

Brief periods of increased erosion could occur during damaged site maintenance and rehabilitation activities and the construction of facilities.

4.13.2 Contract Acceleration

This alternative would require the same construction techniques as the Proposed Action.

4.14 Radon

Fort Carson Family Housing, LLC would be responsible for designing radon mitigation into new construction or for any radon mitigation needed in new housing and for maintaining radon abatement in existing housing for the proposed action (all alternatives) and the Contract Acceleration alternative.

4.15 Topography

4.15.1 Proposed Action

Area M consists of significant hilly terrain and slope conditions. These conditions exist along the northeastern and a part of the southern portion of the site. Restricting development in these areas or on the higher slopes of the parcel alleviates any unnecessary grading and slope amendment.

Site N and O are level and would not require extensive grading and slope amendment.

4.15.2 Contract Acceleration

Since the areas have already been prepared for existing housing, extensive grading or slope amendment would not be required to construct replacement housing.

4.16 Noise and Aviation Safety

4.16.1 Proposed Action (Same for all alternative sites)

Construction operations would cause temporary increases in noise in family housing areas during the day. Permanent increases in noise would result when family housing is constructed in previously open areas; however, the sources of noise would be from increased traffic and people living in the area and would be similar to noise levels in existing family housing areas at Fort Carson. The additional increase in noise is not considered significant and would not impact receptors on or off post. The most significant noise source would be traffic from Highway 115 on the west side of the post. At the present time, noise from Highway 115 does not significantly impact existing family housing areas.

4.16.2 Contract Acceleration

Construction operations would cause temporary increases in noise in family housing areas during the day.

4.17 Water Resources

4.17.1 Proposed Action

An increase in impermeable surfaces would cause increased storm runoff. Due to the size of the construction sites (greater than five acres) the proposed action would require a Storm Water Discharge General Permit for Construction Sites, in accordance with provisions of the Clean Water Act, under the National Pollutant Discharge Elimination System permitting process. The storm water prevention plan that is part of the permit contains provisions to prevent erosion. Once disturbed areas are revegetated, storm water runoff should decrease; however, permanent

increases in runoff would result due to additional impermeable surfaces. Stormwater runoff would be properly coordinated so that runoff does not damage surrounding properties. The system should also provide and maintain positive crown or sheet drainage for all streets, roads and sidewalks.

Erosion is more likely in Areas M due to the topography. Further, the presence adjacent to Area M of an intermittent stream may result in brief periods of increased erosion and possibly minor stream sedimentation during damaged site maintenance and rehabilitation activities. These potential surface water impacts would be mitigated through various restrictions and, when necessary, expeditious damage repair by the contractor to these resources, minimizing the potential for cumulative effects.

The Limekiln drainage floodplain (called Tributary to Unnamed Ditch in the 2000 Flood Delineation Study) would not be impacted by any of the alternatives. All areas were configured to keep construction out of the 100-year floodplain of the Limekiln drainage on Fort Carson (Appendix 6). Each alternative would include water detention ponds as necessary for storm water. This would be coordinated with the State of Colorado Water Commission for permitting requirements, if any. None of the alternatives would impact the seeps and perched groundwater located near Area M, since construction would not occur in those areas. Impacts to wetlands differ among the three alternatives, since wetlands only occur in Area M (Fig. 13).

- Alternative 1- Approximately .5 acres of wetlands would be impacted.
- Alternative 2 – Approximately .5 acres of wetlands would be impacted.
- Alternative 3 – No wetlands would be impacted.

The U.S. Army Corps of Engineers is the regulatory agency for wetlands permits, under Section 404 of the Clean Water Act. Any activities from the proposed action under Alternatives 1, 2 or 3 would be reviewed for compliance with Section 404, and application of specific 404 permits would be made as needed. The Department of Defense is required to protect wetlands by executive order and implementing policies. The Proposed Action and siting alternatives would have no significant effect on wetlands at Fort Carson.

The Proposed Action would not create significant effects to water resources in terms of violations of the Clean Water Act, state laws on water rights and water quality, and regional requirements.

4.17.2 Contract Acceleration

Construction and demolition may result in brief periods of increased erosion and possibly minor stream sedimentation during damaged site maintenance and rehabilitation activities. All proposed construction projects that disturb land areas greater than five acres are required to have a Storm Water Discharge General Permit for Construction Sites, in accordance with provisions of the Clean Water Act, under the National Pollutant Discharge Elimination System permitting process.

No further impacts to surface and ground water resources beyond the original family housing proposal would occur since no additional land would be leased.

4.18 Flora

4.18.1 Proposed Action

There is very limited native vegetation remaining on the west side of the Cantonment Area, except for a corridor adjacent to Colorado Highway 115 (south of Gate 1), in Area M (shortgrass prairie with some shrublands), and in its northern and southern portion. Grassland closest to Harr Avenue in Area M contains more non-native plants. Loss of shortgrass prairie from development of Areas M, N and O is estimated as follows for each alternative:

Alternative 1 - Approximately 54 acres of shortgrass prairie would be converted to housing. Approximately 19 acres of mowed native and non-native grasses and forbs would be converted to housing.

Alternative 2 - Approximately 80 acres of shortgrass prairie would be converted to housing. This alternative would result in the greatest loss of shortgrass prairie and leave only a negligible amount of shortgrass prairie in the western portion of the cantonment area. There is an area of Canada Thistle in the northwest portion of Area M. Any soil excavation in or near this area would need to be used on the site to prevent spread of this noxious weed.

Alternative 3 - Approximately 14 acres of shortgrass prairie, 19 acres of mowed native and non-native grasses and forbs, and 40 acres of paved and landscaped area would be converted to housing. This alternative would result in the least amount of native short-grass prairie converted to housing.

Surveys conclude that no known, federal-listed threatened, endangered, or candidate plant species occur on Fort Carson. The proposed action (all alternative construction sites) and the no action would not impact threatened, endangered or candidate plant species.

4.18.2 Contract Acceleration

This alternative would not cause significant impacts to native vegetation since the areas have already been disturbed by existing housing. There would also be no impacts to threatened, endangered or candidate plant species.

4.19 Fauna

4.19.1 Proposed Action

There would be no impacts to threatened or endangered species from the proposed action for alternatives 1, 2, and 3. However, the Limekiln drainage is a major corridor for wildlife on Cheyenne Mountain State Park and based on observations of species of wildlife in the cantonment area, it appears that some wildlife does cross Highway 115 onto Fort Carson and vice versa. On the other hand, it is unlikely that wildlife use the Limekiln drainage to access southern downrange areas that have more suitable wildlife habitat due to the fact the drainage continues east into developed areas on Fort Carson. Construction of family housing on Site M especially on the northern portion as proposed in Alternative 2 would locate housing closest to this drainage. Interactions of wildlife with humans such as bears and mountain lions would be expected to increase. Although construction of housing west of Highway 115 has left much of the scrub oak and other native vegetation intact, it has also fragmented it and decreased its value as wildlife

habitat. Area M is the largest remaining native area north of Titus, with its size of approximately 200 acres (counting the hill), and being surrounded by the Fort Carson cantonment area and Highway 115 limits its value as wildlife habitat. The site does contain many birds, small animals and deer, and has the most diversity of species of any area remaining in the Cantonment. Construction of housing on Area M would contribute to the regional trend of habitat fragmentation, with Alternative 2 causing the most fragmentation from development on three sides of the hill. Alternative 3 would cause the least fragmentation because housing would be built on 14 acres north of the Golf Course with the remaining construction taking place in areas that are not considered good wildlife habitat. Alternative 2 would be intermediate, with no housing construction adjacent to the Limekiln drainage. Impacts to wildlife are considered to be slightly negative.

Continuing education of housing residents is necessary to prevent unwanted wildlife/human interaction.

4.19.2 Contract Acceleration

There would be no impact to wildlife from the demolition and construction of replacement family housing due to built environment.

4.20 Cultural Resources

4.20.1 Proposed Action

Since Areas M, N and O do not contain National Register of Historic Places (NRHP) eligible resources, there would be no impacts to cultural resources from the proposed action. In the event new resources were discovered during excavation, the project may be delayed since compliance actions in accordance with Section 106 of the National Historic Preservation Act would have to be completed.

4.20.2 Contract Acceleration

It is unlikely that this Alternative would have any impact on Cultural Resources since the areas already include existing housing.

4.21 Visual Resources

4.21.1 Proposed Action

The proposed action would involve construction in areas M and N that are currently open space for alternatives 1, 2, 3. Although there would be differences in the configuration of developed areas among the alternatives, all alternatives would have some impact to visual resources on and off post. The predominant feature of Fort Carson that can be viewed from the Cheyenne Mountain State Park is the hill and open space to the north and south of the hill in Area M. Although the property is not part of the State Park, this view provides a visual extension of natural areas and is in keeping with the natural character of the park. Construction of housing as proposed in Alternative 2 would impact this view of natural areas the most with housing on the north and south base of the hill that would be visible from the park. Alternative 1 and 3 would site housing that would be visible along the south side of the hill. The view of housing is

considered to be a negative, but not a significant impact to the park. Alternative 2 would have the most impact, Atlernatives 1 and 3, the least.

Additional development in this previously open area will give a more suburban look to this part of the cantonment area. The perception of this change as negative or positive depends on individual perspective. However, preservation of natural open space has become an increasingly important regional value. It has been shown through many public comments on proposed land developments, not only in Colorado Springs but across the Front Range of Colorado, allocation of taxes for land purchases, and general uses of open space land for recreation, that the general public places great value on preserving tracts of land for those purposes.

4.21.2 Contract Acceleration

Demolition and construction of family housing in existing areas would have minimal impacts to visual resources on and off-post. Older housing would be replaced with modern housing that may be considered to be more attractive.

4.22 Hazardous Materials/Waste

4.22.1 Proposed Action (Same for all alternative sites)

Solid waste management units would not impact construction in Sites M, N or O. Other than timing, demolition of existing units is the same under the Proposed Action as under the original project covered in the June 1996 EA. Demolition of the old facilities in all cases would likely involve asbestos and lead-base paint removal. Hazardous materials used in the course of renovation and construction must comply with the Occupational Health and Safety Act. Special regulated solid waste such as asbestos and hazardous waste generated by the contractor during demolition and construction will not be disposed of at Fort Carson. The contractor disposes of any hazardous waste off post in compliance with the Resource Conservation and Recovery Act and state hazardous waste laws.

4.22.2 Contract Acceleration

Other than timing, demolition of existing units is the same under the Proposed Action as under the original project covered in the 1996 EA.

4.23 Solid Waste

4.23.1 Proposed Action (Same for all alternative sites)

Mitigation measures would include reuse and recycling of as much material as possible and the private contractor continuing its disposal of waste off post.

4.23.2 Contract Acceleration

Same as above.

4.24 Cumulative Effects

Per 40 CFR 1508.7, cumulative effects is defined as "the impact on the environment which results 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 actions." Types of actions that could contribute to cumulative effects and potential cumulative effects are summarized in Tables 4.1 and 4.2, respectively, and consist mainly of issues related to development such as air quality, open space, etc. The tables were prepared based on guidance in "Considering Cumulative Effects Under the National Environmental Policy Act", Council of Environmental Quality, January 1997

The proposed action contributes to loss of open space in the Pikes Peak region, with Alternative 2 causing the greatest loss of native vegetation and wildlife habitat. Loss of native habitats in parcels causes "fragmentation" of wildlife habitat and decreases its biodiversity because smaller intact parcels of native vegetation does not support species that require large amounts of acreage for food or prey. Bears, mountain lions, and elk are examples of wildlife that can travel long distances. Alternatives 1 and 3 would preserve more natural open space. Development of open space on Fort Carson contributes to the regional trend of conversion of agricultural and native areas to residential and commercial use. Coloradans have consistently ranked growth as one of their top concerns.

Another potential cumulative impact would be increasing the amount of stormwater runoff into a watershed that drains into Fountain Creek. Fountain Creek is being impacted negatively by increased stormwater runoff from the rapid increase in impermeable surfaces associated with development. Landowners adjacent to Fountain Creek are experiencing increased erosion and loss of valuable land during and after intense rainfall events. However, new and proposed housing development on Fort Carson includes the construction of stormwater detention ponds to control the release of stormwater runoff after large amounts of rainfall. Construction of detention ponds in conjunction with family housing construction in Alteratives 1, 2, or 3 would mitigate the increased runoff that would be expected to occur with construction of roads, sidewalks, housing and other structures.

The contract acceleration alternative would have insignificant or no contributions to cumulative impacts of development because construction would take place in previously developed areas.

Table 4-1. Type of Actions That Could Contribute to Cumulative Effects			
Past Actions	Present Actions	Proposed Action	Future Actions
Fort Carson Family Housing Privatization – Construction and Renovation	Construction of new family housing in Areas C1, C2, I-north and south Renovation of existing housing	Accelerated construction of new 250 new family housing units	Demolition and replacement of original housing
Residential and commercial development off-post	Residential and commercial development off-post	Demolition 250 existing units	Construction of elementary school on Fort Carson
Purchase of over 1,600 acres for Cheyenne Mountain State Park	Wildlife and vegetation studies at Cheyenne Mountain State Park	Construction of community center (subject to availability of funding)	Development of state park: trail, picnic tables for day use, open to public in 2004
			Residential and commercial development off-post

Table 4-2: Types of Actions That Could Contribute to Cumulative Effects					
Resource	Past Actions	Present Actions	Proposed Action	Future Actions	Cumulative Effects
Air Quality	Minor increases in particulates and CO from construction activities and vehicles (on and off-post development)	Minor increases in particulates and CO from construction activities and vehicles (on and off-post development	Minor increases in particulates and CO from construction and demolition activities and vehicles (on and off-post development	Minor increases in particulates and CO from construction and demolition activities and vehicles (on and off-post development	Federal actions subject to conformity determination; cumulative increases are minor, not significant regionally
Land Use/Open Space/Visual	Conversion of open space – natural and/or agricultural areas to development (on and off-	Conversion of open space – natural and/or agricultural areas to development (on and off-	Conversion of natural area in Area M to housing, open space to community/school in Area N, former WWII area to	Conversion of open space – natural and/or agricultural areas to development (off-post)	Proposed action would result in net loss of open space; contributes to regional trend of

Table 4-2: Types of Actions That Could Contribute to Cumulative Effects

Resource	Past Actions	Present Actions	Proposed Action	Future Actions	Cumulative Effects
	post) Preservation of open space for state park	post)	housing in Area O		urbanization/development, minor negative cumulative impact: Alternative 2 would cause most loss of native areas, Alternative 3, the least. Creation of state park protects natural areas, but far more open space is converted than preserved.
Water Resources	Development on and off-post increases stormwater runoff due to impermeable surfaces such as roads, parking lots, sidewalks, etc.	Development on and off-post increases stormwater runoff due to impermeable surfaces such as roads, parking lots, sidewalks, etc.	Construction of new roads, sidewalks, driveways increases impermeable surfaces and stormwater runoff, area to be developed drains into Fountain Creek	Development on and off-post increases stormwater runoff due to impermeable surfaces such as roads, parking lots, sidewalks, etc	Stormwater runoff increases on Fort Carson are mitigated by use of detention ponds in new family housing areas that releases water at slower rates, family housing construction helps to mitigate regional trend of increasing flows in Fountain Creek
Flora	Development in cantonment area has been in vacant areas adjacent to developed areas or in previously developed or disturbed areas,; Development off-post causing loss/fragmentation of native vegetation, loss of biodiversity	Development of current family housing in area, some loss of native area in Area I, but value was decreased by presence of Canada thistle	Development of Area M in Alternative 2 would cause the greatest loss of native vegetation, Alternative 3 the least.	Continued development off-post would continue trend of converting native vegetation to urban/suburban areas. On-post construction for the future is planned for areas previously developed	Proposed action would result in some loss of native vegetation, slight negative contribution to cumulative loss of native vegetation for the region
Fauna	Development off-post reduces value or eliminates	Current family housing construction in areas with	Development of Area M would cause loss of last area	Development off-post reduces value or eliminates	Proposed action contributes slight negative impacts to

Table 4-2: Types of Actions That Could Contribute to Cumulative Effects

Resource	Past Actions	Present Actions	Proposed Action	Future Actions	Cumulative Effects
	wildlife habitat, increases human interaction with deer, bears, mountain lions, coyotes, etc.	little or no wildlife habitat value, some loss of native area in Area I	of native habitat in cantonment area and near state park, birds and small mammals that use the area would be negatively impacted. Increased human interactions with deer, bears, mountain, coyotes, etc. expected due to proximity of state park.	wildlife habitat, increases human interaction with deer, bears, mountain lions, coyotes, etc. Development of state park with trails and picnic tables is expected to have some impacts to wildlife, management of park to balance wildlife and recreational uses.	regional decline in native habitat and fragmentation, overall decline in native wildlife populations, species and diversity.
Threatened and Endangered Species	No currently listed threatened and endangered species have been found in cantonment area, black tailed prairie dog warrants listing but precluded due to higher priorities. Black-tailed prairie dog colonies have been located in cantonment area and downrange, colonies controlled near housing areas due to health concerns, colonies have been removed in cantonment area for construction projects.	Prairie dog colonies have been controlled near family housing as recently as Spring 2000	No active or abandoned prairie dog colonies exist on proposed construction sites; 2 colonies on nearby state park. Area M has shortgrass prairie that is considered suitable habitat, development of Area M would remove some of it. Other colonies located on east side of cantonment area and downrange.	Prairie dog colonies in family housing areas would continue to be controlled. Other colonies Off-post development would convert suitable habitat to urban/suburban areas	According to recent Department of Natural Resources study, number of acres of active colonies along Front Range is larger than expected, however, many colonies are on property awaiting development, fragmentation of habitat to continue in region, plague die-offs to continue, management activities are being developed by state and government agencies, Fort Carson management of prairie dog colonies contributes to preservation.

4.25 Conclusions

The proposed action is to modify the contract and lease to allow FCFH LLC to accelerate the construction of new and demolition of old family housing, to reduce the density of existing housing areas, and to allow construction of enhanced community facilities for the family housing residents. This action is preferred over modifying the contract only to accelerate the current construction-demolition schedule, and the no action alternative which would be to adhere to the existing contract and construction schedule. The main negative environmental impact from the proposed action is the use of additional land in the cantonment area which has very little remaining open space. This loss of open space, especially natural areas, contributes to the regional trend of converting open space (agricultural areas and/or natural areas) to residential and commercial use and is considered to be a slight negative cumulative impact. A potential negative impact would be the short term effects to School District 8 and on-post childcare facilities through the increased number of elementary age students in the short term. The main positive impacts would be providing soldiers and their families higher quality housing faster, with greater room for both housing and community facilities.

Analysis of the proposed action included the consideration of three siting alternatives. Although no *significant* environmental impacts from any of the alternative sites were identified through NEPA analysis, some siting alternatives were determined to have less impact than others. They have been ranked below according to the magnitude of those impacts from lowest to highest, with a brief discussion of those impacts. Some impacts would have little difference (especially in the long term) across all alternatives, e.g. air quality. No threatened and endangered species, cultural resources, and only minimal wetland impacts occur from any of these siting alternatives. Only impacts that differ among the three alternatives are discussed here. For a summary of impacts from the Proposed Action (including alternative sites) and the Contract Acceleration alternative, see Table 4-3 at the end of this section.

Siting Alternative 3 – This alternative analyzed construction in three separate areas, using the southern portion of Area M (northern boundary of the golf course), Area O (where the old 6000 series of buildings was demolished) and Area N (open space south of Gate 1).

This alternative has the least environmental impact and the least impact on aesthetic values (open space and vistas), as most of the hilly terrain would be left undeveloped. This alternative would least impact the adjoining State/City Park and would make a larger, contiguous area of open space. This alternative would require re-siting of two Public Private Ventures and an MCA project for a DCA community center.

- Area O is a previously developed area that has been demolished as part of the WWII facilities reduction program. Impacts to wildlife, vegetation and wetlands are minimal. Urban wildlife (skunks, raccoons, pigeons, etc.) mainly occurs there, and the vegetation is landscaping. Topography is flat. The Limekiln drainage passes through part of the site, but has been altered through mowing, erosion control features, etc. The site layout would need to be done in such a way to avoid the floodplain located at the south boundary of the parcel. Utilities are in place, but would need to be replaced/upgraded.

Sewage lines do not pass through the choke point in Cheyenne Village. Drinking water lines are available.

- Area N is a grassy expanse of open space with little biodiversity (diverse wildlife or vegetation species) that is mowed routinely. Utilities are in close proximity. Sewage lines would not pass through the Cheyenne Village choke point. No wetlands would be affected. The floodplain of the Limekiln drainage (also known as Tributary to Unnamed Ditch) would potentially be affected by construction. Site layout would need to avoid the floodplain near the Harr Avenue intersection with Prussman. Some wildlife vs. human interaction would be expected.
- The southern portion of Area M runs along the northern boundary of an existing golf course and Harr Avenue, and would have little impact to wildlife or vegetation diversity. No wetlands would be affected.
- Traffic would be heavier near Gate 1, but would be spread out more among several roads (Prussman, Nelson, Sheridan) other than Harr Avenue.
- This siting alternative would result in a minimal irreversible and irretrievable commitment of resources. This alternative uses the least amount of undeveloped land.

Siting Alternative 1- This alternative analyzed construction in two separate areas, partial Area M (without the northwestern leg of housing) and Area N. Impacts to wildlife and vegetation would be lessened, although not to a great degree.

- Some areas of grassy meadow along the Limekiln drainage in Area M would be preserved. The small hill in the north portion would be severely cut back to allow construction. Utilities are not on site, but are in close proximity. Housing development in this area would exacerbate the sewage line choke point affecting Cheyenne Village, etc.
- Wildlife vs. human interaction would be potentially increased, but to a lesser degree than Alternative 2 (Area M only).
- Area N would be developed and impacts would be the same as described above, except that traffic would affect Gate 1 to a lesser extent. The floodplain has the potential to be impacted, although to a lesser degree than Siting Alternative 3, since Area O would not be used. Development here would not add to the sewage choke point.
- Traffic would be more spread out between Gates 1 and 5.
- This siting alternative would result in an irreversible and irretrievable commitment of resources, although to a lesser degree than Siting Alternative 2. Undeveloped land would be removed from the cantonment area, and shortgrass prairie would be destroyed along with hillside vegetation and wildlife habitat.

Siting Alternative 2 – This alternative analyzed construction in one contiguous area, Area M. This alternative would have the most impact to aesthetics, open space values, wildlife, vegetation and biodiversity in the cantonment area. This alternative would have the most effect on cumulative impacts (impacts which by themselves are not significant, but have an additive effect throughout the region) through the removal of an area of higher biodiversity, and reduction of open space in continuation with the State/City park.

- Construction around the base of the hills, and removal of a smaller hill to the north would impact wildlife movement, habitat and vegetation diversity. More wildlife vs. human interaction would occur.
- Some wetlands would be impacted, although this would be minimal. The floodplain has the potential to be impacted, although to a lesser degree than Siting Alternatives 1 and 3.
- Area M has the greatest biodiversity of any area left in the cantonment. A well-developed riparian area with understory (vegetation below trees) is present providing cover and food for wildlife.
- Wildlife vs. human interaction would be potentially increased, more so than the other alternatives.
- Drinking water lines would need to be installed and a new reservoir (or lines run to an existing reservoir) would be necessary to provide water.
- All development in this area would add to the Cheyenne Village, etc., choke point.
- Traffic would be spread out between Gates 1 and 5.
- This siting alternative would result in the greatest irreversible and irretrievable commitment of resources. A greater amount of undeveloped land would be removed from the cantonment area, and more shortgrass prairie would be destroyed along with hillside vegetation and wildlife habitat.

Table 4-3. Summary of Environmental Impacts				
Affected Resource	Proposed Action			Accelerated Construction
	Siting Alternative 1 (Areas M, N)	Siting Alternative 2 (Area M)	Siting Alternative 3 (Areas M, N, O)	
Population	Temporary increase until demolition of old units			Temporary decrease until construction of new units
Employment	Potential for increased employment due to additional contracts/spending			Same as proposed action
Housing	Increase new housing to 41% of inventory, replacement of older, smaller units with larger, modern units, decrease housing density in existing areas			Increase new housing to 41% of inventory, smaller yards and other open areas in already dense housing areas, smaller community center due to less space available
Infrastructure and Services	Some utilities present or adjacent to M and N, installation required		Utilities present, replacement or upgrade may be required, fewest units in M to exacerbate sewage chokepoint	Utility infrastructure in place, no sewage chokepoint issues
	Housing in M would exacerbate chokepoint, Community Center/School in N would not affect chokepoint	Greatest exacerbation of sewage chokepoint		
Schools	Sharing of parking/rec areas with community center; If larger families move on-post would increase funding for District 8 but also increase school crowding faster than anticipated, busing of students possible			Potential for temporary reduced funding to District 8 due to fewer students until demolition and construction completed, reduces crowding problems temporarily
Community Services	No impacts to AAFES services, additional community facilities located near family housing			Type/size of facilities planned limited by available space in existing housing areas

Table 4-3. Summary of Environmental Impacts				
Affected Resource	Proposed Action			Accelerated Construction
	Siting Alternative 1 (Areas M, N)	Siting Alternative 2 (Area M)	Siting Alternative 3 (Areas M, N, O)	
Childcare	Potential for temporary increase in children living in larger units, would cause shortage of childcare spaces on-post			Temporary decrease in children due to fewer available units then same affects as proposed action
Facilities and Land Use	Loss of 73 acres of open space – some native, some maintained	Loss of 80 acres of open space, mostly native areas	Loss of 73 acres of open space- some native, some maintained, some previously developed	No change in land use; less open space in housing areas from smaller yards and other common areas
	Open space created in existing housing areas: 38.5 in Arapahoe Village, 88 in Cherokee Village, 38.8 in Choctaw Village			
Land Use Off-Post	No direct impacts			No impacts
Environmental Justice	No impact			
Protection of Children	The planned renovation of existing units or replacement with new units would reduce and eventually eliminate any potential for exposure of children to asbestos containing materials and lead based paint			
Transportation	Increased traffic on Harr and Titus	Similar to Siting Alternative 1	Increased traffic on Harr (north), Prussman and Nelson	Temporary increases from construction traffic, no long term changes
Air Quality	Short and long term increases in particulates and CO emissions would not be regionally significant, conforms to State Implementation Plan			Increases in particulates and CO less than proposed action
Soils	Construction on expansive soils would require use of special techniques to minimize impacts of expansive soils. FCFH, LLC responsible for maintenance and repairs			
Radon	FCFH, LLC responsible for radon mitigation in new construction and maintaining radon abatement in existing housing areas			

Table 4-3. Summary of Environmental Impacts				
Affected Resource	Proposed Action			Accelerated Construction
	Siting Alternative 1 (Areas M, N)	Siting Alternative 2 (Area M)	Siting Alternative 3 (Areas M, N, O)	
Topography	Development in Area M would avoid higher slopes and hilly terrain; one hill to north would be removed; Area N is level	Development in Area M would avoid higher slopes and hilly terrain; one hill to the north would be removed	Development in Area M would avoid higher slopes and hilly terrain; hills would remain; Areas N and O are level	Existing housing areas do not require extensive grading/slope amendment
Noise and Aviation Safety	No family housing areas, existing or proposed, located in noise zones with land use restrictions or in aviation safety zones			
Water Resources	Increase in impermeable surfaces contributes to increased storm water runoff; impacts mitigated by storm water detention ponds. Storm water protection measures required by Storm Water Discharge Permit			
Flora	Intermediate loss of shortgrass prairie	Greatest loss of shortgrass prairie	Least loss of shortgrass prairie	No impacts to native vegetation, areas already developed and landscaped
Fauna	Intermediate loss of wildlife and habitat in terms of quality and quantity	Greatest loss of wildlife and habitat in terms of quality and quantity	Least loss of wildlife habitat and in terms of quality and quantity	No impact to wildlife or wildlife habitat
Threatened and Endangered Species	Loss of potential prairie dog habitat (warranted but precluded from federal listing) Control of prairie dogs in family housing areas would continue			Control of prairie dogs in family housing areas would continue
Cultural Resources	Areas surveyed for cultural resources, none found. No National Register of Historic Places eligible or listed sites			
Visual Resources	Loss of natural/open areas to development reduces quality of views on-post and from off-post, appearance of existing housing areas would be improved by reducing density			New housing would improve appearance of existing housing areas

Table 4-3. Summary of Environmental Impacts				
Affected Resource	Proposed Action			Accelerated Construction
	Siting Alternative 1 (Areas M, N)	Siting Alternative 2 (Area M)	Siting Alternative 3 (Areas M, N, O)	
Hazardous Materials/ Waste	No Solid Waste Management Units, asbestos containing materials and/or lead based paint removed prior to demolition			
Solid Waste	Waste disposal off-post, recycling as much as possible			

5.0 List of Preparers

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6.0 References

6.1 Individuals and Organizations

Name	Organization
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Cheryl Walker	Fountain-Fort Carson School District 8
	Fort Carson Military Police Operations
	Pikes Peak Area Council of Governments
	U.S. Environmental Protection Agency, Office of Water

