

**STAFF SUMMARY SHEET**

	TO	ACTION	SIGNATURE (Surname), GRADE AND DATE		TO	ACTION	SIGNATURE (Surname), GRADE AND DATE
1	90 MW/ JA	Coord	<i>Matthew Simms, Capt, USAF</i> 22 June 2012	6	90 MW/ CV	Coord	
2	90 MSG/ CC	Coord	<i>Travis K. Leighton, Lt Col, USAF</i> 26 June 2012	7	90 MW/ CC	Sign	<i>Collect Co 26 June 12</i>
3	90 MW/ CCEA	Coord		8	90 CES/ CC	File	
4	90 MW/ CCE	Coord		9			
5	90 MW/ CCS	Coord		10			

SURNAME OF ACTION OFFICER AND GRADE	SYMBOL	PHONE	TYPYST'S INITIALS	SUSPENSE DATE
Beckwith, GS-11	90 CES/CEAN	773-3667	rs	20120622
SUBJECT				DATE
Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Decommissioning and Demolition of the Central Heat Plant, GHLN 09-1010B				20120605

**SUMMARY**

- PURPOSE:** To obtain signature by 90 MW/CC on the Final FONSI allowing for the Decommissioning and Demolition of the Central Heat Plant.
- SUMMARY:** An EA, prepared by Booz Allen Hamilton, for the decommission and demolition of the Central Heat Plant (Building 660) has been prepared as required by the National Environmental Policy Act (NEPA). The NEPA process did not reveal any significant impacts to the human or natural environment; therefore, a FONSI has been prepared. The FONSI is the decision document that will finalize the NEPA process for the proposed action. Per the requirements of NEPA, the EA was released for public comment from 21 May through 27 May 2012. A public notice was published in the Warren Sentinel to notify the public of the availability of the EA for review. Copies of the EA were placed at the Base Library and on the F. E. Warren AFB website. No comments were received.
- The Final FONSI and EA for Decommissioning and Demolition of the Central Heat Plant at Tab 1 and Tab 2, respectively.
- RECOMMENDATION:** 90 MW/CC sign the Final FONSI at Tab 1.

  
 TRAVIS K. LEIGHTON, Lt Col, USAF  
 Commander, 90th Civil Engineer Squadron

- 2 Tabs:
- Final FONSI, Decommissioning and Demolition of the Central Heat Plant
  - Final EA, Decommissioning and Demolition of the Central Heat Plant, GHLN 09-1010B

# Report Documentation Page

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**FINAL**  
**FINDING OF NO SIGNIFICANT IMPACT (FONSI)**  
**FOR**  
**DECOMMISSIONING AND DEMOLITION**  
**OF THE CENTRAL HEAT PLANT**  
**F. E. WARREN AIR FORCE BASE, WYOMING**

**DECISION**

It is my decision to approve the proposed action as described in the Environmental Assessment (EA) for the Decommission and Demolition of the Central Heat Plant, which is attached and hereby incorporated by reference.

**FINDING OF NO SIGNIFICANT IMPACT**

This EA was prepared and evaluated pursuant to the National Environmental Policy Act (Public Law 91-190, 42 U.S.C. 4321 *et seq*) and the Air Force Environmental Impact Process (32 CFR 898). I have concluded that the Proposed Action does not constitute “a major federal action significantly affecting the quality of the human environment” when considered individually or cumulatively in the context of the referenced Act, including both direct and indirect impacts. Therefore, an Environmental Impact Statement (EIS) is not necessary.

**RATIONALE FOR DECISION**

My decision to approve the proposed action is based upon the following:

Air Force Global Strike Command has budgeted to install boilers in individual buildings to help the command achieve the energy reductions mandated by Executive Order 13423; 30% reductions in energy usage are required by FY15. Installation of individual boilers is both more efficient and less expensive to maintain. The Base will save an estimated 100,000 BTUs in natural gas consumption and a projected total first-year dollar savings of \$1,302,065.

Once the boiler installation is complete, the Central Heat Plant and associated High Temperature Hot Water (HTHW) distribution system will be obsolete and unnecessary. There is no other beneficial use for the heat plant building or associated HTHW distribution system. Decommissioning and demolishing the Central Heat Plant and HTHW distribution system eliminates the need to maintain facilities that are no longer needed. Demolition of the heat plant will remove a facility located on the perimeter of the Crow Creek flood plain.

Based on the analysis of environmental impacts in the EA, impacts to wildlife and other resources resulting from the proposed project, independently or cumulatively, will not be significant.

**APPROVED BY**

  
\_\_\_\_\_  
CHRISTOPHER A. COFFELT, Colonel, USAF  
Commander, 90th Missile Wing

26 Jun 12  
DATE

**FINAL**  
**ENVIRONMENTAL ASSESSMENT (EA)**  
**FOR**  
**DECOMMISSIONING AND DEMOLITION**  
**OF THE CENTRAL HEAT PLANT**  
**GHLN 09-1010B**  
**F. E. WARREN AIR FORCE BASE, WYOMING**

**JUNE 2012**

Prepared By:  
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## **1. INTRODUCTION.**

F. E. Warren AFB (FEW or Base) is proposing to decommission and demolish the natural gas-fired, Central Heat Plant (Building 660) and to decommission the High Temperature Hot Water (HTHW) distribution system that is served by the Central Heat Plant.

