National Center for Atmospheric Research Wyoming Supercomputer Center

DRAFT ENVIRONMENTAL ASSESSMENT

February 2010

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POTOMAC-HUDSON ENVIRONMENTAL, INC.

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ACRONYMS AND ABBREVIATIONS

AQCR	Air Quality Control Region
BOPU	Board of Public Utilities
dBA	Decibel, A-weighted scale
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
IPCC	International Panel on Climate Change
LEADS	Laramie County Corporation for Economic Development
LEED	Leadership in Energy and Environmental Design
LOS	Level of Service
mgd	million gallons per day
mph	miles per hour
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NCAR	National Center for Atmospheric Research
NEPA	National Environmental Policy Act
NRBP	North Range Business Park
NSF	National Science Foundation
NWI	National Wetland Inventory
NWSC	NCAR – Wyoming Supercomputing Center
OSHA	Occupational Safety and Health Administration
PUE	Power Usage Effectiveness
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
UCAR	University Corporation for Atmospheric Research
U.S.	United States
USFWS	United States Fish and Wildlife Services
WDEQ	Wyoming Department of Environmental Quality
WYDOT	Wyoming Department of Transportation

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1.0 PURPOSE AND NEED

1.1 Introduction

The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense ..." With an annual budget of about $6.06 billion, NSF is the funding source for approximately 20 percent of all federally supported basic research conducted by America's colleges and universities.

NSF fulfills its mission chiefly by issuing limited-term grants (currently about 10,000 new awards per year, with an average duration of three years) to fund specific research proposals that have been judged the most promising by a rigorous and objective merit-review system. Most of these awards go to institutions supporting individual investigators or small groups of investigators. Others provide funding for research centers, instruments, and facilities that allow scientists, engineers, and students to work at the outermost frontiers of knowledge.

The National Center for Atmospheric Research (NCAR) is the largest of NSF's Federally-Funded Research and Development Centers. NCAR, based in Boulder, CO, conducts research and maintains advanced computational, experimental and observational facilities in support of the atmospheric and related sciences community. NCAR is operated by the University Corporation for Atmospheric Research (UCAR) under a cooperative agreement with NSF.

1.2 Purpose and Need

One of NCAR's primary areas of activity is the development and operation of complex numerical models of the climate and weather systems. These models serve as a community resource and are widely used throughout the U.S. and abroad. For example, the NCAR climate model provided more than half of the simulations used in the most recent report of the International Panel on Climate Change (IPCC). These large community models require powerful supercomputing resources and generate very large amounts of data that must be carefully archived. The NCAR high-performance computing facilities are currently located at the Mesa Laboratory, in Boulder; however, this site has only limited power available and is unable to support further upgrades to the system. It is therefore proposed that the principal NCAR facilities be relocated to a new site, where a partnership has been established between UCAR, the University of Wyoming, the State of Wyoming, Cheyenne Laramie County Corporation for Economic Development (LEADS), the Wyoming Business Council, and Cheyenne Light, Fuel & Power to build the NCAR-Wyoming Supercomputing Center (NWSC) in Cheyenne.

1.3 National Environmental Policy Act

This EA is prepared in accordance with the National Environmental Policy Act (NEPA), as amended (42 United States Code 4321), and the President’s Council on Environmental Quality regulations for Implementing the Procedural Provision on NEPA (40 Code of Federal Regulations 1500-1508), whereas NEPA requires that a federal agency conducting a federal action must:

- Assess the environmental impacts of any Proposed Action;
- Identify adverse environmental effects that cannot be avoided, should the Proposed Action be implemented;
- Evaluate alternatives to the Proposed Action, including a No Action Alternative; and
- Describe the cumulative impacts of the Proposed Action and other planned projects in the area of the site.

These provisions must be addressed before a final decision is made to proceed with any proposed federal action that has the potential to cause impacts to the human environment, including providing federal funding to a project. This EA evaluates the potential individual and cumulative effects of the Proposed Action and the No Action

Alternative on the physical, human, and natural environment. The EA is intended to meet regulatory requirements under NEPA and provide NSF with the information needed to make an informed decision regarding the proposed project.

NEPA requires federal agencies to take into account the potential consequences of their actions on both the natural and human environments as part of their planning and decision-making processes. To facilitate these considerations, a number of typical actions that have been determined to have little or no potential for adverse impacts are "categorically excluded" from the detailed NEPA assessment process. Thus, the first step in determining if an action would have an adverse effect on the environment is to assess whether it fits into a defined category for which a Categorical Exclusion (CE) is applicable. If a CE is applied, the agency prepares a Record of CE to document the decision and proceeds with the action.

For actions that are not subject to a CE, the agency prepares an EA to determine the potential for significant impacts. If through the evaluation and analysis conducted for the EA process, it is determined that no significant impacts would occur as a result of the action, then the determination would result in a Finding of No Significant Impact (FONSI). The federal agency would then publish an EA/FONSI. The NEPA process is complete when the FONSI is executed.

If significant adverse impacts to the natural or human environment are indicated or other intervening circumstances exist either at the onset of a project or it is determined through the EA process, an Environmental Impact Statement (EIS) may be prepared. An EIS is a more intensive study of the effects of the Proposed Action, and requires more rigorous public involvement. The agency formalizes its decisions relating to an action for which an EIS is prepared in a Record of Decision (ROD). Following a 30-day waiting period after publication of the ROD in the Federal Register, the NEPA process is complete.

1.4 Public Involvement and Agency Consultation

Agency coordination has been initiated with The U.S. Fish and Wildlife Service (USFWS), the Natural Heritage Program, and the State Historic Preservation Office per requirements of Section 7 of the Endangered Species Act, and Section 106 of the National Historic Preservation Act. Copies of the letters are included in Appendix A of this EA.

A Notice of Availability for the Draft EA was published in the Wyoming *Tribune-Eagle* announcing the 30-day public review comment period to solicit agency and public input on the proposed project. Copies of the Draft EA were made available on the NSF website as well as locally at the Laramie County Library and Wyoming State Library in Cheyenne, and at the offices of Cheyenne LEADS. Comments received on the Draft EA will be addressed in the Final EA.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Description of the Proposed Action

The Proposed Action involves the construction of the NWSC facility in Cheyenne, Wyoming to support the operation of NCAR's supercomputer system (see Figure 2-1). The NWSC would house high-performance computers, mass storage (data archival) systems, and required mechanical and electrical infrastructure. It would also include office space, meeting rooms and a visitor/public area. Plans call for the building to showcase sustainable technologies and energy efficient design and operation with Leadership in Energy and Environmental Design (LEED) certification being a requirement. Mechanical and electrical infrastructure design considerations include minimizing facility electrical and water consumption to the greatest degree possible, and a Power Usage Effectiveness (PUE) value (a ratio of the total power load delivered to the data center by the load delivered to IT equipment) for the facility of less than 1.3 is targeted. NWSC computing facilities would be in operation 24 hours a day, seven days a week. During normal (8 a.m. - 5 p.m.) business hours, 25 staff would be on-site in the facility with 3-4 people working in the NWSC during nighttime and weekend hours. The estimated number of annual walk-in visitors would be 10,000-15,000, averaging 38-58 people daily, assuming Monday to Friday public hours. Parking for 30 staff members, 15 visitors, and additional bus parking would be provided.

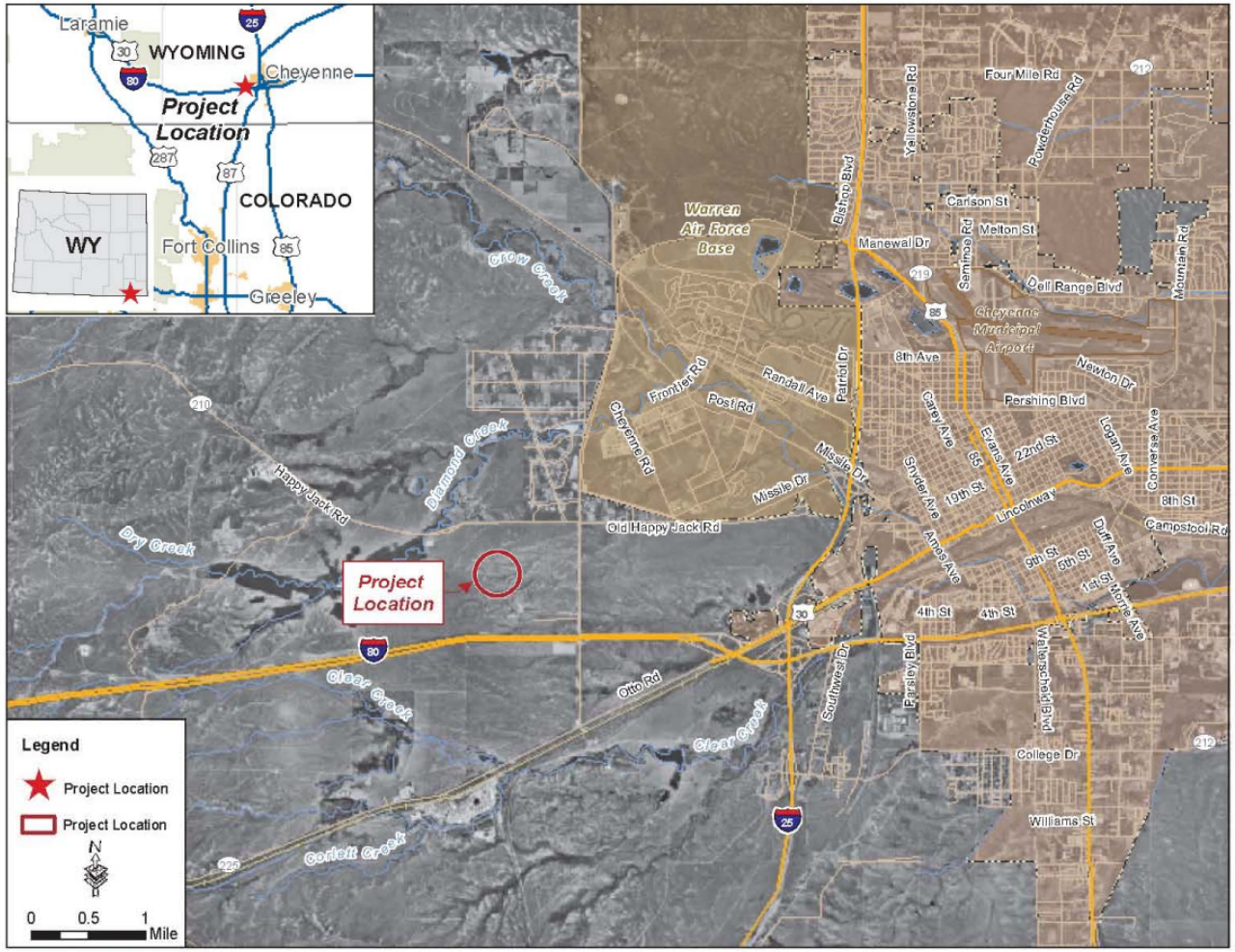
Overall facility design would provide for a modular and expandable approach and would allow for two core and shell modules. This would create the necessary capacity as and when additional equipment and facility infrastructure are required. Each module would contain approximately 100,000 gross square feet and would include two computer raised floor spaces of approximately 12,000 square feet each. Each raised floor space would be sized to accommodate approximately 6-8 Megawatts (MW) of total electrical load (i.e., power for computing equipment and supporting mechanical systems). The initial NWSC construction phase would include the first core and shell module only and would include provisioning for two raised floor spaces, approximately 50,000 square feet of mechanical and electrical systems space, 10,000 square feet of office and visitor/public space, and 6,000 square feet of magnetic media (data) storage space. This first core and shell module would be expected to meet the high-performance computing needs of the atmospheric and related geosciences for a period of approximately 10 years, at which time the requirement to build the second core and shell module would be assessed.

Four types of air conditioning units would be used at the facility. One main cooling unit, one back-up refrigeration system, one back-up chiller and one emergency electric boiler. There would be no formal heating system since the residual heat generated from the computers would keep the building within acceptable temperature ranges. Mister-type humidifiers would be used inside to condition the interior air. All cooling units would be connected to the cooling tower and would be evaporative only (non-misting). Periodic blowdowns would be conducted that would require conditioning and filtering of the water.

The NWSC would utilize three 10,000-gallon aboveground diesel fuel storage tanks located outside the facility. These tanks would supply up to ten diesel back-up emergency power generators and also feed the individual interior day tanks on the interior generators. One Life Safety generator would also be located at the facility for the elevator, lights and alarms.

The proposed NWSC site plan is presented in Figure 2-2 and Figure 2-3 presents a conceptual rendering of the proposed site development.

Currently, the proposed construction site is owned by the Cheyenne LEADS, with project plans currently calling for UCAR ultimately to own the land and facility. The construction of the NWSC, if approved, is planned to begin early 2010 with transition to full facility operations in 2012.



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12/04/09	CJV	MJM	AS SHOWN	503	1 OF 1

POTOMAC-HUDSON ENVIRONMENTAL, INC.

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Jersey City, NJ 07305

136 W. 16th Street
Suite 3E, PO Box 1206
New York, NY 10011

PROJECT LOCATION MAP
NSF Supercomputer
Block 2, Lots 3 and 4
Township 13N, Range 67W, Section 4
Cheyenne, Wyoming

SOURCE: USGS

FIGURE # 2-1

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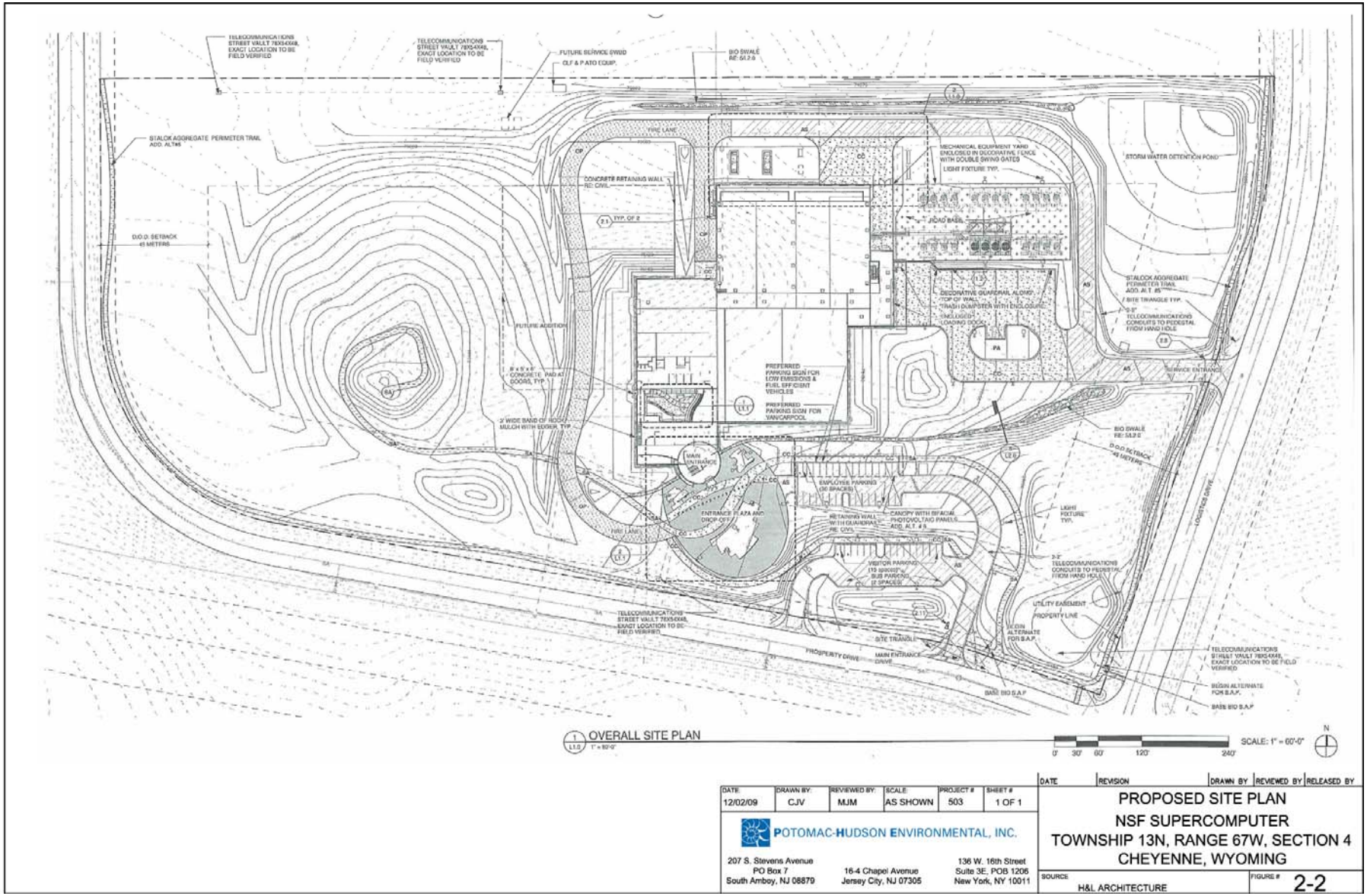
OVERALL SITE PLAN
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0' 30' 60' 120' 240'
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DRAWN BY: CJV
REVIEWED BY: MJM
SCALE: AS SHOWN
PROJECT # 503
SHEET # 1 OF 1
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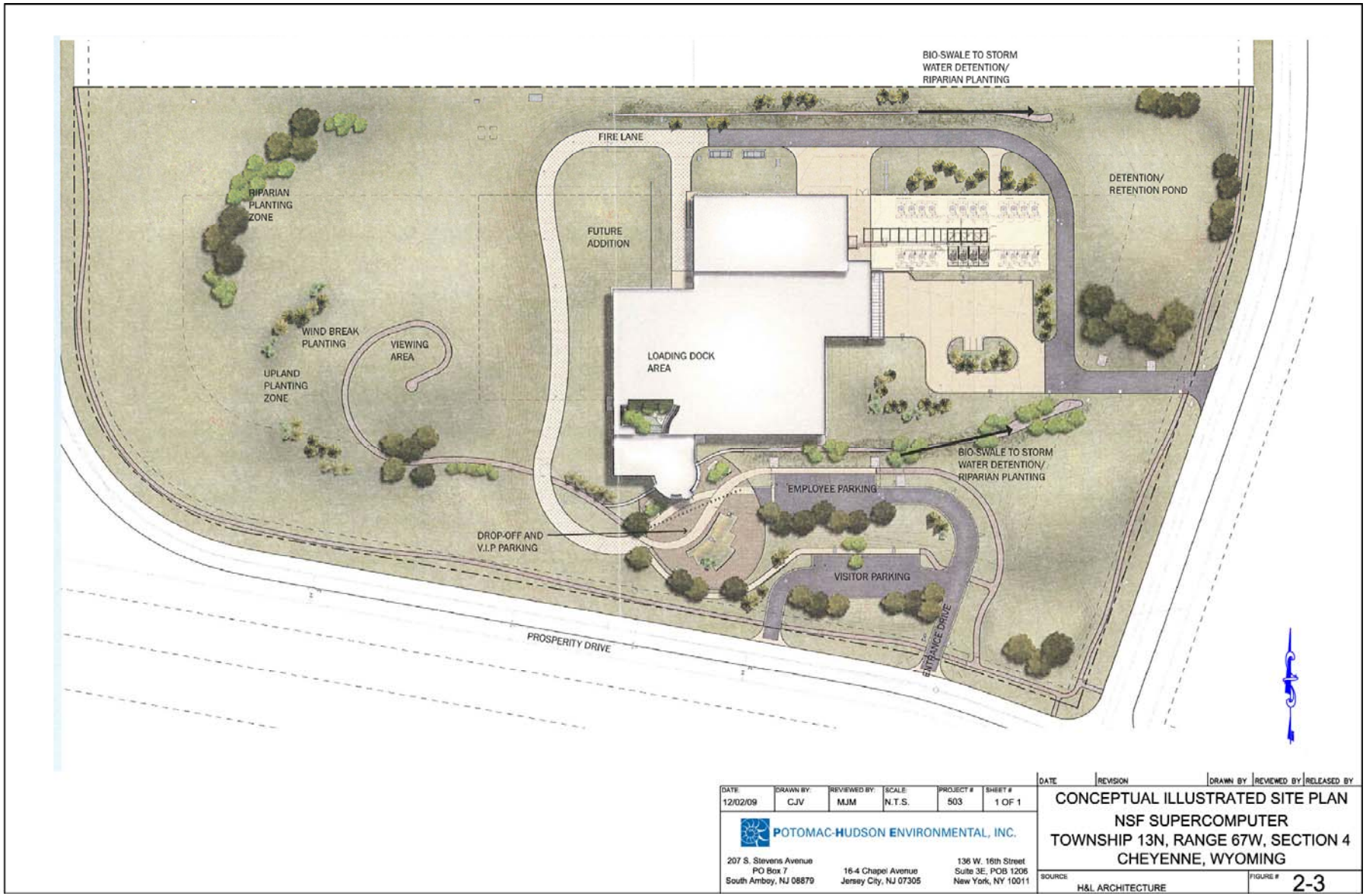
South Amboy, NJ 08879
16-4 Chapel Avenue
Jersey City, NJ 07305
136 W. 16th Street
Suite 3E, POB 1206
New York, NY 10011
DATE
REVISION
DRAWN BY
REVIEWED BY
RELEASED BY
PROPOSED SITE PLAN
NSF SUPERCOMPUTER
TOWNSHIP 13N, RANGE 67W, SECTION 4
CHEYENNE, WYOMING
SOURCE
H&L ARCHITECTURE
FIGURE #
2-2


