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1. EXECUTIVE SUMMARY

Taxpayers expect federal laboratories to fulfill their mission with due regard for protection of the public, workers, and the environment. To that end, the National Energy Technology Laboratory (NETL) strives to achieve the highest standards of environmental performance. Proof of NETL's environmental performance is found in the information contained within this document. This document presents summary data to demonstrate NETL's performance in protecting the environment, describing incidents and responses, confirming compliance with environmental requirements and standards, and highlighting significant programs and efforts.

The purpose of the Annual Site Environmental Report (ASER) is to inform the public, U.S. Department of Energy (DOE) officials, and other stakeholders of the environmental conditions and activities at NETL's sites located in Morgantown, West Virginia; Pittsburgh, Pennsylvania; Tulsa, Oklahoma; and Fairbanks, Alaska. The ASER concentrates on the Morgantown and Pittsburgh sites, which encompass research laboratories on roughly 330 acres and which perform activities that could impact the environment. NETL's offices at Tulsa and Fairbanks are administrative offices located inside commercial and university office building space, respectively.

Both the Morgantown and Pittsburgh sites have traditionally conducted research and development (R&D) in coal utilization processes, and both have implemented the natural gas program for DOE. Both have laboratories and sub-commercial-scale development facilities. Unlike the Morgantown and Pittsburgh sites, the Tulsa office, which leads the oil program, is solely engaged in the administration of contracts with offsite organizations and has no onsite laboratories or development facilities. Similarly, the Fairbanks office is responsible for the administration of contracts dealing with energy issues in Alaska. Because there are no laboratories at these latter two locations, environmental risks associated with their onsite activities are extremely low.

During 2003, NETL employees at the Pittsburgh and Morgantown sites worked diligently to adopt and implement the internationally-recognized International Standards Organization (ISO) 14001 standard, *Environmental Management Systems*. All employees at these two sites received training during 2002 and 2003 on NETL's environmental policy, environmental management system (EMS), and environmental aspects, objectives, and targets. Employees worked to revise or complete NETL's environment, safety, and health (ES&H) directives (orders, operating plans, procedures) so that 95 percent of all the directives issued were uniform for the Pittsburgh and Morgantown sites. Many lab-specific test plans and operating procedures were also updated. In-house auditors audited most employees to determine the level at which the EMS was being implemented. When auditors discovered non-conformances, corrective actions were implemented, and follow-up audits verified successful completion of each corrective action. There were 84 findings during the internal audits that were corrected. Many of the findings were educational in nature (e.g., employees not fully understanding EMS processes and their roles within these processes). Results of this valuable learning experience were demonstrated by a successful ISO 14001 registration audit during August 2003. External registration auditors noted many strengths in the program and found only three minor non-conformances plus two opportunities for improvement.

When most people think of DOE laboratories, they think of nuclear programs; however, NETL does not conduct nuclear work on its sites nor dispose of radioactive wastes. The only ionizing radiation sources on site are small, sealed sources installed in various laboratory instruments and devices. When these radiation sources are no longer needed, they are returned to the instrument manufacturer. NETL has a radiation protection program for the safe usage of these small sources and the monitoring of worker exposure; however, there is insufficient justification for a program of off-site monitoring because the sources are very small. Environmental protection programs at NETL sites in Pittsburgh and Morgantown, therefore, focus on non-nuclear chemical and physical hazards that might occur as a result of laboratory work on fossil energy (coal, oil, and natural gas) projects. NETL has assisted DOE in the development of technologies for the decontamination and decommissioning of nuclear facilities, but this assistance has been provided only in the form of contract administration.

NETL protects the environment through media-based programs and through process and control programs. The media-based programs are: the Ambient Air Quality Program, the Surface Water Quality Program, and the Ground Water Quality Program. These programs establish monitoring of ground water and surface runoff water around the perimeter of the sites for the possible escape of contaminants and the monitoring of air pollution sources (i.e., stacks, vents, fume hoods) on site. Closely associated programs address industrial waste water management, spill prevention and control, and handling of hazardous materials. Various details of program implementation and pollution prevention strategy at both sites are given in the Ground Water Protection Management Plan, the Storm Water Pollution Prevention Plan, and the Spill Prevention, Control and Countermeasures Plan.