The natural gas-fired, heat plant is a 10,140 square foot facility constructed in 1981 that currently serves 104 separate buildings through an 87,057 linear foot (LF) network of above and below-ground HTHW distribution piping system. See Figure 1.

The Central Heat Plant uses three 55 million BTU (MBTU) capacity natural gas powered boilers to heat water to a temperature of 380°F. The heated water is distributed through the HTHW system via pressurized nitrogen and returns to the heat plant at a temperature of 270°F. The HTHW system is a closed loop system. The water returning from the HTHW piping is re-heated by the heat plant before it is sent again through the HTHW piping. The current peak demand requires the production of approximately 66 MBTUs to serve the HTHW system, which can be satisfied by using two boilers. The natural gas-fired units allow the heat plant to utilize the base's propane backup system. Since the heat plant converted to gas-fired boilers, baseline energy consumption has not been established.

The Central Heat Plant operates nine months out of the year (since artificial heating is not necessary during the months of June, July, and August) and provides hot water, radiant heat, and steam heat to 104 buildings.

The HTHW distribution lines emanate from the heat plant in three general directions. One line services buildings along 5th Cavalry Avenue towards Gate 1. Another line parallels 5th Cavalry Avenue and branches out to service the remaining buildings north of the railroad tracks. The third line services the buildings south of Crow Creek. Each building has a heat converter that transfers heat from its HTHW line to either low-pressure steam or medium temperature hot water, which then delivers heat throughout the building.

The HTHW would be replaced with 102 individual boilers in each of 104 buildings currently being served by the HTHW system. Each new individual boiler will achieve at least a 90% heating efficiency. Heat generating operations at Building 660 would end. Building 660 would be dismantled and demolished and the HTHW would be dismantled and abandoned in place.

As each building receives its boiler, the existing HTHW supply and return piping into the building would be removed, the piping capped, and a by-pass provided. The HTHW tunnel would be separated from the building with the HTHW piping abandoned in-place within the tunnel.

## **2. PURPOSE AND NEED FOR ACTION.**

The Central Heat Plant's HTHW piping distribution system is at 43% of its anticipated life expectancy and is in urgent need of major repairs due to leaks in the HTHW piping and failed insulation. Although the heat plant building itself is in good condition, operating efficiencies are limited due to the age and condition of the HTHW system. Failure of asphalt and concrete covering on below ground vaults are being experienced due to water infiltration from the HTHW system; causing problems with maintaining drainage systems, roads, and parking lot surfaces.

Federal agencies are mandated by Executive Order (E.O.) 13423 and the Energy Policy Act of 2005 to reduce energy usage and increase energy efficiency. These mandated changes in energy use will not be achieved and inefficiencies in operation will continue if the HTHW remains in operation. Even with the needed repair, the central heat system cannot be brought into compliance with the mandated energy efficiency requirements. The approximately 20 miles of HTHW piping is a major source of energy inefficiency for FEW; the HTHW system experiences high temperature losses as water is distributed. The boilers that will replace the HTHW system will achieve the same amount of heating at higher efficiency while consuming less energy.

Additional savings in operation and maintenance costs will be achieved by negating the requirement to replace/reinsulated aged HTHW piping. Increases achieved by efficiencies in individual heating systems operations will result in a direct cost savings due to a reduction in the consumption of natural gas.

An Economic Analysis has been performed on this project with a savings-to-investment ratio calculated at 2:1. The simple payback period is 6.03 years. The annual savings in energy are: 100,000 MBTUs per year of natural gas with a total first year dollar savings projected at \$1,302,065.

### **3. SCOPE OF THE ENVIRONMENTAL ASSESSMENT.**

This EA is required by the Air Force Environmental Impact Analysis Process (32 CFR 989), the National Environmental Policy Act (Public Law 91-190), Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508), and Air Force Instruction 32-7061, The Environmental Impact Analysis Process (2003). This EA identifies, describes, and evaluates the potential direct, indirect, and cumulative environmental impacts that could result from implementation of the proposed action. This EA also identifies management measures to prevent or minimize environmental impacts.

### **4. ALTERNATIVE SELECTION CRITERA.**

#### **4.1. Total Cost, Savings-to-Investment Ratio, and Length of Payback Period**

The purchase, installation, and maintenance of a heating system to provide heat to the central area of Base should minimize costs to the greatest extent practicable. The savings-to-investment ratio for implementing and operating a particular heating system must not be below 1:1. (The savings to investment ratio is amount of savings generated per each dollar investment.) The payback period (the period after which a project begins paying for itself) for implementing a heating system must not exceed 10 years.

#### **4.2. Base and Air Force Compliance with E.O. 13423 & the Energy Policy Act of 2005**

E.O. 13423 requires Federal agencies to reduce energy usage intensity by 30% by the end of FY15, relative to their energy usage in FY03. Federal agencies are also mandated by E.O. 13423 to reduce water consumption, relative to the agency's baseline of water consumption in FY07. Water consumption must be reduced by 2% annually through the end of FY15, or be reduced by 16% as a whole by FY15 relative to water consumption in FY07.

#### 4.3. Maintenance of Historic Character and Appearance

FEW is home to the Fort D. A. Russell National Historic Landmark District and is listed on the National Register of Historic Places. Changes to those characteristics that qualify it for inclusion on the National Register shall be avoided. These include changes to historic buildings and landscapes that could adversely affect these resources.