BIO-SWALE TO STORM WATER DETENTION/ RIPARIAN PLANTING
FIRE LANE
DETENTION/ RETENTION POND
RIPARIAN PLANTING ZONE
FUTURE ADDITION
WIND BREAK PLANTING
VIEWING AREA
UPLAND PLANTING ZONE
LOADING DOCK AREA
BIO-SWALE TO STORM WATER DETENTION/ RIPARIAN PLANTING
EMPLOYEE PARKING
DROP-OFF AND V.I.P. PARKING
VISITOR PARKING
PROSPERITY DRIVE
ENTRANCE DRIVE
DATE 12/02/09
DRAWN BY: CJV
REVIEWED BY: MJM
SCALE: N.T.S.
PROJECT # 503
SHEET # 1 OF 1
POTOMAC-HUDSON ENVIRONMENTAL, INC.
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16-4 Chapel Avenue Jersey City, NJ 07305
136 W. 16th Street Suite 3E, POB 1206 New York, NY 10011
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CONCEPTUAL ILLUSTRATED SITE PLAN
NSF SUPERCOMPUTER
TOWNSHIP 13N, RANGE 67W, SECTION 4
CHEYENNE, WYOMING
SOURCE H&L ARCHITECTURE
FIGURE # 2-3

2.2 Project Location

The proposed NWSC would be built on a 24-acre site located on the northwest corner of the intersection of Prosperity Drive and Logistics Drive in the North Range Business Park (NRBP) in Cheyenne, Laramie County, Wyoming (Figure 2-1). Figure 2-4 is a current picture of the proposed NWSC site viewed from the eastern edge along Logistics Drive. The NRBP consists of a total of 620 acres of land with its own interchange onto Interstate 80 via Wyoming State Highway 222 (Roundtop Road). To the north of the park is State Highway 210 (also known as Happy Jack Road), with State Highway 222 to the east, and Interstate 80 to the south. The park is located approximately 3 miles southwest of downtown Cheyenne.

The NRBP currently includes an 850,000-square foot Walmart Automated Distribution Center, which is located on approximately 146 acres in the southwest corner of the park at the intersection of Horizon Drive and Logistics Drive. Although the balance of the NRBP is vacant, it has been platted and laid out with utilities. The NWSC would occupy Lots 3 and 4, comprising the southern half of Block 2, along Prosperity Drive between Diamond Creek Road and Logistics Drive.

Figure 2-4. Proposed NWSC Site viewed from Logistics Drive

2.3 No Action Alternative

Under the No Action Alternative, NSF would not construct the NCAR-Wyoming Supercomputer Center. The NCAR high-performance computing facilities, currently located at the Mesa Laboratory in Boulder, would remain in the status quo situation. The needed upgrade of the computing facilities would not be conducted, as the existing power source is unable to support further upgrades to the current system. Although the No Action Alternative would not meet the purpose and need for the project, this alternative provides a basis for comparative analysis with the Proposed Action Alternative.

2.4 Alternatives Considered and Dismissed from Further Consideration

NCAR and UCAR considered nine other site alternatives and evaluated those alternatives through a screening criteria process established to meet the needs of the Proposed Action. The major criteria for site selection included:

- Long term-site suitability, a minimum of 15 acres to accommodate anticipated 2012 expansion needs and potential foreseeable future expansion, and readily developable.
- Critical infrastructure availability (e.g., access roads, electrical, fiber options, water, sewer, etc.); and
- A site location distanced from potential air emissions, air pollutants, and safety concerns form another facility or arterial transportation or transit corridor.

The following provides a brief overview of the eight sites evaluated:

- Three Colorado School of Mines sites were considered: the West Campus site, the Creekside site, and the Main Campus site, all located in Golden, Colorado.
    - The West Campus site was comprised of 80 developable acres with easements for a 6 inch potable water line and a major 230V Xcel Energy transmission line on the property. Sanitary sewer, stormwater detention, natural gas lines, potable water, electrical transmission lines, and fiber optics would require some additional expansion. Site parcels were currently zoned as Residential (R-1 and R-3) and Mercantile (M-1). R-1 is intended to provide areas for low density residential development where continuation of certain agricultural uses are compatible with this development. R-3 is intended to provide for medium density residential development and includes single-family and two-family dwellings (duplex). M-1 zoning is intended for any kind of scientific research or manufacture, compounding, assembling, processing or treatment of products, and office and office/warehouse use.
    - The Creekside site included a 29 acre site, occupied by Brooks Stadium, football practice fields, the former Colorado School of Mines Research Institute, and baseball and softball fields that was zoned R-3; a 6 acre site occupied by softball fields; and additional acreage within the 100 year floodplain; and an optional 45 acre parcel. While utilities were available in various locations throughout the Creekside site, additional expansion would be required.
    - The Main Campus site was comprised of roughly two vacated blocks. Each block was approximately 3 acres in size, totally approximately 6 acres and zoned R-1A, which was restricted to residential unit size. While utilities were available in various locations throughout the site, additional expansion would be required. Additionally, the site would require the demolition of the former Jefferson County Hall of Justice, which would require abatement of asbestos containing materials.
- The Colorado State University Foothills Campus site in Fort Collins, Colorado (15 acres of a 1,500 acre site annexed by the University for a research campus, outside of Fort Collins and building requirements with the University acting as own zoning and building agency). While utilities are in close proximity to the site, additional expansion would be required.
- The Colorado Technology Center site in Louisville, Colorado involved approximately 32 acres, zoned as Planned Community Zoned District. While utilities were available within close proximity, additional expansion would be required.
- The Research Park, University of Boulder site in Boulder, Colorado involved 13.5 acres with adjacent uses including research and development facilities for space sciences and software development, office space and ancillary uses directly related to research and development. While utilities were available, additional expansion would be required.

- The Clover Basin Business Park in Longmont, Colorado involved approximately 9 acres of vacant land, previously agricultural use. While utilities were available within close proximately, additional expansion would be required.
- The Cheyenne Business Parkway in Cheyenne, Wyoming, involved a 60 acre property zoned as Heavy Industrial, and located adjacent to a native reserve area, a high-technology tenant and a national fiber backbone. The site is easily accessible to Interstate-80 and Interstate-25. While utilities were available, additional expansion would be required.
- The Laramie County Community College in Laramie, Wyoming, is a 20 plus acre site, zoned as Planned Development, and adjacent to Community College amenities with regional parks planned to the north of the site. While utilities were available, additional expansion would be required.

All sites were evaluated using the screening criteria and were dismissed from further consideration. Collectively, the basis for dismissal of the sites involved: insufficient existing and future infrastructure capacity, and potential site design difficulties, and zoning restrictions, which would cause significant scheduling delays. Additionally, for some alternatives, concerns involving flooding issues, soil contamination, air emissions, safety issues, and insufficient acreage and site location were determining factors for no further evaluation of the sites.

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3.0 AFFECTED ENVIRONMENT

3.1 Land Use

3.1.1 Existing Land Use

The Cheyenne Development Office has recently rezoned the NRBP property (Figure 3-1) from a Light Industrial District to a Planned Unit Development (PUD) district. A PUD provides for flexibility and creativity in building and site design as consistent with an approved plan or specific ordinance. Such plans ensure that adverse impacts would be prevented and that public health, safety, and welfare would be protected. PUDs enable the creation of areas for mixed uses that provide mutual benefits, but that are not ordinarily permitted together in other zoning categories (Cheyenne, 2009).

Currently, the only building in the NRBP is the Walmart Automated Distribution Center located on approximately 146 acres in the southwestern corner of the park (Figure 3-2). Adjacent properties to the north of Happy Jack Road include low-density residential uses and range lands. Range lands adjoin the property to the west, and range lands are also located to the east and south, across Roundtop Road and Interstate 80, respectively. Warren Air Force Base is located north of Happy Jack Road and east of Roundtop Road adjacent to the northeastern corner of NRBP. The Happy Jack Power Substation is located on Happy Jack Road near the northwestern corner of NRBP. The R. L. Sherard Water Treatment Plant is located at 1821 Happy Jack Road, less than 2 miles west of the park. A Dyno Nobel explosives processing facility is located across Interstate 80, approximately 2 miles south of the NRBP.

3.1.2 Future Land Use Planning

The Cheyenne Future Land Use Plan (Cheyenne MPO, 2006) shows the NRBP property, as well as adjacent lands south of Interstate 80, planned for Industrial use. Adjacent properties to the north of Happy Jack Road are planned for Urban Transition Residential use. Properties to the east and west of the NRBP are planned for Mixed-Use: Employment Campus. The NRBP Master Plan (AVI, 2005) anticipated that the park would be approximately 32 percent developed by 2030.

Figure 3-1. NRBP before Construction of Interstate-80 Interchange and Walmart (view from south)

Figure 3-2. Walmart Automated Distribution Center viewed from Proposed NWSC Site

3.2 Air Quality and Climate

3.2.1 Air Quality

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants. NAAQS represent maximum concentrations above which adverse effects on human health may occur. Areas of the country where air pollution levels persistently exceed the NAAQS may be designated as nonattainment areas. The proposed project area is located in Laramie County, within the Metropolitan Cheyenne Intrastate Air Quality Control Region (AQCR). The EPA has designated the air quality in the vicinity of the project area as attainment for all criteria air pollutants.

There are no existing sources of pollution from the undeveloped project site, with the exception of windblown fugitive dust from open unprotected surfaces. Some vehicular air emissions are present in the area due to the proximity of Interstate-80, Happy Jack Road, and Round Top Road.

3.2.2 Climate

Climate in Cheyenne is classified as semi-arid. The mean annual temperature is 45.6 F. Mean maximum temperatures range from 37.7 F in January to 82.8 F in July, while mean minimum temperatures range from 15.2 F in January to 54.6 F in July. The record low is –34 F and the record high is 100 F. On average, 106 days of each year are clear, 127 are partly cloudy, and 133 are cloudy. Mean annual precipitation is 14.4 inches, with most precipitation occurring from May through July. Precipitation of 0.1 inches or more occurs an average of 100.7 days each year, while 1.0 inches or more of snow occur an average of 17.1 days each year. Thunderstorms occur on average 51.1 days each year. Cheyenne has a relatively low incidence of heavy fog (defined as visibility < 0.25 miles), with an average of 23.5 days each year.

Southern Wyoming has the most consistent high wind speeds in the continental U.S. The mean wind speed in Cheyenne is 12.9 mph. The lowest mean wind speed (10.4 mph) occurs in July and August, and the highest mean wind speed (15.3 mph) occurs in January. Winds are predominantly from the west-northwest. The highest wind gust recorded in Cheyenne was 94 mph.

3.3 Noise

There are no known studies of ambient noise levels in the immediate project area. Currently, noise in the project area is typical of a rural setting. Sources of ambient noise include vehicular traffic, weather disturbances, occasional aircraft from Cheyenne Municipal Airport and Warren Air Force Base, and natural sources (e.g., wildlife, wind). Training with weapons by Warren Air Force personnel to the north can occasionally be heard from the project area, although noise from this source is likely to be non-disruptive. Because the project site and surrounding areas are relatively rural, sources of loud noises are few most of the time, and ambient noise levels are likely between 40 and 50 decibel A-weighted sound level (dBA) under calm wind conditions. These noise levels are similar to those experienced in libraries or residential living rooms and are characterized as being very quiet.

There are no sensitive human noise receptors such as schools, hospitals, or daycare centers in the vicinity of the project area. Noise-sensitive receptors in the project area are limited primarily to off-site residential developments located to the north approximately 1,000 feet or greater from the project site boundary.

Currently, the undeveloped site does not contribute to noise pollution.

3.4 Geology and Soils

3.4.1 Geology

As a result of geologic history, Wyoming is divisible into three major physiographic categories: mountains, the Great Plains of eastern Wyoming, and basins. The subject site lies within the High Plains portion of the Great Plains Physiographic Province, characterized by Tertiary and Cretaceous Period sedimentary deposits. Within the project area, the major geologic formation encountered is the Ogallala Formation from the Oligocene Epoch of the Tertiary Period. Rocks within the region range in age from Pre-Cambrian to recent, and are composed primarily of shale with small amounts of sandstone, siltstone, and limestone. Some of the sand and gravel layers may be well cemented with calcium carbonate, forming discontinuous sandstone and conglomerate beds. The sedimentary units composing the Ogallala are believed to have been deposited under fluvial (streams and rivers) and localized eolian (wind-blown) conditions in a humid, alluvial fan environment.

3.4.2 Soils

The Laramie County U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey (Figure 3-3) indicates that the near surface unconsolidated soils are comprised of an Evanston Loam (0-6 percent slope) and Ipson-Evanston Complex (6-30 percent slope) (NRCS, 2009). These soil types are described as deep and well-drained soils having moderate permeability and a high available water capacity.

A Geotechnical Engineering Report (Terracon, 2005), based upon the conduct of 12 test borings, indicates that the near surface soils are comprised of medium dense to very dense sand having various amounts of silt, clay, and gravel. These soil types were encountered beneath the vegetative layer to the maximum depth investigated (20.5 feet). Clay layers having low to medium plasticity (lean) were identified in three of the 12 locations investigated.

There are no known mineral resources located in the Proposed Action site.

Laramie County, Wyoming, Western Part (WY721)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
131	Evanston loam, 0 to 6 percent slopes	100.1	53.9%
138	Ipson-Evanston complex, 6 to 30 percent slopes	85.6	46.1%
Totals for Area of Interest		185.7	100.0%

DATE	DRAWN BY	REVIEWED BY	SCALE	PROJECT #	SHEET #
12/04/09	CJV	MJM	AS SHOWN	503	1 OF 1

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Jersey City, NJ 07305

136 W. 16th Street
Suite 3E, PO Box 1206
New York, NY 10011

SOIL SURVEY
NSF Supercomputer
Block 2, Lots 3 and 4
Township 13N, Range 67W, Section 4
Cheyenne, Wyoming

SOURCE
Natural Resources Conservation Service

FIGURE #
3-3

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3.5 Water Resources

3.5.1 Surface Water

The project site is located within the Crow Creek watershed, which is part of the South Platte River basin. No perennial or intermittent drainages are located within the project site. Intermittent drainages in the project area are limited to topographical depressions and swales that may carry water following precipitation events or snow melts. None of these depressions or swales have a defined bed and bank and therefore would not likely be considered jurisdictional waters of the U.S. subject to regulation by the U.S. Army Corps of Engineers. Drainage from the site is generally toward Crow Creek to the east of the project area.

3.5.2 Groundwater

The Quaternary-age alluvial and terrace deposits and the Tertiary-age Oallala Formation described in Section 3.4, comprise the High Plains aquifer. Where saturated with groundwater, the Quaternary deposits are hydraulically connected to the Ogallala Formation. The High Plains aquifer is the principal source of water for most of the water supply wells in and around the Cheyenne area.

The depth to groundwater in the proposed project area generally lies greater than from 15-20 feet below ground surface based on a geotechnical study conducted by Terracon (2005). A total of 12 test borings were advanced across the NRBP to depths ranging from 10.5 feet to 20.5 feet below ground surface. No groundwater was encountered. Of the 12 borings, four borings were located proximal to the proposed action project site: one to the northwest, one adjacent to the southern edge, one at the southeastern corner and one to the northeast. These borings ranged in depth from 10.5-14.3 feet below ground surface.

Groundwater at the project site is recharged locally through infiltration of precipitation.

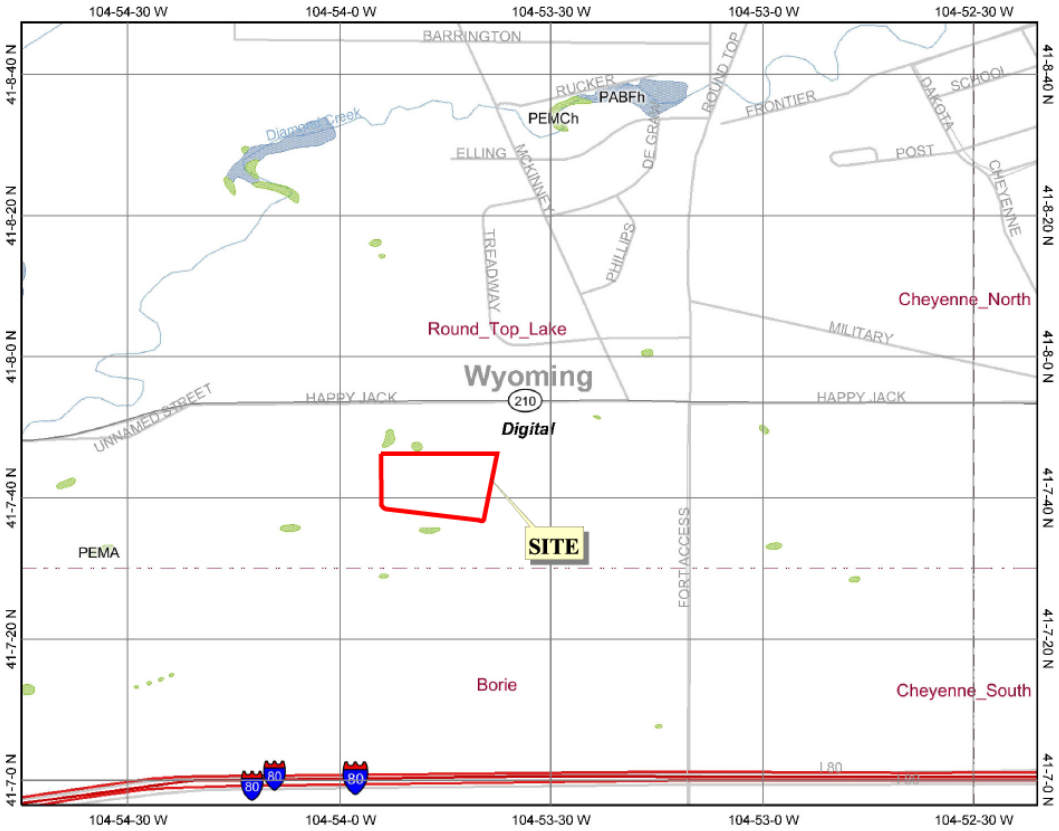
3.5.3 Wetlands

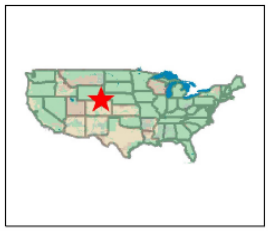
The National Wetland Inventory (NWI) map that covers the proposed action project area indicates the potential presence of several small palustrine emergent wetlands with temporary water regimes (National Wetland Inventory, 2009).. When using the NWI maps, it is common to field check the mapped feature for verification since these maps are created through aerial photo interpretation. A copy of the NWI map is presented as Figure 3-4. Several of these locations are man-made excavations within the drainages formally used to capture water for livestock use following precipitation events. The others are depressions within small, closed basins (Figure 3-5).

