

Table 3-13. Cultural Resources Identified on the NWTC Property

Site #	Description	NRHP Status	Survey
5-JF-728	Historic: Ruins of stone building	Not Eligible	Dames and Moore 1991
5-JF-729	Historic: Possible Corral	Not Eligible	Dames and Moore 1991
5-JF-754	Historic: Isolated Find: Barbed Wire	Not Eligible	Dames and Moore 1991
5 JF 755	Historic: Isolated Find: Barbed Wire	Not Eligible	Dames and Moore 1991
5-JF-992	Historic: Concrete foundation	Not Eligible	Labat-Anderson 1995

NRHP- National Register of Historic Places

Not Eligible: Sites/Isolates determined not eligible for inclusion on the NRHP

A fourth survey was conducted on private property adjacent to the NWTC (SAIC, 2001). This survey, completed on August 22, 2001 and October 23, 2001, covered the proposed gas line (option 1 and option 2) between the NWTC property and Highway 93. No additional cultural resources were identified during the fourth survey.

3.9.1 Archaeological Resources

There are no known significant archaeological resources within or adjacent to the NWTC boundary. However, Labat and Associates (1995) identified an area of approximately 6.5 acres within the northwest corner of the NWTC site as having a high potential for buried archaeological deposits.

3.9.2 Architectural Resources

All standing structures within the NWTC property boundary are less than 50 years of age, and none of the structures have a high potential to gain cultural significance in the near future. There are no significant architectural resources within or adjacent to the NWTC boundary.

3.9.3 Traditional Cultural Resources

There are no known significant traditional cultural resources within or adjacent to the NWTC boundary.

3.10 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Hazardous materials are substances that pose a potential hazard to human health and/or the environment if improperly managed. Hazardous wastes are hazardous materials that are disposed and are defined as being hazardous by the Resources Conservation and Recovery Act (RCRA). At the NWTC, management programs for hazardous materials and wastes attempt to reduce impacts to human health and the environment by using environmentally friendly products to the greatest extent possible, thereby minimizing the use of chemicals that contain hazardous materials, and consequently minimizing the amount of hazardous waste generated.

The foundation of hazardous materials management is imbedded in NREL Policy 6-6, Risk Assessment. This policy requires all workers to evaluate new or substantially modified activities by identifying and mitigating/eliminating environmental hazards and their potential impacts. It

does so by promoting the identification and control of environmental hazards presented by NREL activities. The evaluations apply to:

- Emissions to air;
- Releases to surface water, including storm drains;
- Wastewater releases;
- Improper waste management;
- Contamination/releases to land;
- Impact on communities;
- Use of raw materials and natural resources;
- Impacts to wildlife or vegetation;
- Erosion or contamination of storm water;
- Contamination of groundwater; and
- Life cycle impacts.

As an example of the implementation of this policy, NWTC staff members notify NREL prior to application of pesticides on the NWTC site so that the pesticide can be evaluated to determine if it is the least harmful choice with respect to human health and the environment.

All chemicals and wastes at the NWTC are managed through a network of integrated programs centrally managed by the NREL. The programs are specifically developed to minimize or eliminate adverse effects on the environment. The programs include chemical acquisition, hazardous chemical training, use monitoring, and disposal tracking. The NWTC incorporates pollution prevention practices in its research and support activities to reduce or eliminate the use of hazardous materials. All programs are managed in accordance with applicable federal, state, and local laws and regulations and DOE/NREL requirements.

Hazardous materials, including lubricating oils, are centrally tracked through NREL's chemical inventory system. The inventory system tracks hazardous materials according to type, quantity, destination, and user. This system is supplemented by a separate waste management system that documents disposition of wastes. Hazardous waste management includes characterization, storage, transportation, and disposal of waste generated at NWTC. Together the two systems provide complete tracking of NWTC hazardous materials and hazardous wastes. In addition, the NWTC actively promotes solid waste recycling.