Hazardous wastes are handled according to a stringent program that ensures that laboratory wastes are properly packaged, labeled, manifested, and stored temporarily until they are shipped via licensed transporters to Resource Conservation and Recovery Act (RCRA)-permitted treatment, storage, or disposal facilities. During 2003, NETL launched a program to reduce its chemical inventory by 20 percent by 2005 using fiscal year (FY) 2002 as the baseline and thereby decrease the long-term risks associated with maintaining larger inventories.

Work was completed during 2003 on the design of the new Chemical Handling Facility for the Pittsburgh site. This facility provides receiving and dispensing functions for chemicals and an accumulation and consolidation area for hazardous and non-hazardous wastes. The new design will minimize the risk of chemical escape by leakage and minimize the environmental impact of any explosion or violent chemical reaction inside the facility.

Ground water and surface water have been protected during recent years, with no new contamination occurring. In fact, the number of analytes tested and the number of ground water wells sampled has been reduced to address only general indicators of contamination (pH, specific con-

ductance, total organic carbon, and total organic halogens). This list is sufficient for NETL to monitor for contamination from both identified and unidentified sources. Such a generalized approach is justified by the lower risks associated with the smaller projects and the smaller quantities of hazardous chemicals that are now used on site. There were no spills directly to the environment or other environmental incidents during 2003 that triggered reporting requirements.

There was one citation of regulatory violations during 2003. A citation was issued on February 25, 2003, as a result of a regulatory inspection at the Morgantown site on November 27, 2002. The West Virginia Department of Environmental Protection (WVDEP), Office of Waste Management, found four violations of the hazardous wastes management regulations. All of the violations involved inadequate or improper marking and labeling of wastes. NETL immediately corrected the problems by labeling all universal waste batteries and containers of universal waste batteries, labeling all universal waste lamps and containers of universal waste lamps, labeling all containers of hazardous wastes with the words “hazardous wastes,” and labeling all containers of hazardous wastes with the accumulation date. Prior to the citation, most but not all items or containers were labeled appropriately.

The significant accomplishments or activities during 2003 were:

- ES&H Directives: Approximately 95 percent of the required ES&H directives (orders, operating plans, and procedures) have been reviewed or completed and issued for the merged (Pittsburgh and Morgantown) sites. More than 50 directives were reviewed and revised or completed for the merged sites by the end of 2003.

- Independent Third-Party Assessments: NETL commissioned three independent assessments of its ES&H programs: (1) chemical inventory and Material Safety Data Sheet (MSDS) management, (2) air quality management, and (3) fall protection. These assessments indicated minor non-conformances due to not following the requirements in NETL directives. The corrective actions included specific fixes, training and more rigorous annual reviews of the directives by the program participants. DOE Headquarters conducted a Pollution Prevention Opportunity Assessment (PPOA). Several opportunities were identified, although upon further investigation many have proven unfeasible for implementation due to technical, legal, and economic considerations.

- In-House Assessments: NETL management and ES&H staff conducted 24 walkthrough inspections. Additionally, ES&H staff participated in over 150 Safety Analysis and Review System (SARS) Annual Assessments for in-house R&D projects, site operations, and site facilities. The SARS assessments are the principal means of ES&H control and oversight of projects.

- ISO 14001 activities:

    1. Conducted two EMS Management Review Team meetings.
    2. Developed new EMS computer-based training (CBT) for all NETL employees.
    3. Conducted four Internal EMS Audits.

4. Reviewed and revised as necessary 22 Environmental Management Plans (EMPs) with metrics for each EMP objective.
5. Continued to refine the EMS webpage on the NETL Intranet and the ISO 14001 webpage on the external website.
6. Finalized the EMS Roadmap (manual).
7. Generated bi-weekly regulatory reviews and posted these on the NETL Intranet.
8. Underwent third-party readiness assessments, which uncovered five major non-conformances and eleven minor non-conformances in the areas of document control, operations control and in-house auditing. All non-conformances were corrected and closed.
9. Underwent an EMS Desk Audit by an ISO 14001 registrar, who raised six issues – all subsequently resolved.
10. Underwent an On-site Readiness Review by an ISO 14001 registrar.
11. Underwent a successful ISO 14001 registration audit by an ISO 14001 registrar.