None of the identified wetland areas are located on the project site. Two of these areas lie to the north of the project site. Although standing water was present at the time of the site reconnaissance, no hydrophytic vegetation was identified. Thus, these areas would not be considered jurisdictional wetlands.

3.5.4 Floodplains

There are no perennial streams or drainages on the project site, and the site is not located within a mapped l00-year flood plain.





Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Streams
- Counties 100K
- States 100K
- South America
- North America

Scale: 1:24,000

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12/02/09	CJV	MJM	AS SHOWN	503	1 OF 1

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NWI WETLAND MAP
NSF Supercomputer
Block 2, Lots 3 and 4
Township 13N, Range 67W, Section 4
Cheyenne, Wyoming

SOURCE
National Wetlands Inventory Website

FIGURE #
3-4

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Figure 3-5. Closed Basin Wetland on Property Bordering NWSC Site to the North

3.6 Biological Resources

3.6.1 Vegetation

The primary habitat type present in the project area is prairie grassland, predominantly consisting of mixed grasses and forbs. Common species include those listed in the Table 3.1.

Table 3.1 Project Site Dominant Vegetation

Common Name	Scientific Name
Blue grama	*Bouteloua gracilis*
Crested wheatgrass	*Agropyron sp.*
Needle and Thread	*Stipa comata*
Smooth brome	*Bromis inermis*
Buckwheat	*Eriogonum sp.*
Fringed sagebrush	*Artemisia frigida*

Invasive Species

The primary invasive species identified in the project area is Canada thistle (*Cirsium arvense*), which was observed on the eastern portion of the site adjacent to the partially graded Logistics Drive. It is not uncommon for invasive species to gain a foothold in disturbed areas, and the partial grading of this area has allowed the introduction of several individuals of this species.

3.6.2 Wildlife

The grassland habitat present in the project area supports a limited number of mammals, reptiles and birds. The lack of water courses and permanent wetlands restrict the availability of suitable habitat for fish and amphibians. No trees or other structures suitable for nesting raptors are present on the site, although raptors may occasionally forage in the area. Wildlife species generally found in the project area include pronghorn antelope (*Antilocapra americana*), occasional mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor hirtus*), coyote (*Canis latrans*),

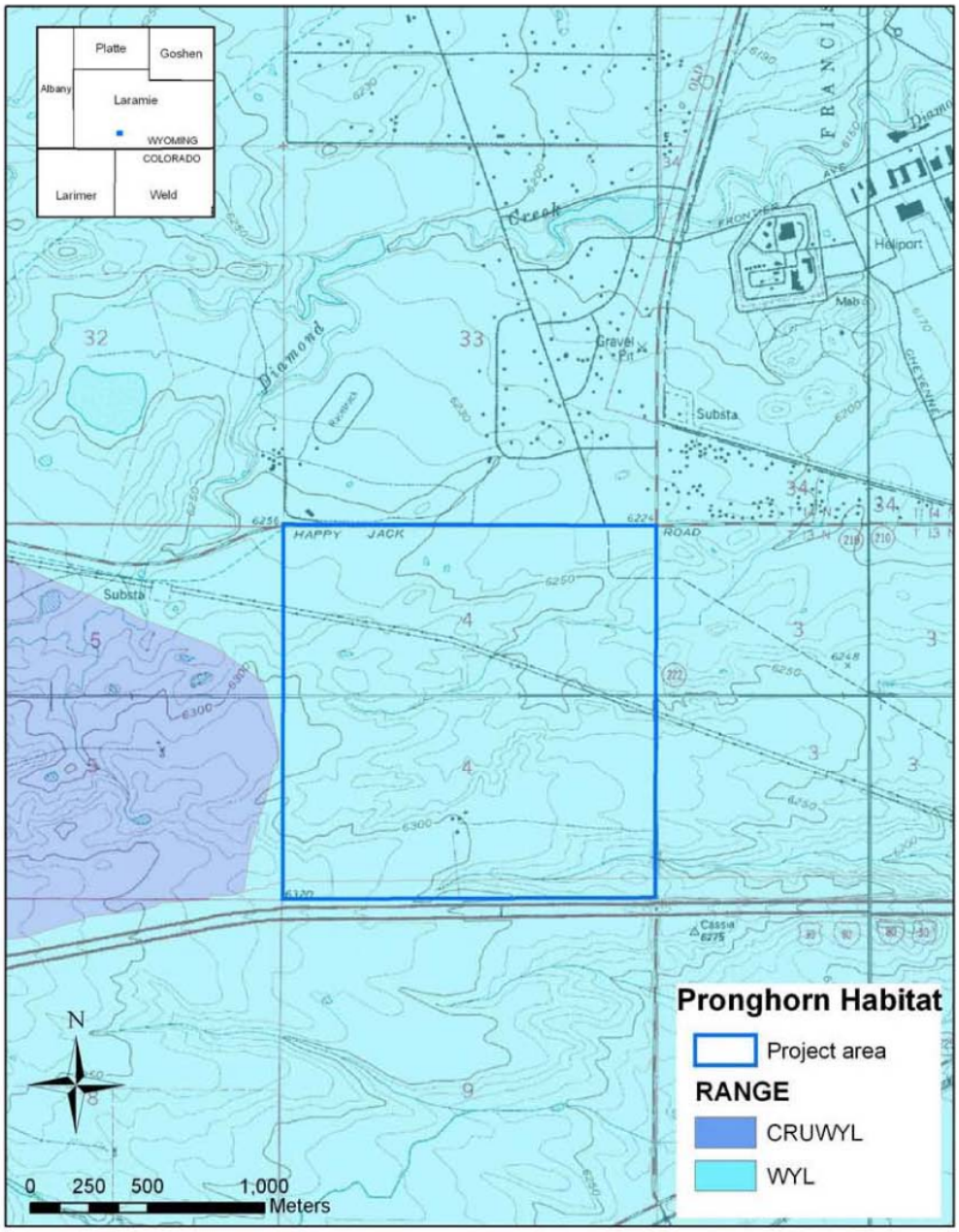
black-tailed jackrabbit (*Lepus califomicus melanotis*), cottontail rabbit (Sylvilagus sp.), skunk (Spilogale sp.), and common rodents.

The proposed project is located in winter yearlong range for pronghorn antelopes (Figure 3-6). These animals are free-ranging and are generally well-adapted to the presence of urban development. Crucial winter range for pronghorn occurs just to the west of the proposed project area (Figure 3-7).

Figure 3-6. Pronghorn Antelope along Roundtop Road east of NRBP

3.6.3 Threatened and Endangered Species

Section 7 of the Endangered Species Act requires that all federal agencies ensure that actions approved, funded, or carried out do not jeopardize the continued existence of a listed species or destroy critical habitat. The State of Wyoming does not have a state level endangered species act, however the USFWS (2009) has identified 14 animals and five plants in Wyoming as endangered or threatened under the Endangered Species Act (ESA, 1973). These listed species are presented in Table 3.2, Federally Listed Threatened and Endangered Species in Wyoming. As defined by the ESA, an endangered species is any species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. In accordance with the ESA, the lead agency in coordination with the USFWS must ensure that any action that they authorize, fund, or carry out would not adversely affect a federally-listed threatened or endangered species.



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DATE:	DRAWN BY:	REVIEWED BY:	SCALE:	PROJECT #	SHEET #
12/02/09	CJV	MM	AS SHOWN	503	1 OF 1

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PRONGHORN ANTELOPE HABITAT AROUND THE PROPOSED PROJECT AREA

NSF Supercomputer
Block 2, Lots 3 and 4
Township 13N, Range 67W, Section 4
Cheyenne, Wyoming

SOURCE: Environmental Impact Assessment
North Range Business Park

FIGURE # 3-7

Table 3.2 Federally Listed Threatened and Endangered Species in Wyoming

Common Name	Scientific Name	Federal Status*	Habitat Description**
MAMMALS			
black-footed ferret	*Mustela nigripes*	E	The black-footed ferret is associated with prairie dog towns (*Cynomys* spp.); it is also found in open level sparse grass areas.
Canada lynx	*Lynx canadensis*	T	Habitat for Canada lynx consists of spruce/fir montane forests, largely boreal and montane regions with coniferous or mixed forest dominating and with thick undergrowth. This species may also utilize open forest, rocks, and tundra.
gray wolf	*Canis lupus*	E	The gray wolf inhabits forested areas.
grizzly bear	*Ursus arctos*	T	This species occurs in mountain forests, open meadows, and river valleys.
BIRDS			
interior least tern	*Sterna antillarum*	E	This species requires large shorelines along rivers, lakes, and other water bodies.
piping plover	*Charadrius melodus*	T	The piping plover inhabits sandy upper beaches, especially where scattered grass tufts are present; this species also inhabits sparsely vegetated shores, and islands of shallow lakes, ponds, rivers, and impoundments.
whooping crane	*Grus americana*	E	The whooping crane migrates primarily through the Great Plains. Introduced individuals potentially migrate from Idaho and Wyoming south. Spring migrants use Platte Valley for northern migration.
AMPHIBIANS			
Wyoming toad	*Bufo baxteri*	E	The Wyoming toad occurs in the vicinity of lakes and adjacent meadows.
FISH			
bonytail chub	*Gila elegans*	E	This species inhabits the Colorado River and it larger tributaries, including Green River.
humpback chub	*Gila cypha*	E	The bonytail chub is found throughout the Colorado River Basin, including the Colorado River and major tributary systems.
Kendall Warm Springs dace	*Rhinichthys osculus thermalis*	E	This species inhabits Kendall Warm Springs, which is a tributary of the Green River near Pinedale, Wyoming.
Colorado pikeminnow	*Ptychocheilus lucius*	E	The Colorado pikeminnow is restricted to the large rivers of the Colorado River Basin.
pallid sturgeon	*Scaphirhynchus albus*	E	This species does not occur in Wyoming, but water depletions to the upper Platte River Basin would require compliance with the Platte River Recovery Implementation Program.
razorback sucker	*Xyrauchen texanus*	E	The razorback sucker inhabits the Colorado River Basin, including the Green River Basin.

Table 3.2 Federally Listed Threatened and Endangered Species in Wyoming (continued)

Common Name	Scientific Name	Federal Status*	Habitat Description**
PLANTS			
blowout penstemon	*Penstemon haydenii*	E	This species is limited to the sandhills region of west-central Nebraska, and sand dune habitat in the northeastern Great Divide Basin in Wyoming. In Wyoming, it occurs on sandy aprons or the lower half of steep sandy slopes deposited at the base of granitic or sedimentary mountains or ridges.
Colorado butterfly plant	*Gaura neomexicana ssp. coloradensis*	T	Occurs on sub-irrigated, alluvial soils on level or slightly sloping floodplains and drainage bottoms, and old, abandoned stream channels with a high water table. Colonies are often found in low depressions or along bends in wide, meandering stream channels. This species may even occur at the interface between riparian meadows and drier grasslands.
desert yellowhead	*Yermo xanthocephalus*	T	The desert yellowhead, discovered in 1990, is found only on about six acres of cold desert habitat in the Wind River Basin of central Wyoming.
Ute ladies'-tresses	*Spiranthes diluvialis*	T	Found in moist to very wet meadows along streams or in abandoned stream meanders that still retain ample ground water; also found in bogs-seeps habitat.
western prairie fringed orchid	*Platanthera praeclara*	T	This species is found in western portions of the North American tallgrass prairie, commonly on moist, calcareous or subsaline prairies and sedge meadows.

*E = Endangered; T = Threatened
**Source: NatureServe, 2009

Based on a review of the Wyoming Natural Diversity Database (WYNDD, 2009); two ESA listed species have been recorded within the township that contains the project area: Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*), and piping plover (*Charadrius melodus*). Both species are considered threatened. Multiple records for the Colorado butterfly plant have occurred within the township and date from 1978 to 2004, while the piping plover was recorded in the late 1890s. The nearest Colorado butterfly plants to the project site occur in two populations north of the development site, with the nearest population within 200 meters (565 feet) from Happy Jack Road. Colorado butterfly plant is a regional endemic plant species that is found in sub-irrigated soils in depressions and drainages. There is no suitable habitat for Colorado butterfly plant in the project area. Piping plovers require sandy upper beaches, most especially where scattered grass tufts are present. This species also inhabits sparsely vegetated shores and islands of shallow lakes, ponds, rivers, and impoundments (NatureServe 2009). There is no suitable piping plover habitat within the project area.

Based on habitat descriptions presented in Table 3.2, there is no suitable habitat within the project area for any ESA-listed species found in Wyoming.

Critical habitat designations, as defined by the ESA, occur in Wyoming for two plant species: desert yellowhead (*Yermo xanthocephalus*) and Colorado butterfly plant (*Gaura neomexicana*). Critical habitat for desert yellowhead is located on federally-managed Bureau of Land Management land in Freemont County in south-central Wyoming. Critical habitat for Colorado butterfly plant is restricted to streamside habitat along specific streams in southeast Wyoming, outside of the project area. Critical habitat is not carried forward for analysis in this EA, as none occur within the project site.

Copies of correspondence for the Wyoming Department of Game and Fish and the US Fish & Wildlife Service are included in Appendix A, Correspondence.

3.7 Cultural Resources

Prior to field investigations at the NWSC location, a records search was conducted through the Wyoming State Historic Preservation Officer's Cultural Records Office. The search examined the reports, cultural resource forms, National Register of Historic Places listings, and other materials physically stored at, and digitized by, the Laramie, Wyoming facility.

The results of the records search indicate that there are no enrolled National Register of Historic Places properties in the vicinity of the project. Approximately 32 acres of block cultural resource inventory have been completed to current Wyoming State Historic Preservation Office (SHPO) standards within the section containing the project area. None of these investigations appear to overlap with the present study area.

Four sites have been recorded within the section containing the project. The National Register-eligible Cheyenne-Miracle Mile Transmission Line is immediately outside the area of potential effect, along its south side. The 1870 General Land Office plat for T. 13 N., R. 67 W. does not indicate any historic sites or structures in the immediate vicinity of the project.

3.8 Solid and Hazardous Waste

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act (42 United States Code 9601 *et seq.),* as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act (15 United States Code 2601-2629). In general, hazardous materials include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare or to the environment when released or otherwise improperly managed.

Hazardous wastes are defined by the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA, 42 United States Code 6901 *et seq.),* which was further amended by the Hazardous and Solid Waste Amendments. RCRA Subtitle C (40 Code of Federal Regulations Parts 260 through 270) regulations are administered by the EPA and are applicable to the management of hazardous waste. These regulations require that hazardous waste be handled, stored, transported, disposed, or recycled in compliance with applicable regulations.

There are currently no solid wastes, hazardous materials or hazardous wastes generated or stored at the project site.

Based on a review of historic aerial photographs from 1976, 1978, 1980, 1988, 1993, 1999 and 2006 obtained from Environmental Data Resources, Inc., the site appears to have been open rangeland back to at least 1976, the earliest photograph obtained. The immediately surrounding area has also been open rangeland.

A Phase I Environmental Site Assessment was conducted for the West Interstate-80 Project at the Southwest Corner of Happy Jack Road and North Fort Access Road in Cheyenne, Laramie County, Wyoming (Terracon, 2004). The subject site is a part of the project area for the 2004 assessment. As part of the Phase I Environmental Site Assessment, a radius search was conducted for properties located within a one mile radius that have been identified on one or more environmental databases. Based on a review of the 2004 Phase I report, the subject site was not identified on any databases searched. The only site identified within a 1 mile radius was the Francis E. Warren Air Force Base located between ½ and 1 mile northeast of the subject site. Groundwater contamination identified at the Air Force Base was noted to be impacting a residential subdivision nearby, but this subdivision is located approximately two miles to the east-northeast of the site and appears to be topographically down-gradient relative to the site and, therefore, would not affect the project site.

3.9 Utilities and Energy Use

3.9.1 Potable Water

The Cheyenne Board of Public Utilities (BOPU) provides potable water to the City of Cheyenne. The R. L. Sherard Water Treatment Plant, located on Happy Jack Road less than 2 miles west of the NRBP, currently supplies potable water to the area via parallel 30-inch and 42-inch diameter water mains that are owned and maintained by the city in a right-of-way along the south side of Happy Jack Road. The Sherard plant has a capacity of 40 million gallons per day (mgd) and an average demand of approximately 15 mgd (Cheyenne MPO, 2006). In 2009, the BOPU reported 18,947 residential, 1,182 multi-family, 1,629 commercial, 24 industrial, and 156 other water customers (BOPU, 2009a).

A critical portion of Cheyenne's water supply originates in the Sierra Madre mountain range on the western slope of the Continental Divide in the Little Snake River basin. The water is transmitted through a tunnel and stored in Hog Park Reservoir on the eastern side of the Divide. Although the water collected and stored in Hog Park Reservoir belongs to Cheyenne, delivery of the water is prohibitive due to the presence of several mountain ranges between Hog Park Reservoir and Cheyenne. Therefore, an exchange arrangement was developed and approved by the Wyoming State Engineer. Because waters from both Douglas Creek and Hog Park Creek eventually empty into the North Platte River, Cheyenne is permitted to replace water withdrawn from the North Platte River via Douglas Creek and Rob Roy Reservoir using water from west of the Continental Divide stored at Hog Park Reservoir. Hence, the North Platte River is kept in balance. Water stored in Rob Roy Reservoir is transported to Granite Springs and Crystal Reservoirs for use in Cheyenne (BOPU, 2009a).

BOPU also draws groundwater from four well fields, which produce approximately 25 percent of Cheyenne's water. In January, 2009, BOPU discontinued withdrawals of groundwater from the Borie Well Field after results from a routine sample detected trace amounts of trichloroethylene in the King II water storage tank. The loss of the well field reduced Cheyenne's groundwater production by 3 mgd (BOPU, 2009b).