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Fig. 5 Area M

Figure 5, Area N

Figure 5, Area O

Fort Carson Military Reservation

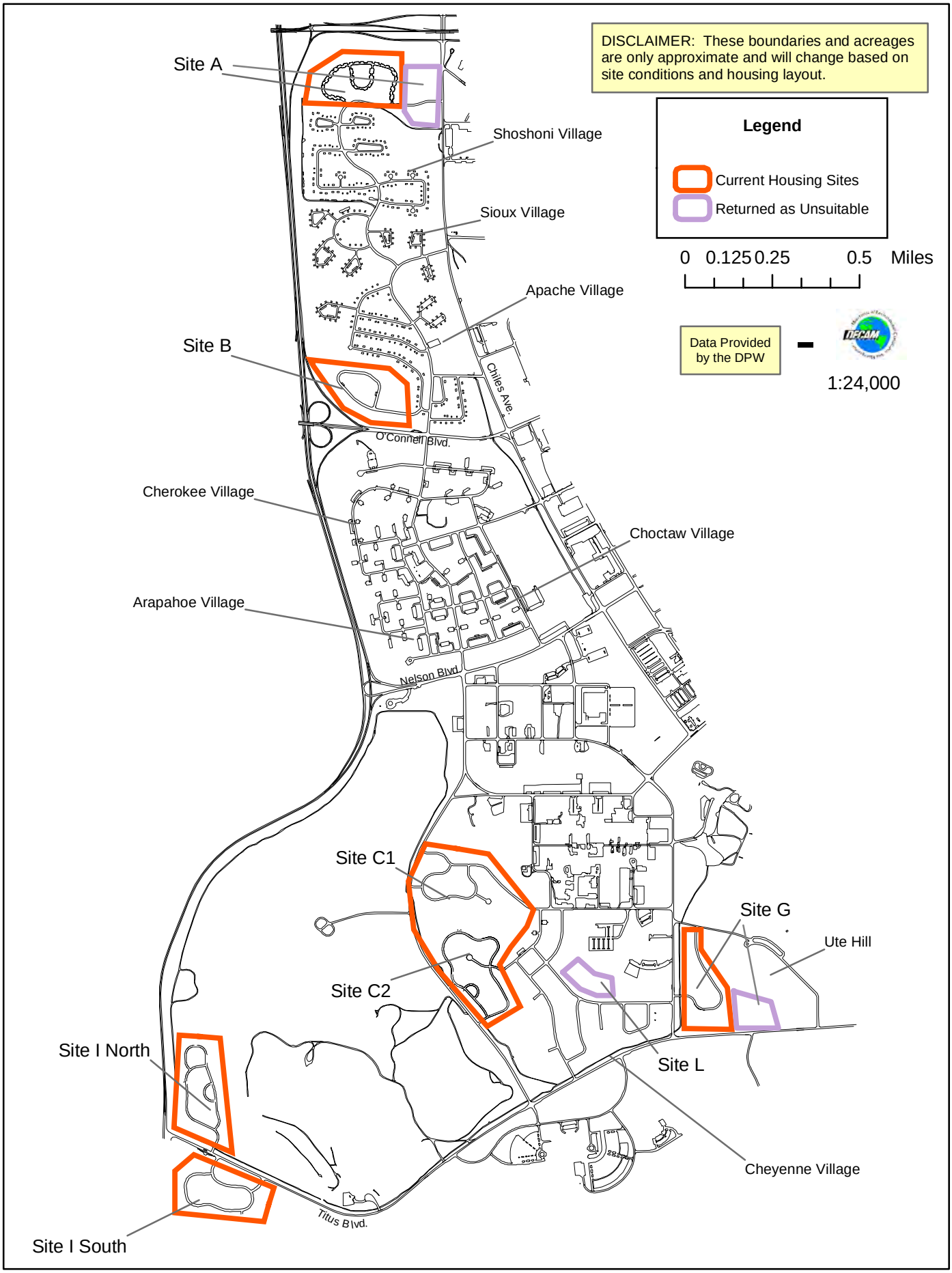

Fig. 1

Fort Carson Military Reservation

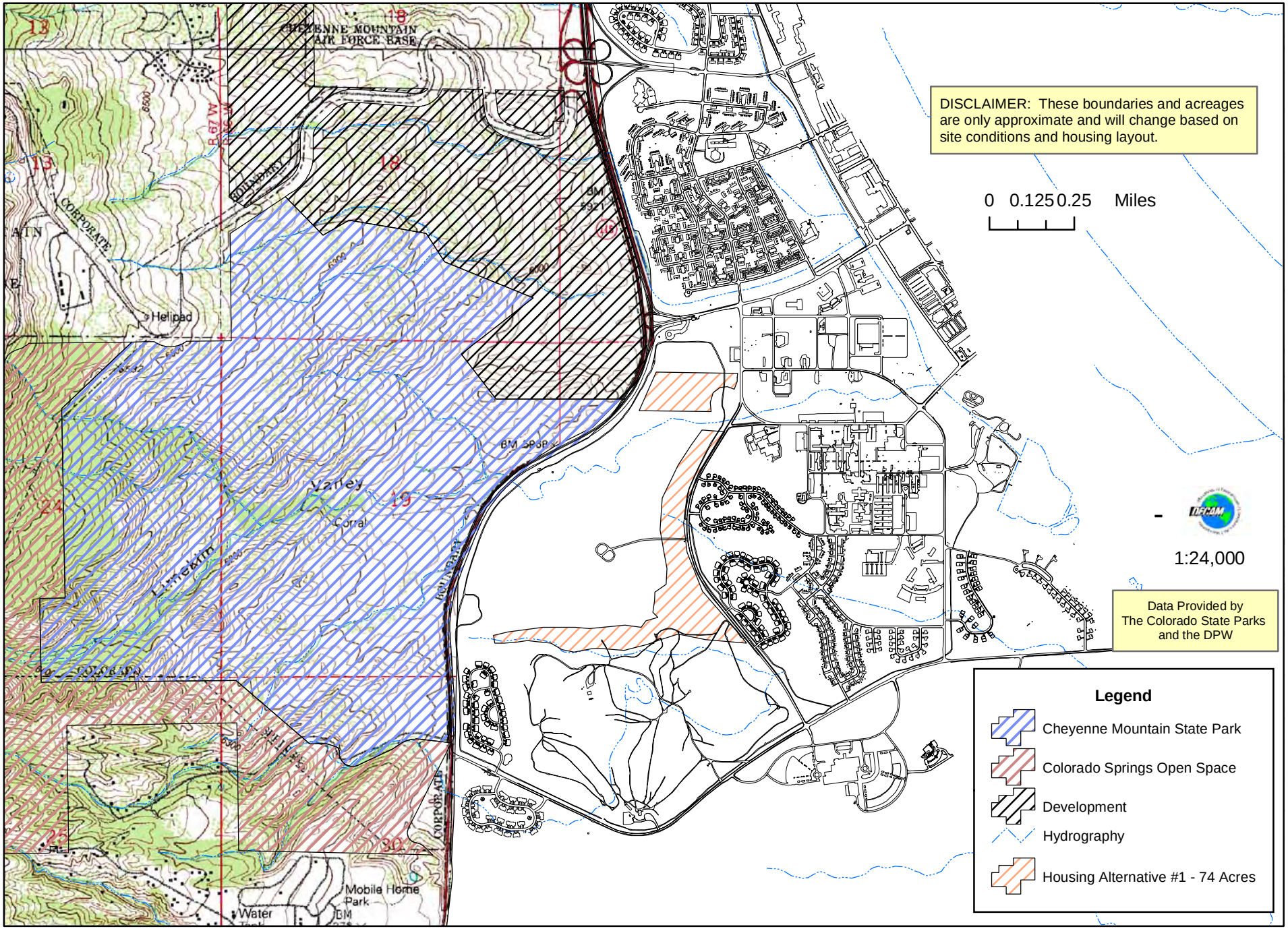

Fig. 2

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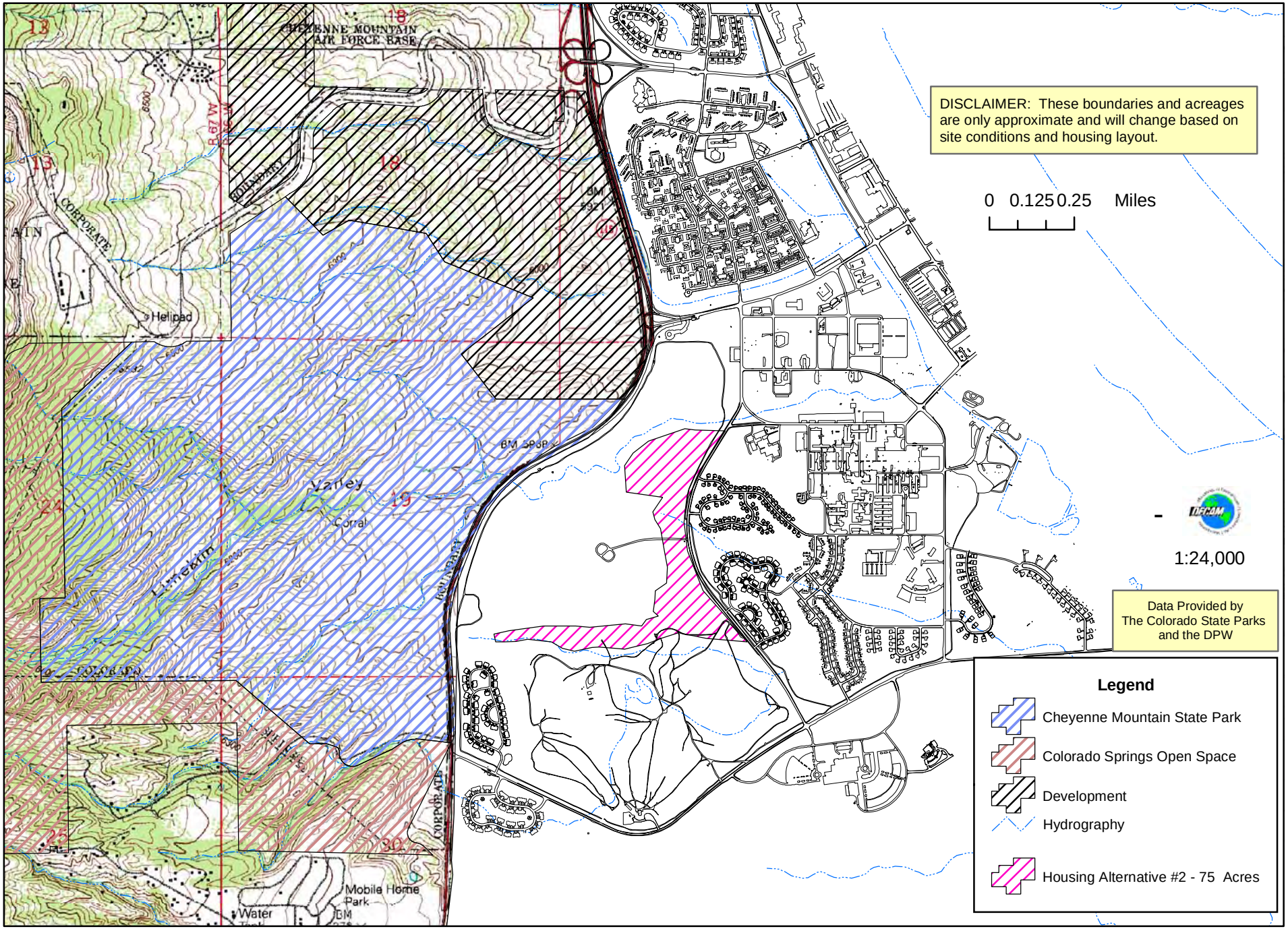

Fig. 3

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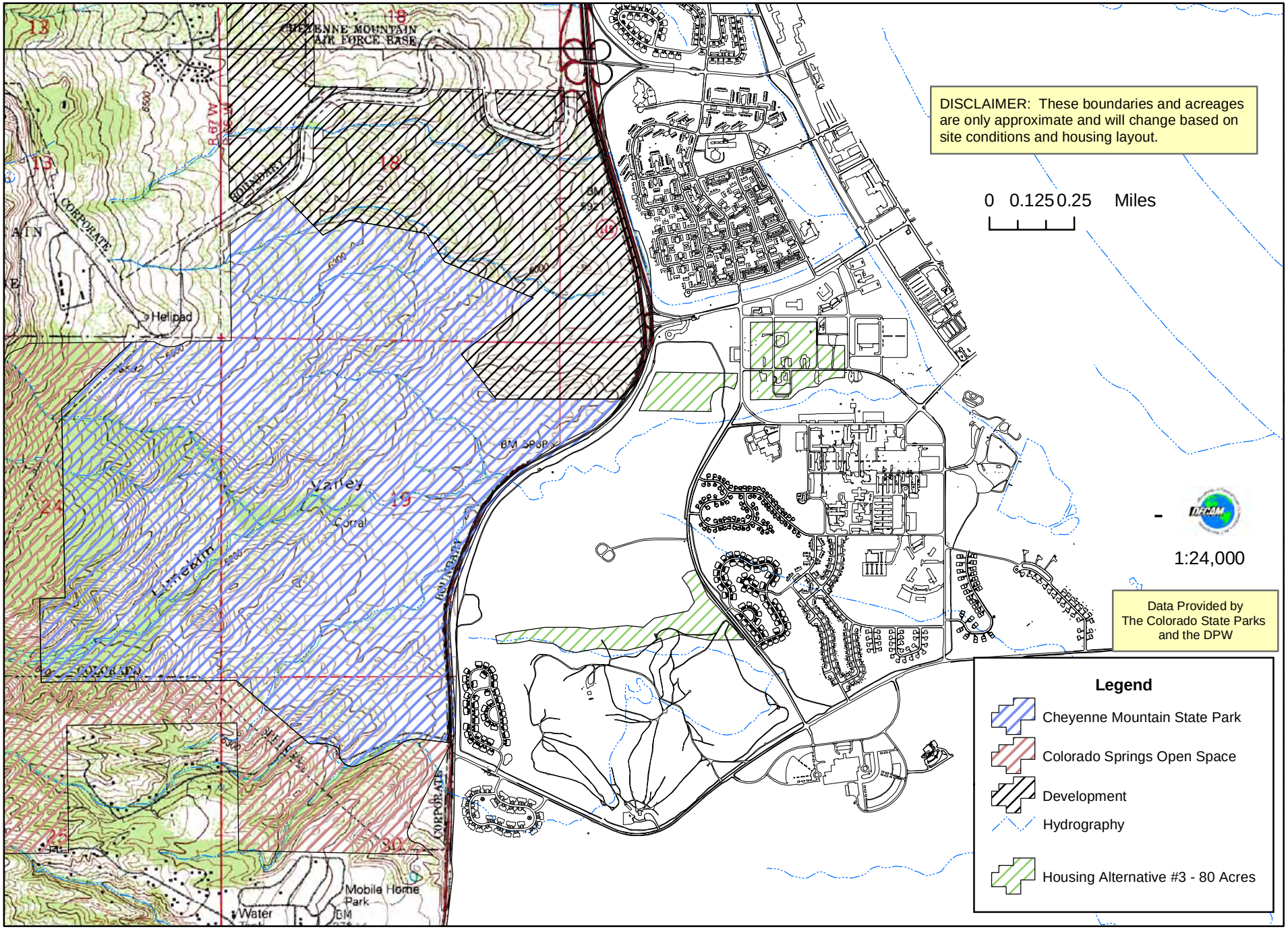