### 5. DESCRIPTION OF PROPOSED ALTERNATIVES.

#### 5.1. Alternative A-No Action.

The Central Heat Plant will not be decommissioned and demolished. The HTHW heating system will remain in place.

#### 5.2. Alternative B-Decentralize Heat Plant & Install Individual Boilers (Preferred Alternative).

FEW will decommission and demolish the Central Heat Plant and decommission the HTHW heating piping. Individual hot water boilers would be installed in the buildings previously served by the HTHW system. The HTHW system would be drained of water and the piping will be abandoned in place.

#### 5.3. Alternative C-Install Ground Source Heat Pumps.

FEW will decommission and demolish the Central Heat Plant and abandon the HTHW piping in place. The HTHW heating system would be emptied of water and abandoned in place, and a ground source heat exchanger system would be installed to serve the heating needs of the buildings. Ground source heat exchangers transfer heat from the top 500 feet of earth's crust (which is typically warmer than the earth's surface and also maintains a constant temperature) to buildings on the earth's surface. Individual horizontal closed-loop ground source heat exchange systems would most likely have to be installed to serve each of the 104 buildings separately. To install the horizontal closed-loop system, wells are drilled to reach the appropriate depth to provide thermal conductivity, and then high density polyethylene pipes are installed and the pipes are filled with thermally conductive fluid (typically mixture of brine, propylene glycol (a heat conducting solvent), and water.) Horizontal ground source wells must typically reach depths of 10 to 20 feet in the earth's crust to achieve adequate heat transfers. Wells approximately 10 to 30 deep would need to be drilled either under or adjacent to each of the 104 buildings to be served by the ground source heat exchanger system. Horizontal closed loop systems typically need 400 to 600 feet of linear piping to produce one ton of heating and cooling capacity.

#### 5.4. Alternative D-Install Solar Heating Panels or Solar Photovoltaic Array.

FEW will decommission and demolish the Central Heat Plant and abandon the HTHW piping in place. The HTHW heating system would be emptied of water and abandoned in place, and a solar heating system would be installed to serve the heating needs of the 104 buildings. Installing a solar heating system to replace the central heat plant could either be accomplished by installing a solar heating panel on the roof of each of the 104 buildings or having a solar photovoltaic array consisting of several individual solar panels installed on the ground on FEW property and connected to the buildings.

#### 5.5. Alternative E-Replace One 55 MBTU Boiler & Re-Insulate the HTHW System.

The Central Heat Plant does not have to run each of three 55 MBTU boilers at full capacity to heat the water for the HTHW to 380°F. A 55 MBTU boiler achieves 82-84% possible heating efficiency when running, producing an average output 45 MBTUs. A 30 MBTU boiler can achieve 85-88% heating efficiency running at full capacity and produce the same amount of heat as a 55 MBTU boiler, while consuming a lower amount of natural gas. In addition to replacing one of the 55 MBTU boilers, increased energy efficiency for the heat plant could be achieved by re-insulating the HTHW piping, which prevents heat loss as water is transferred from the heat plant to the buildings on Base. (The greatest loss of heat occurs in the HTHW piping that travels between the heat plant and the individual buildings it serves.) The HTHW piping would be insulated with new fiberglass insulation.

### 6. ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION.

#### 6.1. Alternative C-Install Ground Source Heat Pumps.

Because of space constraints and current established land use patterns in the Historic District, a horizontal closed-loop ground source heat exchange system is the most feasible configuration for the installation of ground source heat exchange piping. Each individual building in the Historic District previously served by the heat plant would require its own horizontal ground source system with piping arranged in a vertical loop, "slinky configuration" to generate an adequate amount of heat. Because each individual building would require its own heat exchanger, installing ground source heat for all 104 buildings of the Historic District is extremely costly and infeasible. Because installing individual ground source heat exchangers is cost prohibitive, Alternative C is eliminated from further consideration.

#### 6.2. Alternative D-Install Solar Heating Panels or Solar Photovoltaic Array

The installation of individual solar panels on each of the 104 buildings, the majority of which are located within the Historic District, to provide an individual heating system to each building would significantly compromise the historic character and appearance of the Historic District. The generation, installation, and maintenance of a ground-mounted solar array must be cost competitive in comparison to the Base's current program of purchasing electricity from outside utility providers. In terms of cost comparisons, it has been determined that a ground-mounted solar photovoltaic array would have a payback period of greater than 10 years. (A photovoltaic array at FEW would take more 10 years to pay for itself.) This makes a ground-mounted solar array infeasible in terms of the required term of economic payback for a utility generation system. For both reasons, this option for the implementation of Alternative D has been eliminated from further consideration.

#### 6.3. Alternative E-Replace One 55 MBTU Boiler & Re-Insulate HTHW System

The replacement of one of the three 55 MBTU boilers with a 30 MBTU boiler and the re-insulation of the HTHW distribution piping is cost prohibitive. It is estimated that it would cost 10 million dollars to completely re-insulate and re-pipe the entire HTHW system, and this cost estimate does not include the additional expense of purchasing a new 30 MBTU boiler. By comparison, the entire cost for the decommissioning and demolition of the Central Heat Plant, including the cost of purchasing and maintaining the new individual boilers, is estimated at 12.1 million dollars (AF Form 813 Request for Environmental Impact Analysis,

Decentralized Heat Plant, August 2009). Because of these cost prohibitions, Alternative E is eliminated from further consideration.