3.9.2 Wastewater

The NRBP is served by a 12-inch diameter sanitary sewer, which conveys wastewater to the Dry Creek Wastewater Treatment Plant operated by the Cheyenne BOPU. The Dry Creek plant has a capacity of 10.5 mgd. Together with the Crow Creek Wastewater Treatment Plant, which has a capacity of 6.5 mgd, the two plants provide a combined treatment capacity of 17 mgd for the service area (BOPU, 2009a). The average wastewater treatment by BOPU for the combined plants is less than10 mgd (Cheyenne MPO, 2006). The Crow Creek plant also has the capacity to treat 4 mgd as recycled water for distribution to cemeteries, parks, athletic fields and green spaces for irrigation use. In 2009, the BOPU reported 18,837 residential, 1,180 multi-family, 1,525 commercial, 20 industrial, and 12 other sewer customers (BOPU, 2009a).

3.9.3 Energy Use

The NRBP is served by Cheyenne Light, Fuel & Power, which is owned by Black Hills Corporation. Cheyenne Light, Fuel & Power serves 39,800 electric customers and 33,300 natural gas customers in the greater Cheyenne area (BHC, 2009). Recently, the company's peak demand was 168 MW (Associated Press, 2009). Among the generating stations serving the company's customers is the 29 MW Happy Jack Wind Farm located approximately 5 miles west of the NRBP (Figure 3-8). The wind farm generates renewable electric power using an array of wind turbines. Electrical power for the NRBP is distributed from the Happy Jack Power Substation (Figure 3-9), which is located near the northwestern corner of the NRBP property. A high voltage transmission line extends from the Happy Jack Power Substation across the NRBP property from west to east in a corridor south of Prosperity Drive.

Figure 3-8. Happy Jack Wind Farm (west of NRBP)

Figure 3-9. Happy Jack Power Substation (west of NRBP)

3.10 Socioeconomics and Environmental Justice

3.10.1 Population and Housing

The population of the City of Cheyenne grew from 53,360 in April 2000 to 56,915 in July 2008 at an average annual rate of 0.8 percent. The growth rate for the most recent year of record (mid-2007 to mid-2008) was slightly higher at 1.2 percent. Cheyenne's population constitutes approximately 65 percent of the population in Laramie County, which was 87,542 in July 2008 (Wyoming EAD, 2009). The Laramie County population grew at an annual average rate of 0.9 percent from 2000 to 2008. The population of Laramie County is expected to

reach between 103,000 and 135,000 in 2030, depending upon projected annual growth rates ranging from 1 to 2 percent (Cheyenne MPO, 2006).

The NRBP is located in Census Tract 19, Block Group 1, Block 1003, which includes a large swath of land bounded by Roundtop Road, Happy Jack Road, and Interstate 80, and extending west nearly to Curt Gowdy State Park. The census block had a population of 4 within a single household in 2000. Adjacent census blocks were sparsely populated as well, with the largest populations in Blocks 2587 (28 people) and 2588 (30 people) located north of Happy Jack Road and west of Roundtop Road adjacent to the NRBP (U.S. Census Bureau, 2000).

The Cheyenne area included 29,136 housing units in 2003, of which 73 percent were single family. The median year of construction was 1965 and the last housing boom occurred in the 1970s. By contrast, the median year of construction for houses in Census Tract 19 encompassing the NRBP was 1984, with the largest proportion constructed since the 1970s. For the city as a whole, the occupancy rate in 2000 was 94 percent, with 66 percent owner occupied. The occupancy rate in the Block Group 1 encompassing the NRBP was 75 percent with 81 percent owner occupied. The median value of houses in Cheyenne was $102,400 in 2000, while the median value in Census Tract 19 was $153,000 (U.S. Census Bureau, 2000). Most housing in Census Tract 19 includes larger lot sizes reflective of the rural residential character outside the downtown area.

3.10.2 Taxes and Revenue

The City of Cheyenne raises the majority of its revenues through charges for services (37 percent), sales taxes (31 percent), and property taxes (10 percent). For the fiscal year ended June 30, 2008, the city recorded a net asset balance of $392.4 million, which represents a 4.1 percent increase ($15.6 million) from fiscal year 2007, and includes $32.9 million in unrestricted net assets (Cheyenne, 2008).

The city maintains 23 individual governmental fund accounts that finance governmental activities, including general government, public safety (police and fire departments), public works, health and welfare, and recreation. These governmental activities are supported by taxes and intergovernmental revenues. Business-type activities of the city include the water and sewer departments, the Civic Center, and the Ice and Events Center. These activities are financed through enterprise funds that are supported by charges for services (Cheyenne, 2008).

3.10.3 Economy and Employment

The 620-acre NRBP is owned by Cheyenne LEADS, which is a private, not-for-profit economic development organization serving the City of Cheyenne and Laramie County, Wyoming. Cheyenne LEADS is funded by the City of Cheyenne, Laramie County, the Cheyenne-Laramie County Joint Powers Board, and by dues from more than 300 corporate and individual members. Cheyenne LEADS also owns the Cheyenne Business Parkway (CBP), which covers 900 acres within city limits immediately east of downtown Cheyenne. Current tenants of the CBP include Lowe's Home Improvement's Regional Distribution Center, EchoStar (DishNetwork) satellite uplink center, Jeld-Wen Windows factory, Truss-Craft, Quark Software, Sierra Trading Post catalog merchants, and Grobet precision manufacturing. The CBP currently has 300 acres available (Cheyenne LEADS, 2009).

The Cheyenne Area Master Plan (Cheyenne MPO, 2006) listed the top five employers in the Cheyenne Area as F.E. Warren Air Force Base, the State of Wyoming, the U.S. Government, Laramie County School District No. 1, and United Medical Centers. Major private employers in the area include the Union Pacific Railroad, Lowe’s, Sierra Trading Post, and Echo Star Communications. In addition to these employment centers, the Walmart Automated Distribution Center at NRBP employs approximately 450 workers.

The Laramie County workforce employed in non-agricultural jobs in 2008 included an average of 45,100 individuals. The largest portion of this workforce was employed in government service (30 percent), and the next largest portion was employed in trade, transportation, and utilities (22 percent). An additional 37 percent of workers were employed in other service jobs, and 11 percent of workers were employed in goods-producing industries. The average unemployment rates in Cheyenne and Laramie Counties in 2008 were 4.1 percent and 3.9

percent, respectively (WYDOE, 2009). As of October 2009, the unemployment rate in Cheyenne had increased to 7.2 percent as a result of the severe nationwide recession; however, Cheyenne ranked 92nd in the U.S. among metropolitan statistical areas with lowest unemployment (BLS, 2009).

3.10.4 Environmental Justice

Executive Order 12898 (E.O. 12898, 1994) requires federal agencies to address the potential for their actions to have an adverse and disproportionate impact on minority or low-income populations. As defined by the Census Bureau, minority populations include Blacks, Hispanics and Latinos, American Indians and Alaskan Natives, Asians, and Native Hawaiians. The percentage of these minority populations in Cheyenne (18.6 percent) is higher than in the State of Wyoming (11.1 percent) and Laramie County (16.8 percent) but lower than the percentage in the U.S. (30.9 percent). Census Block 1003, in which the NRBP is located, had a population of 4 in 2000, all minorities (Hispanic/Latino); however, the larger Block Group 1 encompassing the NRBP had a minority population equivalent to 9.9 percent, which is lower than the State of Wyoming (U.S. Census Bureau, 2000). The closest residences to the NRBP property are located north of Happy Jack Road in Block Group 2, which had a minority population equivalent to 6.4 percent.

Low-income populations are best measured by the percentage of the population with incomes below the poverty level. At the 2000 Census, the poverty rate in the City of Cheyenne (8.8 percent of the population) was lower than the rates in Laramie County (9.1 percent), the State of Wyoming (11.4 percent), and the U.S. (12.4 percent). The poverty rate in Block Group 1, encompassing the NRBP property, was 11.1 percent, which is comparable to the rate in Wyoming as a whole. The closest residences to the NRBP property are located north of Happy Jack Road in Block Group 2, which had a very low poverty rate (3.8 percent) in the 2000 Census.

3.11 Visual Resources

The NRBP is located in the High Plains Grasslands of Wyoming. The topography is gently rolling and generally devoid of trees. Therefore, viewscapes are broad and unobstructed. To the west of the property, the turbines of the Happy Jack Wind Farm are clearly visible on a ridgeline approximately 5 miles distant (previous Figure 3-8). Interstate 80 is visible to the south. Visible structures on the NRBP include the large Walmart Automated Distribution Center in the southwest corner of the property and the high voltage transmission lines extending from the Happy Jack Power Substation across the NRBP property from west to east (Figure 3-10).

Figure 3-10. View of NWSC Site from Happy Jack Road with Power Lines and Walmart Distribution Center in Distance

3.12 Traffic and Transportation

The proposed 24-acre site for the NWSC is located on the northwest corner of the intersection of Prosperity Drive and Logistics Drive within Block Two, Lots 3 & 4 of the predominantly undeveloped 620-acre NRBP. The NRBP is zoned light industrial, and is designed to include 20 parcels.

The NRBP is bordered on the north by Happy Jack Road (Highway 210), on the east by Roundtop Road (Highway 222), and on the south by Interstate 80. The properties on the western border are undeveloped. In preparation for site development, NRBP has constructed an unfinished roadway network through the property (Figure 3-11). Block Two is located at the northwest corner of the NRBP, bordered by Diamond Creek Road to the west, Prosperity Drive to the south, Logistics Drive to the east, and Happy Jack Road to the north.

The acreage surrounding the NRBP to the northwest, west and south is undeveloped for many miles. The majority of the local population resides in the city of Cheyenne located east of Interstate 25 approximately 2 miles to the east of the site. The land west of Interstate 25 and north of Happy Jack Road is also developed, including a residential community located directly north of the NRBP across Happy Jack Road. Currently there is very little traffic around the northwest corner of the NRBP (proposed site location) due to the lack of residences or destinations to the west of the site.

According to the Cheyenne Area Transportation Master Plan (Cheyenne MPO, 2006), the two-lane Roundtop Road (Figure 3-12) is currently uncongested with a level-of-service (LOS) between A and C. Four-lane Interstate 80 is also uncongested with a LOS between A and C. By 2030, if existing roads are left unimproved, portions of Roundtop Road (from Highway 225 to Prosperity Drive) and Happy Jack Road east of McKinney Drive are projected to become congested with a LOS of E to F. The Master Plan's 2030 Roadway Vision Plan includes improvements around the NRBP, including improvements to the interchange of Interstate-80 with Roundtop Road (widen the underpass), as well as improvements to the stretch of Roundtop Road adjoining the NRBP (improve to two/four-lane major arterial), and improvements to Happy Jack Road from Roundtop Road to Interstate-25 (improve and widen to four-lane major arterial); although, only portions of these improvements would be made under a fiscally-constrained scenario.

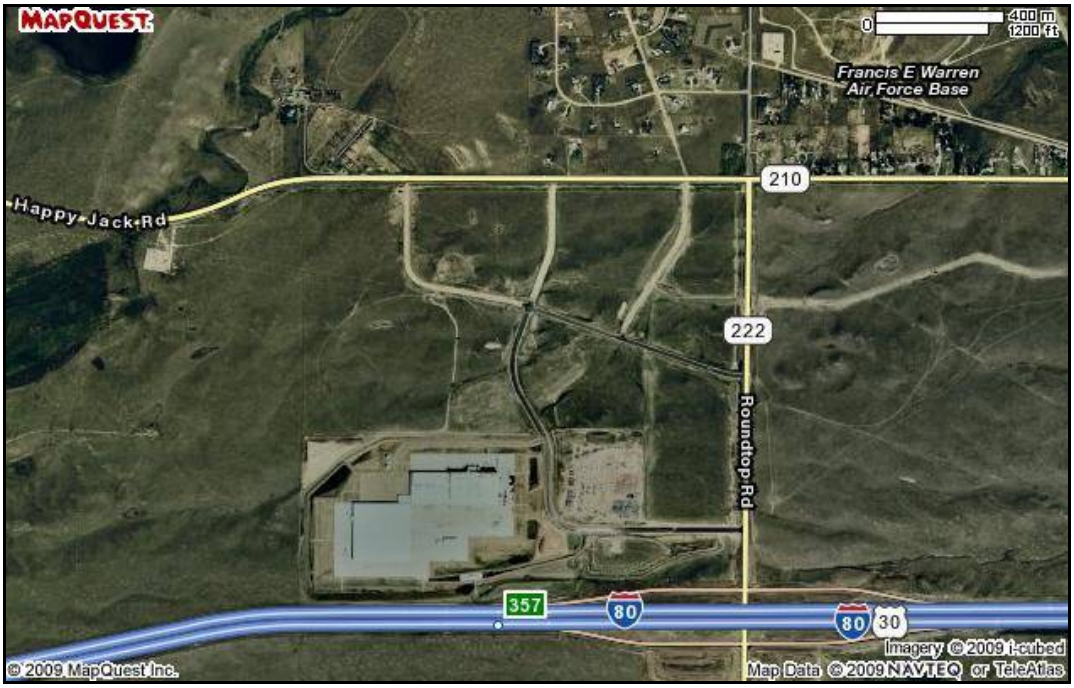

Figure 3-11. Roadways in Vicinity of NRBP

Figure 3-12. View South on Roundtop Road from Horizon Drive toward Interstate-80

3.13 Sustainability

The NSF is an independent federal agency and NCAR is the largest of NSF's Federally Funded Research and Development Centers. NCAR is operated by the UCAR under a cooperative agreement with NSF. NCAR has established a partnership with the Wyoming Business Council, the University of Wyoming, and Cheyenne Light, Fuel, and Power to build the NWSC. This section provides an overview of each including programs, goals and initiatives towards sustainability.

The NSF strives to be a leader in embracing environmental initiatives. The Foundation adds credibility, cost saving and long-term value to company's sustainability programs through product assessment, process verification and standards development, in which NSF tests current, in-process, and new sustainability standards. As a part of NSF's ongoing commitment to protect the environment they adopted the LEED Green Building Rating System during the expansion of their Michigan-based corporate headquarters. The energy model for the NSF expansion indicates that the design of the building is saving 26 percent energy costs over a basic building and obtained LEED silver certification for the project (National Science Foundation, 2004).

UCAR is committed to working toward sustainability and routinely supports the integration of best practices that benefit the environment, human well being, and organizational productivity. UCAR was an early adopter of many sustainable environmentally preferable practices that are now considered mainstream, such as adopting an environmental stewardship policy, recycling, providing each staff member with an EcoPass to ride public transit for free, and creating a free bike loan program (National Center for Atmospheric Research, 2008). The proposed NWSC facility would be the first NCAR facility to earn LEED certification for its design, construction, and operation furthering their goal toward a more sustainable future (International Institute for Sustainable Laboratories, 2009).

The Wyoming Business Council administers the State Energy Program, funded by the U.S. Department of Energy. The program works to expand opportunities for alternative or renewable energy use in Wyoming using domestic fuels or resources to promote sustainability. Public and private entities, including industries, have become more energy efficient through the flexible State Energy Program that covers buildings, transportation, and public outreach. They promote clean energy technologies and foster the emergence of sustainable markets. The Business Council has worked with the owners of Wyoming public buildings to achieve LEED Certification for

two public buildings, the Big Horn County Elementary School and the Laramie County Library (Wyoming Business Council, 2009).

The University of Wyoming is a national research university and is leader in the fields of environment and natural resource research, specializing in energy, agriculture, and water-related fields. The University strives to be a leader and has a Campus Sustainability Committee (CSC), which handles implementing actions to reduce carbon emissions and eventually become carbon neutral. The University continues to pursue energy-saving projects, such as lighting and control retrofits, and would develop a master utility plan to improve energy efficiency. Students have the option to purchase wind energy credits. The engineering college maintains a renewable energy field site to develop and demonstrate renewable energy systems and all new construction and major renovations at the University strive to meet LEED Silver standards (University of Wyoming, 2007).

Cheyenne Light, Fuel & Power was officially acquired by Black Hills Corporation in January 2005. The company has sought to maximize environmental and economic benefits as early as 1918, by making improvements that resulted in raising power efficiency by reducing coal consumption and eliminating gas and smoke irritation in their boiler room, installing a higher pressure boiler over a modern chain grate stoker, and expansion resulting in a highly efficient bench being added to increase the capacity and decrease the cost of gas generation for the communities it serves (CLF&P, 2009).

3.14 Human Health and Safety

The NRBP property is currently vacant with the exception of the Walmart Automated Distribution Center. As described above under Solid and Hazardous Wastes, there are no solid wastes, hazardous materials or hazardous wastes generated or stored at the project site, and the NRBP property was not identified in any environmental databases during a Phase I Environmental Site Assessment in 2004 for the West Interstate-80 Project. Therefore, there are no substantive health and safety factors associated with the NRBP location.

3.15 Community Services

3.15.1 Law Enforcement

The Cheyenne Police Department is a progressive agency of 105 sworn officers and 27 civilian employees. The Department works to serve the community with many innovative programs and specialized units in which officers can participate. These units include mounted patrols, Special Weapons Assault Team, Hostage Negotiations Unit, Special Enforcement Unit, K-9 Unit, Arson and Explosives Investigative Unit, School Resource Officers, and the Juvenile Crime Unit (Cheyenne Police, 2009).

The U.S. has over 800,000 enforcement officers and has an average of 2.3 police officers per thousand residents (Project America, 2008). The City of Cheyenne is just under the national average at two officers per thousand residents. Although the current number of law enforcement officers within the City is below the U.S. average, crime rates within the City are equal to the U.S. average, which is an indication that law enforcement is appropriately staffed (Best Places, 2009).

Laramie County encompasses an area larger than the State of Delaware and has a population of approximately 87,000 people. The Laramie County Sheriff's Office is one of the largest agencies of its kind in Wyoming, staffed by approximately 145 full-time employees, with 110 of those positions being held by commissioned patrol and detention deputies (Laramie County, 2009). Index offenses which include criminal sexual assault, robbery, aggravated assault, burglary, theft, motor vehicle theft and arson are a way of measuring and comparing crime statistics. The State of Wyoming averaged 3,388 index offenses per 100,000 residents in 2005, whereas Laramie County reported 281 per 100,000 residents for the same year (The Disaster Center, 2008); therefore, indicating that law enforcement is appropriately staffed.

3.15.2 Fire Protection

The City of Cheyenne Fire Department was first organized in 1909 and has grown into a modern fire department which holds a primary response duty to over 55,000 citizens within its jurisdiction, covering an area over 24 square miles. The Department is staffed by a Fire Chief, three Division Chiefs, three Battalion Chiefs, and ninety-two full-time firefighters (Cheyenne Fire and Rescue, 2009).

The Department is a member of Wyoming's mutual aid agreement, of which Laramie County has a total of eight fire districts that contain over a hundred volunteer firefighters. All of the fire districts participate in the region's mutual aid agreement and would assist in an emergency if called upon (Laramie County, 2009).

3.15.3 Healthcare Services

The City of Cheyenne is served by two major hospitals. The Cheyenne Veterans Administration (VA) Medical Center and the Cheyenne Regional Medical Center. The Cheyenne VA Medical Center opened in 1934 and provides medical services to approximately 68,000 veterans living in the tri-state area of southeastern Wyoming, northeastern Colorado and southwestern Nebraska (U.S. Department of Veterans Affairs, 2009).