Fig. 4

Fort Carson Military Reservation

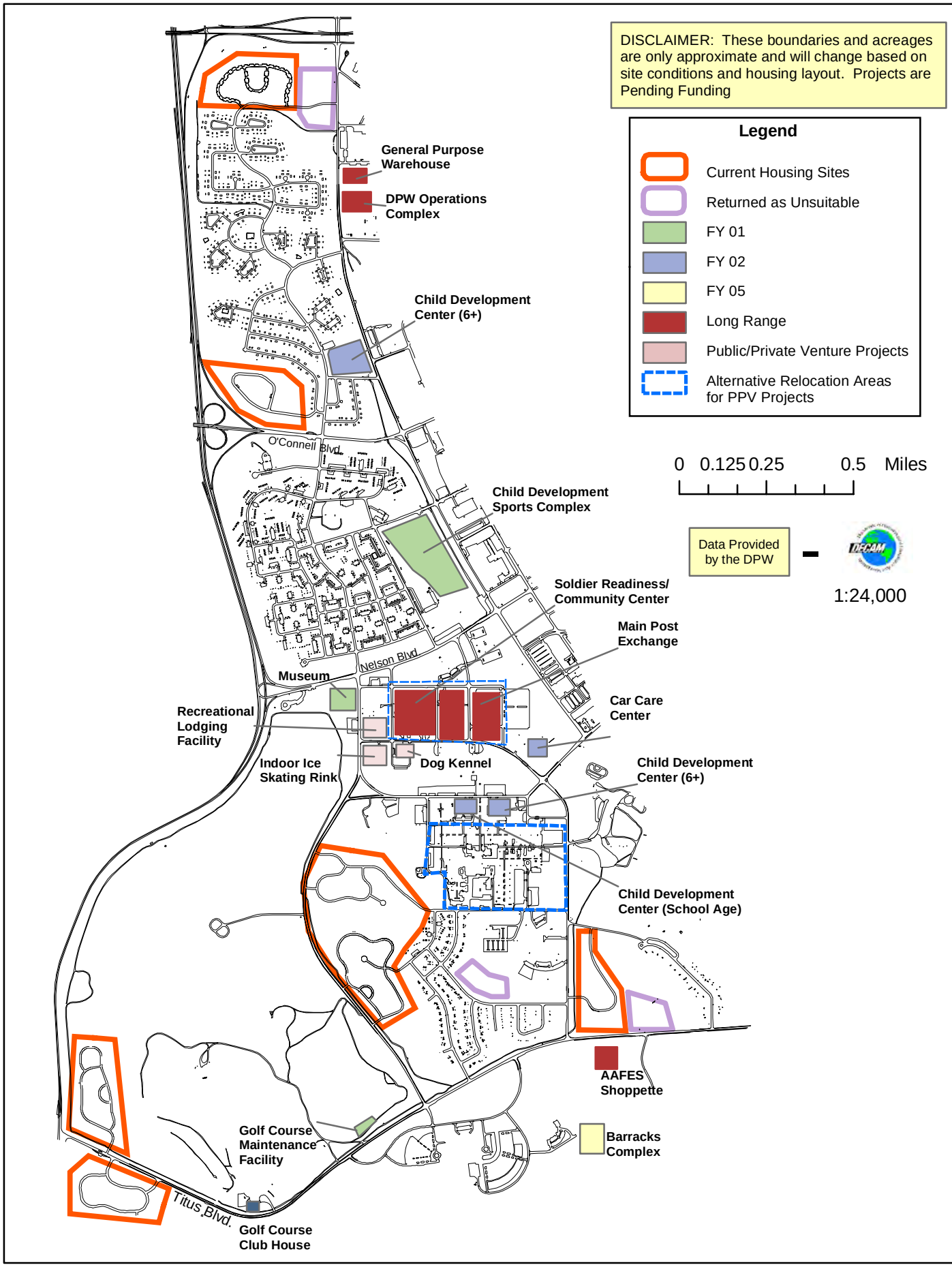

Fig. 6

Figure 7, Old Family Housing

Fort Carson Military Reservation

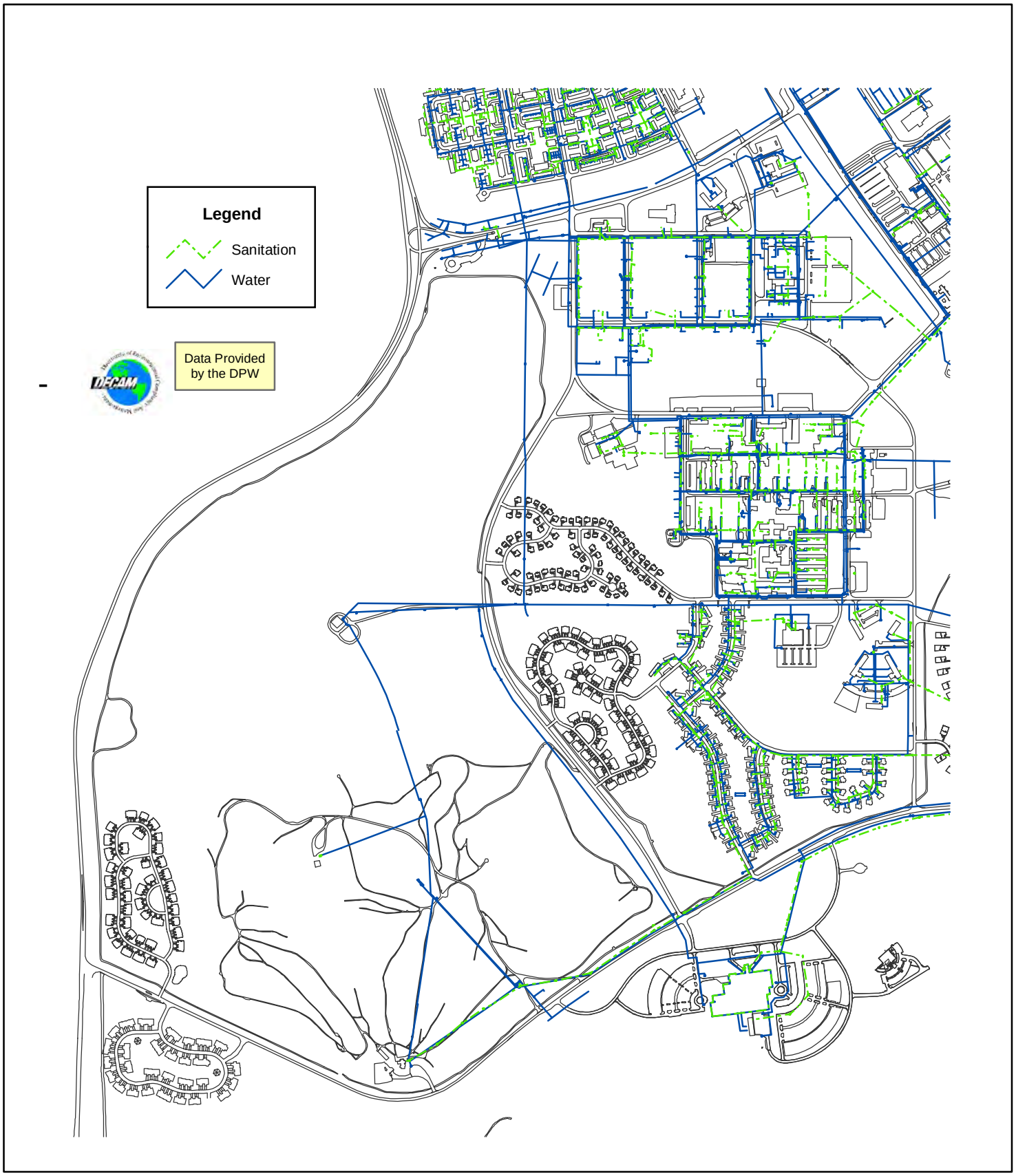

Fig. 8

Fort Carson Military Reservation

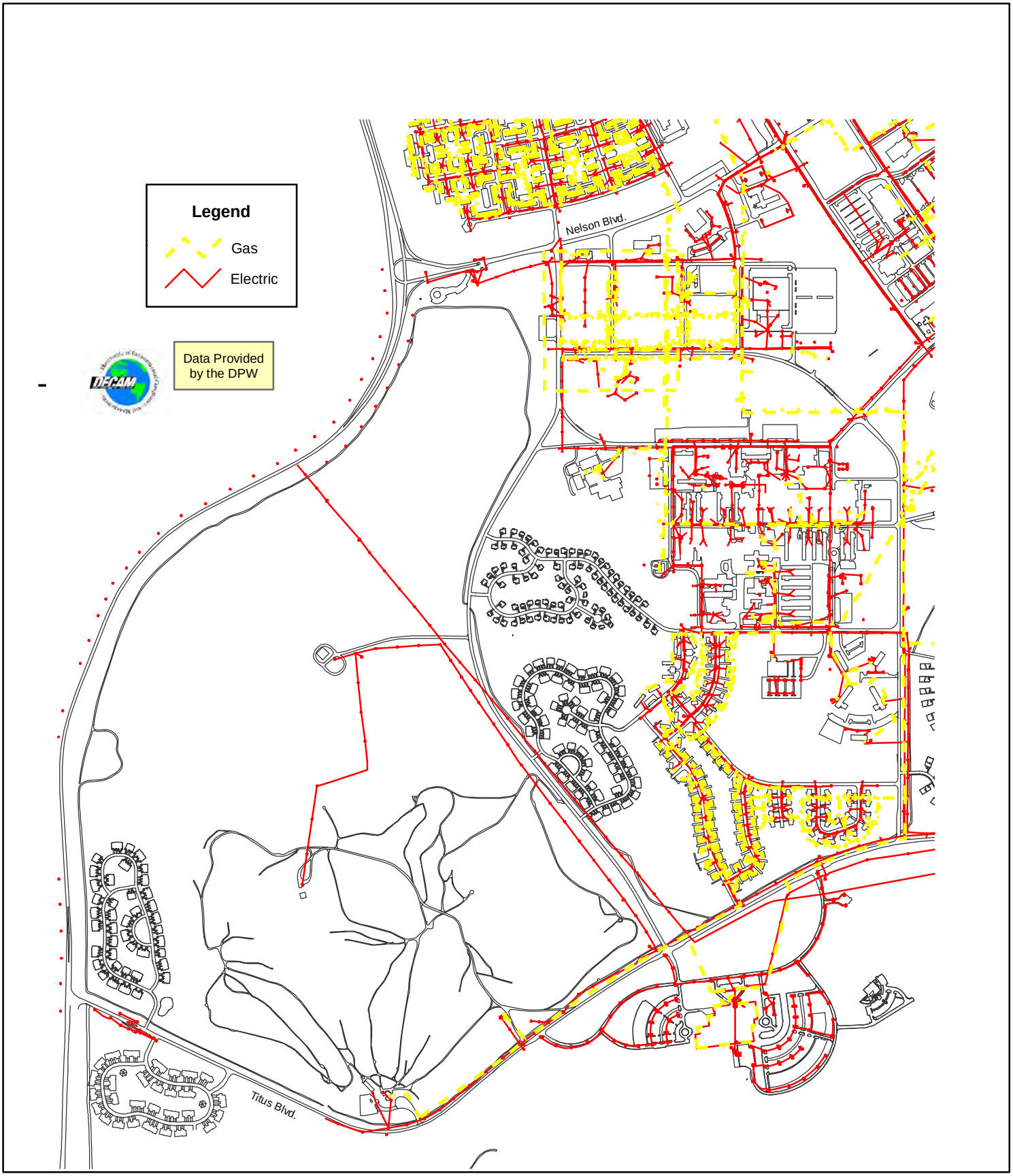

Fig. 9

Fort Carson Military Reservation

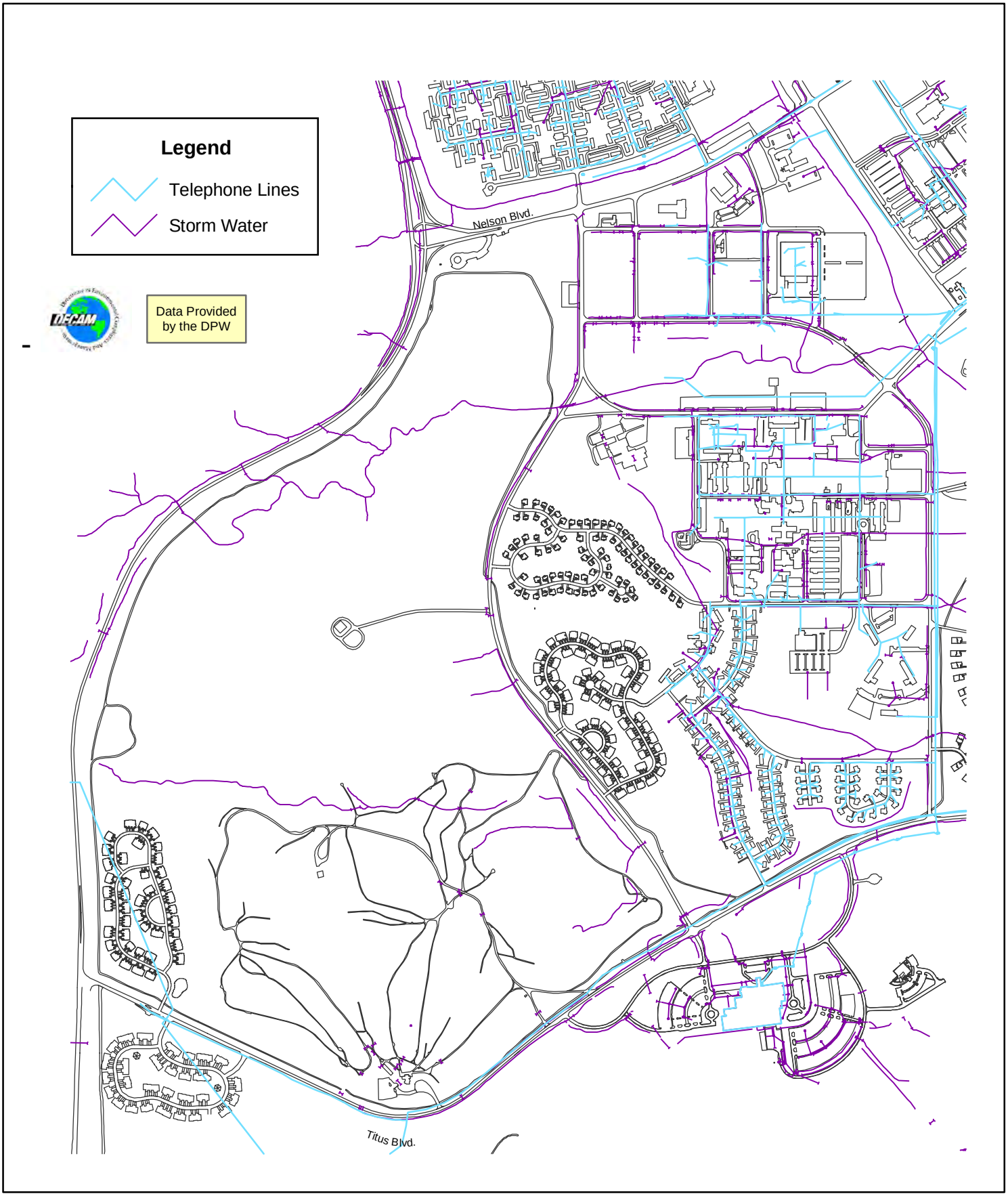

Fig. 10

Fort Carson Military Reservation

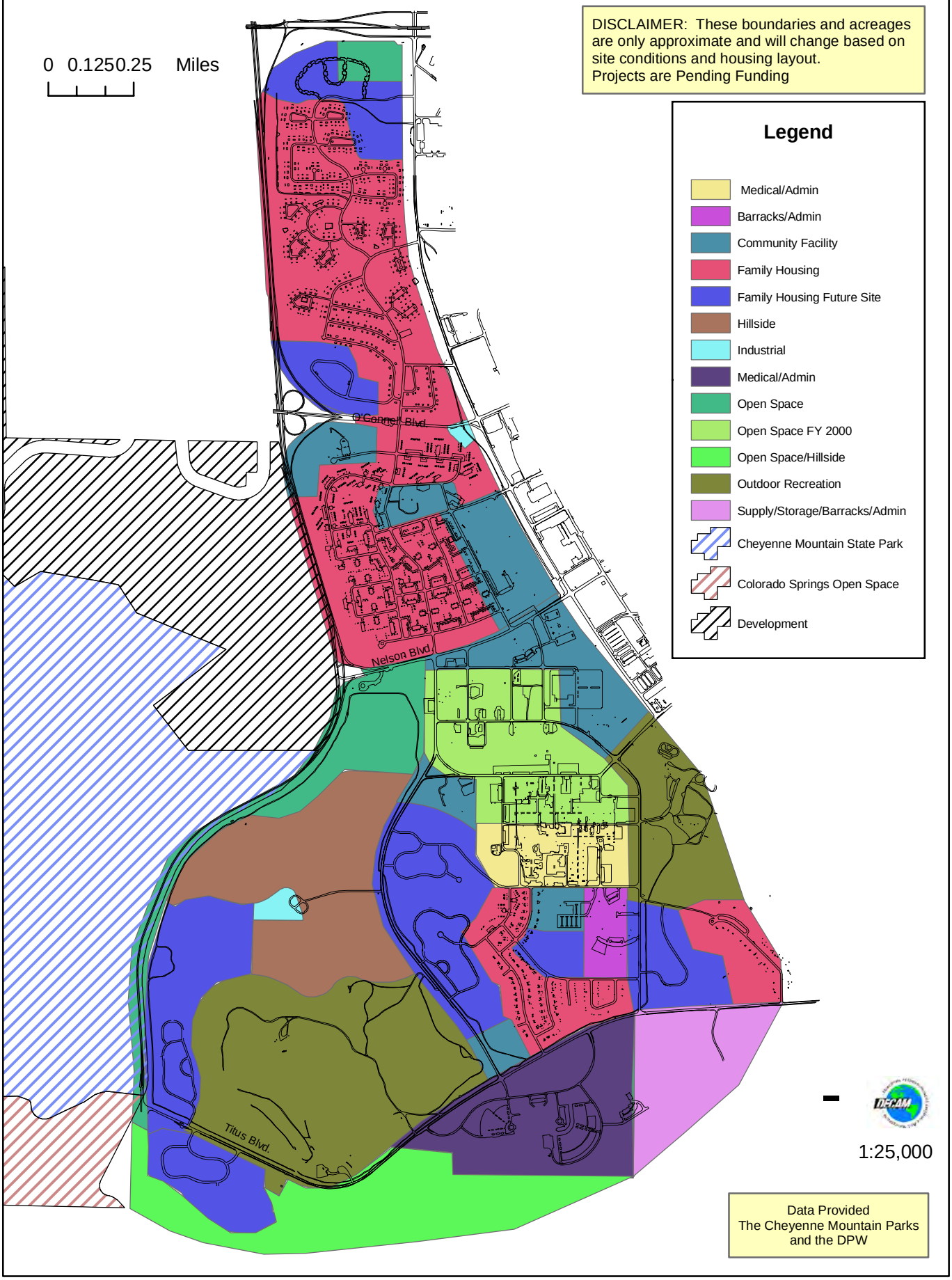

Fig. 11

Fort Carson Military Reservation

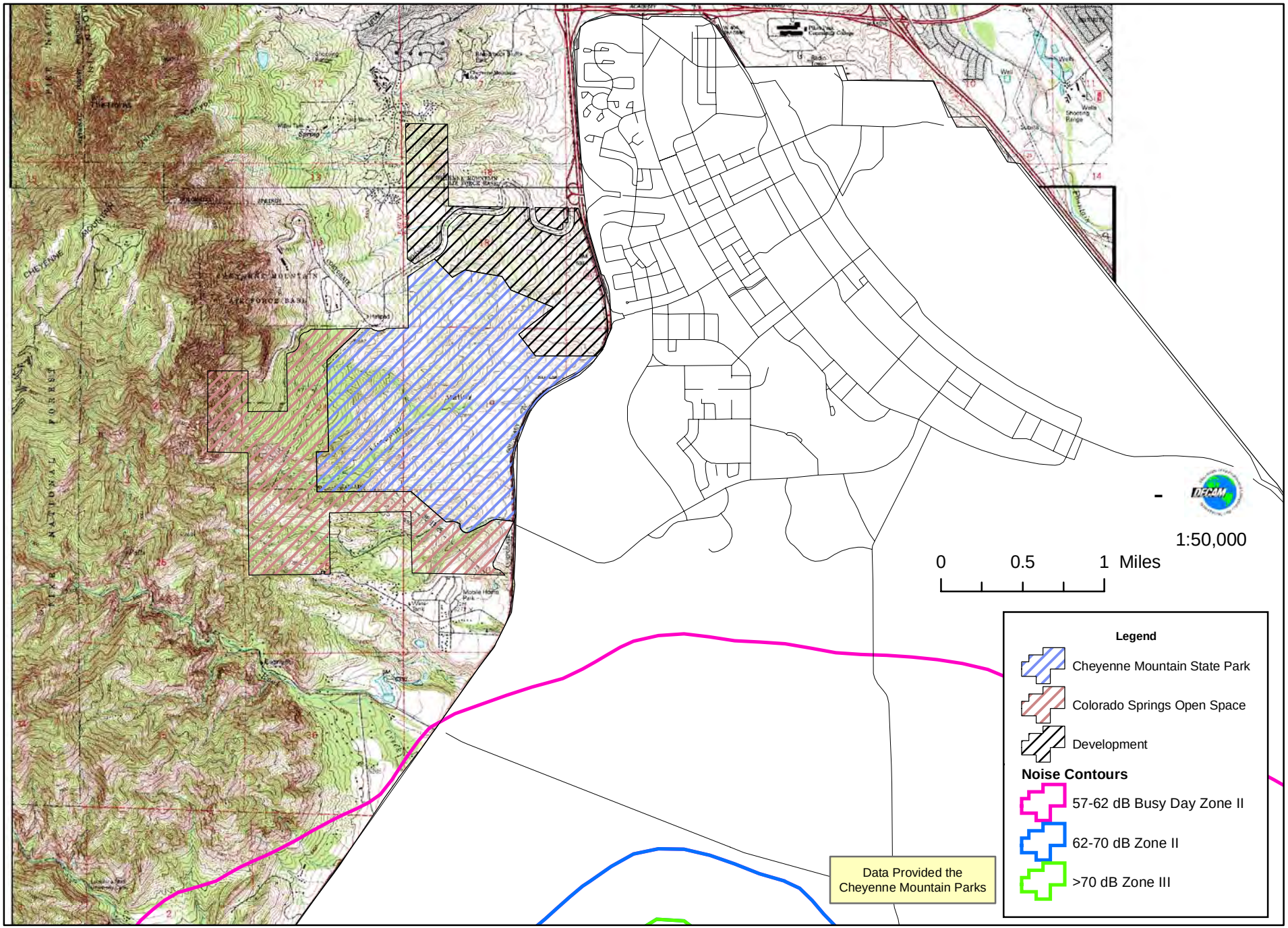

Fig. 12

Fort Carson Military Reservation

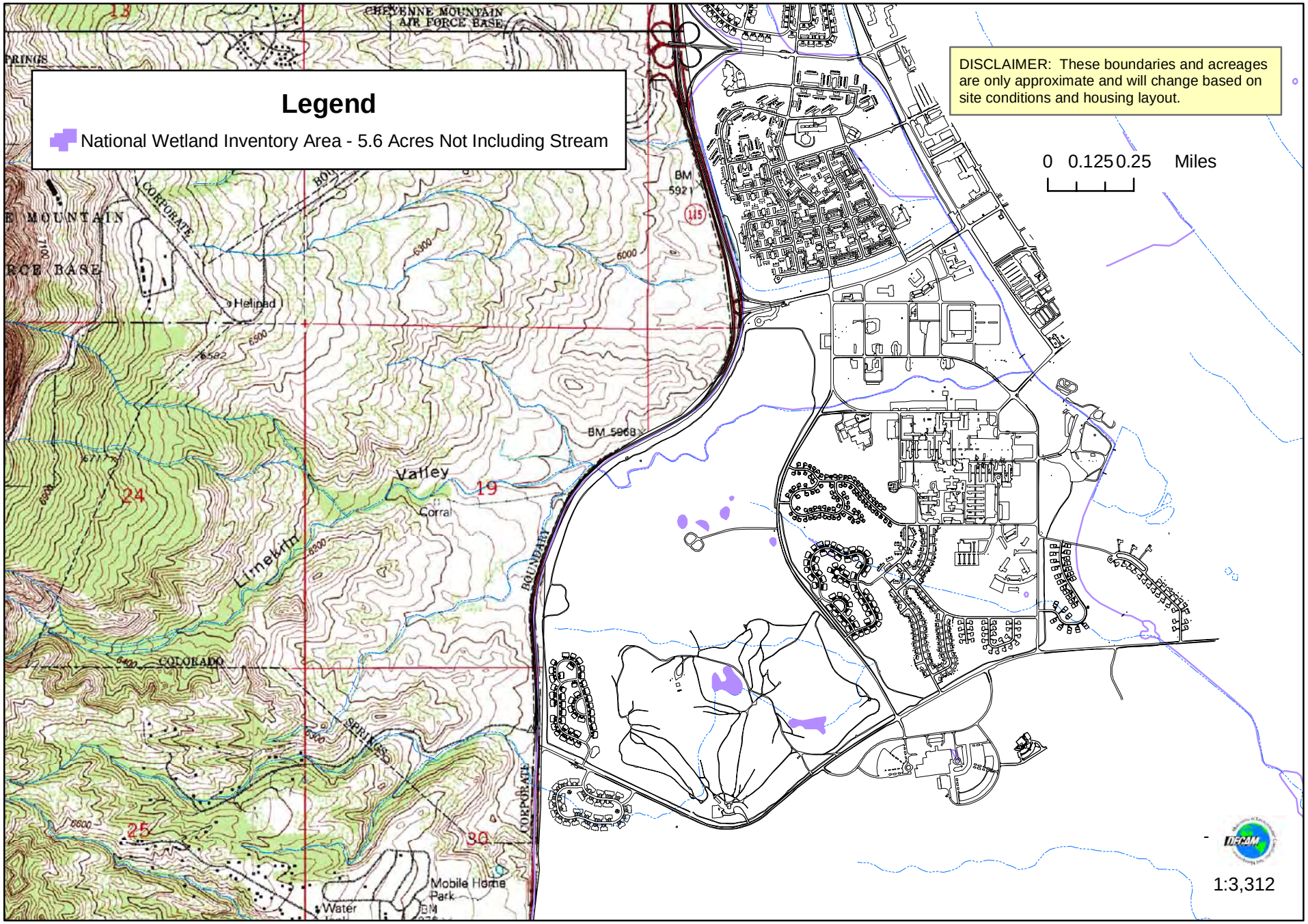

Fig. 13

Fort Carson Military Reservation

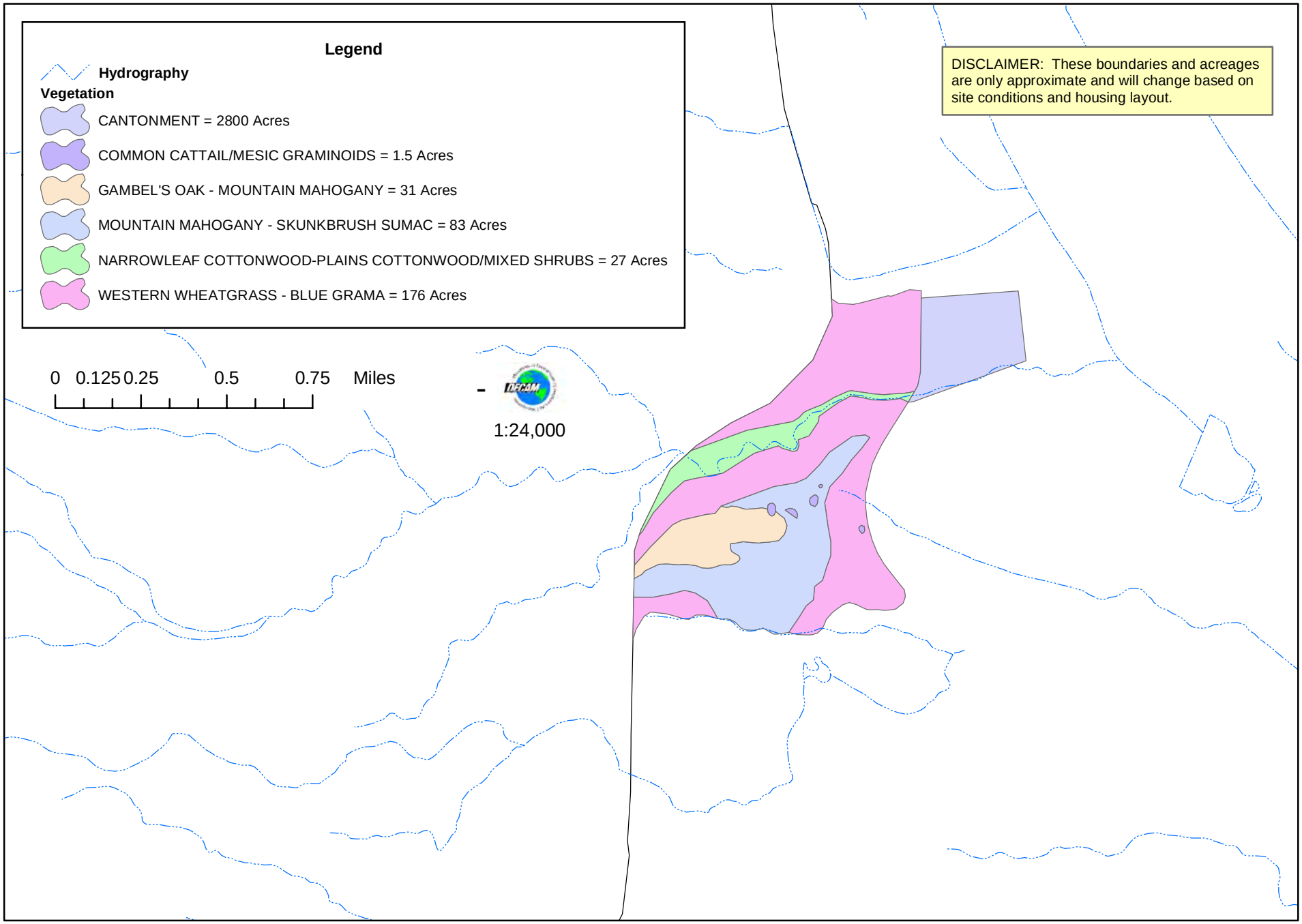

Fig. 14

Alternative Sites Considered but not Selected

Several alternative construction sites were considered but not selected for further analysis. These are summarized below

The northeastern and eastern expanse of land in the Cantonment Area between Minick Ave and I-25 is primarily industrial land use and open space. There are industrial and housing land use compatibility (industrial noise, dust, undesirable views) and adjacency issues in addition to concerns about the topography of the area, access, explosive safety arcs (hot rail loading facility), distance from community facilities, and the proximity of the I-25 corridor and its noise.

Construct New Housing Southwest of Evans Army Hospital

This area is between Gates 5 and 6 (farther southwest of Evans Army Hospital) along Highway 115. Major issues dealing with this alternative include encroachment on downrange areas, wildlife concerns, downrange noise, distance from community facilities, and lack of utility infrastructure.

Construct New Housing in Area South of Titus

Looking ESE from Intersection of Titus Blvd. and Sheridan Ave.

This is bordered on the north by Titus Blvd, on the east by Butts Road, on the south by the hill mass generally delineating the downrange area, and on the west by the entry road into the 10th Special Forces Group area (a total of approximately 32 acres).

This is located along the downrange noise buffer at the southern part of the Cantonment Area. Further, it is just to the north of the post landfill and the small impact area and adjacent to the 10th Special Forces Group compound. This area does not contain sufficient acreage to accommodate the school, housing, and community center. It is also the farthest inside Fort Carson.

Construct New Housing in Old Hospital Complex

Old Hospital Complex, Looking West from Sheridan

The old hospital complex area is bordered on the north by Prussman Blvd, on the east by Sheridan Avenue, on the south by Woodfill Road, and on the west by Mekong Street (a total of approximately 51 acres). A historic district presently occupies this space although demolition of all buildings except for two is being reviewed by the State Historic Preservation Office.; While the space is feasible for redevelopment (good access, located between two existing housing areas, near community facilities, etc., it is unknown when the area would be available for redevelopment. If this land were to become available in the near or mid-term, it is a prime candidate for a portion of the new housing, or other projects.

, Looking Southeast from Mountainside Elementary School

Construct New Housing near 5000 Area

This area is the present location of Cherokee Village, bordered on the north by O'Connell Blvd, on the east by Chiles Avenue, on the south by Ellis Street and Arapahoe and Choctaw Villages, and on the west by Highway 115 (a total of approximately 88 acres).

This area of existing housing would be demolished before new construction occurred. Beacon Elementary School currently occupies a one-block area in the southeast quadrant of this area. Mountainside Elementary School is to the immediate northwest of Area R. This area does not contain sufficient acreage to accommodate the new school, housing, and community center. Construction here could result in unacceptably high-density housing.

To: Robin Romero
NEPA Coordinator

Informal Consultation with USFWS - Preble's Meadow Jumping Mouse in Proposed School Site

On August 6, 2001 I described the proposed new school/housing/community center/ ball fields project, named Area M, to Peter Plage, USFWS. I requested the Service's opinion concerning the riparian area and immediate upland habitats as to whether or not the poposed site should have a Preble's meadow jumping mouse, *Zapus hudsonicus preblei* survey. Peter Plage said that although El Paso County was considered mouse habitat, extensive surveys in prior years on northern Fort Carson, did not reveal that any Preble's existed in suitable mouse habitat on the Post. He said "the Service does not consider the proposed project area to be a concern" to the continued existence of Preble's meadow jumping mouse.

Peter Plage also said that Fort Carson could trap if they wanted, with documentation to be sent to his office. The additional information would be kept on file. If any Preble's meadow jumping mice were found during any survey, the Service would need to be notified immediately. He suggested if a survey was done for in house reasons, that the appropriate place to survey would be downstream from the project site in the best looking suitable habitat, as opposed to the mesic upland site were Area M is proposed.

Photographs documenting Area M and its adjacent riparian habitat are on file in the DECAM Wildlife Office.

Bill Maynard
DECAM Wildlife

Appendix C: 2012 EA FNSI Family Housing

Environmental Assessment

Fort Carson Family Housing Construction and Operation of New Family Housing Units

Fort Carson, Colorado

March 2012

Finding of No Significant Impact

For the Lease to Fort Carson Family Housing for Construction and Operation of New Family Housing Units, Fort Carson, CO

Fort Carson has prepared an Environmental Assessment (EA) (March 2012) that evaluates the potential environmental and socioeconomic impacts associated with modifying the Department of the Army's lease and associated legal documents with Fort Carson Family Housing, Limited Liability Company (FCFH, LLC). This proposal primarily allows for the construction of new family housing units on approximately 35-acres near Gate 2 and about 24-acres within the Old Hospital Site on Fort Carson.

Description of the Proposed Action

The Proposed Action is to take the necessary legal actions to allow FCFH to complete the construction of new family housing units at Cherokee Village and the Old Hospital Site, remove Building 5510 and replace with a new 10,000 square feet community center, convert two child development centers into community centers, and relocate a contractor construction lay down yard. The Proposed Action also includes supplementing the Army's ground lease to include an approximate; collective 15-acres of Cherokee Village (expansion [Parcel 7A]) and 5510 Area (Parcel 13); 24-acre parcel of the Old Hospital Site (Parcel 14); 1.9-acre Gate 3 Child Development Center (CDC) (Parcel 12); 2-acre Gate 5 CDC (Parcel 15); and 1.2-acre contractor lay down yard in the vicinity of Cherokee Village or the intersection of Titus Boulevard and Harr Avenue.

Alternatives Considered

The Army considered six location alternatives on Fort Carson for implementing the Proposed Action. The alternative locations considered included: approximately 35-acres at Cherokee Village and about 24-acres within the Old Hospital Site, which is the Preferred Alternative; Landfill east of Choctaw Village; Parcels R-1 and R-2; Area north of Evans Army Hospital (Titus/Harr Site); Area M West; and the Golf Course. The six areas were screened using specific criteria Fort Carson developed for implementation of the Proposed Action. The proposed locations of Cherokee Village and the Old Hospital Site best met the Army's criteria and was designated the Preferred Alternative. The other considerations did not meet the screening criteria. Therefore, the Army eliminated the other locations from further study and were not analyzed in detail. A detailed study of the Proposed Action and the No Action Alternative was conducted as part of the EA.

No Action Alternative

Under the no action alternative, the current FCFH lease would not be modified and new family units would not be constructed to support Fort Carson Soldiers and their families. This alternative is not viable because existing family housing on Fort Carson is not capable of housing currently assigned or the anticipated incoming personnel and their families.

Environmental Consequences

No significant negative environmental or socioeconomic consequences that could not be mitigated were identified in the EA for the Proposed Action. Implementation of the Proposed Action would result in less than significant permanent, adverse impacts to all resources. In addition, construction-related effects to all resource areas would be temporary and localized

and potentially affect air quality, noise, geology and soils, water resources, transportation, and hazardous materials. A temporary, minor, beneficial impact to the local economy would result from construction-related jobs and construction-related purchases of supplies and materials. There would be minor displacement of wildlife from the project areas, but this impact would dissipate with time as wildlife species that occur within the site areas are mostly urban-adapted species such as red fox, pigeons, etc. and would acclimate to the new areas. There would be no impacts to rare, threatened, or endangered species.

Conclusion

The attached EA was prepared pursuant to 32 Code of Federal Regulations (CFR) 651 and U.S. Council on Environmental Quality (CEQ) regulations (Title 40, U.S. Code, Parts 1500-1508) for implementing the procedural requirements of the National Environmental Policy Act (NEPA). The finding of this EA is that the Proposed Action would have no significant impact on the human or natural environment.

Therefore, based on review of the EA, I conclude that the Proposed Action is not a major federal action that would significantly affect the quality of the environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969, as amended. Accordingly, no Environmental Impact Statement (EIS) is required.

Date: 23 APR 12

Robert F. McLaughlin
COL, FA
Garrison Commander
Fort Carson, Colorado

Environmental Assessment
For the Lease to Fort Carson Family Housing for Construction and Operation of New Family Housing Units, Fort Carson, CO

March 2012

Prepared By:

Robert M. Ford, CHMM
Project Manager
Gryphon Environmental, LLC

Reviewed By:

Staff Judge Advocate
Office of the Staff Judge Advocate
Fort Carson, CO 80913

Submitted By:

Hal Alguire
Public Works, Director
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23 April 2012
Date

Approved By:

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Garrison Commander
Fort Carson, CO 80913

23 Apr 12
Date

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FIGURES

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1.0 PURPOSE, NEED AND SCOPE

1.1 INTRODUCTION

This Environmental Assessment (EA) analyzes the potential impacts of the proposal to modify the Department of the Army's lease and associated legal documents with Fort Carson Family Housing, Limited Liability Company (FCFH). This proposal would allow FCFH to construct new family housing units on approximately 24-acres within the Old Hospital Site (OHS) area southeast of and near the main gate (Gate 1), and allow for the removal and replacement of existing housing units within the approximate 35-acre Cherokee Village area, which is located near Gate 2. The proposal would also allow for removal of Building 5510, construction of an approximate 10,000 square feet community center and relocation of a contractor construction laydown yard.

1.2 HISTORY

The Department of the Army continues to implement the privatization of family housing on our military installations to address a deficit of family housing within the local communities. In 1996, Congress enacted Section 2801 of the 1996 Defense Authorization Act (Public Law 104-106, codified at Title 10 of the United States Code [U.S.C.] Sections 2871-85). Also known as the Military Housing Privatization Initiative (MHPI), this allows the military to partner with a private developer to construct, manage, renovate, replace, rehabilitate and maintain Army family housing and ancillary supporting facilities. The Army's implementation of the MHPI authorities is known as the Residential Communities Initiative (RCI).

In 2008, a Housing Market Analysis (HMA) report was prepared by Robert D. Niehaus, Inc. (Niehaus, 2008), which was based on criteria and methods approved by Headquarters, Department of the Army. The HMA reflects current guidance by the Office of the Secretary of Defense (OSD) regarding market analyses for military housing and determines both the accompanied (with Family) and unaccompanied (without Family) housing requirements for military personnel stationed at Fort Carson. The then current (2008) and projected (2013) permanent party personnel totals were obtained from the 2008 Army Stationing and installation Plan (ASIP) report (Army, 2008).

According to the 2008 HMA report, by 2013, Fort Carson's population was anticipated to be more than 28,000 active-duty, permanent party military personnel. The total number of families requiring housing was forecast to increase to almost 16,000 families and the number of unaccompanied personnel requiring housing to about 11,000 military members.

The results of the 2008 HMA showed that there was a validated on-post housing requirement for over 4,000 family housing units on Fort Carson. As of December 2008, there were approximately 2,800 units. Starting in 2006 an additional 408 units were constructed by FCFH, bringing the new end-state to 3,060 units. In

2010, FCFH initiated construction efforts for an additional 308 deficit homes that will bring the end state to 3,368 homes leaving a deficit of approximately 600 family housing units.

1.3 PURPOSE AND NEED FOR PROPOSED ACTION

The purpose of the Proposed Action is to supplement the FCFH ground lease and make additional locations available for the construction of new family housing units and associated community centers in order to address the growing population of Soldiers and their families. The Proposed Action is necessary to provide enough affordable, quality housing and ancillary facilities to Soldiers and their families, reducing the overall number of deficit homes on Fort Carson.

1.4 SCOPE OF ANALYSIS

This EA has been developed in accordance with the National Environmental Policy Act of 1969 (NEPA) and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the Army. Its purpose is to inform decision-makers and the public of the likely environmental consequences of the Proposed Action and alternatives.

This EA identifies, documents and evaluates the potential effects of the Proposed Action and alternatives. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians and military technicians have analyzed the Proposed Action and alternatives. Collectively, they have identified relevant beneficial and adverse effects associated with these actions. The Proposed Action and alternatives are described in Section 2.0. Conditions existing in 2011, which are considered to be the baseline conditions or affected environment against which the Proposed Action and alternatives are compared, are described in Section 3.0. The expected effects of the Proposed Action are described immediately following the affected environment in Section 3.0. The potential for cumulative effects is addressed in Section 4.0. Appropriate mitigation measures are identified in Section 5.0 and conclusions are presented in Section 6.0.

1.5 AGENCY AND PUBLIC PARTICIPATION

Public participation opportunities with respect to this EA and decision-making on the Proposed Action are guided by Army Regulation 200-2, Environmental Analysis of Army Actions and 32 Code of Federal Regulations (CFR) Part 651. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. All agencies, organizations and members of the public having an interest in the Proposed Action, including minority, low-income, disadvantaged and Native American groups, will be given the opportunity to comment on this EA.

A Notice of Availability (NOA) for the EA and Draft Finding of No Significant Impact (FNSI) was published on February 1, 2012 announcing the 30-day public review period between February 1 and March 1, 2012. Copies of the announcements are included in Appendix A. The EA was made available at the following locations:

- Penrose Public Library, located on 20 North Cascade Avenue, Colorado Springs, Colorado;
- Pueblo West Library, located at 298 South Joe Martinez Boulevard, Pueblo, Colorado;
- Fountain Branch Library, located at 230 South Main Street, Fountain, Colorado; and
- Grant Library, 1637 Flint Street, Building 1528, Fort Carson, Colorado.

Fort Carson did not receive any public comments during the 30-day review period.

1.6 LEGAL FRAMEWORK

A decision on whether to proceed with the Proposed Action rests on numerous factors such as mission requirements, schedule, availability of funding and environmental considerations. In addressing environmental considerations, Fort Carson is guided by relevant statutes (and their implementing regulations) and Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resources management and planning. These include, but are not limited to, the following:

- Clean Air Act;
- Clean Water Act;
- Noise Control Act;
- Endangered Species Act;
- Migratory Bird Treaty Act;
- National Historic Preservation Act;
- Archaeological Resources Protection Act;
- Resource Conservation and Recovery Act (RCRA);
- Toxic Substances Control Act;
- Energy Independence and Security Act (EISA), Section 438;
- EO 11988, Floodplain Management;
- EO 11990, Protection of Wetlands;
- EO 12088, Federal Compliance with Pollution Control Standards;
- EO 12580, Superfund Implementation;
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations;
- EO 13007, Indian Sacred Sites;
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks;
- EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management;

- EO 13175, Consultation and Coordination with Indian Tribal Governments;
- EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds; and
- EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance.

2.0 PROPOSED ACTION AND ALTERNATIVES

This section presents information on the Proposed Action and alternatives. The Proposed Action is described in Section 2.1, and alternatives to the Proposed Action are discussed in Section 2.2. The No Action alternative is presented in Section 2.3. The Proposed Action described in Section 2.1 is the preferred alternative.

2.1 PROPOSED ACTION

The Proposed Action is comprised of five major actions. These actions include 1) supplementing FCFH's ground lease; 2) removing and/or remodeling existing structures; 3) constructing new family housing units and support facilities; 4) operating new family housing units and support facilities; and 5) relocating the FCFH contractor construction lay down yard. The following paragraphs describe these actions in greater detail.

2.1.1 Ground Lease Supplement

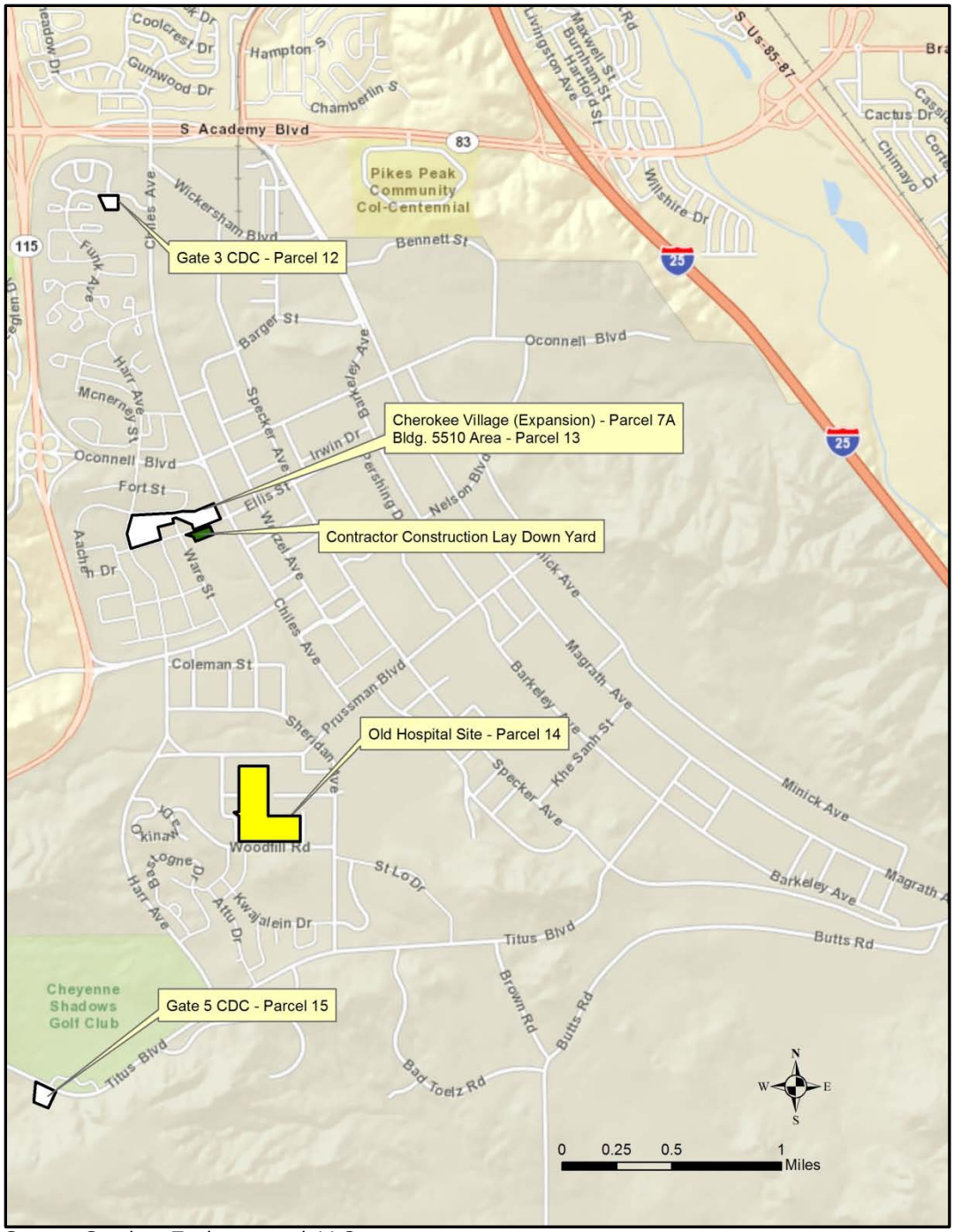
FCFH's ground lease would collectively be supplemented to include approximately 44 additional acres. The Cherokee Village site (expansion [Parcel 7A]) would increase approximately 8-acres for use as new housing. The existing Building 5510 Area (Parcel 13 [approximately 7-acres]) would be used for construction of an approximate 10,000 square feet community center. Cherokee Village and Building 5510 are located adjacent to and southeast of Gate 2, and will be referred to collectively as the Cherokee Village site unless otherwise specified. Approximately 24 additional acres would be supplemented from the Old Hospital Site (OHS) (Parcel 14) to construct additional family housing units. The OHS area being considered is located south of the Post Exchange (PX) in the west-central portion of the Fort Carson cantonment area. Additional parcels considered for inclusion into the ground lease include two separate approximate 2-acre child development centers (CDCs), which would be converted into community centers, and an approximate 1-acre contractor construction lay down yard (CCLY). One CDC is located in the north end of the cantonment area just inside Gate 3 (Parcel 12) and the other is in the south end just inside Gate 5 and across from the Golf Course (Parcel 15). Additionally, one CCLY is located adjacent to and south of Cherokee Village and the other adjacent to and north of Evans Hospital (Figure 2.1-1).