## 7. AFFECTED ENVIRONMENT.

The decentralization and demolition of Central Heat Plant is not anticipated to affect the following environmental areas: Geography/Geology, Land Use, Hazardous Waste Disposal, Threatened and Endangered Species, and Socioeconomics. A description of these environmental resources can be found in the *Programmatic Environmental Assessment for F. E. Warren Air Force Base, April 2005*. The description of these resources is incorporated by reference into this environmental assessment document.

### 7.1. Surface Water Resources

The installation is located within the Crow Creek Watershed, which is part of the South Platte River Basin. Perennial surface water resources located on the Base include Diamond Creek, Crow Creek, North and South Pearson Lakes, and Lake Centennial. The installation contains approximately 127 acres of wetlands delineated on the U.S. Fish and Wildlife Service National Wetlands Inventory. While variable, depth to groundwater generally exceeds five feet throughout the installation.

### 7.2. Air Quality

Under provisions of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for air pollutants considered harmful to human health and the environment. The CAA established two types of national air quality standards. One set of limits (the primary standard) protects health; another set of limits (the secondary standard) is intended to prevent environmental and property damage. A geographic area that meets or exceeds the primary standard is called an attainment area; areas that don't meet the primary standard are called non-attainment areas. Laramie County is designated as an attainment area for all criteria air pollutants.

### 7.3. Solid Waste

7.3.1. FEW does not manage an active solid waste landfill. Solid waste (trash) is collected, weighed, and then transported to the city of Cheyenne landfill for disposal. A local civilian contractor removes approximately 160 tons of solid waste per month from the installation's industrial areas and collects an additional 100 tons per month from Privatized Housing (PH).

7.3.2. Local landfills for construction type material may not be available depending on volume and construction debris characterization. Local landfills are reaching capacity and are selective on type and bulk construction debris. Construction waste (to include lead/asbestos-containing construction material) can be disposed of in Ault, Colorado at the Weld County landfill (there are no known current restrictions that would affect acceptance of demolition type debris/materials).

7.3.3. FEW operates a recycling program. The base recycling facility accepts aluminum, steel and tin cans, plastics, cardboard, office paper, mixed paper, magazines, and newspapers. Office paper is collected weekly from the industrial buildings on base. PH participates in a curbside recycling program. Additionally, the base has established

a compost program. The facility accepts biodegradable materials such as wood landscaping materials, grass clippings, leaves, manure, and tree trimmings. Approximately 1,200 tons of finished compost are produced at the base facility per year.

#### 7.4. Vegetation

7.4.1. Three primary vegetation communities occur on the Base: (1) shortgrass prairie grassland; (2) wet (mesic) meadow wetlands; and (3) riparian areas-cottonwood and willow. The shortgrass prairie grassland is dominated by blue grama (*Bouteloua gracilis*), western wheatgrass (*Elymus smithii*), needle-and-thread grass (*Stipa comata*), and fringed sagewort (*Artemisia frigida*). Wet meadows on the Base are dominated by foxtail barley (*Hordeum jubatum*), Kentucky bluegrass (*Poa pratensis*), tall wheatgrass (*Elymus elongatus*), baltic rush (*Juncus balticus*), tufted hairgrass (*Deschampsia cespitosa*), bluejoint grass (*Calamagrostis canadensis*), and sedges (*Carex spp.*). The riparian areas are dominated by a shrub scrub community of sandbar willow (*Salix exigua*), strap willow (*Salix lingulifolia*), and crack willow (*Salix fragilis*), with scattered cottonwood (*Populus deltoides*) and green ash (*Fraxinus pennsylvanica*) trees and herbaceous understory similar to the mesic meadows. Much of the previously disturbed and reclaimed areas on the Base (e.g., small arms impact area) are dominated by planted crested wheatgrass (*Agropyron cristatum*), which was planted as part of restoration efforts (WEST 2001b).

7.4.2. Developed areas of the Base have a woody vegetation component that, while not originally present, is extremely important for wildlife, aesthetic, cultural, and social values. Plains Cottonwood, Colorado Spruce, Ponderosa Pine, and Green Ash are the most important woody vegetation species on the installation. There are no wooded areas of five acres or greater on the Base; however, the urban forest is an intrinsic component of the current environment of the Historic District.

7.4.3. Several noxious weed species are known to occur on the Base. Of these species, Canada thistle (*Cirsium arvense*), Dalmatian toadflax (*Linaria dalmatica*), and Leafy spurge (*Euphorbia esula*) are the most prevalent.

#### 7.5. Wildlife

7.5.1. A relatively large herd of pronghorn antelope (*Antilocarpa americana*) inhabits the Base. Although the pronghorn on the installation are a part of the larger Iron Mountain herd, most reside on the installation year-round. The Base population was approximately 275 animals in 2012. The pronghorn are free ranging and occur throughout the Base, including the developed urban areas.

7.5.2. At least 139 species of birds have been recorded on the Base. Included among the several species of waterfowl are the Tundra Swan (*Cygnus columbianus*), Canada Goose (*Branta canadensis*), and Wood Duck (*Aix sponsa*). The birds-of-prey recorded on the Base include the Turkey Vulture (*Cathartes aura*), Bald Eagle (*Haliaeetus leucocephalus*), Peregrine Falcon (*Falco peregrinus*), and several species of hawk (*Buteo spp.*) (WEST 2001b).