- Indoor Air Quality Retrofits: Work continued to retrofit Building (B-) 94 at Pittsburgh with an efficient ozone-depleting substance- (ODS-) free heating, ventilation, and air conditioning (HVAC) system. The new system is part of a plan to phase out the onsite uses of Class I ODSs while also increasing the energy efficiency of buildings. Work continued on other buildings to improve various parts of the HVAC systems solely for benefits in energy efficiency.

- Environmentally Friendly New Buildings: NETL is currently designing two new buildings using sustainable design principles. The new buildings when completed will meet the requirements for the Environmental Protection Agency's (EPA's) Energy Star designation and the Leadership in Energy and Environmental Design (LEED) designation. Additionally, NETL is pursuing EPA's Energy Star rating for its new Pittsburgh daycare facility, "Room to Grow," as well as the LEED certification through the U.S. Green Building Council.

- Environmentally Friendly Older Buildings: NETL evaluated and attempted to qualify before December 31, 2003, two of its older office buildings for receipt of the EPA's Energy Star Building label. Three of the five recommended actions needed to qualify one of the buildings are in the process of being completed. The other two recommended actions have been submitted for funding consideration. NETL is still pursuing the Energy Star Building label for B-26 in Morgantown.

- Progress in Energy Efficiency of Facilities: NETL has begun reporting, for the Morgantown and Pittsburgh sites, its energy consumption and its progress toward meeting the FY 2005 goal of a 20 percent reduction in energy use per square foot of heated/cooled floor space relative to a 1990 baseline. The energy use for FY 2003 (Pittsburgh and Morgantown combined) was 274,300 BTU/GSF, a 25.7 percent decrease from the 1990 baseline of 369,240 BTU/GSF.

- National Environmental Policy Act (NEPA) Activities: Four Environmental Impact Statements (EISs) were in development during 2003, although none were completed. Five Environmental Assessments (EAs) were completed, with four reaching a Record of Decision during the year. One EA was successfully launched. There were approximately 310 NEPA reviews resulting in categorical exclusions.

- Improved Waste Water Effluent Quality: Following three Notice of Violations (NOVs) during 2002 at the Pittsburgh waste water treatment plant for mercury and cyanide, the treatment process was changed to first raise the pH, causing precipitation of the mercury, and then filtering out the precipitates before lowering the pH to the normal range. This change appears to have reduced mercury concentrations to non-detectable levels. There were zero NOVs during 2003.

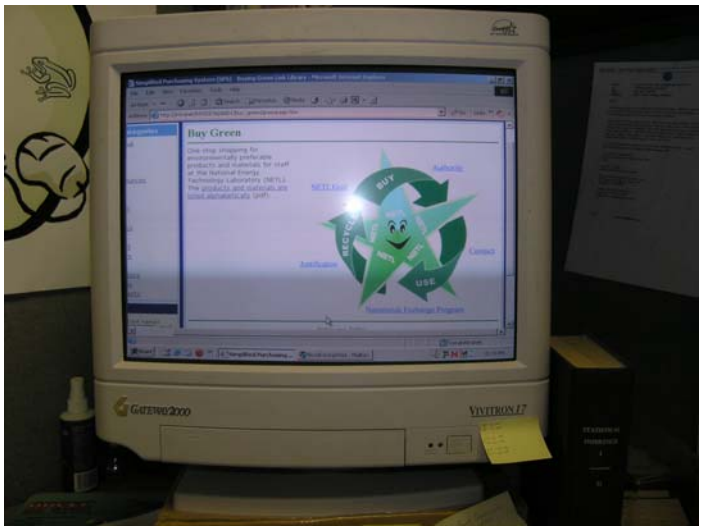
- Asbestos Abatement: There were several small asbestos abatement actions, including the replacement of asbestos-containing sides and cooling fins on a project cooling tower in Morgantown plus the abatement of some floor tiles, mastic, laboratory equipment, ventilation ducts and furnace materials in Pittsburgh.