2.1.2 Building Removal and/or Remodel

Except for the contractor construction lay down yard, each proposed site would involve some level of building removal or remodeling activity. Cherokee Village has 114 existing family housing units that would be removed and replaced with between 100 and 114 new family housing units. Located in the same vicinity, Building 5510 would be deconstructed and/or demolished and replaced with an approximate 10,000 square feet community center. Building 5510 is currently used to support the Department of Veterans Affairs' Integrated Disability Evaluation System. At the OHS, the Thrift Shop would be deconstructed and/or demolished to

allow for additional space to construct new family housing. Lastly, both CDCs would remain, be remodeled and converted into community centers for use by their adjacent neighborhoods.

Figure 2.1-1. Proposed Action Site Locations.



Source: Gryphon Environmental, LLC
Note: Only one Contractor Construction Lay Down Yard will be selected as part of Proposed Action.

2.1.3 New Family Housing Unit and Support Facility Construction

Only the Cherokee Village and OHS parcels collectively involve construction of between 216 and 230 new housing units, support facilities and utilities not otherwise discussed previously. Between 100 and 114 new family housing units would be constructed within the existing Cherokee Village footprint and the proposed ground lease supplemental 8-acres. The proposed family housing units would be in different styles, densities and configurations for junior enlisted families. Housing units, duplex, triplex or quadraplex in style, would range from 1800 ft^2 to 1937 ft^2. Building 5510 would be replaced with an approximate 10,000 square feet community center. The Proposed Action also includes upgrades to existing utilities, to include water, sewer, electric and gas. Existing pavements would also be improved. The OHS would include the construction of 116 new family housing units and similar upgrades to utilities as Cherokee Village.

2.1.4 Family Housing Unit and Support Facility Operation

Operations of family housing units and support facilities include utility usage, transportation related energy use, solid waste generation activities, nuisance control measures employed, and stormwater impacts associated with maintaining increased populations and residence on Fort Carson.

2.1.5 Contractor Construction Lay Down Yard Relocation

Under the Proposed Action, the existing approximate 1.2-acre FCFH CCLY would be relocated to one of two alternate sites within the cantonment area. The CCLY proposed for relocation is located just inside and south of Gate 3 (Contractor Gate). Option 1 would include relocating it to an approximate 1.2-acre area adjacent to and southwest of the Ellis Street and Chiles Avenue intersection in the vicinity of Cherokee Village. Option 2 would include relocating it to an approximate 1.2-acre area adjacent to and northeast of the Harr Avenue and Titus Boulevard intersection, directly east of the golf course and north of Evans Hospital. Both sites have level topography, are vacant, and have the required services and utilities necessary for operation.

2.2 ALTERNATIVES CONSIDERED BUT DISMISSED

The Directorate of Public Works and FCFH identified five alternatives, as well as the No Action Alternative, to the Proposed Action and developed the following criteria to evaluate vacant areas on Fort Carson for suitability as housing sites.

- Location in the cantonment area;
- Proximity to community facilities and existing schools;
- Environmental justice;
- Compatible adjacent land use;
- Suitable topography and water table;

- School and family housing community center be co-located; and
- Force protection / security.

Based on these criteria, only the Proposed Action (Preferred Alternative) and the No Action Alternative are carried forward for detailed analysis. Other alternatives considered but dismissed are described in the following section.

2.2.1 Landfill East of Choctaw Village

This site is located within a floodplain and was dismissed due to extraordinary development costs, which are associated with the level of effort required to raise the proposed construction site approximately five feet or more. Additionally, the site possesses soils that are not optimal for development and would require deep foundation systems. The site was also not believed to be a suitable site for construction of new family housing units for junior enlisted personnel due to environmental justice related considerations.

2.2.2 Parcels R-1 and R-2

These areas were dismissed because the parcels are near Iron Horse Park, which is considered valuable green space on Fort Carson. Furthermore, these sites were considered undesirable as they were too close to a number of existing buildings that were thought to be incompatible with family housing.

2.2.3 Area North of Evans Army Hospital (Titus/Harr Site)

Similar to Alternative 2.2.1, this site is located within a floodplain and was dismissed due to extraordinary development costs, which are associated with the level of effort required to raise the proposed construction site approximately five feet or more. Additionally, the site possesses soils that are not optimal for development and would require deep foundation systems. The site also possesses wetlands that would require mitigation efforts. The Titus/Harr Site is approximately 16- acres and would also be too small to construct the desired number of homes.

2.2.4 Area M West

Area M was identified in the 2006 Additional Family Housing Units EA. In 2006, this area was determined suitable for a family housing construction site, and 96 units were constructed. Areas located northwest and southwest of the current Area M and northwest of the golf course, designated as Area M West, were considered for additional units. In April 2009, the Garrison Commander (GC) requested these areas be removed from further analysis due to: concerns about impacts to wildlife and native vegetation; the need to realign/reroute portion of the golf course; limited availability of utilities; poor soils that would need a more expensive piling foundation system; the need for a tie-back system for stability. Additionally, the GC requested these sites be discarded as these characteristics do not facilitate the fulfillment of Leadership in Energy and Environmental Design - New Development (LEED - ND) criteria.

2.2.5 Golf Course Relocation

The 232-acre golf course located south of Area M was considered as a possible location. This alternative was discarded from further analysis due to lack of utility availability, wetland areas, terrain, and cost for construction of a new golf course.

2.3 NO ACTION ALTERNATIVE

Consideration of the No Action alternative is required by NEPA. It provides a basis of comparison for the Proposed Action and also addresses issues of concern by avoiding or minimizing effects associated with the Proposed Action. Under this alternative, the Army would not take the necessary legal steps to permit FCFH to construct new family housing. Implementing the No Action Alternative would require some junior enlisted Soldiers and their families with three and four bedroom requirements, to reside off-post, requiring high rent/high out of pocket expenses, daily commute and inconvenient access to Soldier and Family community services on Fort Carson. The No Action Alternative will be considered in the environmental consequences analysis to provide a basis of comparison for the Proposed Action and also address issues of concern on current environmental conditions by avoiding or minimizing effects associated with the Proposed Action, as required by NEPA regulations.

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3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

This chapter provides general descriptions of the affected environment and the consequences of the Proposed Action and alternatives.

3.1 AFFECTED ENVIRONMENT

This section is an overview of the baseline physical, biological, social and economic conditions that occur within the region of influence (ROI) of the Proposed Action. Only the following environmental and socioeconomic conditions relevant to the Proposed Action are presented:

- 3.1 Land Use;
- 3.2 Air Quality;
- 3.3 Noise;
- 3.4 Geology and Soils;
- 3.5 Water Resources;
- 3.6 Biological Resources;
- 3.7 Cultural Resources;
- 3.8 Socioeconomics and Environmental Justice;
- 3.9 Transportation;
- 3.10 Utilities;
- 3.11 Hazardous and Toxic Substances; and
- 3.12 Sustainability.

Potential effects to the visual and aesthetic resources on and around Fort Carson were considered but not included for detailed analysis. Construction of new housing could introduce new elements to the visual landscape, but these changes either would not be visible from off-post or are consistent with the character of a military installation. Therefore, there would be no adverse visual or aesthetic impact resulting from increased density of housing, and visual and aesthetic impacts are not discussed further in this environmental assessment.

Section 3.0 is organized by resource, as listed above. As applicable, each section includes background on how the resource is related to the Proposed Action, provides an overview or relevant legislative requirements governing the resource and discusses the general conditions of the resource in the Region of Influence (ROI).

3.2 ENVIRONMENTAL CONSEQUENCES

This section is an evaluation of the potential effects on the resources affected by the Proposed Action and the No Action Alternative. This analysis includes likely beneficial and adverse effects on the human environment, including short-term and long-term effects and direct and indirect effects. The analysis of effects on resources focuses on environmental issues in terms of their potential to affect the

resource. Detailed consideration is given to those resources that have potential for environmental effects. Interpretation of effects in terms of their duration, intensity, and scale are provided where possible. Effects under the No Action Alternative are compared against baseline effects of each resource.

Section Organization

Each section describes the method used for analysis of effects and factors used to determine the significance of effects (40 CFR, Part 1508.8). Effects are described where they occur for each resource, including both direct and indirect effects. Direct effects are caused by the proposed occur later in time or at a distance from the Proposed Action.

Terminology

To determine whether an effect is significant, CEQ regulations require the consideration of context and intensity of potential effects (40 CFR, Part 1508.27). Context normally refers to the setting, whether local or regional, and intensity refers to the severity and duration of the effect. Also, this EA includes a discussion of the possible conflicts between the proposed project alternatives and the objectives of federal, regional, state, and local land use plans and policies for the area concerned (40 CFR, Part 1502.16[c]). Effects are described according to the following levels:

- Significant adverse effect;
- Significant adverse effect but mitigable to less than significant;
- Minor adverse effect;
- No effect; or
- Beneficial effect.

The impacts to environmental resources discussed in this chapter would be considered significant if they have a major and/or important effect, which cannot be mitigated to less than significant. A project will normally have a significant impact on the environment if it will:

- Conflict with adopted plans and established uses of the community where it is to be located;
- Have a substantial, demonstrable negative aesthetic effect;
- Substantially affect a rare or endangered species of animal or plant or the habitat of such species;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species;
- Substantially diminish habitat for fish, wildlife, or plants;
- Breach standards relating to solid waste or litter control;
- Substantially degrade water quality;
- Contaminate a public water supply;
- Substantially degrade or deplete ground water resources;
- Interfere substantially with ground water recharge;

- Encourage activities which result in the use of large amounts of fuel, water, or energy;
- Use fuel, water, or energy in a wasteful manner;
- Disrupt or adversely affect an archaeological site or a property of historic or cultural significance;
- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system;
- Increase substantially the ambient noise levels for adjoining areas;
- Cause substantial flooding, erosion or siltation;
- Expose people or structures to major geological hazards;
- Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the areas affected;
- Violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations; or
- Interfere with emergency response plans.

Specific design details of the Proposed Action, building removal, construction, and operation and maintenance activities have not yet been developed. Boundary-specific site locations or footprints, were used as a basis to make conservative assumptions that were used to evaluate a worst-case scenario of possible impacts. Specific information on construction materials or other such design details would be developed as the design process matures. In addition, design ideas received during the public comment period could be incorporated. Any dimensions or description of site features are approximate, based on a typical conceptual design that meets the purpose and need. Impacts analysis was completed utilizing information currently available based upon a maximum footprint. During the design process, mitigation measures (e.g., energy efficiency, water conservation design standards, erosion and sedimentation best management practices) would be implemented to minimize impacts to the environment so that the final site design could actually be smaller than the maximum footprint scenario and have fewer impacts when completed.

Baseline information was gathered from the 2009 Additional Family Housing EA, current regulations, plans, policies, and FCFH and Fort Carson staff. Following the discussion of each resource's environmental conditions is a discussion of the environmental effects of the Proposed Action and the No Action Alternative. Unless otherwise stated, the ROI for the Proposed Action are the project sites and adjacent lands. The current conditions of a resource's affected environment, along with information presented for the No Action Alternative, constitute the baseline for analysis of effects resulting from implementing the Proposed Action. There may be both adverse and beneficial effects in a single category for a resource; for instance, a project could interfere with an existing land use, such as recreation (an adverse effect), while expanding public access to different recreation resources (a beneficial effect). Where there are adverse and beneficial effects, both are described. Mitigation is identified where it may reduce the significance of an effect.

The cumulative effects of the Proposed Action, when added to other past, present, and reasonably foreseeable future actions, are presented in Section 3.13, Cumulative Effects Summary. Section 3.14, Mitigation Summary, presents the mitigation measures that would be implemented as part of the Proposed Action to minimize effects on affected resources.

3.1 LAND USE

3.1.1 Affected Environment

Geographic Setting and Location

As seen in Figure 3.1-1, Fort Carson is located in central Colorado at the foot of the Rocky Mountains in El Paso, Fremont, and Pueblo counties. To the north is Colorado Springs, to the east is Interstate-25 and mixed development, to the south are privately-owned ranches, and to the west is State Highway 115. Downtown Colorado Springs and Denver lie approximately 8-miles and 75-miles, respectively, to the north, while the City of Pueblo is approximately 35-miles south of the cantonment area.

Fort Carson covers approximately 137,000-acres, and extends between 2- and 15-miles east to west and approximately 24-miles north to south. The cantonment area, which consists of developed land and a high density of urban uses, is located in the northern portion of the installation and covers approximately 6,000-acres. The downrange area, which is used for large caliber and small-arms live-fire individual and collective training; aircraft, wheeled and tracked vehicle maneuver operations; and mission readiness exercises, covers approximately 131,000-acres of unimproved or open lands. Additionally, Butts Army Airfield is located in the northeast quadrant of the downrange area and is used for command and control of flight operations as well as maintenance and repair of aircraft.

Climate

The region including Fort Carson is classified as mid-latitude and semi-arid, characterized by hot summers, cold winters, and relatively low rainfall. July is the warmest month with the normal daily maximum temperature of 84.4° Fahrenheit, and January is the coldest with a normal daily minimum temperature of 14.5° Fahrenheit.

Mean annual precipitation at Fort Carson increases toward the northwest. Colorado Springs receives precipitation approximately 50 days a year receiving an average of 17.5 inches of precipitation annually during the period of April through August. Average annual snowfall in the region is 42.4-inches. Snow and sleet usually occur from September to May with the heaviest snowfall in March and possible trace accumulations as late as June.

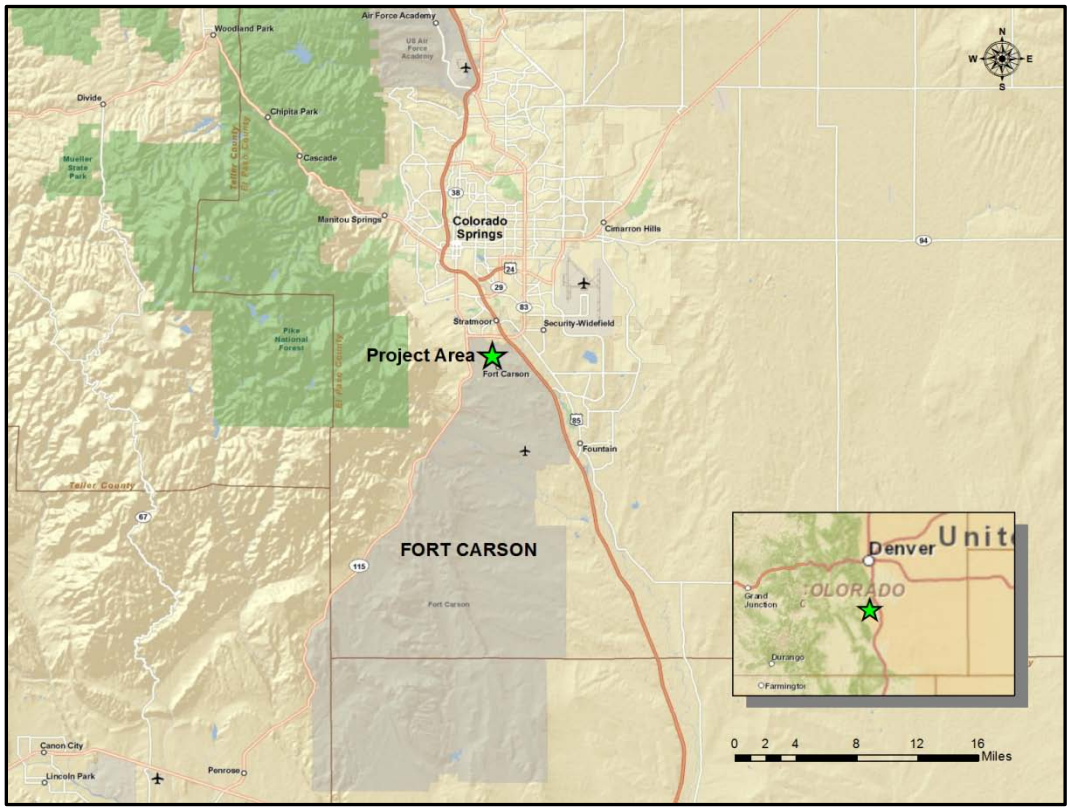
Existing Land Use

Fort Carson is an active military training facility for both weapons qualification and field training. Land use falls generally into one of two broad categories, which are the cantonment area and downrange. The cantonment area consists of developed land and a high density of urban uses. The downrange area is used primarily for training and in areas where compatible for recreational purposes. The existing land use categories for Fort Carson are:

- Community;
- Industrial;
- Professional and Institutional;
- Residential; and
- Training / Ranges.

The proposed project sites are generally located in the west-central area of the cantonment area. Cherokee Village is classified as residential, and the OHS, Building 5510 and both CDCs as professional and institutional. Both of the proposed CCLYs are classified as community and/or open space.

Figure 3.1-1. Location of Fort Carson, Colorado.



Source: Gryphon Environmental, LLC

3.1.2 Environmental Consequences

Methodology for Effects Analysis

Effects on land use were assessed based on whether the Proposed Action would be consistent with installation, site-specific and surrounding land uses.

Factors Considered for Effects Analysis

The evaluation of potential effects on land use was based on the Proposed Action's consistency with the following:

- Existing and planned land uses at Fort Carson;
- Conflict with the objectives, policies, or guidance of state and local land use plans;
- Conflict with the objectives, policies, and guidance of the Farmland Protection Policy Act (FPPA) of 1981, which is intended to minimize the impact of federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural uses; and
- Unique characteristics of the geographical area (40 CFR, Part 1508.27), such as forest reserves, parks, and prime farmlands.

Summary of Effects

The Proposed Action is consistent with the relative regulatory framework, such as the FPPA, proposed Army land use plans, and uses in surrounding areas. There would be minor beneficial effects because construction of the proposed housing units on Fort Carson would provide housing that meets Army standards and would locate the housing in an intended area close to other housing, training, and community support areas. The effects evaluation for the No Action Alternative is based on a comparison to the baseline effects; no effects are anticipated from the No Action Alternative.

Proposed Action

There are no significant land use changes under the Proposed Action. The approximate 35-acre Cherokee Village site is currently classified as residential and would continue to fulfill this capacity. Building 5510 and both CDCs currently serve institutional functions and would fulfill a residential/community role under the Proposed Action. Buildings 6270 and 6271 within the OHS would continue to be used for FCFH administrative and operational purposes. The unoccupied portions of the OHS are developed and previously provided a professional and administrative function. The OHS is also currently surrounded by residential areas. The proposed CCLY would change land use categories the most as it would transition from community/green space to industrial use. Because either CCLY would require approximately 1.2 acres in area, a significant amount of land use change would not occur.

Overall, the land use is consistent with Fort Carson master planning. Under the Proposed Action, there would be minor beneficial effects. The proposed new housing developments would supplement off-post housing supply and on-post housing units that do not comply with Army RCI standards. This would provide service members and their families with affordable quality housing that meets military and local housing construction standards, as defined by the U.S. Army Corps of Engineers (USACE) Centers of Standardization, as well as standards for design established by the Army that would minimize environmental effects. The

locations of the Proposed Action encourage efficiency by locating additional family housing on-post and are thus close to installation facilities and services. This would improve zone functional interrelationships and interzone flow with the neighboring housing developments.

The Proposed Action is consistent with proposed Army land use plans and uses in surrounding areas. There would be minor beneficial effects because construction of the proposed housing on Fort Carson would provide facilities that meet Army standards and would locate the facilities in an intended area close to other family housing, training, and community support areas.

No Action Alternative

The effects evaluation for the No Action Alternative is based on a comparison to the baseline conditions and the probable effects. Because there would be no change in land use under the No Action Alternative, the project sites would remain static. There would be no effects under the No Action Alternative.

3.2 AIR QUALITY

3.2.1 Affected Environment

The Clean Air Act authorizes the USEPA to establish National Ambient Air Quality Standards for six principal pollutants, called "criteria pollutants," which are considered harmful to the public health and environment. These pollutants include ozone, carbon monoxide (CO), nitrogen oxides, sulfur dioxide, particulate matter, and lead particles. In an effort to control and minimize the direct and indirect impacts of these pollutants, the Clean Air Act established the New Source Review (NSR) and Operating Permit programs, which are administered federally by the United States Environmental Protection Agency (USEPA) and, in Colorado, by the Colorado Department of Public Health and Environment (CDPHE). New Source Review permits are considered pre-construction or construction permits, while operating permits are considered permits to operate, or post-construction permits. Fort Carson is required to comply with the requirements of both of these permitting programs.

There are three types of NSR permitting requirements, which are generally based on whether a major stationary source would be constructed or modified in an attainment, unclassifiable, or non-attainment area for National Ambient Air Quality Standards. These permit requirements include the Prevention of Significant Deterioration, Non-Attainment New Source Review, and minor NSR. A Prevention of Significant Deterioration permit is required for new or modified stationary sources in attainment or unclassifiable areas. Non-Attainment NSR permits are required for major sources in non-attainment areas as well as the minor NSR to a lesser extent. Recently, the USEPA added greenhouse gases (GHG) to be accounted for in NSR efforts in accordance with several USEPA final rules issued in 2010. Implementation of these rules went into effect on January 2, 2011. To determine NSR permitting requirements and ensure compliance with the Clean Air Act General Conformity Rule, a Conformity Applicability Analysis must be performed for each proposed federal action, or actions occurring on federal land, prior to initiation of the project. The purpose of the analysis is to ensure that federal actions do not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS) or worsen existing conditions.

Operating permits, also known as Title V permits, are legally enforceable documents issued to stationary sources after the source has begun to operate. Sources with emissions greater than the established permitting thresholds or that meet other applicable criteria are required to obtain an operating permit (USEPA, 2010a). The permits contain all the air pollution control requirements that apply to the source, including requirements from NSR permits or other applicable requirements such as New Source Performance Standards (USEPA, 2010b) or National Emissions Standards for Hazardous Air Pollutants (HAPs) (USEPA, 2010c).

Ambient Air Quality Conditions

Fort Carson is in an attainment area for all criteria pollutants, with the exception of carbon monoxide (CO) for which the area has been designated as a maintenance area (Colorado Springs achieved attainment in October 1999). The Colorado Springs urban area, including the Fort Carson cantonment area, is under a maintenance plan until 2019 to demonstrate compliance with the CO standard (CDPHE, 2009). The proposed project sites are located within the CO attainment/maintenance area and air-conformity regulations do apply. These regulations require quantification of direct and indirect, construction, and operation emissions for any federal action and comparison of these emissions to threshold of significance levels in non-attainment and maintenance areas. As a result, this EA and enclosed conformity analysis only covers the emissions associated with construction activities and first year of new housing operations.

Sources of ozone (O_3) are a concern in the region. However, local monitoring results demonstrate that this region is in attainment with the new 8-hour O_3 standard. The USEPA is reconsidering the 2008 ozone National Ambient Air Quality Standard and will likely strengthen the standard to be more protective of public health and the environment. The USEPA recently delayed the issuance of the new standard until 2013 to further review and analyze data (EPA, 2011). The USEPA is expected to tighten the standard from its current 75 parts per billion to 70 parts per billion, averaged over an 8-hour period (EPA, 2011). The long-term sustainability goal for Fort Carson is to reduce installation greenhouse gases and other air pollutants to the lowest level achievable emissions rates by 2027.

Air Pollutant Emissions

Air pollutant emissions are generated at Fort Carson mainly through the combustion of fossil fuels in equipment such as boilers and motorized vehicles. Combustion products include mainly CO, nitrogen oxides, sulfur dioxide, and particulate matter (both as PM_{10} and $PM_{2.5}$). Lesser contributions of emissions come from coating activities, gasoline filling stations, chemical usage, and fuel storage and fueling operations, landfill related emissions, military and fire training. Pollutants from these activities include those listed above, volatile organic compounds, and various HAPs. Travel by tanks and other military vehicles on unpaved roads is the largest generator of particulate matter.

Fort Carson is considered a Title V major source due to the potential to emit more than 100 tons per year of the following criteria pollutants: particulate matter, volatile organic compounds, CO, and nitrogen oxides, which would be emitted from stationary equipment such as boilers, generators, and parts cleaners. Significant net increases of these pollutants would invoke Prevention of Significant Deterioration review requirements, which are implemented by the State of Colorado Air Quality Control Commission, Regulation 3, Part D.

Greenhouse Gases

GHG are another air pollutant category of general concern. GHG are compounds in the atmosphere that absorb infrared radiation and reradiate a portion of it back to earth, thus trapping heat and warming the atmosphere. The most important GHG of concern are carbon dioxide, methane, and nitrous oxide. The overall global warming potential of GHG emissions is typically presented in terms of carbon dioxide equivalents (CO_2e), using equivalency factors developed by the Intergovernmental Panel on Climate Change.

In May 2008, Fort Carson became the first Army installation nationwide to perform a comprehensive carbon equivalent emissions analysis for its operations. This analysis was based on guidance provided in the GHG Protocol, A Corporate Accounting and Reporting Standard, 2007 (WBCSD, 2007). The protocol was established by the World Business Council on Sustainable Development in partnership with the World Resources Institute, with the goal of helping businesses, governments, and environmental groups engage climate change through the establishment of effective, credible programs. The Fort Carson carbon emissions analysis was developed for scope 1 and 2 sources on the installation for which it has total operational control. The scope sources include direct emissions (scope 1) including units such as boilers, furnaces, emergency generators and government-owned vehicles and indirect (scope 2) units such as emissions from local utilities which are estimated for the production of electricity that Fort Carson consumes. The model does not consider privately owned vehicles (POVs) operated on Fort Carson, or tenant operations other than Evans Army Community Hospital.

3.2.2 Environmental Consequences

Methodology for Analyzing Effects

Air pollutant emissions from demolition, construction and operations were evaluated using URBEMIS2007 for Windows Version 9.2.4. (URBEMIS). URBEMIS is used to estimate criteria pollutant emissions from construction and operation of land use development projects, and is released and approved for use by California Air Resources Board. URBEMIS is used by the South Coast Air Quality Management District, which is the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties, the smoggiest region of the U.S.

The construction emission estimates developed for this EA incorporated use of the URBEMIS California State-wide emission factors without mitigation controls enabled. This approach was used to demonstrate the most conservative estimates. The annual operational and area source emission estimates for the operation of family housing were also developed using URBEMIS except for electrical consumption emissions. These emissions estimates were derived using a spreadsheet model that incorporated data from Colorado Springs Utilities (CSU) and AP-42 emission factors. Table 3.2-1 is a summary of criteria pollutant emissions expected from building removal, construction and operations of family

housing. Since building removal is necessary prior to commencement of construction activities, equipment and vehicles use for building removal were combined with construction activities. Construction was evaluated in terms of six activity phases: building removal, mass grading, trenching, asphalt (paving), building (vertical construction), and exterior coatings.

Factors Considered for Effect Analysis

Factors considered in determining whether the Proposed Action or alternatives would have a significant effect on air quality are the following:

- If it were to generate significant quantities of criteria pollutant emissions in a calendar year that could contribute to local or regional exceedances of federal or state ambient air quality standards; or
- If it were to generate significant quantities of GHG emissions in a calendar year.

Summary of Effects

The Proposed Action would not have significant adverse effects from criteria pollutants or GHGs. Because the No Action Alternative would not change the present conditions at the project site, there would be no adverse effect on air quality.

Proposed Action

Construction

Air quality effects from the Proposed Action are primarily the result of temporary emissions from construction. The Proposed Action would require the operation of heavy equipment and construction vehicles for various activities, including site grading, excavating and pouring building foundations, installing buried and aboveground utility interconnects, erecting buildings, and paving roads and driveways. Also, there would be additional vehicle traffic to and from the project site associated with construction commuters and heavy trucks delivering construction materials and facility components. Construction would result in various sources of emissions, including engine exhaust, fugitive dust from site disturbance, fugitive organic compounds from surface coatings, such as paints and solvents, and fugitive organic compounds from curing asphalt. Standard management practices would be implemented as part of the Proposed Action, such as watering area of exposed soil and covering trucks with tarps, to reduce fugitive dust.

Operation and Maintenance

Minor long-term emissions would result from occupation of the new houses. Operation of the Proposed Action would introduce new sources of emissions, primarily vehicle traffic and ventilation systems. The emissions from these sources would be a fraction of the emissions generated during construction and would not generate significant quantities of criteria pollutant or GHG emissions. For these

reasons, operation and maintenance of the new houses would have a minor adverse effect on air quality.

Criteria Pollutants

Emission estimates presented in Table 3.2-1 indicate that the maximum annual unmitigated carbon monoxide emissions from demolition, construction and operation would be approximately 46.83 tons per year, well below the CAA conformity de minimis threshold of 100 tons per year. Furthermore, these maximum emissions (equivalent to 0.128 tons per day) are not considered regionally significant, as the established emissions inventory for 2015 in the State Implementation Plan is 409.35 tons per day, based on 149,412.75 tons per year (TPY) (CDPHE, 2003). Therefore, criteria pollutant emissions associated with the Proposed Action are considered minor, and no formal CAA conformity determination is required. A Draft Record of Nonapplicability (RONA) is provided as Appendix B.

Table 3.2-1.
Summary of Criteria Pollutant Emissions from Construction and Operations of Family Housing

Year	Annual Emissions, Tons Per Year					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2012	0.22	2.01	0.92	0.00	10.12	2.18
2013	4.08	21.90	10.99	0.00	75.67	16.50
2014	25.99	24.46	23.74	0.01	13.65	3.70
2015*	9.02	7.85	46.83	0.03	0.46	0.32
Maximum Annual Emissions	25.99	24.46	46.63	.03	75.67	16.50
CAA Conformity Threshold	**NA**	**NA**	**100**	**NA**	**NA**	**NA**

*Includes criteria pollutant emissions from operations
NA – not applicable
ROG – reactive organic compounds (ozone precursor)
NO_x – oxides of nitrogen (ozone precursor)
CO – carbon monoxide
PM_{10} – inhalable particulate matter
$PM_{2.5}$ – fine particulate matter
SO_x – sulfur oxides

Table 3.2-2.
Summary of GHG Emissions from Construction of Family Housing

Year	Annual Emissions, Tons Per Year		
	CO_2	N_2O	CO_2e
2012	189.28	2.01	789.15
2013	2,302.62	21.90	8,828.82
2014	4,136.16	24.46	11,425.99
2015	556.50	2.63	1,341.28
Maximum Annual Emissions	4,136.16	24.46	11,425.99

GWP – global warming potential in carbon dioxide equivalents (CO_2e)
CO_2 – carbon dioxide (GWP = 1)
N_2O – nitrous oxide (GWP = 298)
CO_2e – carbon dioxide equivalents

Greenhouse Gas Emissions

In addition to the criteria pollutant emissions summarized in Table 3.2-1, demolition and construction would generate GHG emissions from equipment engine exhaust. Table 3.2-2 is a summary of annual GHG emissions expected from building removal, construction and operation. Federal and state agencies have not yet established impact significance thresholds for GHG emissions. As can be seen by comparing Table 3.2-1 and Table 3.2-2, GHG emission quantities associated with proposed building removal and construction are much larger than the quantities of criteria pollutant emissions. The relative significance of GHG emission estimates in Table 3.2-2 can be interpreted in the context of available Colorado statewide GHG emissions. The Center for Climate Strategies (CCS, 2007) estimated that statewide GHG emissions in 2005 were approximately 118 million metric tons of CO_2e emissions, an amount equal to 1.7% of total U.S. GHG emissions. The maximum GHG emissions expected from the Proposed Action of 11,425.99 tons per year CO_2e would be only 0.0097 percent of statewide 2005 emissions. In addition, GHG emissions from building removal and construction would be temporary ongoing emissions. The expected short-term GHG emissions that would be produced are too small to be considered significant.