## 7.6. Soils

The predominant soil series on base is classified texturally as loamy, where average topsoil depth ranges from four to six inches. The subsoil is composed primarily of alluvial clay and extends from a depth of approximately 6 to 36 inches. Throughout the base, pavements reduce soil infiltration significantly. The subsoil is capped with approximately 38 miles of bituminous asphalt roadways, 90,000 square feet of concrete roadways, and 1.9 million square feet of asphalt parking lots.

## 7.7. Noise

The major sources of noise on the base include grounds maintenance activities, local base motor vehicle traffic, vehicular traffic on adjacent Interstate-25, base helicopter operations, and fixed-wing aircraft operating from the Cheyenne Airport. The location of helicopter operations in the southern portion of the base has a limited noise impact to the rest of the installation. There is no data at this time to quantify the amount of noise generated by these operations.

## 7.8. Cultural and Archeological Resources

FEW has approximately 208 impressive brick structures listed in the National Register of Historic Places. Most of these facilities are located within the central core of the Base, designated as a Historic District in 1969 under the provisions of the National Historic Preservation Act [16 U.S.C. 470 *et seq.*], and designated the Fort D. A. Russell National Historic Landmark in 1972 (Figure B-9). The Base also contains 131 archaeological sites; of which, 71 are eligible or potentially eligible for inclusion in the National Register of Historic Places (30 C.F.R. 60).

## 7.9. Safety and Occupational Health (Asbestos and Lead-based Paint)

### 7.9.1. Asbestos

All buildings constructed prior to 1981 are presumed to contain Asbestos Containing Materials (ACM) if no survey has been recorded. Prior to 1981, ACMs were used extensively in plaster, wall board, joint compound, felt material, roofing material, floor tile, mastic, piping insulation, gaskets, ceiling tiles, and sprayed-on soundproofing and insulation. FEW developed an Asbestos Management Plan (AMP) and an Asbestos Operating Plan (AOP) per AFI 32-1052, *Facility Asbestos Management*, in March 2002. Under these plans, the quantity and type of asbestos (friable/non-friable) in structures must be determined before facilities are renovated or demolished. Complete removal of ACM is not required; however, ACM likely to release airborne asbestos fibers that cannot be reliably maintained, repaired, or isolated must be removed. No new ACMs are used or installed at any facilities on FEW.

### 7.9.2. Lead-Based Paint (LBP)

FEW has developed a Lead Management Plan (LMP) to deal with potential lead hazards. The LMP assigns responsibilities and describes procedures for managing hazards associated with lead and LBP on base and at the associated missile sites. The base LMP primarily aims to protect children under the age of seven from lead exposure,

since they are most at risk. However, the presence of LBP does not necessarily mean a hazard exists. The Base policy is to manage LBP in place by maintaining the LBP in good condition. When cost effective, LBP abatement is considered for facility renovation projects. In addition, specific Department of Housing and Urban Development standards apply to housing units. At FEW, housing units constructed since 1981 are considered LBP free. These areas include Carlin Heights and the new Atlas housing. All other base housing units contain LBP. Housing residents are required to receive information prior to occupying the quarters and whenever work is to be scheduled, so as not to disturb the LBP, and to adequately protect themselves and their families from hazards associated with lead-based paint.

## **8. ENVIRONMENTAL CONSEQUENCES.**

### **8.1. Resource Impacts-Alternative A.**

Alternative A, no action would take place. The Central Heat Plant operations would continue unchanged from current operations. No environmental consequences resulting from the implementation of this Alternative are anticipated.

### **8.2. Resource Impacts-Alternative B.**

Alternative B-Decentralize Heat Plant & Install Individual Boilers (Preferred Alternative). FEW will decommission and demolish the Central Heat Plant and decommission the HTHW heating piping. Individual hot water boilers would be installed in the buildings previously served by the HTHW system. The HTHW system would be drained of water and the piping will be abandoned in place.

#### **8.2.1. Water Quality.**

a. Direct and Indirect Impacts-The water circulating through the HTHW system is treated with powdered sodium hydroxide (lye) and powdered sodium sulfate (the sodium salt of sulfuric acid) to prevent corrosion in the piping system. (Sodium hydroxide is typically sold as a household drain cleaner.) A possible release of this chemically treated water would directly negatively impact water quality in nearby water bodies such as Crow Creek, particularly if a release of chemically-treated water occurred near the heat plant itself, or along the down-slope hillside between the heat plant building and Crow Creek.

b. Proposed Management Practices-The chemically treated water in the HTHW system will be treated as municipal wastewater. It will be disposed of in a wastewater treatment facility designed to handle contaminated wastewater.

c. Cumulative Impacts-When disposed of properly as wastewater, the elimination of the treated water will not cause any negative impacts to the water quality in Crow Creek.

