moratorium on mining activities on the NWTC site, where mineral rights are privately owned and leased by Minerals Reserve, Inc. The 20-year moratorium will begin on the date that Western Aggregates, Inc. obtains final approval to commence mining operations from all relevant permitting authorities. To date, Minerals Reserve, Inc. has not fulfilled county and state conditions required to begin activities under the lease on the NWTC site, including the completion of tallgrass prairie and hydrological studies. Consequently, construction and use of a road within this easement is not considered in this analysis. Any proposal by Minerals Reserve, Inc. to develop/use the road easement would be subject to a separate NEPA analysis when a formal proposal is submitted for DOE consideration.

1.2.3 Site Planning Process, Decision Protocol and Environmental Management Commitments

Formal strategic and annual planning processes are in effect at NREL that establish work tasks and direct site development decisions in pursuit of the NREL mission. These planning and decision-making processes are coordinated and integrated so that all necessary information is available for consideration, and that the information flows from one element of the planning process to another in the proper sequence. Elements of this formal planning process interact in continuous feedback and improvement loops and include:

- An *Institutional Plan* that sets forth the organization's mission, critical outcomes, and performance objectives, and identifies specific activities and resources (e.g., staff, facilities) necessary to achieve the objectives. The Institutional Plan is revised annually and includes specific environmental, safety, and health (ES&H) objectives and resource needs.
- An NREL *One-Year Plan* that translates the NREL mission defined in the Institutional Plan into specific work tasks, including research activities and site development, to be completed each fiscal year. Coordinated Annual Operating Plans (AOPs) are developed by each internal organization (e.g., technology program, science and technology center, and operations support office) in support of the One-Year Plan. The AOPs identify specific performance objectives, work tasks, and resource requirements for that organization for the fiscal year.
- A *Capital Plan* having a five-year outlook that establishes resource and budget requirements for major projects (e.g., facility construction, infrastructure development, major equipment acquisitions).
- A *Site Development Plan* that captures the results of planning processes that identify, evaluate, and address opportunities and limitations of the NREL's existing land and facilities. The Plan's objective is to maximize the potential of NREL sites, while meeting the near-term and long-term facility and siting needs of the technology programs.
- NREL *Policies and Procedures Manual* that includes NREL's ES&H Policies. The most directly related policies are as follows:

  2-1 Integrated Safety Management
  6-1 Environment, Safety, and Health
  6-2 Environment Management
  6-3 Property Protection
  6-4 Worker Safety and Health
  6-5 Occupational Medicine
  6-6 Risk Assessment

The site has been divided into geographic zones to provide general guidance for site development. These zones designate locations for specific facility types and land uses such as buildings, turbines, roads, open spaces and other site features. Conceptual design and architectural guidance is used to address site development compatibility and visual quality issues.

Engineering requirements and limitations on new facility development exist to protect wind energy corridors and address aviation standards. These requirements and limitations address horizontal and vertical barrier parameters (heights and widths of structures in key locations).

NREL's Site Operations Office implements a formal design review process for all construction proposals for both new facilities and test sites, and modifications to those that currently exist.

The following discussion elaborates on Policies 6-2 and 6-6 and other environmental commitments at the NWTC.

Policy 6-2

Policy 6-2 Environmental Management sets forth NREL's environmental policy statement, general rules, responsibilities, related policies, and laboratory level procedures. Policy 6-2 establishes NREL's general rules for environmental protection as follows:

> "NREL manages and operates this DOE site consistent with the following ongoing environmental protection goals to fulfill research objectives and to maintain good stewardship of the public land.
>
> 1. To maintain and enhance the environment on NREL's sites through restoration or other means which foster the preservation of native ecosystems.
> 2. To protect natural, historical, and archaeological resources.
> 3. To promote and preserve native ecosystems.
> 4. To incorporate pollution prevention practices in research and support activities.
> 5. To apply sustainability concepts to design and operation of facilities.
> 6. To continually improve the effectiveness of NREL's environmental management implementing programs.
> 7. To achieve a reputation in the public and regulatory community as a leader in environmental excellence through consistently high performance and open, responsive communications."