No Action Alternative

The No Action Alternative would not change or augment the existing emissions in the ROI. No effects are identified as resulting from the No Action Alternative.

3.3 NOISE

3.3.1 Affected Environment

Sources of noise associated with Fort Carson include military training operations, aircraft, and traffic. The military sources of noise are the firing of weapons and the operation of tactical vehicles and aircraft. Other sources of noise include motor vehicle traffic (for example, cars and trucks) and construction activities.

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities as part of everyday life, such as construction or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. A-weighing, described in a-weighted decibels (dBA), approximates this frequency response to express accurately the perception of sound by humans. Sounds encountered in daily life and their approximate level in dBA is provided in Table 3.3-1. Table 3.3-2 provides typical noise levels from construction equipment for reference.

Table 3.3-1
Common Sounds and Their Levels

Outdoor	Sound Level (dBA)	Indoor
Snowmobile	100	Subway train
Tractor	90	Garbage disposal
Noisy Restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway Traffic	70	TV audio
Normal Conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet Residential Area	40	Library

Source: Harris, 1998

Applicable sound quality criteria for Fort Carson are provided in the Fort Carson *Installation Environmental Noise Management Plan* (U.S. Army Center for Health Promotion and Preventive Medicine [USACHPPM], 2006). This plan outlines acceptable land uses based on noise contours that are compatible with the needs of the civilian community and the Army. Under its Environmental Noise Management Program, the Army describes the Installation Compatible Use Zone (ICUZ) program and defines locations with noise sensitive land uses that are

exposed to generally unacceptable noise levels. Noise sensitive land uses include, but are not limited to, residences, schools, medical facilities, and churches.

Table 3.3-2
General Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) 50 ft from Source
Air Compressor	81
Backhoe	80
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Roller	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Truck	88

Source: Federal Highway Administration, 2006

Metrics used by the Army to quantify the noise environment at Army installations are the A-weighted day-night average sound levels (ADNL). Day-night average sound level (DNL) is a time-weighted average sound energy over a 24-hour period; a 10-dB penalty is added to the nighttime levels (10 P.M. - 7 A.M.). These characteristics make it a useful descriptor for continuous noise, such as a busy highway, aircraft noise, or the ongoing components of repetitious blast noise. Furthermore, the Army uses three noise zones (NZ) to qualify the noise environment, NZ I, NZ II and NZ III. Each NZ is correlated with anticipated community annoyance. For example, less than 15 percent of the population would be annoyed by activities generating noise levels less than 65 dBA for NZ I, 15 – 39 percent of the population would be annoyed by activities generating 65 – 75 dBA

for NZ II, and greater than 39 percent of the population would be annoyed for noise generating activities exceeding 75 dBA. Table 3.3-3 outlines noise limits and zones for land use planning.

Table 3-3.3.
Noise Zone Limits

Noise Zone	Percent Population Highly Annoyed	Small-arms PK15(met)	Transportation and Small Arms (ADNL)	Recommended Uses
I	<15	< 87	< 65 dBA	All types of land use activities
II	15 – 39	87–104	65–75 dBA	Industrial, manufacturing, transportation, and resource production
III	>39	> 104	> 75 dBA	So severe that noise sensitive land uses should not be considered therein

Source: USACHPPM, 2006

The portions of the cantonment area where the Proposed Action would be implemented are defined as NZ I and would be suitable for noise-sensitive land use activities including housing.

3.3.2 Environmental Consequences

Methodology for Analyzing Effects

Potential effects of the Proposed Action and No Action Alternative on noise were evaluated by examining the typical noise generated by construction and operational activities, compared to Department of Defense (DoD) guidance regarding noise exposure and distance to nearby sensitive receptors.

Factors Considered for Effects Analysis

Factors considered in determining whether an alternative would have a significant effect are the extent to which its implementation would generate temporary noise during construction or long-term noise during operation and maintenance that would exceed DoD or applicable regulatory standards.

Summary of Effects

The Proposed Action would introduce temporary noise from construction and new operational noise sources, such as ventilation systems and vehicle traffic; however,

these effects would be minor adverse, as described below. Because the No Action Alternative would not change the present conditions at the project site, there is no anticipated adverse effect from noise.

Proposed Action

Construction

Construction noise could temporarily disturb military family housing west and south of the Cherokee Village site across from Harr Avenue and Ellis Street, respectively. In addition, family housing areas adjacent to the OHS to the north and south, across Woodfill Road, could be temporarily disturbed. All adjacent housing areas would be exposed to construction related activities over the span of approximately 19 to 23 months. Construction-related noise generally produces levels of 80 to 90 dBA at a distance of 50 feet. The houses are at least 100 feet from the edge of construction, so noise levels would not exceed 90 dBA. Noise generally attenuates by 6 dB for each doubling of distance, so only the houses nearest the edge of construction would experience levels near 80 to 90 dBA. In addition, standard building construction provides average noise dampening of 20 dB, indoor noise levels would be even lower. Construction would also be limited to daytime. Because construction noise would be temporary, would affect a limited area, and would be limited to daytime, effects would be minor adverse.

Operation and Maintenance

The Proposed Action would introduce new sources of sound, such as ventilation systems and vehicle traffic. These are typical sources of background noise in any residential area and would not likely be perceived as unwanted or annoying sound; therefore, effects from these new sound sources would be minor adverse.

No Action Alternative

Under the No Action Alternative, there would be no noise impacts.

3.4 GEOLOGY AND SOILS

3.4.1 Affected Environment

Geologic and Topographic Conditions

The majority of Fort Carson lies at elevations between 5,500 and 6,000 feet above mean sea level. Geologic units at Fort Carson range in age from the Quaternary period (one million years before present to recent) to the Pennsylvanian period (200 to 250 million years before present). During the Quaternary period both consolidated and unconsolidated sediments were deposited.

Unconsolidated sediments consist primarily of fluvial and alluvial sands, silts and gravels, and wind-deposited silts and sands. Consolidated sediments include shale, limestone, hard sandstone, siltstone, claystone, and conglomerate sandstone and shale. Three main fault lines exist within the region of Fort Carson - the Oil Creek, Ute Pass, and Rampart Range faults. The region is rated Zone 1 for earthquake potential on a scale of zero to four, with a rating of four having greatest earthquake potential. Small earthquakes are known to occur in the region with generally undetectable effects (DECAM, 2007b).

Prime Farmland

The Farmland Protection Policy Act of 1981 requires federal agencies to consider the impact of any activity that would convert prime or unique farmlands to non-agricultural uses. The Natural Resource Conservation Service regulates compliance with the law (7 CFR Part 658). Fort Carson has not used land for agricultural use since 1973 (DPW, 2009). The soils within the project area are located within the limits of an existing military installation and are therefore considered public lands. Public lands cannot be considered prime farmlands. Therefore, farmlands would not be converted as part of the Proposed Action, and no action is required under the Farmland Protection Policy Act. Prime farmland is not analyzed further in this EA.

Soils

Thirty-four soil categories and 65 soil associations have been recognized on Fort Carson. These soils contain a high shrink-swell potential. Shrink-swell potential is the loss or gain of water in soil with soils increasing in volume with increasing moisture. Soil erosion, primarily from water runoff, is a significant problem on the installation. Soils of greatest concern for erosion control are clays, silty clays, and clay loams.

The soil compositions of the sites evaluated under the Proposed Action were collected from the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (USDA, 2011) and descriptions were taken from the Soil Survey of El Paso County Area, Colorado (USDA, 1981). The soil types that would be potentially affected by the Proposed Action are Razor-Midway complex and Nunn clay loam.

Soils at the Cherokee Village site are Razor-Midway complex. The Razor soil make up about 50 percent of the complex, the Midway soil about 30 percent and other soils about 20 percent. Collectively, the soil is moderately deep, well drained with its permeability slow. Surface runoff is medium to rapid with the hazard of erosion being moderate to high. Razor-Midway soil is difficult to re-vegetate. The main limitations for development are depth to shale, slow permeability, shrink-swell potential and slope.

Soil present at the proposed OHS site is Nunn clay loam, 0 to 3 percent slopes, which is a deep, well-drained soil. Permeability of this soil is moderate. Available water capacity is high. Surface runoff is slow to medium, and the hazard of erosion is slight. The main limitations of this soil type for urban use are its moderately slow permeability, low strength, and shrink-swell potential characteristics. Buildings and roads should be designed to overcome these limitations (USDA, 2011).

3.4.2 Environmental Consequences

Methodology for Analyzing Effects

The Proposed Action was evaluated for adverse effects on people and the environment in the context of geologic conditions in the ROI. It was evaluated to determine the significance of the change to the geologic environment, if any, with respect to the factors identified below.

Factors Considered for Effects Analysis

Considered in determining whether the Proposed Action would have a significant effect on geology is the extent to which its implementation would do the following:

- Increase the exposure of people or structures to geologic hazards;
- Cause a substantial loss of soil (such as through increased erosion);
- Conflict with federal, state, or local statutes or regulations; or
- Alter the function of the landscape (for example, altering drainage patterns through large-scale excavation, filling, or leveling).

Summary of Effects

Under the Proposed Action, short-term adverse effects from erosion are anticipated during construction. The Proposed Action may also have minor adverse effects from expansive soils. There would be no effects from the No Action Alternative.

Proposed Action

Under the Proposed Action, the project would employ a qualified geotechnical engineer and structural engineer would be employed for siting of facilities, foundation seismic design, and soil stabilization.

Erosion

During construction, ground disturbance could increase the potential for soil erosion from wind and water. However, the effects would be temporary and would be reduced by implementing Best Management Practices (BMPs). Wind erosion would be reduced by using common dust suppression techniques, such as regularly watering exposed soils and soil stockpiles and by stabilizing soil. Excavation, grading, trenching, and other earth-disturbing activities may expose soils to runoff and create water erosion. Soil loss from construction is anticipated to be primarily from water erosion due to the properties and moisture content of the soils. Water erosion would be reduced by implementing BMPs for stormwater pollution prevention. Additionally, the ground surfaces for the sites under the Proposed Action have a shallow grade. Cherokee Village slopes slightly in all directions while the OHS is relatively flat, which would minimize the potential for water erosion. Stormwater BMPs include building during the summer when rainfall potential is low, using silt fences and constructing sediment traps to prevent eroded soil from being transported off-site, and contouring to stop drainage from entering the site and to prevent run-on. Temporary and permanent erosion and sedimentation control measures would be implemented. As a result, the Proposed Action would have minor adverse effects from erosion.

Expansive Soils

Fine-grained clay sediments or expansive soils, such as those at the project sites, often have a high shrink-swell potential. Where expansive soils are present, structural damage may occur over a long period. Standard construction practices, as described in the current Uniform Building Code, would dictate the types of engineering needed for construction in areas of high shrink-swell potential. Standard BMPs used to ensure that effects from expansive soils are minor are as follows:

- Designing foundation types to account for changing soil patterns;
- Special earthwork preparation to keep the moisture regime near constant;
- Use of reinforcing concrete slabs;
- Measures to ensure drainage would be directed away from foundations and roadways; and
- Foundation studies to identify appropriate site-specific measures.

As a result of implementing BMPs, the Proposed Action would have minor adverse effects on expansive soils.

Seismicity

The Proposed Action would comply with the International Building Code (2006), UFC 1-200-01, and Occupational Safety and Health Administration excavation standards for protection from seismic hazards, which would ensure minor adverse effects from seismic events.

No Action Alternative

Under the No Action Alternative, use of the site would not change, and no large-scale ground disturbing activities would occur. No adverse effects on the geology, soils, and seismicity are expected under the No Action Alternative.

3.5 WATER RESOURCES

3.5.1 Affected Environment

Fort Carson is required to eliminate or minimize the degradation of all water resources on Fort Carson and ensure compliance with all applicable federal, state and local water quality standards (Army Regulation 200-1) (Army, 2007). Water resources are managed in coordination with the U.S. Geological Survey, Natural Resource Conservation Service, U.S. Fish and Wildlife Service, U.S. Department of Justice, U.S. Army Corps of Engineers (USACE), U.S Environmental Protection Agency, and the Colorado State Division of Water Resources (DECAM, 2007b). The *Water Resources Management Program* on Fort Carson includes watershed/sedimentation monitoring and management and project reviews to address erosion and sediment control issues. In addition, the *Stormwater Management Plan* (DPW, 2010a) is designed to reduce the discharge of pollutants from Fort Carson to drainage ways, to protect water quality, and to satisfy Colorado's water quality standards.

Surface Water

The northern and eastern portions of Fort Carson are located within the Fountain Creek watershed of the Arkansas River Basin and drain southeasterly into Fountain Creek. Stormwater runoff in the northern portion of the installation flows into one of four main drainages: B-Ditch, Clover Ditch, Unnamed Ditch or Rock Creek, which are all tributaries of Fountain Creek. The surface runoff of the proposed project sites drain into Unnamed Ditch, which is the only surface water within the proposed project vicinities.

Historically, these drainages have been considered ephemeral or intermittent with no flow occurring in some reaches for long periods of time during the year, and high flows occurring between April and September. However, modern conditions within the watershed have changed the system dynamics, which now typically exhibit perennial flows in most areas of these northern-most drainages. The majority of flows consist of runoff (from precipitation and snowmelt), which has increased due to higher percentages of impervious surface.

Stormwater

The Fort Carson Stormwater Program's main objective is to protect surface waters from pollution. Stormwater runoff can carry physical, chemical, and biological pollutants to sewer systems or directly to a pond, creek, river, or wetland. Therefore, construction and post-construction stormwater controls are assessed on a watershed level during project planning phases.

Section 438 of the Energy Independence and Security Act of 2007 requires that, if the post-development footprint of new surfaces (sidewalks, buildings, parking, non-vegetated landscaping, etc.) exceeds 5,000 square feet, then post-development stormwater controls are required to return the developed area to predevelopment hydrology. However, retention and/or detention for stormwater control are not

allowed on Fort Carson due to regulatory water rights issues and permit requirements, respectively. Instead, Low Impact Development (LID) is required. In accordance with Fort Carson's *Stormwater Management Plan (SWMP)* (DPW, 2010a), the difference in discharge between the predevelopment hydrology and the proposed impacted condition will be the minimal target amount required to be mitigated through permanent BMP design. BMP design should address storms with a five-year return period or less (plus 10%) and should account for the pre-development temperature, discharge rate, volume, and duration of flow. The BMP designs should be constructed to mitigate the change in flow and volume while passing the 25-year native flow characteristics downstream.

The USEPA administers two stormwater permit types on Fort Carson that apply to the Proposed Action; the Municipal Separate Storm Sewer System (MS4) and the Construction General Permit. Fort Carson's MS4 permit goals are to maximize the utilization of multiple BMP placements at each new development site by focusing on LID BMPs.

MS4

Under the National Pollution Discharge Elimination System (NPDES) stormwater program, operators of regulated MS4s, which includes all of Fort Carson, require authorization to discharge pollutants under a NPDES permit. The USEPA's Phase II MS4 permit for federal facilities in Colorado expired in June, 2008. However, the USEPA issued an individual MS4 permit to Fort Carson on April 30, 2009.

The USEPA and Fort Carson manage NPDES MS4 stormwater permit requirements in accordance with Fort Carson's MS4 permit (USEPA, 2009) and SWMP (DPW, 2010a). Contractors must coordinate with DPW-Stormwater prior to construction of any BMPs to ensure compliance with the MS4 permit and SWMP.

Construction General Permit

Construction projects are authorized to discharge stormwater runoff from construction sites under a NPDES Construction General Permit. To obtain coverage under the general permit, contractors must coordinate with DPW-Stormwater and receive concurrence prior to submitting a notice of intent (NOI) for each construction project that disturbs one acre or more of land. In addition, contractors must develop and implement a SWPPP for each project and comply with the additional BMPs set forth in the SWMP (DPW, 2010a). Contractors may eliminate NPDES permitting requirements by filing for a Low Erosivity Waiver (LEW) certification, if applicable (DPW, 2010a). Contractors may file for a LEW if a project is between one and five acres, has a short duration, and an early projected start date that would allow sufficient time reestablish vegetation. A LEW, however, does not eliminate contractor responsibility for implementing management practices that prevent sediment and other contaminants from leaving the project area and discharging into local drainages and storm drains.

Hydrogeology and Groundwater

Groundwater at Fort Carson exists in both alluvial and bedrock aquifers. Alluvial aquifers are formed from unconsolidated deposits of stream alluvium, colluvium, and residuum derived from Pierre Shale that are moderately permeable. The alluvial aquifers can provide well yields from 10 to more than 100 gallons per minute (gpm) (Leonard, 1984). In much of the Arkansas River Basin, hydraulic heads are lower in the deep bedrock aquifers than those in the shallow formations, which indicate that deep bedrock aquifers are not in hydrological connection with the shallow formations. The primary bedrock aquifer at Fort Carson is the Dakota-Purgatoire aquifer, which can yield 10 gpm, although local fracturing can increase permeability and yield more than 200 gpm. Precipitation and stream flow infiltration recharge the bedrock aquifers (Leonard, 1984).

In general, the quality of groundwater on Fort Carson is good with the exception of localized areas of elevated nitrates, high dissolved solids, and sulfates exceeding secondary drinking water standards. Nitrates have recently been detected in the groundwater at multiple locations greater than the regulatory standard of 10 milligrams per liter. Fort Carson and CDPHE have been collaborating to evaluate the possibility that elevated concentrations of nitrates may be naturally occurring as a result of groundwater coming in direct contact with the shale bedrock (DECAM, 2005).

Fort Carson has 16 subsurface well water rights, including nine wells for domestic or military use, at Fort Carson. Seven wells classified as future wells are planned to be installed when needed (DECAM, 2007b). Water rights directly support the training mission by ensuring adequate water supplies for the support and rehabilitation of natural resources on Fort Carson, and to provide training capabilities and fire suppression.

Floodplains

Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. To accomplish this objective, the Army is required to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains for certain federal actions. The acquisition, management, and disposal of federal lands and facilities are specific qualifying federal actions addressed within the EO. Subsequently, the EO requires the application of accepted flood-proofing and other flood protection measures for new construction of structures or facilities within a floodplain. Agencies are required to achieve flood protection, wherever practicable, through elevation of structures above the base flood level rather than filling in land.

Fort Carson's 100-year floodplain map is described in the installation SWMP (DPW, 2010a). Each of the sites under the Proposed Action are outside of the 100-year floodplain.

3.5.2 Environmental Consequences

Methodology for Analyzing Effects

The evaluation of potential effects on water resources is based on the project's potential to affect water quality, surface water runoff volumes and drainage patterns, and flood hazards.

Factors Considered for Effects Analysis

An alternative is considered to have a significant effect on the resource if they result in any of the following:

- Degradation of surface or groundwater quality in a manner that would reduce the existing or potential beneficial uses of the water;
- Noncompliance with existing or proposed water quality standards or with other regulatory requirements related to protecting or managing water resources;
- Alteration of the pattern of surface or groundwater flow or drainage in a manner that would adversely affect the uses of the water within or outside the project region; or
- Increased potential for flooding or the amount of damage that could result from flooding, including flooding from runoff.

Summary of Effects

Short-term, minor adverse effects from silt runoff and water quality degradation on these resources are anticipated during project construction. Under the Proposed Action, there would be no effects on water resources because project infrastructure design would follow BMPs to prevent an increase in the potential for flood hazards.

There would be no effects under the No Action Alternative.

Proposed Action

During construction of the new buildings and supporting infrastructure, there would be an increased potential for water quality degradation due to silt runoff from disturbed areas at the construction site. Effects on water quality would be short term and minor.

Compliance with stormwater discharge requirements under the NPDES permit program requires construction projects that would disturb one acre or more to obtain permit coverage, which involves preparing a site-specific stormwater pollution prevention plan (SWPPP). On federal installations, the administration of the NPDES permit program is the USEPA. The Proposed Action would include engineering BMPs for erosion and sediment control and implementation of a SWPPP. Erosion and sediment control measures used during construction are expected to prevent water quality degradation from stormwater runoff. Implementing Phase II stormwater management regulations of the CWA and

construction BMPs would ensure that nonpoint source contamination of surface water is minor adverse.

Increases in stormwater runoff may occur as a result of an increase in impervious area at the project construction sites for new roads and infrastructure, as compared to existing undeveloped conditions. Federal legislation directs the implementation of low impact development as an “integrated design” approach to new construction. This approach includes the use of bio-retention cells, soil amendments, revegation, permeable pavement (asphalt, concrete, pavers or blocks), grass and bio-swales, green roofs, and other techniques to limit stormwater runoff to predevelopment hydrology to the maximum extent technically feasible (US Army 2010). To comply with this mandate, the new residential area would be designed to respect the natural systems of topography and drainage and to ensure that stormwater is conveyed away from structures and directed to drainage and infiltration systems.

The new storm drainage system would include water detention and quality control structures, which would be built to ensure that post-development peak flow discharges were equal to or less than predevelopment peak flow discharges, with both discharges based on a 100-year frequency storm. The Proposed Action would include culverts and drainage swales designed to withstand a 100-year flood. Potential increases in runoff would likely be offset by surface-holding impoundments and other BMPs. Consequently, conditions that would increase the potential for flood hazards are not expected.

No Action Alternative

Under the No Action Alternative, conditions affecting water quality, surface runoff volumes, drainage, or flood hazards would remain approximately as they are. Currently, no effects on water resources are believed to occur as a result of activities in the ROI. Under the No Action Alternative, the project site would remain unchanged. Any projects involving major changes to the project site, if proposed, would require preparation of additional NEPA documentation. Since no major changes are anticipated under the No Action Alternative, no effects on water resources are expected.

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3.6 BIOLOGICAL RESOURCES

3.6.1 Affected Environment

Biological resources on Fort Carson exist primarily on the training ranges. The cantonment area is highly disturbed and developed. The limited areas with vegetation are covered mostly by non-native landscaped vegetation and turf grasses.

Vegetation

The cantonment area, within which the new family housing would be located, is highly disturbed and developed, and vegetation consists primarily of non-native ornamental landscaping turf and landscape trees. Only small areas of native vegetation remain within the cantonment area. Vegetation in these areas is frequently composed of species introduced to Colorado including green ash, non-native hackberry, honey-locust, and bluegrass. Exotics such as the Russian olive and planted native species including ponderosa and pinyon pines are also present. Native riparian corridors dominated by native plains cottonwood with an understory composed of chokecherry, coyote willow, snowberry, are present in the cantonment area; these riparian communities are often invaded by non-native species such as Japanese brome, Eurasian tansy mustard, green ash, and Russian olive.

The Cherokee Village (Figure 3.6-1), OHS (Figure 3-6.-2), CDCs and contractor construction lay down yard sites are sparsely vegetated and contain a mixture of non-native introduced species, native vegetation communities and a few trees from previous landscaping.

Noxious Weeds

There are 22 noxious weeds known to occur on Fort Carson. Only one, Myrtle spurge (*Euphorbia myrsinites*) is considered a List A species in Colorado. List A species are those considered so potentially damaging (and not yet widespread throughout the state) that they are designated for eradication. List B weed species are species for which state management plans are developed to stop their continued spread.

There are 14 known List B weed species on Fort Carson. They are Canada thistle (*Cirsium arvense*), common teasel (*Dipsacus fullonum*), diffuse knapweed (*Centaurea diffusa*), hoary cress (*Cardaria draba*), houndstongue (*Cynoglossum officinale*), leafy spurge (*Euphorbia esula*), Musk thistle (*Carduus nutans*), Redstem filaree (*Erodium cicutarium*), Russian-olive (*Elaeagnus angustifolia*), salt cedar (*Tamarix chinensis, T. parviflora,* and *T. ramosissima*), Scotch thistle (*Onopordum acanthium*), spotted knapweed (*Centaurea maculosa*), perrenial pepperweed (*Lepidium latifolium),* and yellow toadflax (*Linaria vulgaris*).

List C weed species are species for which the Colorado Department of Agriculture Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, would develop and implement state noxious weed management plans designed to support the efforts of local governing bodies to facilitate more effective integrated weed management on private and public lands. The goal of such plans would not be to stop the continued spread of these species but to provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species. List C weed species known to occur at Fort Carson include: common burdock (*Arctium minus*), common mullein (*Verbascum thapsus*), common St. Johnswort (*Hypericum perforatum*), downy brome (*Bromus tectorum*), field bindweed (*Convolvulus arvensis*), jointed goatgrass (*Aegilops cylindrica*), poison hemlock (*Conium maculatum*), and puncturevine (*Tribulus terrestris*).

Figure 3.6-1. Photograph of Cherokee Village Site Vegetation.

List C species are those that have become so widespread that eradication is impossible and species-specific control would be extremely difficult if not impossible. Therefore, measures for control of these species apply to all weeds in general and are geared towards education and BMPs to help suppress populations. On Fort Carson, the weed species of most concern are myrtle spurge, dalmation, yellow toadflax, leafy spurge, and Scotch thistle. As part of the

federal mandate to control noxious weeds as directed in *Section 15 of the Federal Noxious Weed Act of 1974, "Management of Undesirable Plants on Federal Lands,"* Fort Carson has developed the *Fort Carson and PCMS Invasive Plants Management Plan* (DECAM, 2008a). The plan addresses noxious weed management strategies for Fort Carson through 2012 and is reviewed and updated each year, if necessary.

Figure 3-6-2. Photograph of Old Hospital Site Vegetation.

In 1997, Fort Carson initiated a biological control program as part of a federal initiative to reduce herbicide use by up to 80 percent. The program, using natural enemies (insects and mites) to reduce weed densities, provides a sustainable and environmentally-sound solution to noxious weed issues, while preserving the vulnerable plant and animal communities on Fort Carson. The biological control program has been successful at significantly reducing weed populations at several sites and has grown into a partnering initiative with several other federal agencies along the Colorado Front Range.

Known noxious weeds within the new family housing areas are List C type (i.e. field bindweed, common mullein, downy brome). No List A or List B weeds are known to occur within the proposed areas.

Wildlife

There are no federally-listed endangered, threatened and candidate species of concern, or state-listed species and species of concern known to occur or have the potential to occur at the sites under the Proposed Action.

Waters of the U.S.

In 2008, the USACE re-issued a Regional Permit under Section 404 of the Clean Water Act (33 U.S.C 1344) for *Fort Carson and the PCMS Erosion Control Activities* (USACE, 2008). This regional permit authorizes Fort Carson to conduct erosion control activities that may result in minimal individual and cumulative impacts to wetlands from dredge and fill activities. Typical erosion control measures include bank sloping of erosion courses, check dams, rock armor, hardened crossings, culverts and bridges, erosion control terraces and water diversions, water turnouts, and other erosion control activities approved by USACE.

Fort Carson is included in the National Wetlands Inventory database maintained by the U.S. Fish and Wildlife Service (USFWS). Original data showed 487.9 acres of wetlands on Fort Carson, but the current estimate is approximately 1,028 acres (DECAM, 2007b).

Wetlands on Fort Carson are generally characterized as linear (e.g., streambeds) or small and isolated. There are a number of wetland areas scattered throughout the cantonment area, typically in natural or stormwater runoff drainages (DECAM, 2007b).

None of the sites under the Proposed Action are classified as or in close proximity to designated wetlands according to the SWMP (DPW, 2010a). However, all sites drain directly or indirectly into Unnamed Ditch which directly flows into a federally-recognized freshwater emergent wetland. This wetland is adjacent to and southeast of the Butts Road and Tank Road intersection, which is approximately 1.25 miles southeast of the OHS. Because the wetland is federally-recognized, it falls within the jurisdictional control of USACE and would require appropriate coordination for any activities that may cause disturbances to water quality.

3.6.2 Environmental Consequences

Methodology for Analyzing Effects

Effects were assessed based on how the Proposed Action and No Action Alternative would affect biological resources primarily in the ROI, with an emphasis on sensitive biological resources protected by federal and state law, and Army guidance.

Factors Considered for Effects Analysis

An action is considered to have a significant adverse effect on biological resources if it would result in any of the following:

- Cause the "take" of a highly sensitive resource, such as a threatened and endangered or special status species;
- Result in a jeopardy biological opinion by the USFWS;
- Reduce the population of a sensitive species, as designated by federal and state agencies, or a species with regional and local significance. This can happen with a reduction in numbers, by alteration in behavior, reproduction, or survival, or by loss or disturbance of habitat;
- Damage or degrade wetlands or riparian habitat regulated by the local, state, or federal government or another sensitive habitat, such as designated critical habitat, identified in local or regional plans, policies, or regulations or by the USFWS;
- Interfere with the movement of any native resident or migratory wildlife species (including aquatic species) or with established native resident or migratory wildlife corridors;
- Alter or destroy habitat that would prevent biological communities in the area from reestablishing themselves;
- Introduce or increase the prevalence of undesirable nonnative species; or
- Cause long-term loss or impairment of a substantial portion of local species-dependent habitat.

An effect is considered significant but mitigable if the result of the Proposed Action would have a significant effect on biological resources but compensatory mitigation is included to reduce the level of effect to below significant levels.

Summary of Effects

The Proposed Action would have minor adverse effects on biological resources. There would be no effects from the No Action Alternative.

Proposed Action

There are no sensitive biological resources in or next to the ROI, so the effects on biological resources from implementing the Proposed Action would be adverse but minor. Permanent effects would occur from converting a small undeveloped field into housing and another into a CCLY. These effects are minor because of the highly disturbed nature of the biological resources at the project sites.

Vegetation

The sites considered under the Proposed Action would involve little adverse impact as it is mostly disturbed, and vegetation consists primarily of non-native grasses and landscape trees. Only small areas of native vegetation remain.

Wildlife

Wildlife species that occur within the sites are mostly urban-adapted species such as red fox, pigeons, etc. Minor adverse effects on wildlife are expected to result from the construction, demolition, and operational activities. The sites are already subject to high levels of human activity, considered to be highly developed and disturbed, and not known to permanently support any sensitive species or habitat. To minimize impacts to nesting birds, any tree removal activities should occur between September and January.

Wetlands

The Proposed Action would not significantly impact federally-designated wetlands. Both of the proposed family housing areas discharge indirectly and directly into Unnamed Ditch which flows in a southeasterly direction into a freshwater emergent wetland. The wetland is located approximately 1.25 miles away from the OHS and is adjacent to the intersection of Bad Toelz Road and Butts Road. As required by law and Fort Carson, appropriate BMPs would be established to mitigate erosion caused by construction and operational activities. Additionally, there would be no net loss of wetlands due to the Proposed Action.

No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed, so there would be no related effects. The highly disturbed vegetation community on the project site would remain and would gradually change in vegetative composition and structure but would remain dominated by non-native vegetation for the foreseeable future, in the absence of any management.

3.7 CULTURAL RESOURCES

3.7.1 Affected Environment

Archeological and historical studies have been conducted on Fort Carson for the past 60 years. A comprehensive review of the work conducted on behalf of the Army is contained in the *Integrated Cultural Resources Management Plan* (ICRMP) (DECAM, 2002b). Prehistoric and historic National Register-eligible sites are known to occur throughout the installation. However, the cantonment area, including the six sites affected by the Proposed Action, has been surveyed for cultural resources and is devoid of known prehistoric sites. One historic district, the Incinerator Complex, remains within the cantonment area near Gate 20 and would not be affected by the Proposed Action.