Under NREL Program Number 6-2.1 Policy Number 4-7, Environmental Permitting and Notifications, generation and management of hazardous waste at the NWTC is constrained by the following criteria:

- The NWTC must notify the NREL ES&H office prior to generating 2,205 pounds or more of hazardous waste during a month such that the facility would be considered a large quantity generator.
- NREL does not allow the treatment (evaporation, dilution, reduction of volume or toxicity) or disposing of hazardous waste on the NWTC site.

NREL has an aggressive training program that emphasizes waste minimization and pollution prevention to ensure that chemicals are effectively selected, properly used, and disposed of in compliance with applicable laws and regulations. Chemical management training is mandatory, as are periodic refresher courses. NREL training focuses on chemical use planning, proper selection of the least hazardous materials, safe operating procedures, use of the smallest

quantity possible, waste separation, waste reduction, and reuse. Spill contingency plans and reporting procedures are standardized through NREL. Reporting procedures include the preparation of occurrence reports to document incidents involving chemicals.

3.10.1 Hazardous Materials

NWTC uses small quantities of a limited number of chemicals, including solvents, fuels, enamel paints, and some cleaning compounds. Asbestos is present at several locations. Radioactive materials are not used at NWTC. The site is free of polychlorinated biphenyl (PCB)-bearing materials, whether in transformers or light ballasts. Two 250-gallon tanks and one 500-gallon tank containing propane are located at the site. Compressed gas cylinders are managed under the Compressed Gas Safety Program that clearly outlines how the gases will be stored, handled, and used. Three types of refrigerants (R134a, R12, and R22) are currently used on-site. The total quantity of refrigerants is 204.2 pounds.

The use of hazardous materials for routine operations at NWTC has remained stable since 1996.

NREL maintains a comprehensive list of chemicals present at the NWTC. These chemicals are within the following groups: flammable liquids, compressed gases, and common products such as adhesives, caulks, lubricants, and thinners.

Eleven aboveground storage tanks (ASTs) are located at the NWTC for emergency generator and research use. NREL's tank management program includes safeguards that prevent accidental releases and include use of structural controls and operational and inspection procedures. The ASTs are capable of storing a total of 2,059 gallons of diesel fuel. See Table 3-14 for tank capacity details.

Table 3-14. Aboveground Storage Tanks at the NWTC

Tank ID	Size	Contents	Use
No. 6	400 gallons	Diesel	IUF Emergency Generator
No. 8	500 gallons	Diesel	NWTC Hybrid Power Test Bed (Convault)
No. 10	100 gallons	Diesel	NWTC NPS Daytank
No. 11	100 gallons	Diesel	NWTC HPTB North Daytank (Sim #1)
No. 12	100 gallons	Diesel	NWTC HPTB South Daytank (Sim #2)
No. 13	50 gallons	Diesel	SunWize
No. 14	200 gallons	Diesel	251 Stand-by Generator
No. 16	100 gallons	Diesel	Bergey Hybrid System
No. 17	173 gallons	Diesel	NWTC Hybrid 80 (Sim #4)
No. 18	336 gallons	Diesel	NWTC Hybrid 125 (Sim #3)

Source: NWTC, Eickhoff, 2001

ASTs at the NWTC are operated in accordance with CDPHE and the State Inspector of Oils (Colorado Department of Labor) regulations. Coordination between the NWTC and NREL is required if a tank is installed, removed, repaired or modified, or if its use is changed. The change is evaluated by the ES&H office with respect to state regulations and the NREL AST Management Plan.

3.10.2 Hazardous and Non-hazardous Wastes

The NWTC produces non-hazardous and hazardous wastes. The NWTC attempts to recycle as much of these wastes as possible. CDPHE allows some hazardous wastes to be recycled, including some batteries and waste petroleum products.

The NWTC is a Conditionally Exempt Small Quantity Generator (CESQG), which means that the facility generates less than 220.5 pounds of hazardous waste per month. The site EPA identification number, issued by the CDPHE, is COD983802448.

Hazardous wastes generated at the NWTC are corrosive, flammable, oxidizing, toxic, and reactive. Non-hazardous waste at the NWTC consists of used oil, used hydraulic fluids, and some absorbents. The NWTC attempts to recycle as much of these materials as possible. The amount of hazardous and non-hazardous waste generated in recent years is shown in Table 3-15 below.