The general rules also address "environmental hazard identification." At the NWTC, new or substantially modified activities are evaluated in accordance with NREL Policy 6-6 Risk Assessment.

Policy 6-6

NREL Policy 6-6 Risk Assessment establishes a process that identifies hazards presented by planned research and support activities and facilities. The process then identifies controls necessary to maintain the risk presented by those hazards at an acceptable level. Environmental considerations are an integral part of this process, including application of NEPA requirements. The following hazards are specifically referenced:

a. Emissions to air
b. Releases to surface water, including storm drains
c. Wastewater releases
d. Improper waste management
e. Contamination/releases to land
f. Impacts on communities
g. Use of raw materials and natural resources
h. Impacts to wildlife or vegetation
i. Erosion or contamination of storm water
j. Contamination of groundwater
k. Life-cycle impacts

The goals of Policy 6-6 are to address and prevent off-site impacts and proactively manage on-site activities to minimize any risks to safety, health and the environment.

Controls identified as necessary during *Hazard Identification Reviews* incorporate the requirements found in numerous and specific ES&H implementing programs. These programs are listed in Appendix A.

Other Environmental Commitments

NREL's environmental programs and policies are, in part, based on a series of regulations and recent Executive Orders on "Greening the Government." Key Executive Orders include:

- Executive Order 13148, Leadership in Environmental Management
- Executive Order 13101, Waste Prevention, Recycling, and Federal Acquisition
- Executive Order 13123, Efficient Energy Management

In response to these and other initiatives, DOE and NREL have committed to manage environmentally sensitive areas on the NWTC site for conservation purposes by establishing Conservation Management Areas (see Figure 1-3) and implementing the Sustainable NREL initiative.

Conservation Management Areas and Natural Resource Conservation Program

The Conservation Management Areas will provide continued protection of the site's unique natural resources. NREL will manage the site to minimize disturbance in these areas and will implement protection measures if disturbance occurs. The NREL conservation management areas will be one component of a new program for the NWTC that is currently under development. This program will be called the *Natural Resource Conservation Program,* which will unify these efforts and those associated with designated utility corridors and other adopted measures intended to avoid or minimize impacts on natural resources.

Key NREL commitments to be included in the future Natural Resource Conservation Program include:

- No-Build Zones, including the following:

  - The westernmost portion of the site (66 acres west of the Row 1 road, excluding the area containing existing facilities (Met Tower M-2 and associated data shed)); this area

has been set aside because development in this area could alter the wind regime and optimization of wind turbine testing;
- Ephemeral drainage in the Rock Creek watershed located at the eastern site boundary and traversing a portion of the site in a generally east to west direction;
- Hillside seep and ephemeral drainage east of Building 251;
- Land within the defined xeric tallgrass prairie plant community in the southwest corner of the site, between Rows 1 and 2 (see Figure 3-4 Vegetation Map).

These areas are formally designated as portions of the site on which building would not occur, with two exceptions:

1. As the xeric tallgrass prairie is in the active turbine testing area, it is not reasonable to preclude all development on portions of the site inhabited by this plant community. However, development on the xeric tallgrass prairie would be minimized. Any test sites and access roadways on the xeric tallgrass prairie would be carefully planned, and appropriate protection measures would be implemented. Examples of measures to protect tallgrass prairie include special tallgrass prairie seed mixes to be used for revegetation and provisions for watering during revegetation.
2. Certain existing, dedicated above ground and underground utility corridors, including the Mineral Reserves, Inc. road easement, pass through Conservation Management Areas.