In March 2010 and October 2011 Fort Carson consulted with the Colorado State Historic Preservation Office (COSHPO) concerning the potential impacts of the Proposed Action on Building 5510 and the OHS, respectively. Regarding Building 5510, Fort Carson received concurrence from the COSHPO on its assessment that the building is not eligible for the National Register of Historic Places (NHRP) and that there would be no historic properties affected under Section 106 for the deconstruction of the building (COSHPO, 2010). Fort Carson also received concurrence from the COSHPO in November 2011 regarding its assessment of the Old Hospital Site that it no longer be considered eligible for the NHRP. Additionally, the COSHPO concurred that the remaining individual buildings within the OHS are not eligible for the NHRP (COSHPO, 2011), which would allow use of the site for use as new Soldier housing. Copies of COSHPO correspondence are included in Appendix C.

Upon conducting any ground disturbance activities on Fort Carson, the following two requirements apply:

- Comply with management and treatment strategies for cultural resources on Fort Carson for compliance with Sections 110 and 106 of the National Historic Preservation Act. These are addressed in the following documents: a 1980 Memorandum of Agreement between Fort Carson, the COSHPO, and the Advisory Council on Historic Preservation and the 2002 ICRMP.
- In the event that cultural materials and/or human remains are uncovered in the course of ground-disturbing activities during construction, Fort Carson's Inadvertent Discovery of Archaeological Resources, which is located in Appendix D would be applied and enforced.

Native American consultation would not be necessary for the housing project unless human remains are discovered during construction activities, which would result in Fort Carson entering into Native American Graves Protection and Repatriation Act (NAGPRA) consultation with the appropriately identified Native American tribes for Fort Carson-administered lands.

3.7.2 Environmental Consequences

Methodology for Analyzing Effects

The methods for assessing potential effects on cultural resources are identifying significant cultural resources in the ROI under the Proposed Action and determining potential direct and indirect effects on these resources. Identified resources are described above.

Effects on cultural resources are evaluated in terms of significance. A significant effect is defined as expected and unmitigable on known cultural resources. An effect on a known cultural resource or a likely effect on unknown cultural resources that could be mitigated is considered to be significant but mitigable to less than significant (minor). This category also includes unlikely or unanticipated effects on known or unknown cultural resources that could be mitigated. A minor (less than significant) effect would be one on NRHP-ineligible cultural resources or cultural resources not of concern to Native Americans, historical societies, or agencies. If, during project implementation and operation, no cultural resources were identified or discovered, then the project would not have any effects on cultural resources.

Factors Considered for Effects Analysis

The factors that determine the significance of potential effects on cultural resources in an ROI are based on the federal laws and regulations that set the standards for cultural resources protection.

Section 106 of the NHPA requires that federal agencies consider the possible effects of their actions on historic properties in their boundaries. In addition to archaeological and architectural sites, eligible properties can also be those resources considered significant for their importance to Native American groups. Section 106 and its implementing regulations state that an undertaking has an adverse effect on a historic property (an NRHP-eligible or listed resource) when that undertaking may alter those characteristics of the property that qualify it for inclusion on the NRHP.

Under Section 106, an undertaking is considered to have an adverse effect on a historic property when it diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects include the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property or alteration of its setting when that character contributes to the property's qualifications for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or changes that may alter its setting;
- Neglect of a property, resulting in its deterioration or destruction; and
- Transfer, lease, or sale of a property without adequate provisions to protect its historic integrity.

Traditional and ethnographic resources, including sacred sites, burials, and cultural items, are also protected under the American Indian Religious Freedom Act (AIRFA), Archaeological Resources Protection Act (ARPA), and NAGPRA, whether or not they are considered to be eligible for inclusion in the NRHP. Factors considered in determining whether an action would have a significant effect on cultural resources include the extent or degree to which its implementation would have an adverse effect on a historic property or traditional cultural property, as defined under Section 106 of the NHPA, or would violate the provisions of AIRFA, ARPA, or NAGPRA.

An adverse effect on a historic property, as defined by the NHPA, is not necessarily a major adverse effect under NEPA. While mitigation under the NHPA does not necessarily negate the adverse nature of an effect, mitigation under NEPA can reduce its significance. NHPA and NEPA compliance are separate and parallel processes, and the standards and thresholds of the two are not precisely the same.

Public concerns are also considered as part of effects analysis under NEPA. The concerns expressed by the public during previous analyses emphasized the following needs:

- Continuing access to traditional and religious sites for ceremonial purposes and to hunting and gathering areas;
- Protecting and preserving archaeological and traditional sites;
- Interpreting significance based on Native American tradition and the knowledge of community elders and for community involvement in managing cultural resources on Army land; and
- Complying with federal and state laws and regulations concerning cultural resources protection.

Summary of Effects

The Proposed Action is expected to have no effects on cultural resources, and there would be no effects from the No Action Alternative.

Proposed Action

No adverse impacts are anticipated as the construction would occur primarily on previously disturbed area within the heavily developed cantonment area, and as stated above, the cantonment area has been completely surveyed for historic properties and is devoid of known prehistoric sites. In addition, Fort Carson has received concurrence from the SHPO to remove the buildings within the OHS buffer zone and replace with new family housing units.

No Action Alternative

Under the No Action Alternative, there would be no impacts to cultural resources.

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3.8 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section describes the affected environment and environmental consequences for economic development and the protection of children from environmental health and safety risks. Other socioeconomic elements related to the Proposed Action are discussed extensively in the *Final Environmental Impact Statement for Implementation of Fort Carson Grow the Army Stationing Decisions Grow the Army* (DPW, 2009) and will not be addressed further in this EA.

3.8.1 Affected Environment

Implementing the Proposed Action could have impacts that are concentrated in a geographical area referred to as the region of influence (ROI). The definition of the ROI considers local residential, shopping, and commuting patterns. The ROI is intended to encompass the geographical area within which linkages are strongest between businesses involved in construction activities and the long-term operation of the new facilities.

The ROI for the Proposed Action at Fort Carson comprises three counties: El Paso, Fremont, and Pueblo. Fort Carson, where all of the construction activity would occur, is located in southern El Paso County. Virtually the entire Colorado Springs urbanized area is located north of the installation and contained within El Paso County. Adjacent portions of surrounding counties are also a part of the Colorado Springs functional economic region, including Fremont County to the southwest, and Pueblo County to the south.

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires federal agencies to identify and address disproportionate adverse effects of Proposed Actions on minority populations and low-income communities. Because the Proposed Action would occur within the cantonment area of Fort Carson, where there are no classified and/or concentrated minority or low-income populations, no direct effects would occur. In addition, any direct effects as a result of improving family housing would be considered beneficial and not adverse. Therefore, the Proposed Action would not have any adverse effect on human or socioeconomic resources and complies with the requirements of Executive Order 12898.

Employment

In 2010, the Colorado Department of Labor and Employment (CDLE, 2011) indicated that there were more than 2.4 million jobs in Colorado, of which about 393,000 were military and federal/civilian jobs.

Approximately 392,000 people were employed in the ROI in 2010, 76 percent of whom worked in El Paso County (CDLE, 2011). In El Paso County, the largest share of employment is federal, with 9.8 percent being military and military-related civilian jobs. The retail trade sector employed 9.7 percent, and state and local government accounted for 9.7 percent (BEA, 2011). In Fremont and Pueblo

counties, employment in state and local government contributes substantially to both economies. The largest employers in El Paso County are the major military installations, with the proportion of military employment in the county being much higher than the ROI and the state.

The unemployment rate in all counties of the ROI gradually increased from an average low of three percent in 2000 to an average of 10.1 percent in 2010. In 2000, the unemployment rate of the State of Colorado was approximately three percent and in 2010 it was 8.9 percent. As of September 2011, the average unemployment rate was 7.6 percent in Colorado, and 9.1 within the ROI (CDLE, 2011).

Protection of Children

EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," seeks to protect children from disproportionately incurring environmental health or safety risks that might arise from government policies, programs, activities, and standards. Children are present on Fort Carson in a number of settings within the cantonment area, including family housing neighborhoods, elementary and secondary schools, day care centers, and recreational areas. The Fountain-Fort Carson School District website shows that 2,322 children are enrolled in the schools on Fort Carson. Of the 2,322 children enrolled, 1,817 were in elementary and 505 were in Middle school, while high school students are bused to a school outside of the installation.

Local Economy

The Pikes Peak Area Council of Government's (PPACG) *Fort Carson Regional Growth Plan, Phase II (2008-2010)* key findings are summarized here, and to demonstrate the impact of Fort Carson on the local and regional economy (PPACG, 2010). The 2009 annual expenditures from Fort Carson construction and operation, Soldier income, and Department of the Army (DA) civilian incomes provide an estimated $1.7 billion in direct stimulus for the state and regional economy. Fort Carson supports over 35,000 jobs and approximately half of those are off the installation. Estimated sales and use tax from Fort Carson expenditures contributed approximately $9.5 million in local sales tax to Colorado Springs, $4.2 million to the ROI, and approximately $11.7 million in state sales tax.

3.8.2 Environmental Consequences

Methodology for Analyzing Effects

The ROI for the Proposed Action at Fort Carson includes three counties: El Paso, Fremont, and Pueblo. The Proposed Action and No Action Alternative were evaluated to identify potential beneficial or adverse effects on conditions in the ROI. Effects on population, employment, housing, and quality of life were evaluated qualitatively.

Factors Considered for Effects Analysis

Factors considered in determining whether an alternative would have a significant effect on socioeconomics and environmental justice include the extent or degree to which its implementation would change the following:

- Population;
- Employment and total income in the ROI;
- Demand for housing;
- Demand on schools;
- Change any social, economic, physical, environmental, or health conditions to disproportionately affect any particular low-income or minority group; or
- Disproportionately endanger children in areas on or near the installation.

Summary of Effects

The Proposed Action would have short-term beneficial effects on the local economy from marginal increases in employment and income during construction. It would also have long-term minor beneficial effects and minor short-term adverse effects on children. Regarding environmental justice, effects would not disproportionately endanger children. There would be no effects under the No Action Alternative.

Proposed Action

Employment

The project would result in minor short-term beneficial impacts on the ROI economy. Employment and regional spending would increase during the development period, and there would be no collective population changes. Long-term minor beneficial effects on Fort Carson are expected. The overall quality of life for Soldiers and their families would be improved by implementing the RCI program because quality affordable housing would be provided in residential communities that provide multiple amenities and are close to work.

Protection of Children

Short-term minor adverse and long-term minor beneficial effects on protection of children are expected. In the short term, construction sites at Fort Carson could pose a potential safety hazard to children. However, during construction safety measures would be followed to protect the health and safety of residents, including children. During construction, safety measures stated in 29 CFR, Part 1926, Safety and Health Regulations for Construction, and Army Regulation 385-10, Army Safety Program, would be followed to protect the health and safety of residents, including children. As a result of the Proposed Action, there would be an increase in the amount of children in the area. As part of the project, each project site would be properly fenced and maintained, minimizing the potential safety threat to children in the area and the population as a whole. Although children make up a large portion of the population in the ROI, there would be no substantial disproportionate effects on them, resulting in minor adverse effects.

Long-term beneficial impacts are expected due to an increase in quality of housing. Construction would achieve a minimum of a LEED Silver rating, which would require and facilitate higher indoor air quality standards. Furthermore, the construction footprint of the OHS has potential for asbestos and lead-based paint contamination in the soils as a result building removal efforts and building exterior degradation. Between the early 1940's and early 2000's, approximately 20 World War II era buildings occupied this site. Each building contained a lead-based paint exterior with primer containing greater than one percent asbestos. Eleven of these structures still remain, nine of which are scheduled for removal by early to mid-2012 as part of a separate action. As a result of weathering and earlier building removal activities, some of the lead-based paint chips containing asbestos may be present in the surrounding soils. The U.S Corps Army of Engineers will remove all structures and identified site contamination adjacent to each building, except for the Thrift Shop and Buildings 6270 and 6271, prior to potentially leasing this area to FCFH. Removal of the Thrift Shop and any modifications to Buildings 6270 and 6271 would be FCFH's responsibility. Each of these buildings had most of the hazardous materials previously abated, but some small amounts of asbestos and lead-based paint still remain. Before any family housing construction related activities would take place, the Fort Carson Directorate of Public Works would perform asbestos and lead-based paint sampling in the area to ensure contamination is not present even should the Proposed Action not be implemented. New family housing units have already been constructed adjacent to OHS. This action would preclude the possibility of detriment to human health and the environment and would eliminate the possibility of dangerous exposures. Therefore, implementation of the Proposed Action would have beneficial long-term impacts on protection of children.

Local Economy

The project would result in minor short-term beneficial impacts on the ROI economy. The Proposed Action would slightly increase employment and regional spending during building removal and construction. There would be no impacts on the ROI population. The Proposed Action would not result in an increase in civilian or military personnel, and there would be no change in the long-term residential population at Fort Carson. There would be no long-term impacts on regional economic activity.

No Action Alternative

Under the No Action Alternative, there would be no impact to the ROI economy because building removal, construction and associated procurements would not be implemented. No impacts to children's protection would occur.

3.9 TRANSPORTATION

3.9.1 Affected Environment

This section addresses the roadway network, average daily traffic (ADT) and daily levels of service (LOS). It also addresses transportation planning, the roadway network and traffic as well and other transportation modes to include rail, aviation and transit. Figure 3.10-1 is a map of the cantonment area roadways.

Interstate 25 runs along the east side of the installation. Academy Boulevard (State Highway 83) which forms the northern installation boundary, provides access to Fort Carson via Gates 3 and 4, and connects Interstate 25 to State Highway 115. State Highway 115 is the western reservation boundary for Fort Carson; Gate 1 (visitor's gate) and Gate 2 are located along this roadway. Gate 20 is located at the southeastern portion of the installation and is accessible via Interstate 25 and State Highway 16.

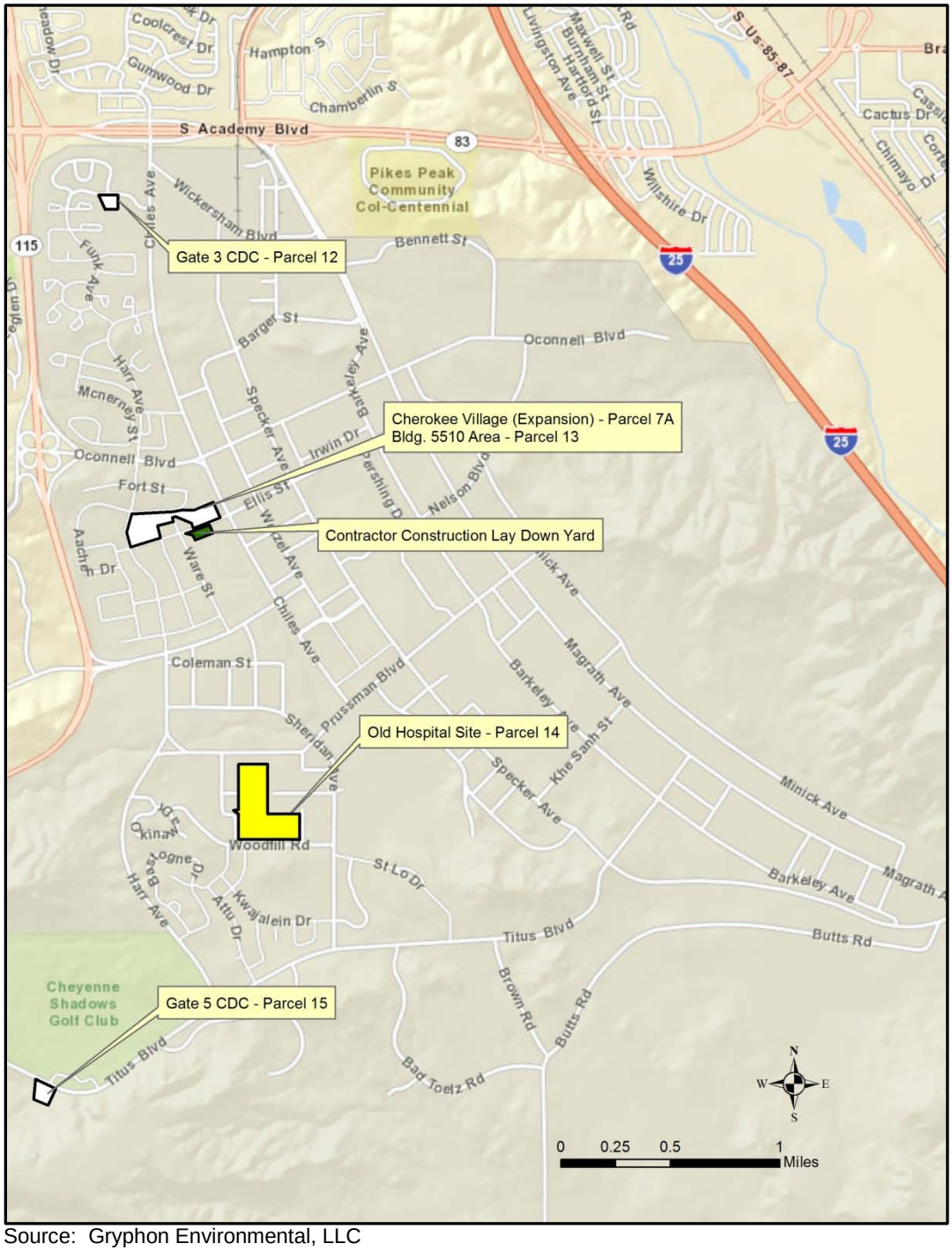
In reaction to the *2005 Fort Carson, Colorado Comprehensive Transportation Study* (DPW, 2008), Colorado Department of Transportation executed a project to alleviate the significant congestion that had occurred along State Highway 16 near Gate 20 during the morning peak period. The limits of the State Highway 16 project extend from Fort Carson Gate 20 on the west to Syracuse Street on the east.

Fort Carson has a goal to reduce single occupancy vehicles on post by 40% by 2027, greenhouse gases, and other air emissions reductions from transportation sources are also desired. Initiatives such as ridesharing and improving pathways for pedestrian and low impact vehicle traffic such as bicycles are encouraged. More efficient vehicles and sustainable, alternative fuels are also desired to meet Fort Carson's Sustainable Transportation Plan goals.

Transportation Planning

Fort Carson has undertaken several transportation studies over the past few years associated with the growth and development, including the *Fort Carson Comprehensive Transportation Study* (DPW, 2005). This study assessed existing conditions and identified short- and long-term transportation needs to meet future demand. The study focused on intersections, roadway corridors, and entry control facilities within the cantonment area, and the recommendations were intended to improve traffic flow and safety. The study's recommendations included roadway expansion (two to four lanes), new construction, realignment of existing roadways, and upgrades to other traffic-related infrastructure. Sustainable initiatives were also identified to reduce automobile dependency and included pedestrian connectors, bus and bicycle facility improvements, and parking lot minimization. The study was updated in May 2008 (DPW, 2008) to address the potential increase in population at Fort Carson. No further updates have been made to this plan since 2008.

Figure 3.10-1. Fort Carson Cantonment Area Roadway System.



Source: Gryphon Environmental, LLC

Roadway Network

The roadway network at Fort Carson consists of approximately 696 miles of roads, of which approximately 266 miles are paved and approximately 430 miles are unpaved. Access to Fort Carson is provided through the following six active entry control points: Gates 1, 2, and 5 on SH 115; Gates 3 and 4 on Academy Boulevard; and Gate 20. Cantonment area roadways generally form a grid pattern that is laid out in a crescent shape from northwest to southeast. Primary east-west access within the cantonment area is provided by O'Connell Boulevard, Prussman Boulevard and Titus Boulevard, while primary north-south access within the cantonment area is provided by Chiles Avenue and three one-way roads (Magrath, Specker and Barkeley Avenues). Butts Road provides access from the cantonment area to the downrange area.

The cantonment area roadway system can be classified into the following three categories according to the function they serve moving people and freight:

- **Arterial Highways** – serve the movement of people and freight regionally between population and activity centers with a minimal level of access to adjacent properties;
- **Collector roadways** – serve the movement of people and freight from population and activity centers and funnel them onto arterial highways with a moderate level of access to adjacent properties; and
- **Local roadways** – provide access to adjacent properties and move people onto collector and arterial roadways.

Butts Road, Magrath Avenue, and Barkeley Avenue are classified as arterials. Collector roadways within Fort Carson include O'Connell Boulevard, Ellis Street, Nelson Boulevard, Prussman Boulevard, Titus Boulevard, Specker Avenue, Chiles Avenue, Harr Avenue, Sheridan Avenue and Minick Avenue. Local roadways throughout Fort Carson serve as the direct connections to parking lots and adjacent properties. An example includes Woodfill Road which would be impacted under the Proposed Action.

The road network in the cantonment area is generally well maintained and adequate. Nearly all major roads within the cantonment area have bituminous surfaces and are capable of accommodating all types of wheeled vehicles (DPW, 2008).

Traffic

A majority of roadways have one lane for each direction of travel with the exception of Magrath and Barkeley Avenues which have two one-way lanes and Specker Avenue (between Titus Boulevard and Magrath Avenue) and Magrath Avenue (between Specker and Gate 20) which are both four lane roadways. The posted speed limit in the cantonment area is generally 30 mph. Some areas near the perimeter of the installation have 40 mph limit and the limit within housing is 20 mph. Existing traffic data indicate that some congestion exists during peak periods

and that all signalized intersections operate at acceptable levels of service according to 2008 traffic volumes.

3.9.2 Environmental Consequences

Methodology for Analyzing Effects

Effects on local circulation, parking, access, and vehicle, pedestrian, and bicycle safety in the vicinity of the proposed project sites were qualitatively evaluated.

Factors Considered for Effects Analysis

Factors considered in determining whether an alternative would have a significant effect are the extent or degree to which its implementation would cause or result in the following:

- Increases in vehicle trips on local roads that would disrupt or alter local circulation patterns;
- Lane closures or impediments that would disrupt or alter local circulation patterns;
- Activities that would create potential traffic safety hazards;
- Increased conflicts with pedestrian and bicycle routes or fixed-route transit;
- Increased demand on public transportation in excess of planned or anticipated capacity at the time of increase;
- Increased demand for bicycle and pedestrian facilities in excess of planned or anticipated capacity at the time of increase;
- Increased parking demand in excess of the supply; or
- Impeded emergency access on or off the site.

Summary of Effects

Under the Proposed Action there would be short-term, minor adverse effects from an increase in construction-related vehicles and activities. Traffic changes on Chiles and Sheridan Avenues as well as roads on Fort Carson result from redistributing traffic during construction. Changes in traffic conditions would result in long-term, minor adverse effects. There is the potential for minor long-term beneficial effects as additional Army families could live on-post and be provided with the opportunity to walk to work and to other installation facilities, instead of driving.

There would be no expected shortage of available parking under the Proposed Action. No effects on pedestrians or bicyclists are anticipated under the Proposed Action.

Proposed Action

Building removal and construction activities would slightly increase the traffic volume in the proposed project areas due to on-road use by construction equipment, construction workforce vehicles, and vehicles delivering construction

materials. The size of the workforce and number of daily truck trips would vary during construction activities. However, these vehicles are not expected to change the current LOS. During roadway improvements, Fort Carson would experience road closures, detours, delays, and potential decreases in the LOS. These would be minor, short-term impacts with the potential to become moderate short-term impacts if not mitigated. The impacts would be mitigated by phasing the roadway improvements and minimizing construction-related traffic activity during peak travel hours. These mitigation measures would keep the impacts from becoming significant.

Cherokee Village Site

The Proposed Action involves removing 114 family existing housing units, constructing 100-114 new housing units, removing Building 5510 and replacing it with a 10,000 square feet community center. Development is anticipated to take approximately 1.5 years. During building removal and construction, truck and construction-related vehicle traffic is expected to increase on some roadways both on and off Fort Cason. Although a roadway routing plan has not yet been developed that would control which roads could be used by construction-related vehicles, the assumption is that the Main Gate would continue to be the primary access point to Fort Carson. A further assumption is that construction-related vehicles would use Gate 3, Contractor Gate, to primary access Fort Carson.

Building removal activities would most likely take place between June and December 2013, and construction occurring between September 2013 and October 2014. During this time, it is likely that the greatest increases of construction-related traffic would occur on Chiles Avenue, Ellis Street, Harr Avenue and O'Connell Boulevard.

Because the actual routes to be taken by residents, construction-related vehicles, and others are discretionary, it is not possible to accurately predict the level of traffic increases on particular roadways. However, the overall impacts are expected to be minor, based on the following assumptions:

- The roadway and intersection improvements called for in the 2008 Fort Carson Supplemental Traffic Study would be implemented by 2012, as recommended in the study;
- Construction-related traffic would be intermittent; and
- Construction-related traffic increases would be of relatively short duration.

In sum, short-term traffic impacts during the construction period could be significant but manageable. Post-construction transportation volumes would be expected to be similar to current volumes because housing populations and community center use are expected to be the same as existing conditions.

Old Hospital Site

Development at this site under the Proposed Action would occur within a 1.5-year period. During construction, construction-related traffic is expected to increase on

some of the roadways serving Fort Carson and neighboring communities. The assumption is that Gate 5 would be the primary contractor access point to Fort Carson for this site. Most construction would be anticipated to take place from June 2012 and November 2013. It is likely that the greatest increases of construction-related traffic would occur on Titus Boulevard, Sheridan Avenue and Woodfill Road during this time. Based on the 2005 *Fort Carson Comprehensive Transportation Study* and 2008 Update, the intersection of Sheridan Avenue and Woodfill Road had a morning total entering traffic volume of 507 vehicles, and an evening volume of 706 vehicles. These traffic volumes pre-date the construction and operation of approximately 242 housing units that are/will be located in the northwest corner of Sheridan Avenue and Woodfill Road as part of a separate action. However, the 2008 Update suggested improvements to this intersection to handle an approximate 1,360 morning and 1,540 evening peak vehicle throughputs. Fort Carson completed the suggested improvements in 2010. Since the 2008 planning thresholds double the actual volume identified in the 2005 study and improvements have been completed, the roadway network should be adequate for the additional proposed population in this area. The Proposed Action is anticipated to have minor short-term and no long-term adverse effects on traffic in this area.

There is the potential for minor long-term beneficial effects as additional Army families could live on-post and be provided with the opportunity to walk to work and to other installation facilities, instead of driving.

No Action Alternative

Under the No Action Alternative, there would be no impacts to traffic.

3.10 UTILITIES

3.10.1 Affected Environment

Potable Water

Colorado Springs Utilities (CSU) supplies water to residents and businesses in Colorado Springs and also to some entities outside the city limits, including Fort Carson. Potable water is purchased by Fort Carson from CSU for domestic, industrial, and irrigation use. Fort Carson's contracted water capacity with CSU is 2,775,451 gallons per day (gpd) average daily usage over a rolling 365 day period. Contracted peak daily demand is 5,161,890 gpd over 5 consecutive days. Fort Carson's average daily usage over a 365 day period is approximately 2,356,515 gpd. The current peak daily demand is approximately 4,488,600 gallons over 5 consecutive days.

Fort Carson's current water conservation efforts have kept water usage below these capacity limits even with Fort Carson's growth. Water reduction has been achieved through installation of low-flow fixtures in some facilities, waterless urinals in new and renovated facilities, single-bay washes inside motor pools, and other conservation efforts. Reduced troop levels as a result of deployments are also a factor. Fort Carson has a water reduction goal of 75% by 2027 and a sustainable development goal which includes a current minimum LEED Silver and Platinum goal by 2027.

Wastewater System

Fort Carson operates and maintains a wastewater collection and treatment system for both sanitary and industrial wastewater components. Effluent discharges from the sewage treatment plant are regulated under USEPA NPDES Permit Number Permit No. CO-0021181, effective December 1, 2011. CDPHE allows Fort Carson to discharge only 4.0 million gallons per day (mgd) into Clover Ditch (DPW, 2010b).

The sanitary sewage treatment plant has a peak historical flow of 2.6 mgd. Recent upgrades to the plant have been completed and approved by CDHPE to increase the capacity to 4.0 mgd with the new capacity operational in the first quarter of 2011. The current wastewater load for the entire system is 1.1 mgd and even less during the warmer months when a portion of the effluent is used to irrigate the Fort Carson golf course (DPW, 2010b).

Based on a review of the current permit limits for Fort Carson, it has been concluded that the facility is in compliance with the current ammonia effluent limits (USEPA ammonia discharge standards (EA-823-F-F-99-024)). The annual average total ammonia concentration in the effluent is approximately 0.50 mg/L. Under proposed regulations, if future ammonia standards require facility upgrade, Fort Carson would have until calendar year 2012 to accomplish implementation.

Energy Sources

Fort Carson purchases natural gas and electricity from CSU. Fort Carson has an energy goal by 2027 for 100% renewable energy (gas and electric). The installation obtains 2.3 percent of its energy needs from solar panels and is currently researching other sources of renewable energy for future use.

Electrical services are provided through two aerial 34.5-kilovolt, three-phase supply lines, which terminate at three power substations in the cantonment area. The peak historical electrical demand at Fort Carson is 27.9 mega-volt amperes (MVA), while the total capacity of transmission lines available to the installation is 57.4 MVA, and the total capacity of transformers is 37.9 MVA.

Fort Carson receives natural gas from CSU via two feeds at the north end of the installation and an additional gas line along State Highway 115. The natural gas is metered and piped through a series of gas mains and distribution lines to Fort Carson's four central heating plants, BAAF, and the family housing areas. The peak historical daily consumption of natural gas at Fort Carson is 9,329 million cubic feet per day (DPW, 2007). CSU's maximum delivery capacity to the installation is 24,000 million cubic feet per day (DPW, 2007).

Solid Waste

The *Integrated Solid Waste Management Plan* (ISWMP) (DECAM, 2004a) contains details of the Solid Waste Management Program at Fort Carson. Fort Carson intends to achieve a 50 percent annual reduction/diversion rate of solid waste through recycling, reuse, and reduction (based on a 1992 baseline generation rate), while ensuring that integrated non-hazardous solid waste management programs provide an economic benefit when compared with disposal using landfills and incineration alone. Refuse, construction-related solid waste, and recyclable materials are all managed by the DPW.

All solid waste from Fort Carson is hauled to offsite landfills, including the Midway Landfill in Fountain, Colorado by a licensed contractor. Midway Landfill and the other landfills are permitted Subtitle D landfills. Fort Carson operates a recycling center near Gate 3. In addition to the recycling center, there are two additional large drop-off facilities at the Post Exchange and at Building 155.

3.10.2 Environmental Consequences

Methodology for Analyzing Effects

The methods used to determine whether a project alternative would have a significant effect on public services and utilities are as follows:

- Review and evaluate each project alternative to identify the action's potential to affect utilities; and
- Assess the compliance of the proposed alternative with applicable federal, state, or local regulations, guidelines, and pollution prevention measures.

The utilities section analyzes potential effects on potable water, wastewater, stormwater, solid waste management, communications, and electrical utility infrastructure. Potential infrastructure shortfalls, inconsistencies, inadequacies, or deficiencies identified between the existing infrastructure and the requirements of a project alternative would all be characterized as potential effects.

Factors Considered for Effects Analysis

Factors considered in determining whether an alternative would have a significant effect on utilities are the extent or degree to which its implementation would result in the following:

- Interrupt or disrupt any public utility service, as a result of physical displacement and subsequent relocation of public utility infrastructure, to the extent that the result would be a direct, long-term service interruption or permanent disruption of essential public utilities; or
- Require an increase in demand for utilities beyond the capacity of the utility provider to the point that substantial expansion, additional facilities, or increased staffing levels would be necessary.