#### **8.2.2. Air Quality.**

a. Direct and Indirect Impacts-The replacement of the three 55 MBTU capacity boilers with individual boilers in each of the historic buildings may potentially result in NO<sub>x</sub> (nitrous oxide) emissions amounts that exceed FEW's current allowance

for NO<sub>x</sub> emissions under the Base's Synthetic Minor air emissions permit, which allows for the emission of 90 tons per year of NO<sub>x</sub>. In a "worst case scenario" air emissions calculation, installing extremely high capacity boilers (1.45 MBTU boilers) in each building would generate 120 tons of NO<sub>x</sub> per year. A more realistic "potential to emit" calculation for amount of NO<sub>x</sub> resulting from the installation and operation of 102 small-capacity boilers resulted in an estimation of 35 tons of NO<sub>x</sub> produced from the new boilers over the course of the year. NO<sub>x</sub> gases are listed as criteria air pollutants by the U.S. EPA. Emissions levels of these gases are governed by primary and secondary standards that protect human health and the environment by limiting emissions amounts.

b. Proposed Management Practices-If the amount of NO<sub>x</sub> emitted by the individual boilers exceeds the 90 tons, the Base will obtain a Title V emissions permit which allows for the emission of 90 to 100 tons per year.

c. Cumulative Impacts-Laramie County is within attainment (below emissions standards) for all criteria air pollutants. The air emissions amounts from the individual boilers, in combination with other sources of air emissions on FEW and in Laramie County will not cause significant impacts.

#### 8.2.3. Solid Waste.

a. Direct and Indirect Impacts-The decommissioning and demolition of the Central Heat Plant will create a large amount of solid waste in the form of excess building materials and the three 55 MBTU boilers that will be decommissioned that will no longer be in use. Additionally, the concrete foundation of the Central Heat Plant may be removed.

b. Proposed Management Practices-To the greatest extent possible, the excess material left from the demolition of the heat plant building will be recycled by the Base materials recycling program instead of being disposed of in a solid waste landfill (off-base). The three 55 MBTU boilers would be sent to other installations or sold to other institutions.

c. Cumulative Impacts-When all available efforts are made to recycle and reuse the usable material resulting from the demolition of the heat plant, the amount of solid waste generated by the decommission and demolition of the heat plant will not be significant.

#### 8.2.4. Fish, Wildlife, and Vegetation.

a. Direct and Indirect Impacts-The Central Heat Plant is located in close proximity to Crow Creek. The demolition of the heat plant building and deconstruction of the building infrastructure will have a short-term, indirect, negative impact on the wildlife living in the Crow Creek watershed by creating noise and dust disturbance that will interrupt wildlife behavior patterns while demolition is occurring. The demolition of the heat plant has the potential to have direct negative impacts if demolition materials or debris are allowed to come into contact with the Crow Creek watershed, or if excessive dust and dirt is allowed into the Crow Creek watershed.

b. Proposed Management Practices-The demolition contractors will be required to provide erosion and sediment control measures in accordance with federal, state, and local laws and regulations. The area of bare soil exposed at any one time by construction/demolition operations shall be kept to minimum. The erosion and sediment control measures should substantially reduce soil erosion associated with the project.

c. Cumulative Impacts-The demolition of the heat plant, when combined with the impacts of other projects on or proximate to the Base, will not significantly impact the wildlife and vegetation on the installation. Development and demolition on the installation will disturb fish, wildlife, and vegetation in the future. This is not expected to permanently adversely impact fish, wildlife, and vegetation on FEW.

#### 8.2.5. Soils.

a. Direct and Indirect Impacts-Ground disturbance during demolition will create a short-term increase in the potential for soil erosion. The soils most widespread on Base are susceptible to wind and water erosion.

b. Proposed Management Practices-The demolition contractors will be required to provide erosion and sediment control measures in accordance with federal, state, and local laws and regulations. The area of bare soil exposed at any one time by demolition operations shall be kept to minimum.

c. Cumulative Impacts-The demolition of the heat plant, when combined with the impacts of other projects on or proximate to the Base, will not significantly impact the soils on the installation. Development and demolition on the installation will disturb soils in the future. This is not expected to significantly adversely impact soils on FEW.

#### 8.2.6. Noise.

a. Direct and Indirect Impacts-There will be a short-term increase in noise associated with demolition activities. However, noise generated by construction activities should not constitute a nuisance. Traffic to the demolition site will be minimal and not increase noise in the vicinity.

b. Proposed Management Practices-Contractors will be required to work during daylight hours.

c. Cumulative Impacts-The demolition of the heat plant, when combined with the impacts of other projects on or proximate to the Base, does not cause a significant noise impact. The increase in noise, other than during demolition activities, resulting from future development is expected to be insignificant.

#### 8.2.7. Cultural and Archeological Resources

a. Direct and Indirect Impacts-All the buildings served by the Central Heat Plant HTHW system are listed on the National Register of Historic Places and are protected by the National Historic Preservation Act. Installation of the individual

boilers in each of the historic buildings could have indirect negative impacts on the appearance of the historic buildings and of the FEW Historic District.

b. Proposed Management Practices-The FEW Warren Cultural Resources Manager has coordinated the installation of the boilers in the historic buildings with the Wyoming State Historic Preservation Office (WYSHPO). This coordination determined the installation of the boilers would have no adverse effect on the buildings.

c. Cumulative Impacts-When combined with the impacts of other potential projects in the Historic District, the installation of the individual boilers in the Historic District buildings will not cause any permanent adverse impacts to the appearance and character of the FEW Historic District.