The Cheyenne Regional Medical Center has more than 175 physicians, 1,700 employees and 400 volunteers (Cheyenne Regional Medical Center, 2009). This Medical Center contains a total of 222 beds. Based on the current population in the City of Cheyenne there are four beds per thousand people (American Hospital Directory, 2009).

3.15.4 Local School System

The City of Cheyenne has a total of four high schools, five middle schools, and 25 elementary schools. Laramie County has a total of nine high schools, seven middle schools, and 33 elementary schools. The City of Cheyenne spends approximately $5,400 per student and there is an average of 16 pupils per teacher. This student/teacher ratio is slightly above the national average (Public School Review, 2009; and Best Places, 2009).

According to the U.S. Census Bureau, the percentage of the City of Cheyenne population 25 years of age and over with a high school education or more is 91 percent and the percentage with a Bachelor's degree or higher is 23.2 percent. The percentage of Laramie County population 25 years of age and over with a high school education or more is 90.3 percent and the percentage with a Bachelor's degree or higher is 22.9 percent (U.S. Census Bureau, 2000).

3.15.5 Recreation

The City of Cheyenne has numerous existing parks and recreation facilities, including 18 Neighborhood Parks or Pocket Parks, which collectively have 70.19 acres of functional park area, 7.48 acres of reserve parkland for future development and 96.71 acres in total. There are an additional 12 properties classified as Community Parks or Sports Complexes, totaling 564 acres. Also throughout the City are two Special Purpose Parks which are Union Depot Plaza and Saddle Tramps Riding Arena. The Union Depot Plaza is a recent addition to the downtown area and is adjacent to the historic Union Pacific Depot. This area is used for festivals and gatherings. Other facilities include five golf courses and two developed aquatics centers (Plan Cheyenne, 2009).

Pocket Park: a small area of open space that is developed and maintained for active or passive recreational use by the residents of a neighborhood or development. A pocket park may include lawn areas, a tot lot, playground, or picnic areas.

The City owns and maintains 111.08 acres of Natural Areas and Natural Corridors. The Dry Creek Parkway (40.20 acres), Dry Creek Greenway (36.50 acres) and Crow Creek Greenway (5.86 acres) were originally obtained to incorporate the city's multi-purpose trail as part of the Cheyenne Greenway project and as important floodwater conveyance features. These areas, with their riparian habitat, provide an oasis of natural habitat within

the city and are some of the most popular areas with residents as they stroll, walk, run or bike through them on the trails (Plan Cheyenne, 2009).

Cheyenne Botanic Gardens is operated by the Botanic Gardens Division of the Parks and Recreation Department and was originally located east of Cheyenne in 1977. The current 9.2-acre Gardens, located in Lions Park, were opened in 1986 and offer a diverse plant collection, several specialty gardens, and volunteer, educational and therapeutic opportunities to the community. The Greenway Trails are another nature loving and popular recreational feature in the City. Approximately 15.9 miles of the greenway have been constructed with the involvement of government agencies, private businesses, volunteers, and schools (Plan Cheyenne, 2009).

Medicine Bow National Forest, located approximately 25 miles to the northwest of Cheyenne, serves as a major recreational area, providing opportunities for cross-country skiing, rock climbing, hiking, picnicking, and camping.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Land Use

4.1.1 Proposed Action Alternative

The proposed NWSC facility is compatible with the zoning classification and proposed land use for the NRBP property. Therefore, the Proposed Action would have no impact on land use either during construction or operations.

4.1.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. The lots proposed for construction of the NWSC facility would remain available for sale by Cheyenne LEADS for another potential commercial project.

4.1.3 Cumulative Impacts

Because the Proposed Action would have no impact on land use, it would not contribute to potential cumulative impacts on land use.

4.1.4 Proposed Mitigation Measures

No mitigation measures would be necessary with respect to land use.

4.2 Air Quality

4.2.1 Proposed Action Alternative

4.2.1.1 Construction

Construction impacts on air quality associated with the project would be similar to any other commercial or light industry construction activities. The proposed project would result in short-term increases in suspended particulates from the movement of vehicles, equipment, and soil disturbance during construction. Short-term emissions of nitrogen oxides, hydrocarbons, carbon monoxide and sulfur dioxide from construction and maintenance vehicles, as well as worker commutation, would also result. Long-term, the project would result in reductions in fugitive windblown suspended particulates, since more ground surface would become impervious or landscaped.

Construction activities would be primarily limited to the site. Consequently, soil disturbances and related dust impacts would primarily occur at structure sites, staging areas, and storage locations. Construction activities would only be detectable in the immediate vicinity of the site, with the exception of off-site construction vehicles and equipment egresses and some short-term, project-related off-site work. Additionally, once construction stops for the day or work is completed in any given area, any impacts on air quality would correspondingly cease.

The area surrounding the project site is vacant. The closest sensitive receptors are residences located approximately 1,000 feet or more to the north of the site property boundary. It is not anticipated that construction activities would result in any significant impacts to nearby receptors. There would also be minimal impact to local roadways from equipment and worker vehicular air pollution.

4.2.1.2 Operations

The NWSC operation would have minimal impacts to existing air quality. Despite its 24 hours per day, seven days a week operation schedule, the facility would only support 25 employees during normal work hours and 3 to 4 employees on weekends. This, combined with 38 to 58 bused visitors per day, would result in only a slight increase in vehicular air pollution to local roadways. Due to the small staffing size, the facility would not be a significant source of vehicular traffic.

The facility would utilize electric heating, ventilating, and air conditioning systems for interior environmental comfort, and electric cooling systems for the computers. The emergency backup boiler would also be electric. There would be an electric heated fluid-based sub-slab ice/snow melting system for the exterior sidewalks and steps. All of the cooling systems and their backups would employ non-misting cooling towers. The power requirements for the cooling/heating systems and the computer, per se, would be significant, up to 4 MW for the initial phase of the project. Cheyenne Light Fuel & Power would provide electricity to the site via the Happy Jack Substation, which receives its power from a variable ratio of coal, natural gas, and wind sources.

The facility would also utilize one diesel life safety backup generator and up to nine diesel backup generators for the computers. Each generator would be exercised once per month for approximately 20 minutes. Normally the Wyoming Department of Environmental Quality, Air Quality Division requires a New Source Construction Permit for Tier 2 or Tier 3 diesel-fired emergency generators, but they have waivers that can be applied for if the facility is a "research" facility such as the NWSC. For the waiver, the applicant need only provide details on the generator's operation and the manufacture's EPA Tier 2/3 rating (WDEQ, 2009). The emergency backup generators are not anticipated to be a significant source of air pollution.

Exposure to radon during and after construction is not expected to be a concern. The building would have a slab foundation with no basement, crawl space, or pits, which reduces exposure risks. There would, however, be some below-grade construction because the structure would be built into a hill. In addition, the building would be constructed with a vapor barrier.

4.2.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no impacts to existing air quality under this alternative.

4.2.3 Cumulative Impacts

Potential future expansion of the NCAR facility, which would require additional equipment and facility infrastructure, would result in an increase in electrical consumption and, hence, a slight indirect impact to air pollution. Increases to vehicular air pollution from increased staff size and/or visitations are not anticipated to be significant.

4.2.4 Proposed Mitigation Measures

During construction of the facility, standard mitigative measures would be employed to minimize fugitive dust generation and exhaust emissions. Such measures would include, but not be limited to, reduced travel speeds of construction equipment on unpaved surfaces, placement of gravel access roadways on-site, spraying of surfactants on soil surfaces, expedited landscaping of bare soil surfaces, minimizing equipment idling time, maintaining equipment to reduce exhaust emissions, covering inactive storage piles, and worker car pooling.

Several energy efficient systems have been incorporated into the facility design to reduce operational electricity consumption, and, hence, the indirect impacts to air quality. Additional operational mitigative measures would include employee car pooling and proper maintenance of the emergency backup generators, and heating, ventilating and air conditioning and computer cooling systems.

4.3 Noise

4.3.1 Proposed Action Alternative

4.3.1.1 Construction

Construction impacts associated with the project would be similar to other commercial or light industry construction activities. The proposed project would result in short-term increases in noise from the movement of

heavy-duty vehicles, equipment, and worker commutation during construction. Standard construction equipment would be used, including excavators, graders, backhoes, dump trucks, and foundation drills.

Construction activities would be primarily limited to the site, and primarily limited to daytime hours. Consequently, noise-related impacts would generally only occur at structure sites, staging areas, and storage locations. Construction activities would only be detectable in the immediate vicinity of the site, with the exception of off-site construction vehicles and equipment egresses and some short-term off-site work erecting power lines to the property. Additionally, once construction stops for the day or work is completed in any given area, any noise impacts would subsequently subside.

The area surrounding the project site is vacant. The closest sensitive receptors are residences located approximately 1,000 feet or more to the north of the site property boundary. It is not anticipated that construction activities would result in any significant impacts to nearby receptors. There would also be minimal impact to local roadways from equipment and worker egress noise, and these would be limited primarily to daytime hours.

4.3.1.2 Operations

The NWSC operation would have minimal impacts to existing noise levels. Despite its 24 hours a day, seven days a week operation schedule, the facility would only support 25 employees during normal work hours and three to four employees on weekends. This, combined with 38 to 58 bused visitors per day, would result in an undetectable increase in vehicular noise levels to local roadways. Comparing the number of peak hour vehicles generated by this facility to existing and future traffic figures in the Master Plan, there would be less than a 1 dBA increase in noise levels to local roadways from the operation of this facility. For comparison, a 3 dBA increase in noise level is barely perceptible to the average person. Everything else being held constant (vehicle mix, speeds), it takes a 27 percent increase in traffic volume to produce even a 1 dBA increase in perceived sound. Due to the small staffing size, the facility would not be a significant source of vehicular traffic.

The facility's cooling compressors, cooling towers, and (up to) 10 emergency backup diesel generators would not be a significant or constant source of noise. As noted above, the closest existing sensitive receptors are residences located approximately 1,000 feet or more to the north of the site property boundary. It is not anticipated that operational activities would result in any significant impacts to nearby existing sensitive receptors. Due to the location of the facility within the NRBP, future adjacent receptors would likely be non-sensitive to noise.

4.3.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no impacts to existing noise levels under this alternative.

4.3.3 Cumulative Impacts

No cumulative impacts have been identified.

4.3.4 Proposed Mitigation Measures

During construction of the facility, standard mitigative measures would be employed to minimize excess noise. Such measures would include, but not be limited to, use of quiet-friendly construction equipment, limiting construction activities and equipment egress to daylight hours, minimizing equipment idling time, maintaining equipment to reduce noise emissions, and worker car pooling.

Operational mitigative measures would include employee car pooling and proper maintenance of the emergency backup generators and heating, ventilating and air conditioning and computer cooling systems.

4.4 Geology and Soils

4.4.1 Proposed Action Alternative

4.4.1.1 Construction

During construction, the eastern portion of the site would be graded to provide suitable elevations for building slabs and fabrication. Through this process, soils would be excavated and rearranged to accommodate the proposed development. The western portion of the site would be generally maintained in its present topography.

It is anticipated that all excavated and graded soils would remain on-site.

This soil movement would not result in overall adverse impacts to soil and geology.

4.4.1.2 Operations

During the operation of the NWSC, no impacts to soils or geology would occur.

4.4.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no project-related impacts to existing site soils and geology under this alternative.

4.4.3 Cumulative Impacts

No cumulative impacts have been identified.

4.4.4 Proposed Mitigation Measures

No specific mitigation measures would be required beyond the best management practices mandated for ground-disturbing activities of the extent associated with the project. Proposed measures to mitigate the potential for soil erosion during construction would include use of silt curtains and straw bales at the construction site perimeter to prevent off-site migration of silt, and seeding of bare areas.

4.5 Water Resources

4.5.1 Proposed Action Alternative

4.5.1.1 Construction

Surface Water
There are no perennial or intermittent drainages on the project site. However, there are topographical depressions and intermittent drainage swales to the north of the project site. Following rainfall or snow melt, these swales could be affected by increases in suspended sediment and turbidity. It is anticipated that all appropriate measures would be taken to prevent erosion and off-site accumulation of silt. Such measures would include use of silt curtains and straw bales at the construction site perimeter. With such measures in place, no adverse impacts to surface water resources have been identified.

Groundwater
Site grading activities would be primarily limited to surface soils, although some utilities would be placed in deeper excavated trenches. In no instance is groundwater, which has been determined to be greater than 10.5-feet below ground surface, anticipated to be encountered nor adversely impacted by project construction activities.

Wetlands
No jurisdictional wetlands have been identified on the project site.

Floodplains
There are no flood plains associated with the project site.

4.5.1.2 Operations

Surface Water
There are no perennial or intermittent drainages on the project site. Operation of the NWSC would not generate discharges of waste streams that could contribute to water quality degradation in off-site areas. Therefore, no adverse impacts would occur.

Stormwater
Development of the NWSC would result in 5.5-acres of impermeable surface (hardscape) consisting of building, parking area and roadway. The increase in stormwater runoff would be accommodated through the construction of bio-swales that function by interrupting the flow of water with vegetation and allowing runoff to passively filter and recharge along the length of the swale. A retention or detention pond would also be present in the northeast corner of the site. Therefore, no adverse site or off-site stormwater impacts are anticipated to occur.

Groundwater
Operation of the NWSC would not adversely impact groundwater resources. The NWSC would not generate waste stream discharges as part of its operation. Stormwater runoff would be increased, but recharge would be facilitated by the construction and use of bio-swales that function by interrupting the flow of water with vegetation and allowing it to passively recharge along the length of the swale. Bio-swales are effective means of filtering stormwater prior to recharge.

Wetlands
There are no wetlands or intermittent drainages on the project site.

Floodplains
There are no flood plains associated with the project site.

4.5.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no impacts to existing surface water, groundwater or wetlands under this alternative.

4.5.3 Cumulative Impacts

No cumulative impacts have been identified.

4.5.4 Proposed Mitigation Measures

No specific mitigation measures would be required beyond the best management practices mandated for ground-disturbing activities of the extent associated with the project. The NWSC project would incorporate bio-swales into its project design. Bio-swales allow stormwater runoff to be filtered prior to infiltration and recharge.

4.6 Biological Resources

4.6.1 Proposed Action Alternative

4.6.1.1 Construction

Vegetation
Existing vegetation would be altered as a result of site development. Some areas of native grassland habitat are likely to remain in open spaces in the development. Of the 24 acres comprising the project site, approximately 5.5-acres of the site would be developed as building, parking, and roadway and approximately 12-acres restored with natural vegetation. The remaining acreage would be maintained in its current condition.

Because the area of disturbance is small, the project would not impact vegetative genetic or species diversity, nor would it substantially alter the overall availability of prairie grassland habitat type. For these reasons, the project would result in no adverse vegetation impact.

Wildlife
No adverse impacts to wildlife have been identified. Some wildlife species that adapt well to living proximal to human developments, such as fox, coyote, rabbit, skunk, and rodents, would remain in the area. The proposed project is located in winter/yearlong range for pronghorn, which are likely to be displaced from the area, but can use adjacent undeveloped habitat that is abundant in the area. Winter/yearlong range is that in which a portion is used throughout the year, but in winter has a significant influx of animals from other seasonal ranges (Wyoming Game and Fish Department, 2009). Crucial winter yearlong range for pronghorn, which is defined as winter range that constitutes a determining factor in a population's ability to maintain itself, is located just to the west of the project area and would not be affected by the proposed project.

Threatened and Endangered Species
A review of listed plant and animal species has indicated that no threatened or endangered species, nor critical habitat, are located in the project site area (Derby and Young, 1999). Therefore, the project would not result in any direct impacts to threatened or endangered species of plants and animals.

It should be noted, however, that water usage requirements during construction of the NWSC must avoid depletions to the watershed for the North Platte River that could potentially impact federally-listed species found in the Platte River system in central Nebraska. The project would fall under the existing EPA Municipal Separate Storm Sewer System 4 permit currently held jointly by the City of Cheyenne, county and state. During construction, EPA standards would need to be met, thereby mitigating or eliminating any downstream impact. Since the project would be mandated to be in compliance with the construction permit, the NWSC project would summarily fall within the approved North Platte River depletion and impact plan. As such, no indirect adverse impacts to threatened and endangered species in the Platte River system would be anticipated.

4.6.1.2 Operations

Vegetation
The operation of the NWSC would have no impact on the vegetative resources of the site.

Wildlife
The operation of the NWSC would have no impact on the wildlife resources of the site. Operation of the facility does not result in intrusive odors, noise, or light, nor are there waste stream discharges that could affect wildlife.

Threatened and Endangered Species
The operation of the NWSC would have no impact on threatened and endangered species.

4.6.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. The 24-acre development site would remain vacant until such time in the future when another user may be identified. There would be no impact on existing vegetation, wildlife or threatened and endangered species under this alternative.

4.6.3 Cumulative Impacts

No cumulative impacts have been identified.

4.6.4 Proposed Mitigation Measures

Approximately 50 percent of the project site, essentially the western half of the site, would be restored with native grasses. In this area, minimal grading is anticipated and advantage would be taken of the natural topography, which includes a small rise that would be accessed via a path and used as a passive viewing area.

The project would be required to comply with the water use standards in the current EPA Municipal Separate Storm Sewer System 4 permit to prevent depletions to the North Platte River watershed and resultant potential impacts to federally-listed species in the Platte River system in central Nebraska.

4.7 Cultural Resources

4.7.1 Proposed Action Alternative

4.7.1.1 Construction

A Class III cultural resource inventory for the NWSC project was completed in October of 2009 (Bradshaw and Larson, 2009). During the inventory, personnel examined the project area using pedestrian transects spaced no more than 94 feet apart. The purpose of the inventory was to identify all cultural resources within the project area, evaluate their eligibility for inclusion in the National Register of Historic Places, and access the potential impacts of the undertaking on eligible properties.

No cultural resources were encountered within the project area. The investigation, recording and evaluation of a nearby segment of the Cheyenne-Miracle Mile Transmission Line have led to the conclusion that this segment is a noncontributing portion of the National Register of Historic Places eligible historic property.

Based on the findings from the records search and field investigations, the proposed undertaking would have no effect on historic properties. Cultural resource clearance has therefore been recommended for the project.

A copy of the letter requesting cultural resource clearance from the State Historic Preservation Office in included in Appendix A, Correspondence.

4.7.1.2 Operations

Since no historic or cultural resources have been identified on the project site, and the site is not a contributing element to identified off-site resources, no impacts would occur to cultural resources during the operation of the NWSC.

4.7.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no impacts to existing historic or cultural resources under this alternative.

4.7.3 Cumulative Impacts

No cumulative impacts have been identified.

4.7.4 Proposed Mitigation Measures

No mitigation measures have been identified, as construction and operation of the NWSC would result in no impacts to the historic and cultural resources of the project area.

4.8 Solid and Hazardous Waste

4.8.1 Proposed Action Alternative

4.8.1.1 Construction

Construction of the Proposed Action would require the use of heavy machinery, requiring maintenance and fuel. Maintenance would most likely be performed off-site and within an authorized service shop. However, the use of machinery on the site could introduce grease, oils, hydraulic fluids and fuels (diesel and gasoline) to the site through accidental discharge or spills. Adhesives and paint materials could also be present on the site during construction. Any hazardous and solid wastes generated would be disposed in accordance with all local, state, and federal laws and regulations. Any hazardous materials used during construction would be stored in a secure, covered location. Any accidental discharge or spill would be reported, as appropriate, and remediated through excavation and appropriate disposal of contaminated soil.