Summary of Effects

Minor adverse effects on public service and utilities in the ROI would result if the Proposed Action were implemented. The Proposed Action would meet current federal standards for building energy efficiency and maximizing water conservation. Increased demand on public utilities would occur under the Proposed Action. The increased demand would be met by infrastructure in both the Cherokee Village site and OHS, such as potable water, electrical, and communications demands. Sewer demands would be met by the existing WWTP by Gate 20. Connecting to this existing infrastructure would minimize environmental effects, resulting in only minor effects on public utilities and would not require any increase in utility staffing.

The No Action Alternative would have no effects on public services and utilities in the ROI.

Proposed Action

The Proposed Action would have short-term minor adverse and long-term beneficial impacts on utilities. Implementation would result in some reconfiguration of the existing utilities on the proposed project sites. Spent building materials would be recycled/re-used to the maximum extent possible. Non-reusable and/or recyclable materials generated by RCI implementation would be disposed of in a designated off-post landfill.

Because there are sufficient capacities in the utility systems serving the installation to sustain the existing and foreseeable number of residences, no appreciable impacts on utilities are anticipated. Moreover, because FCFH strives to fulfill LEED-Silver and Five-Star Energy Star Requirements, efficiencies are anticipated

in the use of some of the utilities under the RCI project, such as potable water, electricity, and heating. The associated reduction in family housing demand for utilities would have a beneficial impact on those utility systems.

Potable Water

There would be no adverse impact on potable water. The estimated demands of the new housing would be well within the capacities of CSU, which supplies potable water to Fort Carson, and the unused maximum amount that CSU is contractually obligated to provide Fort Carson.

Wastewater

There would be no adverse impact on wastewater. The existing sanitary sewer and wastewater treatment system has the capacity to accommodate the estimated amount of wastewater to be generated by implementing the Proposed Action. The design capacity of the plant that services the cantonment area is 4.0 mgd, while the maximum peak historical flow to the treatment plant is 2.6 mgd (DPW, 2009).

Energy Sources

There would be no adverse impact on energy sources. An increase in use of natural gas (approximately .001 mcf/day) and electricity (estimated 4,480 kilowatt hours per day) would occur. This increased electrical demand would be within CSU's ability to provide and Fort Carson's ability to transmit (DPW, 2009).

Solid Waste

Minor, short-term impacts would be expected on solid waste management as a result of the generation of building removal and construction debris. Debris that is not recycled would be placed in a designated off-post landfill and disposed of in accordance with the *Integrated Solid Waste Management* (DECAM 2004a). Long term, addition of the housing units is anticipated to increase solid waste generation on Fort Carson. However, should Soldiers and their families reside in housing off-post, solid waste generation would be commensurate in volume. Adequate landfill space is available in the region to absorb the potential increase in solid waste generation.

No Action Alternative

Under the No Action Alternative, there would be no impacts to utilities.

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3.11 HAZARDOUS AND TOXIC SUBSTANCES

3.11.1 Affected Environment

For the purpose of this EA, the terms hazardous waste, hazardous materials, and toxic substances include those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), or the Toxic Substances Control Act (TSCA). In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, may present substantial danger to public health or welfare or the environment when released.

An Environmental Condition of Property (ECP) report that identifies environmental conditions that may affect the suitability of land transfer is being prepared concurrently with this EA. A summary of the findings of the ECP report and interviews with Fort Carson personnel are included in the following sections.

Management of Hazardous Materials and Wastes

Fort Carson is a large-quantity generator, as defined under RCRA. Waste streams originate from training, aircraft, vehicles, and maintenance and generally consist of petroleum, oil, lubricants, solvents, paints, and adhesives (DECAM, 2004a). DPW – Environmental Division oversees the management of hazardous wastes at Fort Carson in accordance with the *Hazardous Waste Management Plan* (HWMP) (DECAM, 2007a).

Hazardous Waste Storage, Handling and Disposal

Hazardous waste generated by Fort Carson is stored at an approved storage facility, Building 9248, operated by DPW-ED in compliance with the RCRA Part B Permit (Permit # CO-06-09-29-01, effective October 29, 2006) issued by CDPHE (CDPHE, 2006). Building 9248 is located approximately 2.5 miles southeast of the OHS.

Site Contamination and Cleanup

Fort Carson is not listed on the EPA's *National Priority List* (NPL), which designates high-priority cleanup sites under the CERCLA, more commonly known as the *Superfund Program*. Investigation and cleanup of Fort Carson is conducted under the Corrective Action portion of its RCRA Part B Permit (#CO-06-09-29-01).

There are 170 Solid Waste Management Units (SWMUs) within *Fort Carson's Corrective Action Program.* Site investigation and cleanup are being performed in accordance with applicable Army, state, and federal requirements to achieve established cleanup goals and schedules. To the extent practical, all SWMUs will be avoided during construction projects.

There are four SWMUs in the region of influence for the Cherokee Village site; SWMUs 6, 59, 96 and 169, all of which are all classified as "no further action required." There are no SWMUs at the proposed OHS or proposed CCLYs.

SWMU Number 6 – Landfill 6

The old Landfill 6 site is located immediately adjacent to and south of Ellis Street and west of Chiles Avenue. It is also bound by Nelson Boulevard to the south and Ware Street to the west. Before it was removed, the landfill was 13.6-acres and contained construction debris, mixed sanitary waste and municipal waste. Waste petroleum, oil and lubricants were also disposed of in the landfill. Fort Carson removed all landfill debris and completed all required corrective actions. As of 2008, no further action (NFA) is required for the site (CDPHE, 2008).

SWMU Number 59 – Used/Waste Oil Tank, Building 1302

Building 1302 was the location of SWMU Number 59, which is located approximately 0.2 miles southeast of the Cherokee Village site. The CDPHE classified the site as NFA in July 2008 (CDPHE, 2006).

SWMU Number 96

Building 1404 was the location of SWMU Number 96, which is located approximately 0.3 miles southeast of the Cherokee Village site. The CDPHE classified the site as NFA in August 2007 (CDPHE, 2006).

SWMU Number 169

Building 1211 was the location of SWMU Number 169, which is located approximately 0.1 miles southeast of the Cherokee Village site. Building 1211 is the location of a former pump house associated with a fueling station and motor pool in Building 1206. The site is also classified as NFA by CDPHE.

Pesticides

As required by DoD policies, Fort Carson emphasizes integrated pest management. Pesticides and herbicides are required for insect and rodent control in select structures and in the control of undesired vegetation including noxious weeds (DECAM, 2008a). Since 1994, there has been one insecticide release and one suspected herbicide release on the installation. On January 6, 1995, an air release of Diazinon was reported to the National Response Center (NRC). On May 24, 2000, a release of an unknown herbicide near the 2100 Area barracks was suspected but never confirmed.

Asbestos

Asbestos-containing materials (ACM) were prevalent in building construction until the 1970s. Although the use of asbestos has declined dramatically, it is occasionally found in new building materials (DECAM, 2004e). Specifically, asbestos can potentially be found in floor tiles, pipe wrappings, ceilings, and insulation.

According to a building renovation records review of the Cherokee Village site, identified asbestos had been removed from these structures between 2001 and 2002. However, FCFH hired Lead Consultants of America, Inc. to conduct follow-up testing in October 2011, which resulted in additional asbestos being identified in floor coverings, caulking, flashing, and insulation throughout Cherokee Village.

Asbestos-containing materials are also currently present within buildings in the OHS, but would be abated by USACE contractors prior to conveying the OHS to FCFH, excluding Buildings 6250, 6270 and 6271. Building 6250 would be the responsibility of FCFH to abate and remove. Building 6250 was abated in 2004, but does contain small amounts of asbestos in the paint beneath the window frames and within the drywall joint compound (DECAM, 2005a). Buildings 6270 and 6271 would remain and not be abated or removed as part of the Proposed Action. Any subsequent modifications or abatement activities in these buildings would be the responsibility of FCFH. According to surveys conducted in 2005, both buildings have small amounts of asbestos remaining within the structures (<3,000 square feet each). Additionally, it is anticipated that asbestos may be found in the soils within the OHS. Sampling will reveal the presence and extent of asbestos in the soil on the OHS.

Lead-based Paint

Lead based paint is primarily found in buildings constructed prior to 1978 (DECAM, 2004f). In 1978 the Consumer Product Safety Commission banned the use of LBP in residential and commercial establishments. No records of LBP surveys were found prior to 2011 for the Cherokee Village site. However, FCFH hired Lead Consultants of America, Inc. in October 2011 to conduct LBP testing within the site. Test results identified LBP presence in window lintels, door thresholds, gables, columns, porch ceilings, wood siding, soffits, and fascia throughout the site. Lead based paint results for soils were below regulatory action levels.

The OHS contains eight WWII era buildings that contain LBP primarily in the exterior paint. In 2005, the DPW-ENV conducted LBP soil samples around the remaining structures in the OHS. Thirty-five of the approximate 250 samples exceeded the regulatory threshold of 400 mg/kg (ppm) for child-occupied facilities. The remaining buildings are planned for removal by the USACE contractors prior to conveying the OHC to FCFH, excluding Buildings 6250, 6270 and 6271. These buildings would be the responsibility of FCFH to abate. Only Building 6250 would be removed as part of the Proposed Action. All LBP in soils would also be abated and restored to non-regulated conditions.

PCB Containing Transformers and Ballasts

Transformers manufactured prior to 1976 and light ballasts manufactured before 1979 are assumed to contain polychlorinated biphenyl (PCB) waste (DECAM, 2004g). There is no evidence of PCB transformer contamination on any of the sites under the Proposed Action. There is a possibility, however, that the Cherokee Village site contains PCB ballasts in light fixtures. Ballasts in light fixtures removed

during renovations are turned in to Treatment Storage and Disposal Facilities (TSDFs) for proper disposal.

Radon

Radon is a naturally occurring, colorless, and odorless radioactive gas that is produced by the decay of naturally occurring radioactive material, such as potassium and uranium. Atmospheric radon is diluted to insignificant levels, but, when concentrated in enclosed areas, it can present human health risks. Fort Carson is in EPA's Radon Zone 1, indicating average indoor radon concentrations may be greater than 4 picoCuries per liter (pCi/L).

The cantonment area is an area of high concern for radon potential (DECAM, 2004g) and requires monitoring and engineering precautions to limit radon exposure. In 2003, DECAM conducted 11 radon tests in Building 6060, which is located approximately 0.5 miles from the Cherokee Village site and OHS. The test results ranged from 2.2 picocuries/Liter (pCi/L) to 3.9 pCi/L (DECAM, 2003). As a precautionary measure, Fort Carson installed four mitigation systems in Building 6060 to minimize potential adverse impacts on inhabitants. FCFH, in turn, installed passive radon mitigation systems in new housing units constructed in this immediate vicinity between 2010 and 2011.

As of 2010, FCFH policy is to install passive radon mitigation systems in new housing constructed in EPA Zone 1 counties, of which Fort Carson is in. Additionally, FCFH policy requires implementing a program of sampling at least 20% of homes in a single neighborhood. Short-term tests will be performed and statistical averages evaluated. Should statistical averages be below 4 pCi/L, no additional sampling is required for the year. Statistical sampling will be conducted in each neighborhood without repeat sampling of any single home. FCFH's goal is to test every home at least once in a 5-year period (FCFH, 2010).

Munitions

Fort Carson's permanent Ammunition Supply Point is located approximately 2.5 miles south of the closest area of possible new housing. Munitions are not permitted within the cantonment area.

Storage Tanks

Hazardous materials are stored securely in maintenance areas, flammable storage lockers/ areas, and mobile transfer units (tank trucks). Petroleum products are stored in numerous aboveground storage tanks (ASTs) within the cantonment area and include modern contractor-owned, contractor-operated bulk and retail fuel facilities that provide fuel to all military units on Fort Carson. Three AAFES gas stations are located and operated on Fort Carson within 0.75 miles of the Cherokee Village site, and each station contains three underground storage tanks (USTs). Only one of these gas stations is located within 1.0 mile of the OHS and is at the intersection of Chiles and Prussman Avenues, which is approximately 0.5

miles northeast of the OHS. None of the proposed housing sites have ASTs or USTs, and there is no record of contamination within the sites.

3.11.2 Environmental Consequences

Methodology for Analyzing Effects

Effects from hazardous materials and conditions were assessed for both phases of the Proposed Action: construction and operation and maintenance (O&M). In addition, effects from the transport, storage, use, and disposal of hazardous materials were assessed, including reasonably foreseeable upset and accident conditions and worker exposure to hazardous materials.

Significance Criteria for Effects Analysis

An action is considered to have a significant adverse hazardous materials and conditions effect if it would result in any of the following:

- Expose people to hazardous materials or conditions at the project site (for example, MEC, pesticides, and petroleum products);
- Create a substantial hazard to people or the environment through the transport, storage, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or
- Increase wildfire danger or expose people or property to a substantial fire danger.

Summary of Effects

There would be no significant effects from the Proposed Action or from the No Action Alternative. Short-term minor adverse effects would result from the Proposed Action; no effects would result from the No Action Alternative.

Proposed Action

Minor short-term adverse impacts would be caused by building removal and construction activities. Heavy machinery requires maintenance and fuel. Although maintenance would most likely occur off-site and within an authorized service shop, the use of construction machinery could potentially result in the release of small quantities of solvents, cleaning agents, greases, oils, hydraulic fluids, and fuel (e.g., gasoline and diesel). Paints and adhesives would also be used on the site during construction. All hazardous materials would be stored and disposed of in accordance with all local, state, and federal laws and regulations, the Hazardous Waste Management Plan (HWMP) and the Spill Prevention Control and Countermeasures (SPCC) Plan. It is not anticipated that large quantities of hazardous materials would be used during the operation phase of the Proposed Action. Most hazardous materials used would be of small quantity and considered household hazardous materials (e.g., cleaning solutions, paints). Storage tanks would be in compliance with federal, state, and/or local regulations. Basic Fort

Carson SPCC requirements delineate measures and practices that should be implemented to prevent and/or minimize spill/release from the storage and handling of hazardous materials to protect soil and water resources. Basic BMPs for pollution prevention include monitoring storage areas, secondary containment and loading/unloading areas to ensure that products are not spilled during construction and operation of the Proposed Action. Compliance with federal laws and regulations, the HWMP, and the SPCC Plan would minimize adverse effects.

No Action Alternative

Under the No Action Alternative, there would be no change in hazardous and toxic substances.

3.12 SUSTAINABILITY AT FORT CARSON

3.12.1 Affected Environment

The Fort Carson sustainability initiatives derive from Fort Carson's adoption of *25-Year Sustainability Goals* in 2002 and the *Army Strategy for the Environment*, which emphasizes a triple-bottom-line-plus of mission, environment, community, plus economic benefit. The Army Strategy recognized the obligation "to ensure that our Soldiers today- and the Soldiers of the future- have land, water, and air resources they need to train; a healthy environment in which to live; and the support of local communities and the American people," (U.S. Department of the Army, 2011).

Fort Carson is pursuing Net Zero Energy, Net Zero Water and Net Zero Waste by 2020 under the Army's Net Zero initiative.

Fort Carson's initiatives represent a sustainable development approach for both current operations and future planning. The goals that are relevant to the Proposed Action consist of the following:

- Energy and Water: Sustain all facility and mobility systems from renewable sources and reduce total water purchased from outside sources by 75% by 2027;
- Sustainable Transportation: Reduce automobile dependence and provide balanced land use and transportation systems;
- Air Quality: Reduce installation greenhouse gases and other air pollutants to the lowest achievable emission rates;
- Sustainable Development: Create a community that encourages social, civic and physical activity while protecting the environment;
- Sustainable Procurement: All DoD and Fort Carson procurement actions support sustainability; and
- Zero Waste: Total weight of solid and hazardous waste disposed of is reduced to zero by 2027, and every year thereafter.

3.12.2 Environmental Consequences

Methodology for Analyzing Effects

Building removal, construction, and operation and maintenance activities of the Proposed Action were assessed relative to their potential to adversely or beneficially effect progress towards achieving the relevant installation Sustainability Goals described in Section 3.12.1.

Significance Criteria for Effects Analysis

An action is considered to have a significant effect on installation sustainability if it would result in any of the following:

- Substantially delay progress towards achieving goals that are time-bound, which would jeopardize the installation's ability to realistically achieve them;
- Appreciably decrease sustainable transportation opportunities that effect large populations of personnel, for example a battalion-sized unit of 500 – 700 personnel; or
- Disregard for sustainable development tenets that effect large populations or areas on the installation (e.g., 200-acres).
- Disregard for employing sustainable procurement practices as a business practice.

Summary of Effects

There would be no significant effects from the Proposed Action or from the No Action Alternative. Short-term and long-term minor adverse effects would result from the Proposed Action; no effects would result from the No Action Alternative.

Energy and Water

The long-term goal for this 25-Year Plan is to sustain all facility and mobility systems from renewable sources by 2027 and reduce the total water purchased from outside sources by 75% from the 2001 baseline by 2027. The desired end states are: secure sustainable energy sources; alleviation of dependence on fossil fuels and adverse air emissions; funding for life cycle costs; reduction of reliance on petroleum imports and vulnerability; water conservation through efficient consumption, reduce treated wastewater effluent, increase in the quantity of water re-use and development of sustainable water source solutions. Achievement of this goal supports Installation and force security.

Energy and water use on the installation would be expected to increase relative to the number of additional units constructed and operated in the Old Hospital Site. Both energy and water use would potentially decrease in the Cherokee Village site due to increased efficiencies associated with the proposed utility upgrades in the area, installation of Energy Star® compliant appliances and fixtures as well as LEED – Silver construction standards. These savings, however, are not expected to compensate for the net increase of an additional 100 – 116 new housing units proposed for construction within the OHS. Therefore, the Proposed Action would have a minor adverse impact on energy and water use.

Sustainable Transportation

Desired end states related to sustainable transportation and land use from the September 2002 conference are as follows:

- Increased use of mass transit with clean fuels;
- Schedules that reduce vehicle emissions;
- Innovative materials and placement that provides sustainable transportation systems;
- Reduction of average daily commute miles;
- Regional partnerships for alternative and multiple occupancy vehicles;

- Reduce the amount of vehicles on the roadway to reduce congestion; and
- Control urban expansion and zone to discourage vehicle use.

Air Quality

The long-term goal for this plan is to reduce installation greenhouse gases and other air pollutants to the lowest achievable emissions rates by 2027. The goals to improve regional air quality and achieve reductions of absolute emissions is dependent on the overall success of several other sustainability teams, top down Garrison Management support, and successful implementation and appropriate balance of all team initiatives by all advocates and Fort Carson personnel.

The Proposed Action would increase short-term greenhouse gas and criteria pollutant emissions in the ROI primarily based on the impacts of new construction. The ROI would be expected to have long-term net minor beneficial effects as Soldiers and their families that would potentially occupy the Old Hospital Site are be presumed to live within the three-county ROI under analysis, and would commute less.

Sustainable Development

Sustainable Development maximizes land use, resource efficiency, health, safety and productivity. The long-term goal is to fully integrate sustainable planning and operation into all Master Planning for land use, Military Construction Army programs, and third-party construction on Fort Carson. The desired end state is an installation that is developed and managed in accordance with sustainable principles. New development is coordinated with key installation stakeholders and partners. Projects complement each other and site work is coordinated to provide walkable areas that are linked to pedestrian and alternative vehicle corridors. Parking and access for traditional vehicles is provided in an attractive and functional way that emphasizes shared use and flexibility. An integrated approach to stormwater management onsite is taken, and opportunities for regional Low Impact Development and stormwater treatment are implemented. New buildings are constructed to a LEED Platinum standard, and the goal of NetZero Installation is realized in multiple facilities and complexes. Building renovations and additions are constructed to a LEED standard, and the best ideas for energy efficiency and compliance are incorporated into the designs and operation of these facilities. The goal of mixed-use development is advanced through legislation and guidance retooled to allow and promote such sustainable development. Education of Fort Carson residents and guests is deliberate and dynamic, with the goal to ensure that facilities and infrastructure are operated in a sustainable manner. Fort Carson continues to develop into a more livable, functional, sustainable installation, capable of supporting all military missions while taking care of families and serving the community.

Upon meeting the requirements of LEED – Silver construction standards for both of the proposed new housing developments, progress towards sustainable development would be supported.

Sustainable Procurement

Sustainable procurement is the end result of a path begun by the federal government and the DoD through executive orders and policies of the past 20 years. This goal supports all other goals especially zero waste, sustainable development and transportation. As part of the LEED Silver construction standard, this goal would be supported and should increase sustainable procurement volumes on the installation.

Zero Waste

The long-term goal for this 25-Year Plan is to ensure that the total weight of solid and hazardous waste disposed of is reduced to zero by 2027, and every year thereafter. The desired end state is to eliminate or dramatically reduce the amount of waste generated and to effectively use, reuse or recycle all materials. FCFH has implemented a one-source recycling program for residential neighborhoods on the installation. Additionally, FCFH would require maximum reduction of solid waste feasible during construction, and operational and maintenance phases under the Proposed Action. However, an increase in construction, new housing units and their respective operation and maintenance would increase solid waste generation and would have minor short-term and long-term adverse effect on this goal.

No Action Alternative

Under the No Action Alternative, there would be no change to Sustainability Goals on Fort Carson.

3.13 CUMULATIVE IMPACTS

3.13.1 Introduction

Cumulative impacts are the direct and indirect effects of a proposed project's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action (40 CFR, Part 1508.7). Guidance for implementing NEPA recommends that federal agencies identify the temporal and geographic boundaries of the potential cumulative effects of a Proposed Action (CEQ 1997). For the purposes of this EA, the temporal boundary of analysis is from approximately 2009 to 2015. This boundary encompasses a range in which data are reasonably available and forecasts can be reasonably made.

The geographic boundaries of analysis vary, depending on the resource and potential effects. For most resources, the ROI for cumulative impacts is the same as the ROI used to analyze the effects from the Proposed Action and No Action Alternative. Resources with farther-reaching impacts, such as air quality or socioeconomics, are analyzed with a more regional perspective. The analysis area is described under each resource. Specific projects that are similar in size or scope or have the potential to cumulatively affect the resources evaluated for the project are addressed below. Some resources would be affected by several or all of the described activities, while others could be affected very little or not at all.

3.13.2 Cumulative Projects

Cumulative effects of anticipated projects on and around Fort Carson were analyzed extensively in the Final Environmental Impact Statement for Implementation of Fort Carson Grow the Army Stationing Decisions (DPW, 2009) completed in February 2009. The Proposed Action in the EIS was to implement the Fort Carson portions of the December 2007, Record of Decision (ROD) for the 2007 Programmatic EIS for Army Growth and Force Structure Realignment and the possible stationing of a Combat Aviation Brigade (CAB) at Fort Carson.

Additional cumulative impacts beyond those identified in the Final Environmental Impact Statement for Implementation of Fort Carson Grow the Army Stationing Decisions including changes or additions to the projects are identified in Table 3.13-1. The additions and changes to the past, present, and reasonably foreseeable future cumulative impacts identified in Table 3.13-1 were considered with the cumulative impacts identified in the GTA EIS. The impacts of the Proposed Action, summary of impacts of past, present, and future foreseeable actions, proposed mitigation, and cumulative effects are presented in the following sections.

Table 3.13-1
Additions and Changes to Cumulative Impacts Identified in the GTA EIS.

Project or Activity	Time Frame
No longer foreseeable or valid projects	
• Fort Carson Lifestyle Village	
• Additional IBCT that would train at Fort Carson and PCMS (part of the GTA EIS Proposed Action)	
Future Projects at Fort Carson	
• CAB associated construction including control tower, bulk fuel facility, and infrastructure	FY15
• Battle Command Training Center	FY12
• Chapel at Fort Carson	TBD
• Special Forces Tactical Unmanned Aerial Vehicle (TUAV) Facility	FY12-13
• Child Development Center (2)	FY12 and FY14
• Warriors in Transition Unit Complex (Barracks/Admin)	FY12
• Iron Horse Park Development	FY12-13
• Infantry Squad Battle Command Ranges (2)	FY11-12
Future Projects at Piñon Canyon Maneuver Site	
• Vehicle Wash Facility	FY12
Current Projects at Fort Carson	
• Soldiers Family Assistance Center	
• AAFES Tri-Foods	
• AAFES Post Exchange Expansion	
• Commissary	
• Banana Belt Redevelopment	Current-FY14
• Physical Fitness Center	
Current Projects Off-Post	
• Improvements to Drennan Road and Academy Boulevard	

3.13.3 Land Use

Past, present, and reasonably foreseeable future development at Fort Carson, has contributed to, and would continue to contribute to, cumulative effects on land use at the installation. The past, present, and reasonably foreseeable future development of new facilities provide long-term minor beneficial effects on land use. Future changes to land use designations provide structured land use in a way that contributes to the efficiency of the modular force structure and minimizes potential problems, such as incompatible land use activities. The Proposed Action would provide beneficial minor contributions in the long-term; therefore, the past, present, and reasonably foreseeable future actions, combined with the Proposed Action, would have minor beneficial long-term cumulative effects on land use.

3.13.4 Air Quality

Cumulative air quality effects occur when multiple projects affect the same geographic areas at the same time or when sequential projects extend the duration of air quality effects on a given area over a longer period. The air quality effects of the Proposed Action are primarily due to temporary construction (operational effects are minor). Temporary construction-related air quality issues include local fugitive dust and more regional issues related to ozone precursor emissions from construction equipment engine exhaust.

Criteria Pollutants

Emissions of criteria pollutants from cumulative projects would affect the local area, but effects should be minimal because the proponents of the cumulative projects are expected to use such BMPs as dust minimization practices to ensure that their projects comply with air quality standards. Thus, cumulative air quality effects from the Proposed Action and other local and regional projects are considered minor adverse.

Greenhouse Gas Emissions

GHG emissions from sources associated with the Proposed Action would combine with the GHG emissions from other cumulative projects. As noted above, state and federal agencies have not yet

3.13.5 Noise

The ROI for cumulative effects is within the Fort Carson cantonment area. Existing noise levels in this ROI are relatively low and are primarily the result of vehicular traffic patterns. The past, present, and reasonably foreseeable future actions, when combined with the Proposed Action, would not significantly alter existing noise levels in the ROI or exceed established DoD noise levels or applicable regulatory standards and would therefore have a minor adverse cumulative effect on noise levels.

3.13.6 Geology and Soils

The Proposed Action includes using both temporary and permanent erosion and sedimentation control measures to minimize erosion effects. Erosion and sedimentation control measures are expected to be applied as necessary at surrounding project locations where foreseeable land disturbing activities would occur to preclude significant erosion effects. In addition, each project is anticipated to take the appropriate measures to preclude significant effects from expansive soils. Minor adverse cumulative effects with respect to geology and soils are expected.

3.13.7 Water Resources

Minor adverse cumulative effects on water resources are anticipated. During construction of the new facilities under the Proposed Action, there would be an increased potential for water quality degradation due to silt runoff from disturbed areas at the construction site. However, implementing a SWPPP, which includes engineering BMPs for erosion control, would control localized silt runoff from reaching receiving waters. Similar measures are expected to be used at construction sites for other projects throughout the installation to preclude significant water quality degradation from construction.

3.13.8 Biological Resources

Colorado's biological diverseness is under constant pressure from development, construction, and general human pressures, which individually and collectively hasten the deterioration of native landscapes and forests. Declines in native habitats, no matter how minor, contribute in a proportionally meaningful way, with adverse consequences on vegetation and wildlife. Adverse cumulative effects are expected over time due to this trend toward general decline of native habitats, vegetation, and wildlife species, largely resulting from continued habitat loss.

Because it is assumed that the Army would follow identified protocols to protect biological resources, it is also assumed that cumulative projects would comply with applicable regulations and policies governing biological resources. Therefore, there would be no cumulative effects on biological resources from conflicts with natural resource regulations. The cumulative projects would likely increase activity within the area and may involve construction-related activities, an increase in human presence, noise, erosion, dust, and a continued removal of habitat (even though it is already disturbed). These effects would be adverse for biological resources.

The ROI has limited, if any, sensitive biological resources and is already highly disturbed. However, the development of any habitat may contribute in a cumulative fashion to a reduction in the quality and quantity of biological resources. Effects on biological resources would be minor in the ROI because the biological resources affected by the Proposed Action are primarily limited to common native and alien species. Therefore, the contribution of the Proposed Action to the overall adverse cumulative effects of numerous projects would be minor.

3.13.9 Cultural Resources

The Proposed Action would not significantly impact cultural resources. No archaeological resources of significance, TCPs, or other Native American resources are within the proposed project areas of potential effects (APEs). Any inadvertent discoveries would be addressed by implementing the Fort Carson Standard Operating Procedures (SOPs) for Inadvertent Discovery of Archaeological Resources or Burials and by complying with the Native American Graves Repatriation Act.

Because the Proposed Action would not have significant impacts on cultural resources, cumulative projects, with the inclusion of similar measures as those mentioned above, would also reduce significant impacts, and there would be no significant cumulative effects on cultural resources.

3.13.10 Socioeconomics and Environmental Justice

The cumulative projects would increase economic activity and demand for services in the region. These projects would temporarily increase regional employment and spending during their construction phases. As such, the Proposed Action would marginally contribute to cumulative beneficial effects on the economy in the ROI.

The Proposed Action would not result in any effect on minority or low-income populations and would not contribute to a cumulative effect on environmental justice. Further, the Proposed Action would not contribute to any adverse effects relating to the endangerment of children.

3.13.11 Transportation

Development projects are actions that can lead to an increase in traffic or change in vehicular, pedestrian, and bicycle circulation, and roadway projects are often designed to address these changes. The development projects listed in Table 3.13-1 are likely to result in increased personnel at Fort Carson and the ROI, which would result in minor long-term adverse effects on traffic, such as increased vehicle traffic and congestion at gates, intersections, and major throughways, particularly during peak travel times. The road, intersection, and gate alignment improvements would provide minor long-term beneficial effects on vehicle, pedestrian, and bicycle circulation and parking. The construction projects described in Table 3.13.-1 would have minor short-term adverse effects on vehicular, pedestrian, and bicycle circulation for the duration of each construction period.

Implementation of the Proposed Action, in addition to proposed Army growth initiatives and construction projects identified in Table 3.13-1, would add to the minor adverse transportation cumulative effects (increased vehicle traffic and congestion).

Implementation of mitigation measures for transportation effects for the projects shown in Table 3.13-1, such as those identified in the *2008 Fort Carson, Colorado Comprehensive Transportation Study Update*, would reduce the adverse cumulative effects of the Proposed Action. For example, recommendations identified in the study include infrastructure improvements and staggered exercise or reporting times. The Proposed Action is anticipated to provide additional housing on-post, which may reduce the need for Army families to live off-post and to commute to Fort Carson and provide the opportunity to walk to work, thus having a minor beneficial effect on transportation. Therefore, the past, present, and reasonably foreseeable future actions, combined with the Proposed Action, would have minor adverse and minor beneficial cumulative effects on transportation and circulation.

3.13.12 Utilities

Past, present, and future projects would cumulatively increase the demand for public services and utilities in the Fort Carson ROI in the short-term and long-term. The ROI for the cumulative effects on public services and utilities is the overlap of the ROIs of the Proposed Action and the areas affected by the cumulative projects listed in Table 3.13-1 and any other past, present, or reasonably foreseeable future action.

The Proposed Action and cumulative projects would increase electrical and potable water consumption, wastewater generation, stormwater and solid waste generation, and demands on communication systems. However, significant cumulative effects are not anticipated because the Army is expected to ensure that the capacity of infrastructure systems is not exceeded by upgrading existing and constructing new critical infrastructure where existing infrastructure would not be sufficient to meet anticipated utility demand. Additionally, including BMPs, such as porous pavement, evaporation detention ponds, and bio-swales to reduce stormwater runoff, would also mitigate cumulative effects. Presumably, the projects listed in Table 3.13-1 would not occur without environmental review to identify mitigation for these and potentially other issues. When compared to the cumulative projects list, the Proposed Action would increase the demand for public services and utilities in the short term and long term, but this demand would be met from the existing infrastructure, thereby making the Proposed Action's contribution to cumulative effects minor adverse.