- Goals are established to protect and enhance the natural resources on the site using watershed and ecosystem perspectives. The site is managed to preserve and enhance plant species and community diversity, preserve wildlife habitat, and maintain surface water quality and flow volumes.
- On-site environmental monitoring at NWTC is performed on an as-needed basis, and may include monitoring of off-site control areas. Although there is no routine environmental monitoring performed at NWTC, an occasion may arise for which monitoring of one or more environmental media is warranted, either in a localized area on-site or on a site-wide scale. This could include one or more of a variety of environmental media; for example, surface water, groundwater, air, soil, wildlife, or vegetation. There is currently an avian monitoring program underway at the site.
- Appropriate mitigation measures are implemented for any disturbance to Conservation Management Areas, utility corridors or the xeric tallgrass prairie area. These measures would be designed on a case-by-case basis, but could include measures designed to address storm water discharge, erosion, sediment depositions, or revegetation. Examples of measures to protect tallgrass prairie include special tallgrass prairie seed mixes to be used for revegetation and provisions for watering during revegetation.
- Vegetation management at NWTC is currently conducted on a site-wide basis with the objectives of controlling weeds, preserving species diversity, and maintaining ecosystem health to the maximum extent possible. This site-based vegetation management approach would continue, and would support the goal of preservation of plant species and community health in Conservation Management Areas. One component of the vegetation management program is integrated weed management, which incorporates a variety of weed control strategies. Techniques used at the site include such measures as: mechanical controls (e.g., mowing), cultural controls (e.g., minimizing vehicles being driven off established roadways),a variety of chemical controls (e.g., ground treatment with 4-wheel drive vehicles or backpack application, or helicopter application for large areas), and restoration activities such as revegetation after soil disturbance. Revegetation following soil disturbance would be done using a native seed mix specifically designed for NWTC based on plants that

naturally occur on the site. Landscaping materials would consist of low-water use plants, with an emphasis on plants native to the region. Additional landscaping practices are discussed in the "Beneficial Landscaping" section below.

- Wind corridor protection to ensure new development outside the 66-acre Conservation Management Area does not compromise the site's the wind regime and optimization of wind turbine testing. Many years of wind characteristics are documented at the NWTC, including wind direction and annual average wind speed. Prototype and commercial wind turbines are often tested at the NWTC to measure performance characteristics for certification. To continue this testing and research, it is important that the wind regime at the site not be changed by buildings or manmade disturbances in a way that would invalidate any sites for certification testing. Generally, a site must have adequate upwind clearance from significant structures that may alter the smooth wind flow. To maintain upwind clearance with the prevailing winds from the west, NREL has developed the following recommendations and guidelines:

    - Potential interference with the wind regime across the test sites is a limiting factor in siting proposed NWTC facilities.
    - No structures should be erected upwind of Row 1 (66 acre Conservation Management Area).
    - A thorough analysis of all new development proposals should be performed to establish the wind impact of the specific proposed building.

- Consistent with Executive Order 13148 (Greening the Government Through Leadership in Environmental Management), NREL is implementing environmentally and economically beneficial landscaping practices whenever feasible. The principles of this type of landscaping focus on using regionally native plants for landscaping, promoting construction practices that minimize adverse effects on the natural habitat, preventing pollution, and implementing water and energy efficient practices.
- Should any evidence of archaeological resources be discovered during construction at the NWTC, NREL is committed to stopping the work in the vicinity until a qualified archaeologist can completely evaluate the significance of the find according to criteria established by the National Register of Historic Places.

Sustainable NREL

Based on the following definition of "sustainable" and NREL's Mission and Vision Statements, "Sustainable NREL" brings together NREL's commitments into a unified strategy.

> *Sustainable* \se-'sta-ne-bel\, adj. - minimal use of resources (energy, materials, water, etc.) and maximum value received from resources used, while balancing environmental, economic, and human impacts.

NREL Mission

> To develop renewable energy and energy efficiency technologies and practices, advance related science and engineering, and transfer knowledge and innovations to address the Nation's energy and environmental goals.

NREL Vision

> NREL will be the world's preeminent institution for advancing innovative renewable energy and energy efficiency technologies from concept to adoption. By partnering with our stakeholders, we will support a sustainable energy future for the nation and the world. In achieving this next level of excellence, NREL will set the standard for others.

Sustainable NREL is:

- An initiative to help NREL become more sustainable in all its operations and a global model for sustainability.
- A management philosophy and corporate culture.
- A process of change.

In the future, Sustainable NREL envisions that NREL should be not only the preeminent laboratory in the world for research and development in all aspects of clean energy and energy efficiency, but should also demonstrate sustainable practices in all its operations.