No solid or hazardous waste impacts are anticipated during construction.

4.8.1.2 Operations

The NWSC would utilize three 10,000-gallon aboveground diesel fuel storage tanks located outside the facility. These tanks would supply diesel generators for emergency back-up and life safety. Each generator would be checked once a month to ensure proper operation.

Air permitting for the generators has been previously discussed in Section 4.2.1.2.

Batteries would be used on site for interim back-up purposes and would be appropriately disposed in accordance with all applicable regulations.

Four types of air conditioning units would be used at the facility, but there would be no discharges associated with this process.

A sub-slab plumbing network would be used to melt ice and snow off the walkways using a re-circulating water/glycol mixture.

There would be no hazardous substances or wastes generated at the facility, thus there would be no adverse impacts.

4.8.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no solid or hazardous materials used, or wastes generated under this alternative.

4.8.3 Cumulative Impacts

Any spills of hazardous materials during construction or operation of the facility would be minor and would be cleaned up immediately. Since there are no changes in the foreseeable future that would result in increased use of hazardous materials other than previously described, no cumulative impacts are anticipated regarding hazardous materials at the site.

4.8.4 Proposed Mitigation Measures

If any spills of lubricants, diesel fuel or other hazardous materials occur during construction, the contractor would be required to clean up the spills immediately. Solid wastes would be disposed in accordance with all applicable regulations. Spills of diesel fuel from the aboveground storage tanks to be located at the facility for the emergency generators would be cleaned up in accordance with all applicable regulations.

4.9 Utilities and Energy Use

4.9.1 Proposed Action Alternative

4.9.1.1 Construction

Potable Water

Potable water mains have already been constructed in the NRBP (Figure 4-1). These would be tapped during construction for service to the NWSC. During construction, drinking water would be supplied in containers for consumption by workers. Additional water for construction, including dust suppression during ground-disturbing activities, would be supplied by tanker trucks. The anticipated potable water demand during construction would not adversely affect the capacity of the BOPU water system. As appropriate, water for construction uses could be supplied from non-potable sources, included recycled water from the Crow Creek Wastewater Treatment Plant. No construction-related adverse potable water impacts have been identified.

Figure 4-1. Fire Hydrant on Prosperity Drive near Proposed NWSC Site

Wastewater

Sanitary collection sewers have already been constructed in the NRBP (Figure 4-2). These would be tapped during construction for service to the NWSC. No wastewater would be discharged to the sanitary sewer system during construction. Portable toilets would be provided for construction workers. Other water used during construction activities would be retained onsite before disposal in accordance with erosion and sedimentation control plans.

Figure 4-2. Sanitary Sewer Manholes on McKinney Drive near Proposed NWSC Site

Energy Use
Electrical service would be provided to the NWSC by a new feeder circuit from the Happy Jack Power Substation with an alternate feeder circuit from the Corlett Power Substation. Before these connections would be completed, electric power would be supplied for construction via portable generators. The power demands during construction would not adversely affect the capacity of Cheyenne Light, Fuel & Power.

4.9.1.2 Operations

Potable Water
The principal water demands at the NWSC would involve make-up water for mechanical systems. This demand is estimated to be 21 million gallons per year (H+L Architecture, 2009) or approximately 57,500 gallons per day. The facility is expected to have a full-time staff of approximately 25 employees, which would cause a small demand for drinking water. This demand for human consumption is estimated to be 8,300 gallons per year (H+L Architecture, 2009), which would equate to approximately 32 gallons per day assuming a 5-day work week. The estimated total water demand for the NWSC would represent an increase of approximately 0.38 percent above the current average daily demand on the BOPU water system. A letter from the Cheyenne BOPU documenting that it possesses adequate capacity to serve the water and sewer demands of NWSC is included in the Appendix A, Correspondence.

As part of the sustainable design of the NWSC, the facility would include a rainwater collection and reuse system to provide water for landscape irrigation. The system would be designed to handle 32,500 gallons per year of rainwater.

Wastewater
Because the NWSC would be designed to recycle and reuse water to the maximum practicable extent, the principal wastewater discharge to the Cheyenne sanitary sewer system would be sanitary wastewater from toilets and sinks used by workers. The letter from Cheyenne BOPU in the Appendix A states that it has the capacity to serve the water and sewer demands of NWSC.

Energy Use
NCAR anticipates that the power demand for a supercomputer center in the 2012 timeframe capable of 1.0 to 1.5 x 10^{15} floating point operations per second would be 4 MW (NCAR, 2009a). NCAR's design specifications are intended to achieve a minimum LEED certification at the level of Gold. Among these specifications, NCAR has targeted a power usage effectiveness (PUE) value of 1.3 or better for the NWSC. PUE is the ratio of the total amount of power provided to a data center divided by the power load delivered to computing equipment and is a key measure of the overall energy efficiency of computing center operations. Typical data centers have PUE values in the range of 2. NCAR has worked with its design team to explore the use of water- and air-side economization, adiabatic cooling technologies involving no transfer of heat, and the recovery of waste heat from the computer room areas to meet NWSC cooling and heating requirements.

NCAR also has stipulated that a significant fraction of the NWSC power requirements shall be met using renewable energy sources. A proposed Memorandum of Understanding between UCAR and the Wyoming partners stipulates that a minimum of 10 percent renewable energy (predominantly from wind sources) would be used to supply power to the NWSC. Cheyenne Light, Fuel & Power has offered an option for 100 percent of the NWSC power requirement to be met from renewable sources. NCAR is also working with the design team to determine whether solar power generation can be incorporated into the facility design plans in a cost-effective manner (NCAR, 2009b). A letter from Cheyenne Light, Fuel & Power documenting its commitment to meet the power demands of NWSC is included in the Appendix A, Correspondence.

4.9.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. As such, there would be no utility and energy requirements associated with the facility.

4.9.3 Cumulative Impacts

No cumulative impacts on utilities and energy uses are anticipated. The NWSC would be located in the NRBP, which has been planned for development of comparable facilities based on the capacities of public water, wastewater, and electrical power services to support future demand.

4.9.4 Proposed Mitigation Measures

The NWSC has been estimated as achieving 51 LEED credits, which would qualify the facility at the top of LEED Gold Level. Additional design efforts are underway to quality the NWSC at LEED Platinum Level, which is the highest LEED certification level.

4.10 Socioeconomics and Environmental Justice

4.10.1 Proposed Action Alternative

4.10.1.1 Construction

Population and Housing
The project would employ a few hundred construction workers over several months to complete the NWSC. The size of the project and its location in commuting proximity to population centers (Cheyenne, Laramie, and Fort Collins) in Wyoming and Colorado would reduce the potential for an influx of workers during construction. The local construction trades would provide most of the workers, and adequate lodging is available in the Cheyenne area for workers drawn from outside the area. Therefore, the Proposed Action would have a negligible impact on population and housing during construction.

Taxes and Revenue
Increased sales transactions for the purchase of materials and supplies would generate some additional revenues for local and state governments, which would have a minor positive impact on taxes and revenue during construction.

Economy and Employment
The project would provide additional demand for employment locally in the building trades for the duration of construction. The infusion of capital expenditures during construction (estimated at approximately $50 million) would have a net benefit to the local economy. Although much purchasing for the project would relate to materials and equipment acquired outside the city and state, a substantial portion of expenditures would benefit local and regional suppliers. These expenditures, as well as expenditures for food and services by construction workers would have direct and indirect beneficial impacts through multiplier effects on the local and state economies.

Environmental Justice
The NWSC site is mainly distant from residential properties and other receptors that are generally affected adversely by construction activities. The closest residence is located across Happy Jack Road approximately 800 feet northeast of the proposed NWSC site. Fewer than 20 residences are located between 1,000 feet and ½ mile from the site. These residences would be minimally affected by construction activity at the site. Based on census data described in Section 3.10.4, the potential for disproportionate adverse impacts on minorities or low-income populations during construction of the NWSC would be considered negligible.

4.10.1.2 Operations

Population and Housing
Only a small number of individuals (approximately 25 permanent jobs) are expected to be employed at the NWSC facility, and many of these employees would be relocated from the existing NSF facility in Boulder, Colorado. However, even an influx of the entire staff and their families would have a negligible impact on population and housing in the Cheyenne area.

Taxes and Revenue
As a federal entity, the NSF is exempt from state and local taxes. Therefore, the NWSC would not contribute directly to tax revenues for the city and county as would a commercial enterprise on the same NRBP site. Although no current plans exist, Cheyenne LEADS anticipates that NWSC would attract other businesses to the NRBP location, which would increase tax revenues for the city and county. Also, as a state-of-the-art technology facility and potential learning center with unique design features, the NWSC is expected to attract additional visitors to Cheyenne who would contribute to revenues from sales taxes.

Economy and Employment
Although the NWSC would have a small direct impact on employment given the relatively small permanent staff, the existence of the facility would provide potential multiplier effects benefiting local employment and the economy. In particular, the NWSC could stimulate further development of the NRBP property by attracting additional commercial enterprises interested in being close to a state-of-the-art technology facility. The NWSC would also require various supplies and services that would be acquired regionally, and visitors to the facility would also contribute to the local economy. Thus the NWSC would have a net direct and indirect beneficial impact through multiplier effects on the local and state economies.

Environmental Justice
Once operational, the NWSC would have negligible impacts on nearby residences, because it would not involve any activities considered invasive or intrusive. Also, as described under Construction, the closest residence is located across Happy Jack Road approximately 800 feet northeast of the proposed NWSC site, and fewer than 20 residences are located between 800 feet and ½ mile from the site. Therefore, based on census data described in Section 3.10.4, the potential for disproportionate adverse impacts on minorities or low-income populations during operation of the NWSC would be considered negligible.

4.10.2 No Action Alternative

Under the No Action alternative, the NWSC would not be constructed at the NRBP. This scenario would deprive Cheyenne of its second business interest in the NRBP property and may further delay the development of the NRBP. Although a future commercial establishment would likely acquire the proposed site in NRBP, the No Action Alternative would not provide the favorable indirect socioeconomic benefits through economic and employment multipliers in the same timeframe.

4.10.3 Cumulative Impacts

The NRBP property has been planned and subdivided, and it is already being developed to attract future commercial enterprises. Regardless of whether the Proposed Action or the No Action Alternative occurs, it is anticipated that the NRBP property would be developed as planned by Cheyenne LEADS. Therefore, the NWSC is not expected to contribute to adverse cumulative impacts.

4.10.4 Proposed Mitigation Measures

No mitigation measures have been identified, as construction and operation of the NWSC would result in no adverse impacts to socioeconomic conditions in the project area.

4.11 Visual Resources

4.11.1 Proposed Action Alternative

4.11.1.1 Construction

The construction of the NWSC would cause minor short-term impacts on the viewscape during land clearing and the erection of the facility. However, the NRBP has been planned, and the infrastructure has already been laid out for the purposes of attracting commercial enterprises, which would likely occur.

4.11.1.2 Operations

The NWSC would bring an attractive, modern structure to the NRBP (Figure 4-3) with favorable landscaping and sustainable design features that would enhance the viewscape when compared to the existing Walmart Automated Distribution Center or other commercial buildings that might otherwise be located on the same site.

Figure 4-3. Artist's Rendering of NWSC Facility viewed from Prosperity Drive

4.11.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP, which would defer the development of the proposed site. However, Cheyenne LEADS is actively seeking to attract commercial enterprises to the property, which has been planned and laid out with supporting infrastructure. Although a future commercial establishment would likely acquire the proposed site in NRBP, the No Action Alternative may not result in a commercial structure that has visual design features comparable to the NWSC.

4.11.3 Cumulative Impacts

The NRBP property has been planned and subdivided, and it is already being developed to attract future commercial enterprises. Regardless of whether the Proposed Action or the No Action Alternative occurs, it is anticipated that the NRBP property would be developed as promoted by Cheyenne LEADS. Therefore, the NWSC is not expected to contribute to adverse cumulative impacts.

4.11.4 Proposed Mitigation Measures

The NWSC includes numerous design and landscaping features that are intended to enhance the viewscape of the facility. No additional mitigation measures would be required.

4.12 Transportation and Traffic

4.12.1 Proposed Action Alternative

4.12.1.1 Construction

The construction of the NWSC is planned to begin early 2010 with the transition to full facility in 2012. Short-term but measurable adverse impacts to traffic are expected during construction. Construction vehicles and workers would add to existing local traffic and would potentially cause minor congestion, higher traffic noise, and increased vehicle emission levels along the routes. The roads most impacted would be Happy Jack Road and Roundtop Road. The commuter traffic from the construction workers would increase the local traffic, but it is expected to be minor as these roads have little current volume. Construction impacts to existing transportation resources would be minor, temporary and localized (i.e., limited to proximity of the project site).

4.12.1.2 Operations

Based on discussions with the Wyoming Department of Transportation's (WYDOT), a traffic study was performed in 2005 for the NRBP Master Plan (AVI, 2005), which included: an estimate of trip generation for both the year 2030 and for a later full occupancy (build-out) date; an assignment of site-generated traffic to the future roadway network; an evaluation of future intersection volumes and operations; and a list of recommended roadway improvements and right-of-way requirements.

The NRBP internal roadway design includes 6 access points as follows:

- Roundtop Road / Horizon Drive (Access 1);
- Roundtop Road / Prosperity Drive (Access 2);
- Roundtop Road / Happy Jack Road;
- Happy Jack Road / McKinney Drive;
- Happy Jack Road / Logistics Drive (Access 3); and
- Happy Jack Road / Diamond Creek Road (Access 4).

The traffic study assumed that the NRBP would be approximately 32 percent developed by 2030. This estimate was based on assumptions contained in WYDOT's current planning model for the Cheyenne area. The estimated

date of full occupancy of the NRBP is unknown, but assumed to be beyond year 2030. Background traffic for the roadway network surrounding the site was established using traffic projections for 2030 from the WYDOT model. Peak hour volumes were assumed to be 8 percent of daily traffic for the morning peak hour and 10 percent of daily traffic for the evening peak hour.

Figure 4-4 summarizes the expected background traffic volumes with addition of the NRBP site-generated traffic volumes in 2030 and shows projected am/pm peak hour traffic volumes, the proposed laneage, the number of through lanes, and the location of stop signs and traffic signals.

The NRBP Master Plan delineates the widening of Happy Jack Road with left turn lanes into NRBP at Access Points 3, 4, & 5; as well as the widening of Roundtop Road with traffic lights installed at Access Points 1 & 2. Currently, WYDOT has widened the section of Happy Jack Road bordering the NRBP to accommodate future left turn lanes but has not striped the road in that configuration, and would not do so until the access roads are fully built and traffic volumes are justified. WYDOT is planning to rebuild and widen Roundtop Road with turn lanes and traffic lights when future traffic volumes warrant. The traffic improvements in the NRBP Master Plan reflect the transportation network improvements forecasted for 2030 in the Cheyenne Area Transportation Master Plan (Cheyenne MPO, 2006) as discussed for the Affected Environment.

Access Points 2, 3, and 4 would be the most likely entrance points to reach the NWSC site. The NRBP Master Plan Traffic Study anticipates morning traffic entering the business park at the three access points to be 415 cars (249 from the south and 166 from the north) at Access Point 2 (entering Prosperity Drive); 27 cars at Access Point 3 (entering Logistics Drive); and 37 cars at Access Point 3 (entering Diamond Creek Road). The maximum daily number of people expected to arrive at the NWSC during peak morning hours under the Proposed Action would be 25 employees plus a few potential visitors (assuming most visitors would arrive after morning peak). This loading would be substantially lower than the capacity of the future traffic design. The data for the afternoon peak traffic conditions are comparable.

Although the NRBP and Cheyenne Area Master Plans delineate certain road improvements (e.g. road widening, traffic signals, etc), not all of the improvements are likely to be implemented prior to the opening of the NWSC. However, the increase in traffic generated by this project is very small, and the impact even without the improvements would be minor. Thus no adverse impact to overall vehicular operations at critical intersections is anticipated.

4.12.2 No Action Alternative

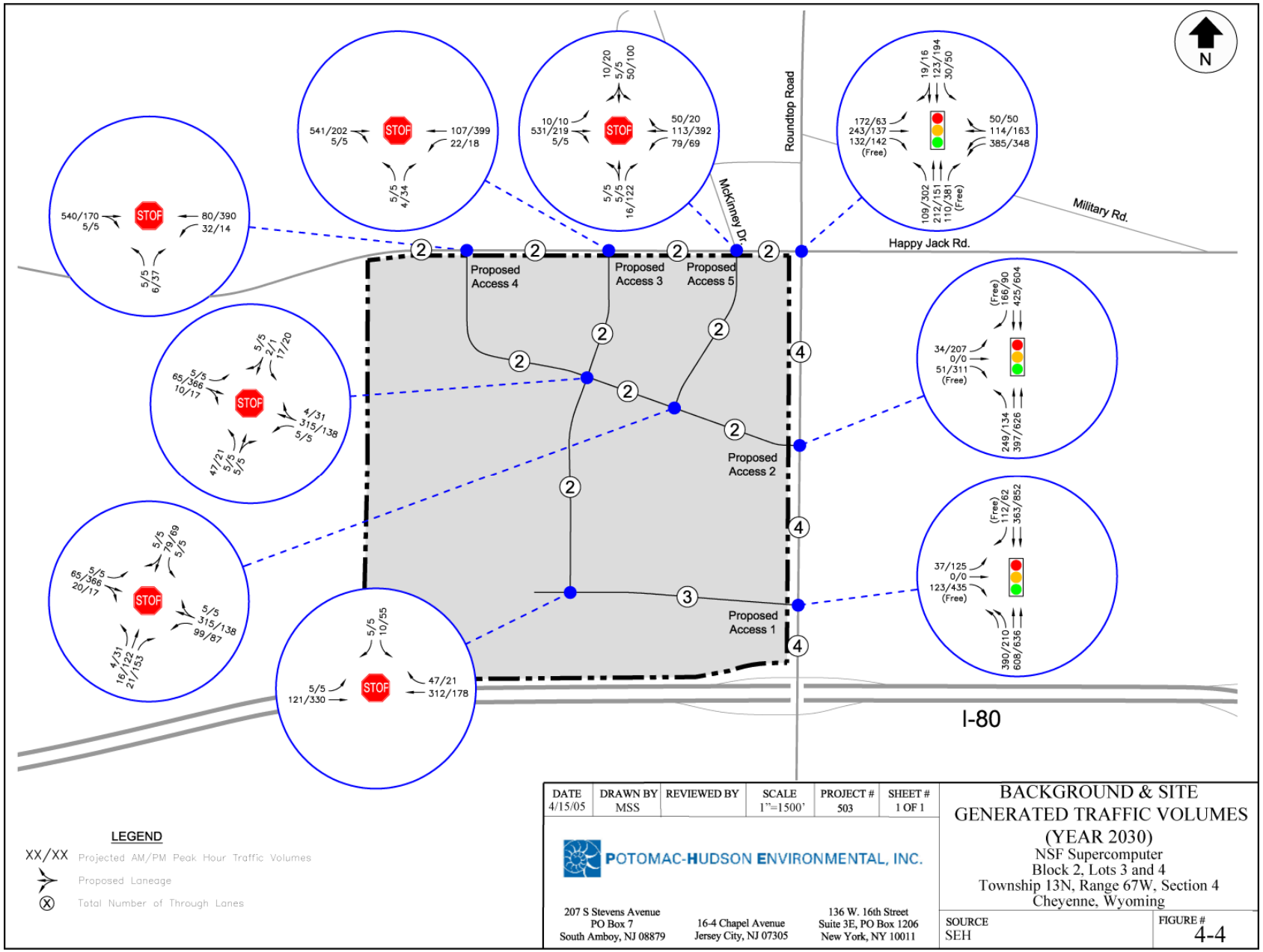
Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no impacts to existing transportation resources under this alternative.