3.13.13 Hazardous and Toxic Substances

Cumulative effects related to hazardous materials and conditions could result from the increased use of hazardous substances, the increased potential for accidental releases of hazardous substances, the increased generation of hazardous waste, the potential to exceed disposal capacity at local or regional permitted disposal facilities, and the increased risk of wildfires associated with the combined effects of other known or reasonably anticipated projects and the Proposed Action. The ROI for cumulative effects is the ROI for hazardous materials and conditions, plus the areas affected by the cumulative projects listed in Table 3.13-1.

The Proposed Action and many of the projects described in Table 3.13-1 would involve construction. This would result in an incremental increase in the transportation, use, and storage of common hazardous and toxic substances, such as petroleum, oils, lubricants, and solvents, for the duration of these activities. The rate of generation of hazardous waste and the chance for an accidental release of hazardous materials would also increase incrementally. All projects are expected to comply with all relevant laws, ordinances, and regulations and to implement standard industry BMPs related to hazardous materials management, which would minimize risks to human health and the environment. Therefore, the cumulative effect would be minor adverse.

Although the Proposed Action would overlap the construction schedule of some of the cumulative projects, the amount of solid and hazardous waste generated on a daily basis would not likely exceed local and regional disposal capacity. The Proposed Action does not involve MEC or burning and would not contribute to this cumulative effect.

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3.14 MITIGATION SUMMARY

This chapter summarizes existing and potential mitigation measures that have the potential to reduce environmental impacts of the Proposed Action or alternatives. No mitigation measures are necessary to avoid significant impacts.

3.14.1 General Mitigation Measures

25-Year Sustainability Goals

Fort Carson adopted twelve *25-Year Sustainability Goals* in 2002 which are described in more detail in Section 3.12. Achievement of these goals, by nature, would mitigate current and future impacts of the Proposed Action or alternatives.

Sustainability and Environmental Management System

Fort Carson adopted the International Organization for Standardization Environmental Management Standard 14001 (ISO 14001) in 2002 and declared conformance in November 2007. In accordance with ISO 14001, the installation maintains an Environmental Management System (EMS) that includes a multitude of plans, policies, and procedures that support continual improvement.

3.14.2 Specific Mitigation Measures

Table 3.14-1 presents a summary of existing and potential mitigation opportunities for reducing or eliminating potential impacts of the Proposed Action. The table describes potential impacts, existing mitigation practices, and potential mitigation measures that apply.

Table 3.14-1
Summary of Mitigation Measures

Air Quality
• Fort Carson Family Housing, LLC (FCFH) will implement air pollution mitigation as required under the FCFH Ground Lease.
Noise
• FCFH will ensure sound attenuation is installed between town homes in accordance with the current Construction, Renovation and Condition Standards for Residential Communities Initiative (RCI) Family Housing Program.
Geology and Soils
• FCFH will implement mitigation measures to the extent such activities are the responsibility of FCFH under the Ground Lease.
Water Resources
• FCFH will implement stormwater mitigation measures to the extent such activities are the responsibility of FCFH under the Ground Lease.
Biological Resources
• FCFH will implement natural resource mitigation measures to the extent such activities are the responsibility of FCFH under the Ground Lease. • Moreover, FCFH shall cut no timber, conduct no mining operations, remove no underground water, sand, gravel, or kindred substances from the ground, commit no waste of any kind, nor in any manner substantially change the contour or condition of the Site, except in compliance with the Natural Resource Management Plan. FCFH may salvage fallen or dead timber provided FCFH does not make commercial use of the timber. All marketable sales of forest products or natural resources shall be conducted by the Secretary, and the proceeds shall go to the Secretary and not be available to the Lessee under the provisions of the Ground Lease.
Cultural Resources
• FCFH shall not knowingly remove or disturb, or cause or permit to be removed or disturbed, any historical, archeological, architectural or other cultural artifacts, relics, remains or objects of antiquity, absent compliance with applicable statutes. In the event such items are discovered on the Project, FCFH shall immediately notify the Garrison Commander and protect the area and the material from further disturbance until the Garrison Commander or his designee gives clearance to proceed in accordance with the Ground Lease.
Transportation
• FCFH will coordinate with DPW's Traffic Engineer, as required, to implement traffic control procedures, such as flaggers and posting detours, to minimize impacts to traffic flow during construction.
Utilities
• FCFH shall design new homes capable of achieving a minimum "Silver" rating in accordance with the current Construction, Renovation and Condition Standards for Residential Communities Initiative (RCI) Family Housing Program. • FCFH will bury cables and underground services in new housing areas in accordance with the current Construction, Renovation and Condition Standards for Residential Communities Initiative (RCI) Family Housing Program.
Hazardous and Toxic Substances
• Asbestos and lead-based paint will be abated to the standards required by federal, state, county, and local regulatory requirements. • FCFH will incorporate radon control, if required, into the design and construction of new homes and ancillary facilities in accordance with the current Construction, Renovation and Condition Standards for Residential Communities Initiative (RCI) Family Housing Program and the Ground Lease.

4.0 FINDINGS AND CONCLUSIONS

4.1 INTRODUCTION

This EA identifies, documents, and evaluates the potential environmental effects of implementing the Proposed Action and the No Action Alternative at Fort Carson, Colorado. Section 3.0 describes existing environmental conditions at Fort Carson family housing areas that could be affected by the Proposed Action and identifies potential environmental effects that could occur if the alternatives were implemented. The following resources were addressed in Section 3.0:

- Land use;
- Air quality;
- Noise;
- Geology and soils;
- Water resources;
- Biological resources;
- Cultural resources;
- Socioeconomics and environmental justice;
- Transportation;
- Utilities;
- Hazardous and Toxic Substances; and
- Sustainability.

4.2 FINDINGS

Table 4-1 summarizes the predicted effects for each resource area from both the Proposed Action and the No Action Alternative.

Under the Proposed Action, minor adverse effects are expected for aesthetics and visual resources, air quality, biological resources, cultural resources, environmental justice, hazardous materials and conditions, geology, soils, and seismicity, noise, transportation, utilities, and water resources. Beneficial effects are expected for hazardous materials and conditions (wildfires), land use, and socioeconomics.

Minor adverse effects are expected on wildfires under the No Action Alternative. No effects are expected for all other resources under the No Action Alternative.

Table 4-1
Summary of Potential Environmental and Socioeconomic Consequences

Resource	Environmental and Socioeconomic Consequences	
	Proposed Action	**No Action Alternative**
Land Use		
• Archaeological resources	Minor beneficial	None
Air Quality		
• Criteria air pollutants	Short-term minor adverse; long-term none	None
• Greenhouse gases	Minor adverse	None
Noise		
• Construction noise	Short-term, minor adverse; long-term, none	None
• Operation and maintenance	Short-term, minor adverse; long-term, none	None
Geology and Soils		
• Erosion	Short-term minor adverse: long-term none	None
• Expansive soils	Minor adverse	None
Water Resources		
• Surface water runoff and erosion	Short-term, minor adverse; long-term, none	None
• Flood Hazards	None	None
Biological Resources		
• Take a sensitive status species or result in a jeopardy opinion	None	None
• Reduce the population of a sensitive species	None	None
• Damage or degrade wetlands or riparian habitat	None	None
• Interfere with the movement of any native residents or migratory wildlife species	Minor adverse	None
• Alter of destroy habitat	Minor adverse	None

Table 4-1
Summary of Potential Environmental and Socioeconomic Consequences

Resource	Environmental and Socioeconomic Consequences	
	Proposed Action	**No Action Alternative**
• Introduce or increase the prevalence of undesirable nonnative species	Minor adverse	None
• Cause long-term loss or impairment of a substantial portion of local habitat	None	None
Cultural Resources		
• Archaeological resources	None	None
• Traditional Native Coloradoan Resources	None	None
• Built environment resources	None	None
Socioeconomics / Environmental Justice		
• Population	None	None
• Employment and total income	Short-term, beneficial; long-term, none	None
• Demand for housing	Beneficial	None
• Demand on public services (for example, schools)	None	None
• Low-income or minority groups	None	None
• Endangerment to children	None	None
Transportation		
• Intersection operations	Minor adverse	None
• Roadway segment operations	Minor adverse	None
• Parking	None	None
• Pedestrian facilities	None	None
• Bicycle facilities	None	None

Table 4-1
Summary of Potential Environmental and Socioeconomic Consequences

Resource	Environmental and Socioeconomic Consequences	
	Proposed Action	**No Action Alternative**
Utilities		
• Police, fire, and emergency management	Minor adverse	None
• Portable water supply	Minor adverse	None
• Sanitary waste water	Minor adverse	None
• Storm water	Short-term, minor adverse; long-term, none	None
• Solid waste	Minor adverse	None
• Communications	None	None
• Electricity	Short-term, minor adverse; long-term none	None
Hazardous and Toxic Substances		
• MEC	None	None
• Pesticides	Minor adverse	None
• Petroleum products	Minor adverse	None
• IRP sites	None	None
• Transport, use of storage, and disposal of hazardous substances	Minor adverse	None
• Wildfires	Beneficial	Minor adverse

4.3 CONCLUSIONS

Implementing the Proposed Action would have no significant direct, indirect, or cumulative effects on the resources above, so an environmental impact statement need not be prepared. This EA supports the issuance of a finding of no significant impact.

5.0 REFERENCES

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6.0 LIST OF PREPARERS

This EA was prepared by Gryphon Environmental, LLC, with support from FCFH and DPW, as well as individuals listed in Section 7, *Persons Consulted*. Below are backgrounds of personnel within Gryphon Environmental, LLC, who either prepared or edited this assessment.

Robert Ford
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7.0 PERSONS CONSULTED

Carson, Dan, Operations Manager, Fort Carson Family Housing

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Granger, Eldon, Environmental Division, Directorate of Public Works, Fort Carson

Johnson, Brad, National Environmental Policy Act Specialist, Environmental Division, Directorate of Public Works, Fort Carson

Martin, David, Toxics Program Manager, Environmental Division, Directorate of Public Works, Fort Carson

Miller, Steve, Senior Project Manager, Balfour Beatty Construction

Mooney, Robert, Project Director, Fort Carson Family Housing

Owings, Debra, NEPA Program Manager, Directorate of Public Works

Rivero-deAguilar, Carlos, Chief, Environmental Division, Directorate of Public Works, Fort Carson

Whiting, Betty, Archaeologist/Historic Preservation Specialist, Environmental Division, Directorate of Public Works, Fort Carson

Yohn, Richard, Pollution Prevention / Environmental Management System Coordinator, Environmental Division, Directorate of Public Works, Fort Carson

APPENDIX A
Public Involvement

AFFIDAVIT OF PUBLICATION

STATE OF COLORADO
COUNTY OF EL PASO

I, Nicole Jones, being first duly sworn, deposes and says that she is the Legal Sales Representative of FREEDOM COLORADO INFORMATION, INC., a corporation, the publishers of a daily public newspaper, which is printed and published daily in whole at the city of Colorado Springs in the County of El Paso, and the State of Colorado, and which is called The Gazette; that a notice of which the annexed is an exact copy, cut from said newspaper, was published in the regular and entire editions of said newspaper **1 time(s) to wit February 1, 2012.**

That said newspaper has been published continuously and uninterruptedly in said County of El Paso for a period of at least six consecutive months next prior to the first issue thereof containing this notice; that said newspaper has a general circulation and that it has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879 and any amendment thereof, and is a newspaper duly qualified for the printing of legal notices and advertisement within the meaning of the laws of the State of Colorado.

Nicole Jones
Legal Sales Representative

Subscribed and sworn to me this **February 1, 2012,** at said City of Colorado Springs, El Paso County, Colorado. My commission **expires April 5, 2015.**

Lora Ramirez
Notary Public

The Gazette

LORA RAMIREZ NOTARY PUBLIC STATE OF COLORADO My Commission Expires 04-05-2015

NOTICE TO THE PUBLIC
FORT CARSON ADDITIONAL FAMILY HOUSING UNITS

Fort Carson, Colorado has completed an Environmental Assessment (EA) and a Draft Finding of No Significant Impact (FONSI) for the construction and operation of new family housing units within the cantonment area on Fort Carson.

The purpose of the EA and FONSI is to document environmentally related findings and determine whether the proposed action would have a significant impact on the natural and human environment.

In order to seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking, this notice is also soliciting comments under the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act in accordance with 36 CFR 800.2(d) and 36 CFR 800.3(e).

Comments on this action are invited and will be accepted for 30 days following the date this notice is published. Copies of the EA and Draft FONSI are available in the Penrose Public Library, 20 N Cascade Ave., Pueblo West Library, 298 S. Joe Martinez Boulevard, Fountain Library, 230 S. Main Street, Fountain; and the Fort Carson Grant Library, Bldg 1528, Flint Street, Fort Carson. Written comments or concerns about the proposed action should be directed to:

Fort Carson NEPA Coordinator
Directorate of Public Works, Environmental Division
1626 Evans St., Bldg. 1219
Fort Carson, CO 80913-5035
usarmy.carson.imcom-central.list.dpw-ed-nepa@mail.mil

For media queries contact the Fort Carson Public Affairs Office Media Relations Office at (719) 526-4143.

Published in The Gazette February 1, 2012.

AFFIDAVIT OF PUBLICATION

THE PUEBLO CHIEFTAIN

State of Colorado)

Pueblo Chieftain

ROB FORD
GRYPHON ENVIRONMENTAL LLC
604 MONTRAIL DR
COLORADO SPGS CO 80911-3842

REFERENCE: 811320
L52587 FORT CARSON ADDITION

TAMARA S CHAMBERS, being first duly sworn upon her oath says: That she is a representative of THE STAR-JOURNAL PUBLISHING CORPORATION, and has personal knowledge of the facts set forth herein; that said Corporation is a corporation organized under the laws of the State of Colorado and that its principal office and place of business is in the city of Pueblo, in the County of Pueblo, in the State of Colorado; that it is the proprietor, printer and publisher of THE PUEBLO CHIEFTAIN, which is, and at all times herein mentioned was a daily newspaper of general circulation printed and published in said City of Pueblo; that said newspaper is, and at all times herein mentioned was, published daily: has been admitted to the United States Mails as a second class matter under the provisions of the Act of Congress of March 3, 1879, and any amendments thereof, and is duly qualified for publishing legal notices and advertisements within the meaning of the laws of the state of Colorado of which is attached a true copy cut from said newspaper and was published on the following dates:

PUBLISHED ON: 02/01

FILED ON: 02/03/12

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For media queries contact the Fort Carson Public Affairs Office Media Relations Office at (719) 526-4143.

L52587

In witness whereof, I have hereunto set my hand this 6th day of Feb A.D. 2012

Tamara S Chambers

Subscribed and sworn to before me this 6th day of Feb A.D. 2012

My commission expires December 5, 2012.

Notary Kimberly Chavez

THE EL PASO COUNTY ADVERTISER AND NEWS,
FOUNTAIN, COLORADO 80817
STATE OF COLORADO

ss.

COUNTY OF EL PASO

I, Karen M. Johnson, do solemnly swear that I am General Manager of the El Paso County Advertiser and News, that the same is a weekly newspaper printed, in whole or in part, and published in the County of El Paso, state of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of El Paso for a period of more than 52 weeks next prior to the first publication of the annexed notice and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

That copies of each number of said paper in which said notice and list were published were delivered by carriers or transmitted by mail to each of the subscribers of said paper for a period of **1** consecutive insertions, once each week, and on the same day of each week; and that first publication of said notice was in the issue of said newspaper dated **Feb. 1**, A.D. **2012** and that the last publication of said notice was in the issue of said newspaper dated **Feb. 1** ,A.D. **2012**.

Karen M. Johnson
General Manager

Subscribed and sworn to before me, a notary public and for the County of El Paso, State of Colorado, this **1st** day of **Feb.** A.D. **2012**

Marianne McBride
Notary Public
My Commission Expires September 30, 2012

MARIANNE MCBRIDE NOTARY PUBLIC STATE OF COLORADO

NOTICE TO THE PUBLIC
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In order to seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking, this notice is also soliciting comments under the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act in accordance with 36 CFR 800.2(d) and 36 CFR 800.3(e).

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For media queries contact the Fort Carson Public Affairs Office Media Relations Office at (719) 526-4143.

Published in the El Paso County Advertiser and News
Publication Date: February 1, 2012

APPENDIX B
Draft Record of Non-applicability

GENERAL CONFORMITY – RECORD OF NON-APPLICABILITY

Project Name: Construct Additional Family Housing Units (Cherokee Village and Old Hospital Site), Fort Carson, Colorado

Location: Fort Carson cantonment area

Within the carbon monoxide (CO) Attainment Maintenance Area: Yes

Activity Type: Construction of Family Housing Units

Year of Project: Construction estimated to begin in June 2012 and expected to be completed by February 2015

Duration of Project: 40 Months

Information Source/POC: Mr. Rob Ford, Gryphon Environmental, LLC. Phone (719) 491-7012.

NEPA Documentation: Environmental Assessment

See attached Supporting Documentation for General Conformity-RONA based on the Air Conformity Applicability Model results.

General Conformity under the Clean Air Act, Section 176, has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because:

Total emissions from this project have been estimated and are below the conformity threshold value established at 40 CFR 93.153 (b) of 100 tons CO per year for a Carbon Monoxide Maintenance Area and are not considered regionally significant (48.5 tons per day) under 40 CFR 93.153 (i).

Signed:_____ Date: _____

CF: DPW-ED NEPA Program

APPENDIX C
Agency Coordination

OFFICE *of* ARCHAEOLOGY *and* HISTORIC PRESERVATION

01 APR REC'D

March 24, 2010

Carlos Rivero-deAguilar
Chief, Environmental Division
Department of the Army
Fort Carson
1626 O'Connell Boulevard, Building 813
Fort Carson, CO 80913

Re: Section 106 Consultation on Proposed Demolition of Building 814 and 5510, Fort Carson, CO (CHS #56545)

Dear Mr. Rivero-deAguilar:

Thank you for your correspondence dated March 15, 2010 and received by our office on March 22, 2010 regarding the review of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

After review of the provided information, we do not object to the proposed Area of Potential Effects (APE) for the proposed project. After review of the scope of work and assessment of adverse effect, we concur that buildings 814 and 5510/5EP.5892 are not eligible for the National Register of Historic Places. After review of the assessment of adverse effect, we concur with the recommended finding of *no historic properties affected* [36 CFR 800.4(d)(1)] under Section 106 for the demolition of buildings 814 and 5510.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties. If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Manager, at (303) 866-4678.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer

COLORADO HISTORICAL SOCIETY
1300 BROADWAY DENVER COLORADO 80203 TEL 303/866-3395 FAX 303/866-2711 www.coloradohistory-oahp.org

HISTORY Colorado

November 7, 2011

RECEIVED NOV 14 2011

Carlos Rivero-deAguilar
Chief, Environmental Division
Department of the Army
Fort Carson
1626 O'Connell Boulevard, Building 813
Fort Carson, CO 80913

Re: Section 106 Consultation on Review and Evaluation of the Old Hospital Complex Historic District/5EP.1778, Fort Carson, CO (CHS #60662)

Dear Mr. Rivero-deAguilar:

Thank you for your correspondence dated October 26, 2011 and received by our office on October 26, 2011 regarding the review of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

After review of the submitted, we concur that the Old Hospital Complex Historic District/5EP.1778 is no longer eligible for the National Register of Historic Places. We also concur that individually, the buildings within the Old Hospital Complex Historic District are not eligible for the National Register of Historic Places.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Manager, at (303) 866-4678.

Sincerely,

for Edward C. Nichols
State Historic Preservation Officer

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
DIRECTORATE OF PUBLIC WORKS
5050 TEVIS STREET, BLDG 305
FORT CARSON, CO 80913-4143

REPLY TO
ATTENTION OF

[Please note that your return correspondence should be addressed to the undersigned at 1626 O'Connell Street, Building 813, Fort Carson, Colorado, 80913.]

Directorate of Public Works

Subject: Section 106 Consultation on Review and Evaluation of the Old Hospital Complex (OHC) Historic District (5EP.1778), Fort Carson, Colorado

Mr. Ed Nichols
State Historic Preservation Officer
Colorado Historical Society
1200 Broadway
Denver, Colorado 80203

Certified Mail Receipt No:
7010 1060 0001 0055 4835

Dear Mr. Nichols:

This letter is intended to initiate Section 106 consultation for the purpose of reviewing and evaluating the status of the Old Hospital Complex Historic District here on Fort Carson. Due to the extreme loss of district integrity, Fort Carson proposes that the Old Hospital Complex (OHC) is no longer eligible for inclusion in the National Register of Historic Places (NRHP) as a district and that none of the five buildings which the Army will retain for the foreseeable future are individually eligible for inclusion in NRHP.

Over the course of the last ten years many of the abandoned and dilapidated buildings that made up the original OHC have been demolished in accordance with Stipulation 1.c. of the *2002 Memorandum of Agreement (MOA) Between the Department of the Army, Headquarters, Fort Carson and the Colorado State Historic Preservation Office Regarding the Old Hospital Complex, Fort Carson, Colorado*. Nine more buildings (6231, 6232, 6234, 6250, 6282, 6283, 6384, 6285, 6290) are scheduled to be demolished in December 2011. Demolition activities are expected to be completed by April 2012. Once the land has been cleared of these OHC buildings, Fort Carson proposes to construct additional new Soldier Family housing units similar to those that currently border the district to the north and east (CHS #55426). Construction activities for the housing project are tentatively scheduled to begin in the summer of 2012.

The five buildings (6222, 6236, 6237, 6270, 6271) that the Army plans to retain at this time all have varying degrees of loss to their physical integrity. Buildings 6222, 6270 and 6271 retain their original exterior concrete block, but have undergone extensive interior renovations due to changes in the use and function of the buildings. The interior of building 6236 had also been heavily modified prior to the MOA as recorded by Spevak (1995). Since then, the interior had been extensively modified to serve the building's current function as administrative space. As a result of restorations

completed in 2008, only the interior of building 6237 retains an appearance that is close to that of its 1942 construction date and original function. The building plans for all five buildings are the generic 800 Series produced by the Department of the Army and constructed on Army installations all over the United States in the 1940's.

Despite best efforts to retain authentic World War II historic exteriors for buildings 6236 and 6237, the out-insulation exterior treatment chosen to combat high energy costs caused by the poor insulation qualities of older masonry buildings, conceals the historic concrete block exteriors of both buildings. This exterior treatment was chosen because moisture and thermal action over time had deteriorated the walls to such an extent that cracks in the original concrete block could not be permanently repaired and continued to reopen.

Our initial request for SHPO review of this exterior treatment was presented in correspondence dated October 23, 2000. This letter also included copies of several documents that proposed the guiding concepts and plans for the adaptive re-use of building 6237. The use of out-insulation was again proposed in a statement of work sent to the SHPO with correspondence dated August 15, 2001, when Fort Carson initiated consultation on amending the 1995 OHC MOA. Other information concerning out-insulation was sent to the SHPO in correspondence dated November 7, 2001. Correspondence from the SHPO dated December 27, 2001, acknowledged the receipt of our November letter, but indicated that our information concerning buildings 6236 and 6237 would be addressed in a separate letter; we are unable to locate a copy of this subsequent correspondence. A letter dated December 3, 2007, referring to a site visit made by SHPO personnel, questioned Fort Carson's use of out-insulation on one of the buildings and indicated that your office was unable to locate correspondence from Fort Carson concerning its proposed use.

With the demolition of most of the buildings in the OHC and the 2009 construction of Soldier Family housing (CHS #55426) to the north and east of the current historic district, the district's sense of feeling and setting has all but disappeared. The middle school located across the street to the west and the 1957 era Capehart housing (2002 ACHP Program Comments) located south of the current district boundary also contribute to the new residential feel of the area. Another residential area (ca. 2003) located to the southwest of the current district on top of the ridge behind building 6215 can also be seen from the OHC. If a patient of the hospital in 1942 visited today, they would be hard pressed to recognize the area as the location of the WWII era hospital where treatment was provided. Taking all of this into consideration, there is no historic viewshed left to protect.

The gradual demolition of OHC buildings over the last ten years has had an irreversible adverse effect on the integrity of the historic district. Despite the best of intentions in 1995 when Fort Carson and SHPO forged the first OHC MOA, changes in military mission, changes related to mission facility requirements, and the high cost of

building maintenance for older structures, and the current reduced funding realities have all combined to make the demands of maintaining the OHC district and its buildings to Secretary of the Interior Standards an untenable situation at the present time.

However, in accordance with the MOA, extensive documentation of the district has been completed: *Documentation and National Register Assessment of the Old Hospital Complex and Red Creek Ranch, Fort Carson Military Reservation, El Paso County, Colorado (Barnes, 1992); The Old Hospital Complex (5EP1778) Fort Carson, Colorado* (Connor and Schneck,1995); *Fort Carson in World War II: The Old Hospital Complex* (Connor and Schneck, 1997); and Historic Architectural Building Survey (HABS) Level II documentation (1996) have all been submitted to your office along with a maintenance manual (Schneck, 1997) for the district buildings and a condition assessment of building 6237 (Napier and McCarthy, 2000). It is interesting to note that the original assessment performed by Barnes in 1992 also determined that the Old Hospital Complex was not eligible for inclusion in the NRHP.

Consequently, Fort Carson's Cultural Resources Manager proposes a determination that the Fort Carson Old Hospital Complex (5EP.1778) is no longer eligible for inclusion in the NRHP as a historic district, and that buildings 6222, 6236, 6237, 6270, and 6271 are not individually eligible. Fort Carson is requesting concurrence with this determination.

Due to the nature and scope of this undertaking, in accordance with 36 CFR 800.2(c)(3), Fort Carson has identified the City of Colorado Springs Historic Preservation Board, the El Paso County Commissioners, and Colorado Preservation, Inc. as additional consulting/interested parties for this action. The point of contact for this issue is Wayne Thomas, Chief, NEPA and Cultural Management Branch, (719) 526-1852 or FAX (719) 526-1705, or by email at george.w.thomas16.civ@mail.mil.

Sincerely,

Carlos Rivero-deAguilar
Chief, Environmental Division

Signed: 10/24/11

Enclosures

APPENDIX D

Fort Carson's Inadvertent Discovery of Archaeological Resources or Burials Standard Operating Procedure

Purpose
This SOP outlines procedures to be followed in the event of inadvertent discovery of archeological resources or burial sites during military training or other Army-sanctioned activities, including recreational activities.

Authorities
ARPA of 1979; NAGPRA; NHPA of 1966, as amended; 36 CFR 800, DoD Instruction 4715; AR 200-4

6.3.1 Who is Responsible for Inadvertent Discovery
Implementation of this SOP is the responsibility of field troops, unit commanders, civilian personnel, recreational users, Range Division, and the CRM, who will contact other parties as appropriate.

6.3.2 Procedures

Step 1. Upon discovery of archeological materials or human remains, field troops, 7th ID and Fort Carson personnel, or any other applicable users (*e.g.*, recreational users) will immediately cease any ground-disturbing operations and report the finding to Range Division (soldiers will report to their unit commander, who will report the finding to Range Division). If the discovery is during facilities maintenance operations in the cantonment area, then DPW will be notified in lieu of Range Division. In the case of ongoing operations (*e.g.*, military training, facilities maintenance operations), a buffer zone (100-meter) may be established around the find, outside which ground-disturbing operations may continue.

Step 2. Range Division or DPW, as appropriate, will contact the CRM at:

Cultural Resources Manager
Building 1219
1626 Evans Street
Fort Carson, CO 80913-4362
(719) 526-3806
Pamela.d.miller26.civ@mail.mil

Step 3. The CRM will inspect the area.

Contingency 1: Human Remains Present
If human remains are present, the CRM will determine whether they may be associated with a crime scene. If there may be a crime scene, the CRM will notify the Provost Marshals Office (PMO) and the Criminal Investigation Division (CID). PMO and CID will assume

custody of the area. If the remains are not associated with a crime scene, the CRM will immediately proceed with the NAGPRA SOP (Section 6.4).

Contingency 2: Cultural Materials Found
If cultural materials (*i.e.*, artifacts, features, etc.) are found without a burial, the preferred alternative will be to move ground-disturbing operations to another location and include the area in future archeological inventory, as described in Section 5.2.1. If operations cannot be moved to avoid the site (or if operations are likely to occur in the area in the near future), the CRM will proceed to Step 4.

Contingency 3: Only Natural Formations
If the CRM is able to determine that the finding represents merely natural formations, the CRM will inform Range Division and prepare a written Memorandum For Record detailing the finding. Operations may proceed unimpeded.

Step 4 (if necessary):
The CRM will initiate the Section 106 process (Section 6.2, *SOP: The Section 106 Process*) in the case of an archeological site or NAGPRA consultation (Section 6.4, *SOP: Native American Graves Protection and Repatriation Act Standard Operating Procedures (Interim)*) in the case of a burial. Operations may proceed following completion of the appropriate review processes and pursuant to any resulting agreement documents.

APPENDIX E

Acronyms

AR	Army Regulation
ACBM	Asbestos-Containing Building Material
ACM	Asbestos-Containing Material
ASIP	Army Stationing and Installation Plan
BMP	Best Management Practice
CAA	Clean Air Act
CCS	Center for Climate Strategies
CDLE	Colorado Department of Labor and Employment
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalents
CSU	Colorado Springs Utilities
dBa	A-weighted decibels
DECAM	Directorate of Environmental Compliance and Management
DPW	Directorate of Public Works
DPW-ED	Directorate of Public Works – Environmental Division
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
FCFH	Fort Carson Family Housing, Limited Liability Company
FNSI	Finding of No Significant Impact
GHG	Greenhouse Gases
GPM	Gallons Per Minute
HMA	Housing Market Analysis
HVAC	Heating, Ventilating, and Air Conditioning
ICRMP	Integrated Cultural Resources Management Plan
ICUZ	Installation Compatible Use Zone
INRMP	Integrated Natural Resources Management Plan
IPCC	Intergovernmental Panel on Climate Change
LEED	Leadership in Energy and Environmental Design
LLC	Limited Liability Company
LOS	Levels of Service
Mg/L	Milligrams per Liter
MHPI	Military Housing Privatization Initiative
MS4	Municipal Separate Storm Sewer System
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NO_x	Nitrogen Oxides
NOA	Notice of Availability
NOI	Notice of Intent

NPDES	National Pollutant Discharge Elimination
NRCS	Natural Resource Conservation Service
NZ	Noise Zones
PCB	Polychlorinated Biphenyl
$PM_{2.5}$	Particulate Matter (nominally 2.5 microns and less)
PM_{10}	Particulate Matter (nominally 10 microns and less)
PSD	Prevention of Significant Deterioration
PX	Post Exchange
OSD	Office of the Secretary of Defense
OHS	Old Hospital Site
RCI	Residential Communities Initiative
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur Dioxides
SOP	Standard Operating Procedure
SPiRiT	Sustainable Project Rating Tool
SWMP	Stormwater Management Plan
SWMU	Solid Waste Management Unit
SWPPP	Stormwater Pollution Prevention Plan
TPY	Tons per Year
UFAS	Uniform Federal Accessibility Standards
U.S.	United States
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Vpd	Vehicles Per Day
WBCSD	World Business Council on Sustainable Development
WRI	World Resources Institute