Sustainable NREL's existing commitments include, but are not limited to, energy efficiency, comprehensive ES&H programs, recycling programs, the use of alternative-fueled NREL vehicles, participation in the Regional Transit District Eco-pass transit ridership incentive program, and Xcel Energy's Windsource electricity program.

NREL exemplifies sustainability in a research and development organization by maximizing efficient use of all resources, minimizing waste and pollution, and serving as a positive force in economic, environmental, and community responsibility.

NREL's energy commitments are comprehensive and include the following:

- NREL buildings are designed to exceed the minimum energy efficiency requirements for government facilities defined in Executive Orders, regulations, and DOE directives. In particular, NREL buildings are designed to exceed the minimum energy efficiency requirements as stated in Executive Order 13123 (Greening the Government Through Efficient Energy Management) which include a 30% reduction in energy use for offices and 20% reduction in energy use for laboratory buildings by 2005; and
- NREL buildings are designed to achieve sustainable design goals. The goal is to achieve a silver rating in the Green Building Rating System, V. 2.0, Leadership in Energy and Environmental Design (LEED), U.S. Green Building Council. The U.S. Green Building Council developed the LEED Green Building Rating System 2.0 for the DOE Energy Efficiency and Renewable Energy, Office of Building Technology, State, and Community Programs. The system is intended for use by commercial building project stakeholders or project team members as a guide for green and sustainable design. The rating system is composed of a specific set of criteria with associated point values. A silver rating is one step above "Certification" under this rating system, and requires a total of 33 to 38 points relative to a maximum of 69 possible points. For more information refer to the following web site: http://www.usgbc.org/.

The following standards, orders, and documents provide valuable guidance on energy efficiency and sustainability in building design:

- ASHRAE Standard 90.1;
- DOE Draft Order 430.2X;
- Code of Federal Regulations 10CFR435;

- Whole Building Design Guide, http://www.wbdg.org;
- Roadmap for Integrating Sustainable Design into Site-Level Operations, PNNL-13183, K. L. Peterson and J.A. Dorsey; and A Design Guide for Energy-Efficient Research Laboratories, http://ateam.lbl.gov/Design-Guide/.

All of the planning processes and commitments described in Section 1.2.3 were considered during the development of the proposed short-term and long-term actions described in Chapter 2.

1.3 CHARACTERISTICS OF A SITE-WIDE ENVIRONMENTAL ASSESSMENT

This document is a "Site-Wide Environmental Assessment" similar to the document NREL prepared for the project site in 1996. DOE defines a site-wide environmental document as follows:

> "A broad-scope EIS or EA that is *programmatic* in nature and identifies and assesses the individual and cumulative impacts of ongoing and reasonably foreseeable future actions at a DOE site." (10CFR Part 1021)

NEPA and other environmental regulations define the term "programmatic," and the application of programmatic environmental documents. In general, a programmatic document applies to a series of related projects and where the projects should be analyzed as an overall program. This approach is proper for analyzing a series of projects that are related either:

1. Geographically;
2. As logical parts in a chain of contemplated actions;
3. In connection with the issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program; or
4. As individual activities carried out under the same authorizing statutory or regulatory authority and have generally similar environmental effects which can be mitigated in similar ways.

At the NWTC, the Proposed Action, as described in Chapter 2, is composed of improvements that are related geographically and are part of a series of interconnected actions to be implemented by NREL.

This Site-Wide EA provides an analytical superstructure for subsequent, more detailed analyses, as necessary. The document will serve as a planning tool that aids decisions about future development of the site. If new issues arise in the future, NREL will prepare subsequent environmental reviews or NEPA documents (EISs/EAs) that would incorporate the analyses from this programmatic document and would be focused only on those issues that have not been adequately addressed. If new proposals or conditions were to be determined by DOE, consistent with its regulations, to have no effects beyond those analyzed in the programmatic document, no new NEPA document would be necessary.

The Supplemental Analysis determines whether the Site-Wide EA remains adequate or a new Site-Wide NEPA document is required. NREL is scheduled to prepare the next Supplemental Analysis in 2007.