4.12.3 Cumulative Impacts

The NRBP Master Plan Traffic Study and Cheyenne Area Transportation Master Plan considered and accommodated cumulative impacts of future development in the transportation roadway and intersection designs. Because traffic from the Proposed Action is easily accommodated within the framework of these Master Plans, the project would have minimal cumulative impact on traffic and transportation in the region.

4.12.4 Proposed Mitigation Measures

No mitigation measures are required for transportation and traffic.


N
Roundtop Road
McKinney Dr.
Military Rd.
Happy Jack Rd.
I-80
Proposed Access 1
Proposed Access 2
Proposed Access 3
Proposed Access 4
Proposed Access 5
STOP
LEGEND
XX/XX Projected AM/PM Peak Hour Traffic Volumes
Proposed Laneage
Total Number of Through Lanes
DATE 4/15/05
DRAWN BY MSS
REVIEWED BY
SCALE 1"=1500'
PROJECT # 503
SHEET # 1 OF 1
POTOMAC-HUDSON ENVIRONMENTAL, INC.
207 S Stevens Avenue PO Box 7 South Amboy, NJ 08879
16-4 Chapel Avenue Jersey City, NJ 07305
136 W. 16th Street Suite 3E, PO Box 1206 New York, NY 10011
BACKGROUND & SITE GENERATED TRAFFIC VOLUMES (YEAR 2030)
NSF Supercomputer
Block 2, Lots 3 and 4
Township 13N, Range 67W, Section 4
Cheyenne, Wyoming
SOURCE SEH
FIGURE # 4-4

4.13 Sustainability

4.13.1 Proposed Action Alternative

The U.S. Green Building Council created the LEED green building rating system, which provides a suite of standards for environmentally sustainable construction to achieve LEED certification. LEED certification consists of a scoring system based on a set of required "prerequisites" and a variety of "points" in six major categories (U.S. Green Building Council, 2009). In LEED Version 2.2 for new construction and major renovations there are 69 possible points and buildings must achieve a minimum of 26 points to become certified. The six major categories include the following:

Sustainable Sites: Addresses the size, location, and other effects of the building on its environment. Includes a total of 14 points.

Water Efficiency: Rewards the prudent use of water indoors and outdoors for landscaping. Includes a total of 5 points.

Energy and Atmosphere: Covers the installation, verification, and monitoring of heating and cooling systems, lighting, and other equipment as well as the use of renewable energy. Includes a total of 17 points.

Materials and Resources: Outlines strategies for using local, renewable, and recycled materials, reducing waste and encouraging recycling. Includes a total of 13 points.

Indoor Environmental Quality: Focuses on reducing indoor gases that can cause harm, incorporating daylight and fresh air, and incorporating lighting and thermal controls for individual occupants. Includes a total of 15 points.

Innovation and Design Process: Provides awards for exemplary performance in any category or a novel and effective technique. Includes a total of 5 points.

The design team evaluated a number of alternative building systems to balance the goals of reducing energy demand, achieving energy efficiency and promoting renewable energy within a reasonable budget. Anticipated sustainable design features that would reduce energy demand include use of renewable energy, conservation of potable water, sustainable design practices for office and personnel space, and power usage effectiveness which are discussed below in further detail.

4.13.1.1 Construction

NCAR recognizes that maximizing the efficiency of buildings is a critical component of addressing human induced climate change. They believe that it is necessary to offset the significant environmental "footprint" of the NWSC created by the required facility size and large power requirements by pursuing a design that draws on sustainable construction practices wherever possible.

Recycled content construction products are to be used as much as possible including sustainable harvested wood products. All of these materials are to be regionally sourced to the maximum extent practicable. To promote sustainable and green indoor air quality, low emitting adhesives, sealants, paints, and flooring systems are to be used. The construction of the NWSC would result in the generation of some construction waste, the use of diesel fuel for construction equipment, gasoline for worker vehicles, and water use for cement and general construction activities. However, construction waste could be recycled to the maximum extent possible in accordance with LEED principles. Particularly, ferrous and non-ferrous metal waste could be recycled, as well as soil and asphalt. Overall, the construction of the NWSC would result in some construction waste resulting in minor adverse impacts to sustainability.

4.13.1.2 Operations

The facility would acquire at a minimum LEED gold certification with a goal of receiving LEED platinum certification, which is the highest level that can be achieved.

The site chosen is sustainable as it is within a half mile of a commuter rail and public bus lines in order to reduce fuel emissions. They intend to utilize a modular design which would allow for the maximization of energy efficiency of all facility electrical and mechanical components. In an effort to meet the requirement of a 1.3 power usage effectiveness or better, they have explored ways to use water and air-side economization, adiabatic cooling technologies, and the recovery of waste heat from the computer room areas to meet NWSC cooling and heating requirements.

An Memorandum of Understanding between UCAR and all of the Wyoming partners that would require a minimum of 10 percent renewable energy (predominantly from wind sources) be used to supply the NWSC site is proposed. Water efficient technologies that minimize potable water use in personnel portions of the facility as well as the use of gray water for supply and drain piping inside the building is planned.

Administrative spaces have been designed to maximize solar access and allow for the harvesting of natural daylight and ventilation. Additionally, design team members have been considering personnel space construction materials be made from reclaimed or recycled content.

The collection of rainwater would to be used to meet site landscape watering needs as well as the use of bio swales for stormwater retention. At least 50 percent of the site area not occupied by the building is to be covered with native or adapted species.

Overall the facility design and operations would adhere to a minimum of LEED gold criteria and existing NSF sustainability plans and goals. Therefore, the proposed project would have a minor positive impact with regard to sustainable operations.

4.13.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no impacts to sustainability under this alternative. However, it is unlikely that any future commercial venture attracted to the same site in the NRBP would have the same level of sustainability proposed by NCAR for the NWSC.

4.13.3 Cumulative Impacts

No cumulative impacts have been identified.

4.13.4 Proposed Mitigation Measures

No mitigation measures would apply to the sustainability of the NWSC.

4.14 Human Health and Safety

4.14.1 Proposed Action Alternative

4.14.1.1 Construction

Potential occupational health and safety risks during construction of the NWSC are expected to be typical of risks for any commercial construction sites. These include, but are not limited to, hazards during movement of heavy objects, including construction equipment; potential slips, trips, and falls; the risk of fire or explosion from general construction activities (e.g., welding); and spills and exposures related to the storage and handling of chemicals and disposal of hazardous waste. The health and safety of construction workers would be protected by adherence to accepted work standards and regulations (29 Code of Federal Regulations Parts 1910 and 1926) of the Occupational Safety and Health Administration (OSHA).

Given the relatively small size of the project (approximately 24 acres), the risks during construction would be comparable to a routine commercial project involving concrete, structural, and electrical work. All personnel involved with construction activities would be properly trained and required to comply with OSHA regulations. Therefore, the potential for adverse safety impacts during construction would be minor.

4.14.1.2 Operations

The potential for adverse impacts to human health and safety during operation of the NWSC would be negligible. With the exception of three 10,000-gallon aboveground diesel fuel storage tanks, NWSC would not use or store hazardous materials in substantial quantities; nor would the facility emit air pollutants in significant quantities. The diesel fuel tanks would be provided with secondary containment for spills, and they would be restricted from access by unauthorized employees and visitors. High voltage electrical hazards also would be restricted from access by unauthorized individuals.

The NWSC facility would not be considered a potential target for terrorism, because it would not perform functions that are critical to the national economy on a routine basis. With the exception of the diesel aboveground storage tanks, the NWSC would not maintain any hazardous materials in quantities that would create the potential for adverse impacts from catastrophic releases resulting from either an accident or an intentionally destructive act. The diesel storage tanks would be secured from potential access by unauthorized individuals and would be provided with secondary containment in accordance with RCRA regulations.

4.14.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NRBP. There would be no health and safety impacts associated with the NWSC at the NRBP property, because the facility would not be constructed.

4.14.3 Cumulative Impacts

The Proposed Action would have negligible impacts on health and safety. Therefore, the proposed NWSC would not contribute to the potential for adverse cumulative impacts on health and safety.

4.14.4 Proposed Mitigation Measures

The design of the proposed NWSC would include features to reduce the potential for health and safety impacts resulting from accidents on site. Activities during construction and operations would be conducted in accordance with OSHA regulations, and no significant adverse impacts on health and safety are anticipated. Therefore, no specific additional mitigation would be required.

4.15 Community Services

4.15.1 Proposed Action Alternative

4.15.1.1 Construction

The need for construction workers would be limited in duration. Construction workers could be drawn from a large labor pool within nearby population centers (Cheyenne, Laramie, and Fort Collins) in Wyoming and Colorado; however, some temporary construction workers with specialized training, and workers employed by contractors from outside the City, would also be required to construct the NWSC. Some of these workers would be expected to commute to the construction site on a daily basis, while others would relocate to the area for the duration of the construction period. Currently, approximately 6 percent of housing and apartment rentals are vacant in Cheyenne (Best Places, 2009), and adequate lodging is available in the Cheyenne area to accommodate an influx of temporary workers.

Law Enforcement
The construction of the NWSC on the proposed project site would not displace any law enforcement facilities, nor would it conflict with local and regional plans for law enforcement services.

Temporary construction jobs created by the proposed NWSC could cause an influx of some temporary residents to the City of Cheyenne. However, most construction workers are expected to be drawn from the existing labor pool of Laramie County and would commute to the site on a daily basis. The exact number of construction workers and their families who might temporarily relocate to the area for the duration of project construction is unknown, but any additional population is not anticipated to create a permanent unsustainable increase in the demand for law enforcement by the Cheyenne Police Department and County Sherriff. . No adverse impacts to law enforcement and public safety during construction of the NWSC have been identified.

Fire Protection
The construction of the NWSC on the proposed project site would not displace any fire protection facilities, nor would it conflict with local and regional plans for fire protection services.

As discussed in Section 3.15, the City of Cheyenne Fire Department is very well staffed and is a member of the State's mutual aid association. Any of these fire departments would be available to assist in a fire emergency if needed. Construction of the NWSC would involve the use of flammable and combustible materials that pose an increased risk of fire or explosion at the proposed project site however, the probability of a significant fire or explosion is very low. The City of Cheyenne Fire Department has the capacity, and is equipped to respond to a major fire emergency at the proposed site, if necessary. Any incidents that may occur during construction would not increase the demand of fire protection services beyond the available capacity of currently existing services. Thus no adverse impacts on fire protection services during construction of the NWSC are anticipated.

Healthcare Services
The construction of the NWSC on the proposed project site would not displace any healthcare facilities, nor would it conflict with local and regional plans for healthcare services.

Temporary construction jobs created by the proposed NWSC could cause an influx of some temporary residents to the City of Cheyenne. However, most construction workers are expected to be drawn from the existing labor pool of Laramie County and would commute to the site on a daily basis. Currently, the City has 4 hospital beds per thousand residents. The Hill-Burton standard is 4.5 hospital beds per thousand residents, and the U.S. average as of 2007 was 2.7 hospital beds per thousand residents (Pearson, 2009). In the unlikely event that all of the temporary construction workers were to relocate to the City of Cheyenne, the affect on healthcare capacity would be extremely small. The ratio of hospital beds per thousand residents would remain approximately 4, which is below the Hill-Burton standard but well above the U.S. average. Therefore, no impacts are expected as the proposed NWSC construction would not adversely affect healthcare capacity.

The Hill Burton Act of 1946 established the objective standard for the number of hospitals, beds, types of beds, and medical personnel needed for every 1,000 people. The Hill Burton standard is 4.5 beds per thousand residents (E-Notes, 2009).

Local School System
The NWSC project would not displace school facilities or conflict with local and regional plans for school system capacity and enrollment.

Although some portion of the temporary construction workers may relocate to the City of Cheyenne with their families, a large influx of school-aged children would not be anticipated. Construction of the proposed facility would create temporary jobs; therefore, it is unlikely that construction workers would relocate their families. It is more likely that temporary workers who permanently reside outside of the City would seek short-term housing for

themselves during the work week. As a result, any influx of school-aged children would result in a negligible impact to local schools and their resources.

Recreation
Construction of the NWSC would not decrease the number of recreational facilities or open spaces in the area, nor would it require additional facilities or personnel to maintain the current levels of service. Due to the proximity of the parks and recreation facilities, visitors to the proposed NWSC may choose to visit one or several of the areas. Overall, there would be no impact to existing open space and recreation areas from the construction of a new NWSC.

4.15.1.2 Operations

The operation of the proposed NWSC would require approximately 25 permanent employees. Although the exact number of staff who would relocate to the City of Cheyenne is unknown, the increase in population would be very small, even if all the positions were filled by staff relocating to the City. Based on the 2009 population and the average family size within the City of Cheyenne, the relocation of 25 employees would result in a population increase of approximately 0.1 percent, representing a negligent increase in population within the City.

Law Enforcement
The operation of the NWSC would not conflict with local and regional plans for law enforcement services. A 0.1 percent increase in population within the City of Cheyenne would result in an imperceptibly small effect on the ratio of law enforcement officers per thousand residents. Law enforcement in the City would be sufficient to handle this increase in population during the operation phase of the project. In addition, the average crime rate as discussed earlier is well below the State and equal to the national average. This is an indication that law enforcement is appropriately staffed and would be sufficient to handle a minor increase in population. Operation of the NWSC would not adversely affect law enforcement capability in the City of Cheyenne.

Fire Protection
The operation of the NWSC would not conflict with local and regional plans for fire protection services. The City of Cheyenne Fire Department and any of the fire department members of the State's mutual aid association would be available to assist in a fire emergency if needed. Any incidents that may occur during operation of the NWSC would not increase the demand on fire protection services beyond the available capacity of currently existing services. Thus no adverse operations-related impacts to fire protection services are anticipated.

Healthcare Services
Once operational, the NWSC would have a combined staff of 25 full-time employees. This influx would result in an increase in population of approximately 0.1 percent. Currently, healthcare capacity within the City of Cheyenne is above the national average, with four hospital beds per thousand residents. Although the proposed project would increase the number of residents potentially requiring medical care, the ratio of hospital beds per thousand residents would remain at approximately 4 and, therefore, no impacts are expected.

Local School System
The NWSC project would not conflict with local and regional plans for school system capacity and enrollment. The actual number of the 25 full-time employees who would relocate to the City of Cheyenne with their families to work at the NWSC is unknown. Based on the average family size, it can be estimated that a maximum of ten new school-aged children could relocate to the City. The Wyoming public school enrollment projections through 2011 display an increase by 8 percent (National Center for Education Statistics, 2009). An additional ten new school-aged children would represent a negligible increase in the number of students who would share the current schools' resources. As a result, any influx of school-aged children would result in no adverse impact to local schools and their resources.

Recreation
Operation of the NWSC would not decrease the number of recreational facilities or open spaces in the area, nor would it require additional facilities or personnel to maintain the current levels of service. Due to the proximity of the parks and recreation facilities, employees, and visitors to the proposed NWSC may choose to visit one or several of the areas. Overall, there would be no impact to existing open space and recreation areas due to the operation of a new NWSC.

4.15.2 No Action Alternative

Under the No Action Alternative, the NWSC would not be constructed at the NBRP. There would be no impacts to existing community services under this alternative.

4.15.3 Cumulative Impacts

No cumulative impacts have been identified.

4.15.4 Proposed Mitigation Measures

No mitigation measures have been identified as construction and operation of the NWSC would have no adverse impacts to existing community services.

5.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible or irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources would have on future generations. Irreversible effects primarily result from use or destruction of a specific resource (e.g., energy from hydrocarbons and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored after implementing a Proposed Action (e.g., extinction of threatened or endangered species).

For the construction and operation of the proposed NWSC facility, some of the resource commitments would be irreversible and irretrievable. The land areas needed for the facility, including the main building and ancillary parking and roadways would be cleared, graded, and filled as needed to accommodate the facilities' construction. Although arguably the land areas and their associated resources could potentially be reclaimed at some point in the future, it is unlikely that they would be restored to original conditions and functionality. Therefore, these land commitments would be considered irreversible.

Raw materials needed for construction of the NWSC would include crushed stone, sand, concrete, lumber, water, diesel fuel, gasoline, and steel, for example. Construction would consume these materials, which would constitute an irretrievable commitment.

The quantities of water used to provide cooling for the NWAS operation would ultimately be evaporated rather than discharged back to surface or ground water and, thus, would be considered irretrievably consumed on a local basis.

The construction and operation of the proposed facilities would require the irreversible commitments of human resources that would not be available for other activities during the period of their commitment, but these commitments would not be irretrievable.

Finally, the implementation of the proposed action would require the commitment of financial resources for the construction and operation of the NWSC. This commitment, however, would be consistent with the purposes of and needs for the Proposed Action as described in Chapter 1.

6.0 THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The Fourth Assessment Report of the International Panel on Climate Change (Parry et al., 2007) documented the alarming long-term and global threats to society from climate change, which has led to calls for expanding the resources devoted to Earth System sciences. As concluded by NCAR (2009b): "To plan for the effects of climate change, the next generation of global climate models would have to provide numerical simulations on a spatial scale of a few kilometers, with enhanced vertical resolution and better representation of the upper atmosphere." NCAR further concluded that current computational resources are inadequate to achieve these objectives.

Accordingly, NCAR proposes to build and operate the NWSC in Cheyenne, Wyoming to address the current limitations and enable the next series of advancements in the Earth System sciences. The proposed NWSC would have the power, space, and cooling to support a 4 MW supercomputer, sufficient to maintain a peak of 1.0 to 1.5 x 10^{15} floating point operations per second in 2012.

The goal of this project is clearly to maintain and enhance the long-term productivity of the environment on planet Earth. Short-term uses of the environment would include the dedication of a 24-acre site in an already-planned commercial park to host the NWSC. The facility would also require substantial electrical power, much of which would be provided in the form of renewable energy by wind turbines nearby, and substantial water resources for mechanical operations. However, the NWSC is being designed for LEED certification at a minimum level of Gold, and it would incorporate numerous energy-saving and resource-limiting features as described in the Sustainability sections of this EA.

7.0 UNAVOIDABLE ADVERSE IMPACTS

No unavoidable adverse impacts of any substantial consequence have been identified in this EA, and no specific mitigation would be required beyond the extensive conservation aspects to be designed into the NWSC with the goal of achieving LEED Platinum Level certification (minimum Gold Level).

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9.0 LIST OF PREPARERS

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APPENDIX A

WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4610

Web site: http://gf.state.wy.us

GOVERNOR
DAVE FREUDENTHAL

DIRECTOR
STEVE K. FERRELL

COMMISSIONERS
CLIFFORD KIRK – President
ED MIGNERY – Vice President
CLARK ALLAN
AARON CLARK
JERRY GALLES
MIKE HEALY
FRED LINDZEY

November 9, 2009

WER 12014
WEST, Inc
Environmental Assessment
Proposed NCAR-Wyoming Supercomputer Center
National Science Foundation
Laramie County

Gretchen Norman
WEST, Inc.
2003 Central Ave
Cheyenne, Wyoming 82001

Dear Ms. Norman:

The staff of the Wyoming Game and Fish Department has reviewed the environmental assessment for the proposed NCAR-Wyoming Supercomputer Center for the National Science Foundation in Laramie County. We offer the following comments for your consideration.