Table 3-15. Waste Generation at the NWTC

Year	1997	1998	1999	2000	2001
Amount of hazardous waste (pounds)	160	515	118	34	2,200
Amount of non-hazardous waste (pounds)	1,720	700	6,900	34	2,280

Source: NWTC, Eickhoff, 2001

There are no known contaminated materials in NWTC soils or groundwater (see Sections 3.6 Water Resources and 3.7 Soils and Geology for related information).

The 2001 amounts are higher than the amounts for the preceding years because they include weights of waste batteries and used light bulbs accumulated over a period of months in association with a particular project. Both the batteries and the bulbs were accumulated and subsequently recycled.

NWTC spills are tracked in a spill-tracking log. Spills exceeding a reporting threshold are reported in the Occurrence Reporting and Processing System, which is part of DOE's emergency notification system. These procedures are integrated into NREL's Emergency Management Program. There have been no spills or releases that required State notification at the NWTC. There have been approximately 9 small spills during the last 10 years.

All NWTC waste handling and disposal activities conform to the requirements of the OSHA, RCRA, and DOE/NREL regulations. NWTC hazardous waste is packaged and disposed through off-site commercial treatment and disposal firms. NWTC solid (non-hazardous) waste is

managed by NREL's Site Operations Center. NREL's activities produce about 235,910 cubic feet of solid waste annually. Solid waste is deposited in a local landfill through contracts with solid waste handling companies.

3.10.3 Recycled Materials

NREL's formal waste minimization program includes an active recycling program. The site currently collects oils (lubricants and antifreeze), fluorescent light bulbs, scrap metals (iron, copper, steel, stainless steel, and aluminum), cardboard, newspaper, office paper, books, glass and plastic containers, packing peanuts, tyvek, transparencies, toner cartridges, and batteries for recycling. NREL encourages employees to bring in recyclable materials from home and use the collection containers in selected NREL parking lots.

3.11 PUBLIC UTILITIES AND SERVICES

The following discussions address electricity, gas, telecommunications, water, sewage, police, fire and ambulance services and infrastructure. Stormwater drainage is addressed in Sections 3.6 and 4.6 Water Resources. Energy is discussed in Sections 3.12 and 4.12. Figure 1-3 presents the locations of on-site utility lines (electrical, gas-oil-steam, telecommunication-CATV, water, sewer and surface drainage).

3.11.1 Electricity and Gas

Electrical power for the NWTC is delivered through Xcel Energy power lines along Highway 93 and on-site. Overhead lines enter the NWTC property from the west along a 20-foot wide easement. The 13.2 kV power lines transition from overhead to underground at the NWTC west property line. From that point, all electric lines on the NWTC property are buried underground. The 13.2 kV power lines feed the Switchgear building (Bldg. 253), which feeds a split bus with two main circuit breakers. One bus feeds the site buildings, and the other feeds the turbine 13.2 kV distribution system to the test sites.

The turbine distribution is connected in a parallel configuration with Xcel Energy, thus allowing the NWTC to feed up to 10 MVA into Xcel Energy's grid with power generated during wind turbine research activities. There is no agreement for the NWTC to sell power into the energy grid.

Power demand ranges from a low of approximately 521 kilowatts to 933 kilowatts. Monthly energy consumption ranges from approximately 141,000 to 413,000 kilowatt-hours. Annual consumption is approximately 3 million kilowatt-hours.

Natural gas is not provided to the site. The nearest gas line is a four-inch line located along the east side of Highway 93. This line terminates at a location just south of the Boulder/Jefferson County line (see Figure 3-5, photograph 21).

3.11.2 Telecommunications

The NWTC is served with 15 phone lines coming directly from Qwest and two T1 high-speed lines coming from NREL's South Table Mountain Site. The NWTC has 41 lines to service 41 incoming and outgoing calls concurrently. These connections are provided to the site via overhead powerline structures that drop below ground at the site boundary.