8.2.8. Safety and Occupational Health

a. Direct and Indirect Impacts-Several of the affected historic buildings contain ACM or LBP or both. Exposure to ACM/LBP during boiler installation presents a direct negative impact to the safety and occupational health of workers performing installation activities. Work involving contact with ACM/LBP is governed by the safety standards established by the Occupational Safety and Health Act (OSHA).

b. Proposed Management Practices-An asbestos-abatement contractor licensed in accordance with federal, state, and local requirements must remove all asbestos-containing and asbestos contaminated materials. Friable ACMs identified as damaged or in poor condition should also be removed or encapsulated prior to boiler installation activities. The general contractor will be informed of the presence of LBP in the project area. Contractor personnel coming into contact with LBP/ACM shall be properly trained in the health effects of lead/ACM, proper work methods, the appropriate use of protective equipment, and regulations governing LBP/ACM removal. During installation activities, engineering controls such as critical barriers and water will be used to minimize fugitive dust levels.

c. Cumulative Impacts-When the removal and handling of ACM/LBP is performed in compliance with Federal (EPA, OSHA), state, and local requirements, the impacts to safety and occupational health should be insignificant.

**9. PERSONS AND AGENCIES CONSULTED.**

The following agencies/individuals were contacted and/or provided a copy of the EA during its original preparation in order to afford an opportunity for comment on the content of the document. Agency consultations are required per 32 CFR 989.14(d).

WYSHPO 2301 Central Avenue Cheyenne WY 82002	John Nunley (90 CES/CEAO) Resource Efficiency Manager F. E. Warren AFB WY 82005	Todd Eldridge (90 CES/CEAN) Community Planner F. E. Warren AFB WY 82005
Travis Beckwith (90 CES/CEAN) Historic Preservation Officer F. E. Warren AFB WY 82005	Kurt Warmbier (90 MW/JA) Attorney Advisor, Environmental Law F. E. Warren AFB WY 82005	Kirk Schaumann (90 CES/CEAN) Air Quality Manager F. E. Warren AFB WY 82005

## 10. REFERENCES.

32 CFR § 989, Department of the Air Force Environmental Impact Analysis Process (EIAP).

FEW Integrated Cultural Resources Management Plan, August 2009.

FEW Integrated Natural Resources Management Plan, May 2006.

FEW General Plan, April 2005.

Western Ecosystems Technology (WEST), 2001b. *Fish and Wildlife Management Operational Component Plan for Francis E. Warren Air Force Base.*

Wyoming Department of Environmental Quality, Air Quality Division Permit MD-1287 (MD-1287).

U.S. EPA. "Developing and Updating Output-Based NO<sub>x</sub> Allowance Allocations", May 2000.

AMEC. "65% Design of Decentralize Central Heat Plant F. E. Warren AFB", August 2009.

Environmental Assessment of The Construction and Operation of a Solar Photovoltaic Array (SPVA) Buckley Air Force Base Denver, Colorado, April 2009.

NeutralExistence.com. "Geothermal Exchange: Ground Source Heating and Cooling", May 2008.

<http://www.neutralexistence.com/begreen/geothermal-exchange-ground-source-heating-and-cooling/>

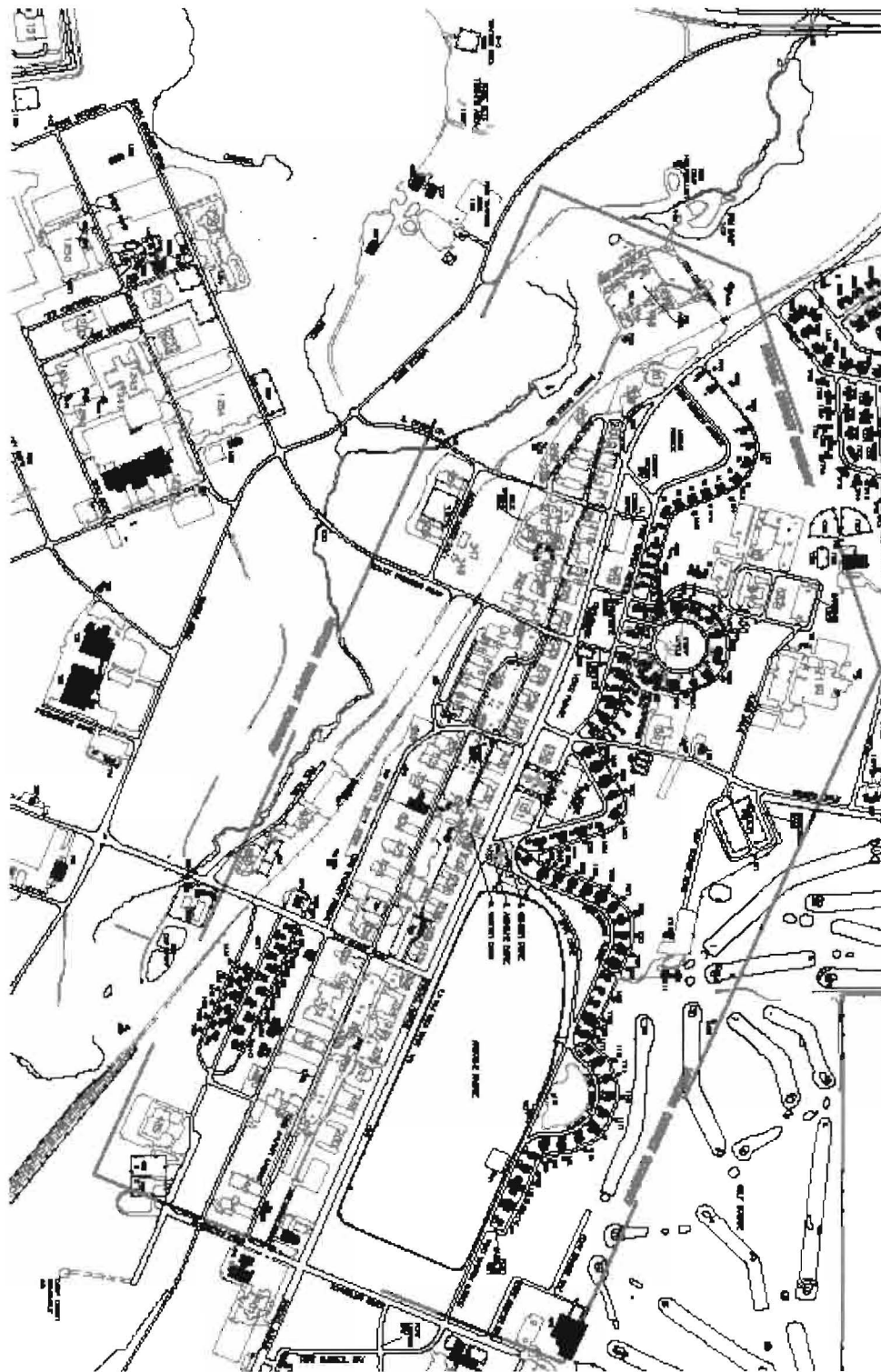
## 11. LIST OF PREPARERS AND REVIEWERS.