This project area lies within delineated pronghorn crucial winter range. As development continues in this area winter range is lost or reduced in value. In addition, the potential for animal/automobile collisions continues to rise. We recommend advising contractors and future employees to be aware of pronghorn in the vicinity. Reducing vehicle speeds and reduction of traffic may help alleviate animal-vehicle conflicts. Additional information may be found at:

FTP site instructions:

1. Open your Internet browser and input this address: ftp://gf.state.wy.us (or click on this link)
2. Login user name = ftp_gis and password = gandf123

NOTE: If at this point you get a message window and a result indicating you are not logged in to our ftp site, you must make one change in your Internet Explorer options, as follows: Click the Tools menu > Internet Options... > Advanced > scroll down through the items under the "Browsing" heading; one of the last lines under this heading is called "Use Passive FTP" and if it is checked, then uncheck it, OR if it is unchecked, then check it; then repeat Steps 1-2

3. There are two folders with GIS data ("GIS_Data_Big_Game" and "GIS_Data_Misc_Game"); select the folder of your choice and double-click it to open it
4. Double-click the file named ".README_FIRST.txt" to open it for help to identify and

determine which files you want and to review information on projection/datum
5. Highlight to select one or more files, then right click and either select "Open" or "Copy to folder..." (either option results in saving the data to your PC, but the copy option is easiest)
6. Close your browser

Thank you for the opportunity to comment. If you have any questions or concerns, please contact Scott Gamo, Staff Terrestrial Biologist, at 307-777-4509.

Sincerely,

for John Emmerich
Deputy Director

JE: MF:sg

cc: USFWS
Terry Creekmore - WGFD, Laramie

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
ES-61411/WY10TA0051

NOV 06 2009

Ms. Gretchen Norman
West, Inc.
2003 Central Avenue
Cheyenne, WY 82001

Dear Ms. Norman:

Thank you for your letter dated October 27, 2009, received in our office on October 30, concerning the request for review as to no impact on threatened or endangered species on the proposed NCAR-Wyoming Supercomputing Center (NWSC) Project. This project will be located in a 24-acre site within the North Range Business Park in Cheyenne, Wyoming. The NWSC facilities will house high-performance computers, mass storage (data archival) systems, and required mechanical and electrical infrastructure, as well as provide office space with meeting rooms and a visitor/public area.

The U.S. Fish and Wildlife Service believes that your letter provides sufficient information to determine the effects of this project to federally listed species. Based on the information provided in your letter, it is unlikely that the proposed work will adversely affect any threatened or endangered species or migratory birds. You may consider this project, as proposed, to be in compliance with the Endangered Species Act of 1973, as amended (Act), 16 U.S.C. 1531 *et seq.* and the Migratory Bird Treaty Act, 16 U.S.C. 703.

This project should be re-analyzed if new information reveals effects of the action that may affect listed species or designated or proposed critical habitat (1) in a manner or to an extent not considered in this letter, (2) if the action is subsequently modified in a manner that causes an effect to a listed species or designated or proposed critical habitat that was not considered in this letter, and/or (3) if a new species is listed or critical habitat is designated that may be affected by this project.

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species and migratory birds. If you have further questions regarding this letter or your responsibilities under the Act, please contact our office at the letterhead address or phone (307) 772-2374.

Sincerely,

Scott Hahn

for Brian T. Kelly
Field Supervisor
Wyoming Field Office

cc: WGFD, Non-game Coordinator, Lander, WY (B. Oakleaf)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)

SURVEY REPORT COVER PAGE

Consultant Project No: 091007a	**Agency No:**
Review and Compliance No:	**Cultural Records Office No:**

AUTHOR(S): Kayla M. Bradshaw and Thomas K. Larson

REPORT TITLE: *Results of a Class III Cultural Resource Inventory for the NCAR-Wyoming Super Computing Center (NWSC)*

DATE OF REPORT (MO/DY/YR): November 13, 2009
LEAD AGENCY (e.g., BLM ADMINISTRATIVE UNIT): National Science Foundation
SURVEY ORGANIZATION/NAME: LTA, Inc.
FEDERAL PERMIT NO.: n/a

BRIEF DESCRIPTION OF UNDERTAKING: The National Center for Atmospheric Research (NCAR) proposes a land acquisition and construction project for the NWSC computer facility in the N ½ of Section 4, T. 13 N., R. 67 W. The area of potential effect (APE) for this project is a 24.4 acre parcel on the western edge of Cheyenne, Wyoming.

SURVEY METHODS:
__X__ Standard 30 Meter Transects ____ Non-Standard (Describe in body of report)

Survey Width (Linear Projects Only): **___ 100 feet (individual road or pipeline corridor)**
___ 150 feet (parallel road/pipeline corridor)
___ Other (indicate width: _____ feet)

COUNTY(IES):+ Laramie

USGS QUAD MAPS: + Round Top Lake Quadrangle

LAND OWNER:*____BLM____BuREC____FS____NPS___PRIVATE____STATE____USFWS
_X __OTHER (Specify) municipal, Cheyenne LEADS

LEGAL DESCRIPTION (T/R/Sec/up to 4 qtrs and identify template corner):+ T. 13 N., R. 67 W., Section 4, N ½

ACREAGE:

FEDERAL SURFACE	BLOCK:	LINEAR:	TOTAL:	TOTAL ACREAGE: 24.4
NON-FED SURFACE	BLOCK: 24.4	LINEAR:	TOTAL: 24.4	

FILE SEARCH DATE(S): 10/26/2009 (25080)
FIELD WORK DATE(S) (MO/DY/YR): 10/27/09
FIELD PERSONNEL:+ Kayla M. Bradshaw, Thomas K. Larson, Rebecca Mashak, and Kyle Joyner

SURVEY RESULTS: ____ NO CULTURAL MATERIAL ____ #ISOLATED FIND(S) __1__ #SITE(S)

+ attach continuation sheets for additional data * check all that pertain

SITE SUMMARY TABLE

Smithsonian #/ Isolated Find #	Brief Site/isolate type	Previously recorded? (Y/N)	Previous Eligibility	SHPO Concurrence (Y/N)	Current Eligibility	NRHP Criteria	Contrib. Portion (Y/N)	Project Effect	Proposed Mitigation or Protection	Land Owner	Twp.	Rng.	Sec.	¼'s	Comments
48LA1402	Cheyenne-Miracle Mile Power Line	Y	C	Y	E	C	N	no effect	none proposed	private	13 N.	67 W.	4	SW NW SW NE, N ½ SE NW	

NRHP eligibility: E (Eligible); **NE** (Not Eligible); **U** (Unevaluated)
Eligibility Determination: R-Listed on NRHP Register; **K**-Eligible by NRHP Keeper; **C**-Eligible-SHPO/Agency concurrence; **E**-Eligible-Consultant/Agency; **U**-Eligibility Unknown; **N**-Not eligible
Effect: NO for sites with no effect; **NAE** for site with no adverse effects; **AE** for sites with adverse effect; **U** for Unknown
Proposed mitigation: e.g., data recovery, avoidance, fencing, sign, etc.

Results of a Class III Cultural Resource Inventory for the NCAR-Wyoming Super Computing Center (NWSC)

Undertaking/Project Description The National Center for Atmospheric Research (NCAR) proposes a land acquisition and construction project for the NWSC computer facility in the N ½ of Section 4, T. 13 N., R. 67 W. (Attachment 1). The area of potential effect (APE) for this project is a 24.4 acre parcel on the western edge of Cheyenne, Wyoming. Access to the facility will be on a previously developed street system, portions of which have been temporarily closed and/or abandoned. No new access routes will be developed outside the block APE.

The proposed facility will house high performance computers, mass storage systems, required mechanical and electrical infrastructure, office space, meeting rooms, and a visitor/public area. Parking for 30 staff members, 15 visitors, and additional bus parking will be provided.

The initial NWSC construction phase would include the first core and shell module. This first core and shell module would be expected to meet the high performance computing needs of the atmospheric and related geosciences for a period of approximately 10 years, at which time the requirement to build the second core and shell module would be assessed. Construction will begin in early 2010 with transition to full facility operations in 2012 (Potomac-Hudson Environmental 2010).

Environmental Setting The project area (Attachment 2) is in slightly rolling terrain between Happy Jack Road and Interstate Highway 80. Deposition is sandy clay. Vegetation is a short grass prairie community containing native grass and introduced hay crop species. The project area is disturbed in places by past construction activity and topsoil stockpiles.

Background Research The records search conducted through the Wyoming SHPO's Cultural Records Office indicates that there are no enrolled National Register of Historic Places properties in the vicinity of the project. Approximately 32 acres of block inventory have been done to current Wyoming SHPO standards within Section 4. None of these investigations appear to overlap with the present study area.

Four sites have been recorded in Section 4 (Table 1). The National Register eligible Cheyenne-Miracle Mile Transmission Line (48LA1402) is immediately outside the APE, along its south side (see Attachment 1). Because of the potential for a visual intrusion on the eligible property from the NWSC, the segment of 48LA1402 closest to the study area was evaluated. The results are discussed below under "Inventory Results." The three other previously recorded sites in Section 4 are well south of the project area.

The 1870 General Land Office plat for T. 13 N., R. 67 W. does not indicate any historic sites or structures in the immediate vicinity of the project. The original mainline of the Union Pacific Railroad is shown on the plat approximately one and one-half miles south of the project area.

Table 1. A summary of previously recorded cultural resources in Section 4, T. 13 N., R. 67 W.

Site #	Description	Eligibility Status
48LA1402	Cheyenne-Miracle Mile Transmission Line	eligible, SHPO concurrence; unevaluated segments
48LN2079	cattle ranch	not eligible, consultant
48LN2080	corral	not eligible, consultant
48LN2081	dump	not eligible, consultant

Survey Methodology Project boundaries were defined on the basis of CAD drawings supplied by AVI Engineering, Planning & Surveying, Cheyenne, Wyoming. The entire APE was inspected on foot with field personnel spaced no more than 30 meters apart. No forms of subsurface testing or artifact collection took place.

Inventory Results No cultural resources were found within the NWSC project area. Because of the potential for visual intrusion beyond the physical boundaries of the project, a small portion of site 48LA1402 was investigated.

48LA1402, the Cheyenne – Miracle Mile/Seminoe – Cheyenne Transmission Line: This historic property was recorded by Associated Cultural Resource Experts in 1999 (Cultural Records Office Accession No. 981678). The original transmission line was constructed in 1939 as part of the Bureau of Reclamation's Kendrick Project for providing irrigation water and hydroelectric power from the North Platte River. Funding for the project was provided primarily by the New Deal era Works Project Administration. The line was evaluated as eligible for inclusion in the National Register of Historic Places under Criterion C.

> The Seminoe-Cheyenne line was one of the first transmission lines to bring North Platte River hydroelectric power to eastern Wyoming, eastern Colorado, and western Nebraska, and it played a large part in establishing federal power in the region [1999 Cultural Properties Form for 48LA1402].

In 1999, integrity of design for some segments of the line was demonstrable as the original construction based on the presence of similar support structures and similar copper wire conductor.

Attachment 3 is a photo of the segment of 48LA1402 that passes by the south side of the APE. Recent renovation of the line included replacement of the original wood H-frame structures with ca. 90 foot, prestressed concrete poles. These changes to the line have had a direct and adverse effect on the historic property's integrity of design, materials, and workmanship. As a result, the segment of 48LA1402 adjacent to the NWSC project area is believed to be a noncontributing portion of the National Register eligible property. The proposed undertaking will therefore have no effect on 48LA1402.

Summary Cultural resource clearance is recommended for the proposed project. No cultural resources were discovered within the project area. For reasons discussed above, the segment of 48LA1402 adjacent to the project area is believed to be a noncontributing portion of the National Register eligible property.

Reference Cited

Potomac-Hudson Environmental
2010 Project Description. Ms. on file, Potomac-Hudson, Environmental, Inc., South Amboy, New Jersey.

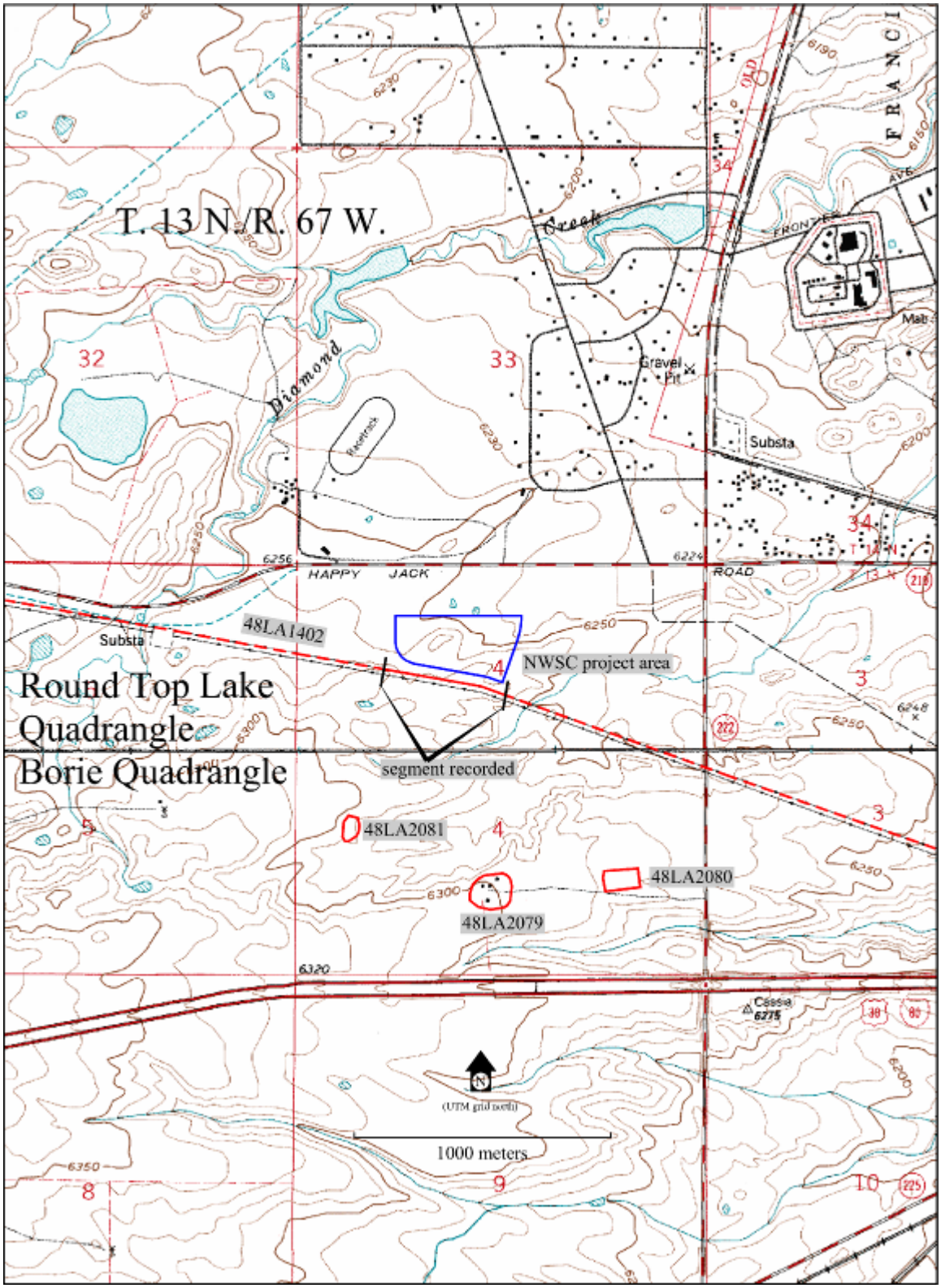
Signed,

Thomas K. Larson
Principal Investigator
LTA, Inc.
421 South Cedar Street
Laramie, WY 82072

Phone (307) 742-4371

copies:

Mary Hopkins, Interim SHPO (1 copy with form)
@@@, Potomac-Hudson Environmental, Inc. (@ copies)



Attachment 1. Portions of the USGS Round Top Lake and Borie Quadrangles showing the location of the NWSC project area.

Attachment 2. A photo of the project area; view to the east.

Attachment 3. The segment of 48LA1402 adjacent to the project area; view to the southwest.

BOARD OF PUBLIC UTILITIES

HERMAN NOE, MANAGER OF ENGINEERING
PO Box 1469 – 2406 Snyder Ave.
Cheyenne, Wy. 82003-1469
Ph. 307-637-6416 // Fax. 307-637-6063

MEMORANDUM

TO: SCOTT SUTHERLAND, CHEYENNE LEADS
FROM: HERMAN NOE *Herman Noe* //signed//
SUBJ: CAPACITY TO SERVE – NORTH RANGE BUSINESS PARK
DATE: November 30, 2009

The Cheyenne Board of Public Utilities has the capacity to provide the necessary water and sewer services to the proposed NCAR facility to be located in the North Range Business Park. There are parallel 30” diameter and 42” diameter water mains running through the northern portion of the property (North Range Business Park) with a combined capacity of about 18 million gallons per day. The North Range Business Park is also served by a 12” diameter sanitary sewer main with a capacity of about 1 million gallons per day.

Please contact me if you have questions or additional needs.

Cheyenne Light Fuel & Power

December 3, 2009

Mr. Scott Sutherland, Vice President
Cheyenne LEADS
PO Box 1045
Cheyenne, WY 82003-1045

Scott:

Pursuant to your request for a statement of Cheyenne Light Fuel and Power Company's level of sustainability and ability to serve NCAR's electrical load in the foreseeable future, I offer the following.

Cheyenne Light has been the sole gas and electric distribution utility for the Cheyenne area since the early 1900's. It has always been and continues to be our goal to be the most reliable and economical long term energy provider for our area.

We have over the years continued to be a leader in this community in developing, growing and maintaining the economic well-being of the community to the benefit of those who reside here.

As you know, Cheyenne Light has been an integral leader and partner in the economic development efforts of this community for over 50 years. Our effort as a business partner in the Cheyenne Business Parkway is just one example to provide a testimonial to that statement.

It is our intention to invest a significant financial outlay in providing the energy needs for the NCAR site in Cheyenne. We have given our full commitment to NCAR, LEADS, and the Wyoming Business Council to provide whatever level of service is required by NCAR, including providing two separate electrical feeders and either a second substation transformer at the Happy Jack Sub or a completely new sub station on NCAR's property as their growth and load dictate it in the future. This commitment, as an investor-owned utility, demonstrates our desire and ability to serve the electrical needs of NCAR for the long term as well as provide our shareholders a return on their investment costs over the years.

We are in an enviable position as an energy provider to have a very stable and long-life supply of electrical generation both from our inexpensive mine-mouth coal fossil fueled generation plants and natural gas fired turbines to the renewable energy we receive from two new wind farms just west of the NCAR site. Currently our oldest generation facility is only seven years old. We are well positioned to expand our current electrical capacity as well as provide the energy for any future growth.

Hopefully, this information fully addresses our commitment to provide long-term, sustainable energy to NCAR throughout the foreseeable future.

Sincerely,

Rob Morris

Rob Morris
Supervisor, Energy Services
Cheyenne Light, Fuel and Power Company

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