Preparers.

<b>Name</b>	<b>Sections</b>	<b>Background</b>	<b>Experience (years)</b>
Kurt Warmbier	1-10	B.S., Biology; M.S., Environmental Management; M.P.A.; J.D.	22
Jennifer Howenstine	1-10	B.A., Biology, Masters, Environmental Science	5

Reviewers.

<b>Name</b>	<b>Agency</b>	<b>Title</b>
Kurt Warmbier	USAF, 90 MW/JA	Attorney Advisor, Environmental Law



**FIGURE 1. Facilities Served by the Central Heat Plant & HTHW. (Highlighted in blue)**

# 90th Civil Engineer Squadron

## Routing/Tracking Sheet

TO: 90 CES/CC

SUBMITTED: 05 Jun 12

FROM: 90 CES/CEAN/Beckwith

ROUTING NUMBER: *H1104*

### DOCUMENT TITLE/SUBJECT

Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Decommissioning and Demolition of the Central Heat Plant, GHLN 09-1010B

#### Minimum Required Coordination

CC <i>J</i>	CD <i>MAE 13 Jun 12</i>	CCS <i>4/6/12</i>	CCF /	CMS /	CCI /	FM Chief <i>[Signature]</i> 6 June 2012 Reviewer <i>MSJ-12</i>
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#### Additional Coordination (as needed)

CEA <i>[Signature]</i> 5 Jun 12	CEO /	CEX /	CER /	CEP <i>WF</i>	CED /	CEF /	CEM /	Security Manage	Other /
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**ADDITIONAL COMMENTS:** OFFICIAL LEGAL DOCUMENTS  
DO NOT MODIFY!

Returned to Flight :

*6/12*

2nd In:

*6/14*

2nd Return:

Status:

*54*

Attorneys Work-Product

**SIMONDS, MATTHEW B Capt USAF AFGSC 90 MW/JA**

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**From:** WARMBIER, KURT T LtCol USAF AFGSC 341 MW/JA  
**Sent:** Friday, June 22, 2012 1:15 PM  
**To:** SIMONDS, MATTHEW B Capt USAF AFGSC 90 MW/JA  
**Subject:** RE: Heat Plant EA/FONSI

Matt

No, I reviewed the EA/FONSI (CE sent me an electronic copy). The EA was good to go since it was released for public comment. Since no comments were received, there is no need to incorporate and discuss them in the EA. The FONSI briefly explains the commander's rationale for his selection. The EA is incorporated by reference into the FONSI so it doesn't need to be summarized.

I forwarded CE a legally sufficient email after my review and told them I'd email you to get coordination on the EA/FONSI (I was told it was in the legal office) and get it moving to Col Dodge and onto WG/CC for signature today.

You can contact Kirk Schaumann, Jennifer Howenstine, or Russell Littlejohn if you need to discuss the documents.

Thanks

Kurt

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

**From:** SIMONDS, MATTHEW B Capt USAF AFGSC 90 MW/JA  
**Sent:** Friday, June 22, 2012 1:10 PM  
**To:** WARMBIER, KURT T LtCol USAF AFGSC 341 MW/JA  
**Subject:** RE: Heat Plant EA/FONSI

Do we still need a legal review?

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

**From:** WARMBIER, KURT T LtCol USAF AFGSC 341 MW/JA  
**Sent:** Friday, June 22, 2012 12:01 PM  
**To:** SIMONDS, MATTHEW B Capt USAF AFGSC 90 MW/JA  
**Subject:** Heat Plant EA/FONSI  
**Importance:** High

Matt

Just got off the phone with Kirk Schaumann, 90 CES. The 90 MW/CC needs to sign the FONSI today or FEW loses funding for the project.

I've reviewed the EA throughout its drafting and took a look at the draft FONSI today. I didn't see any issues. The EA/draft FONSI went through public comment w/o receiving any comments. Therefore, the EA does not need to be revised to incorporate or address any comments.

Coordinate on the SSS to get it on its way.

Thanks

Kurt