- Emergency Management Activities: Emergency drills involving chemical and biological releases were conducted at both the Morgantown site and at the Pittsburgh site. There were two table-top exercises and other training to further prepare the Emergency Response Organization (ERO). ERO job position descriptions were updated with certification requirements, and appointment letters were generated describing each responder's role and potential job hazards. The program underwent two audits: one by the DOE Inspector General's Office and the other as part of an ISO14001 pre-certification audit.

- Off-Site Remediation Activities: Air sparge and bioremediation activities continued at the Rock Springs, Wyoming, Oil Shale Retort site and at the Hoe Creek Underground Coal Gasification sites II and III. Hoe Creek remediation seems to be in the final phases, with remediation activities shut down for periods of time to monitor for rebound of the contaminant levels.

- EMS Computer-Based Training: NETL continued to refine the new integrated CBT system. The electronic job hazard survey was revised to include items related to the EMS and NETL's environmental aspects. The training administration components were also improved. NETL offered four new CBT courses during FY 2003, Radiological Worker 1 (Morgantown site only), Operations Security, Initial Security Briefing, and Records Management-ES&H Records, as well as several revised courses including ISO 14001 Refresher, General Employee Emergency Response, and Blood-Borne Pathogens. Employees completed more than 95 percent of the scheduled mandatory ES&H training within two weeks of the due date for three required courses.

- Affirmative Procurement: A "Green Page" was created on the Intranet for listing various recycled-content items that NETL buys, instructions on how to obtain various items, what to do to reduce the need to buy and how to dispose of selected items. Also, the "Green Cupboard" is printed in the internal newsletter each month listing excess materials that are available.



- Contractor Oversight: NETL improved and expanded language in the NETL procedure governing the management of offsite contractors performing work on site. Contract clauses are offered or required for the submission by the contractor of a safety and health plan and the submission of an environmental compliance plan. NETL is currently weighing the costs and benefits of this approach versus other approaches to oversight or control.

- Risk Assessments Prior to Contract Closeouts: NETL initiated discovery and investigation of three former Office of Fossil Energy (FE) R&D sites to determine the environmental risks prior to contract closeout. The sites were: the Air Products Laboratory Bench-Scale Coal Gasification Project at the Allentown, Pennsylvania, facility; the Air Products Gasification Facility in La Porte, Texas; and the Foster-Wheeler Gasification Facility at Livingston, New Jersey.

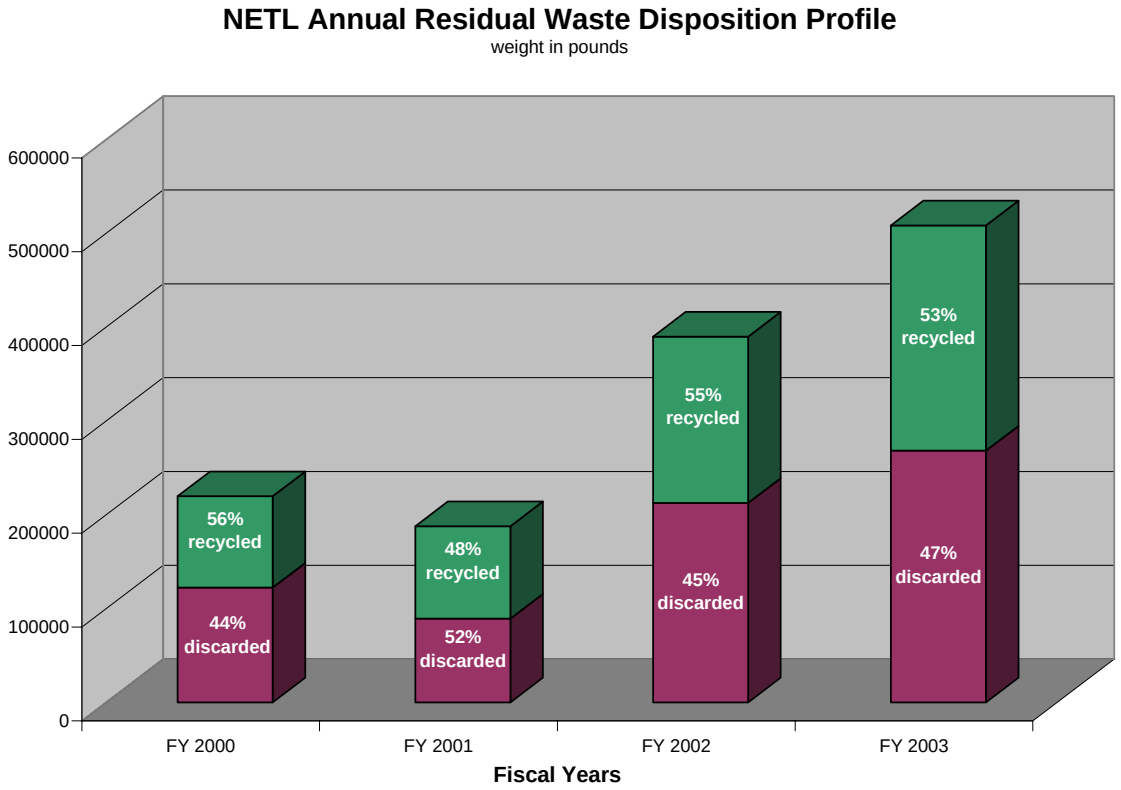
Efforts to comply with Executive Order (EO) 13148 proved highly fruitful for more than implementation of an EMS. The EO's emphasis on pollution prevention as a means of environmental compliance is primarily fulfilled at NETL through EMPs and the associated performance goals of these plans. Progress made during 2003 at the Pittsburgh and Morgantown sites towards accomplishing the Order's goals include:

1. Reduce Non-Hazardous Wastes. The target for 2003 was to generate not more than 241 metric tons, for a reduction of 63 percent from the baseline 1993 level of 641 metric tons.

NETL's 2003 tonnage was 220 metric tons – a 66 percent reduction. NETL is well on its way to the 75 percent reduction required by 2005.

2. Reduce Hazardous Wastes Generation. The target for 2003 was to generate not more than 4.62 metric tons for a reduction of 75 percent from the baseline 1993 level of 18.46. NETL surpassed this goal by nearly 10 percent, producing only 3.01 metric tons for an 83.7 percent reduction. The 2005 goal is a 90 percent reduction from 1993 levels.

3. Increase Non-Hazardous Wastes Recycling. By 2005, NETL should be recycling 45 percent of its non-hazardous wastes, and by 2010 it should recycle 50 percent. During 2003, NETL exceeded even the long-term goal by recycling 52 percent of its non-hazardous wastes.



4. Reduce Hazardous Materials Procured, Received, and Stored. A major effort was made during 2003 by NETL researchers to dispose of old chemicals. This contribution, along with conscientious buying and monitoring of the onsite supplies, allowed NETL to reduce its chemical inventory by 27 percent from the 2002 baseline. The target was a 20 percent reduction by 2005.

5. Reduce ODSs - Class I Refrigerants and Chiller Replacement. By 2010, EO 13148 requires elimination of all non-exempt Class I refrigerants from use. NETL experienced a setback during 2003 when an additional 127.51 pounds of the refrigerants were identified in NETL's inventory. On a positive note, funds were secured for the purchase of two CFC-free chillers to replace both 225-ton Class I ODS chillers used in Pittsburgh on B-94. Replacement completion is scheduled for 2005.

6. Reduce Generation of Greenhouse Gases. Using emissions from 1990 as a baseline, NETL's target reduction of greenhouse gases, such as carbon dioxide, was 21.61 percent for 2003. The actual reduction was 13.81 percent. NETL's carbon dioxide emissions are associated with NETL's consumption of natural gas, electricity, and steam. Better progress toward the 2005 goal of 25 percent reduction will be recognized when the NETL Pittsburgh site discontinues use of the National Institute for Occupational Safety and Health's (NIOSH) coal-fired steam system and when both the Morgantown and Pittsburgh sites move toward cleaner electrical energy suppliers.

7. Decrease Air Emissions of Toxic Compounds. Even though its toxic releases are below the regulatory threshold to report, NETL has taken upon itself to continue to reduce its Toxics Release Inventory (TRI)-listed emissions. NETL's reduction from the 1997 baseline was 46.7 percent during 2003, more than double its target. Sampling and analysis, including monitoring of facility hours of operation, were conducted at selected point sources to confirm that the air emission inventories were accurate and to act as a tool to identify opportunities for reduction. Two activities helped with NETL's reductions for 2003. The first was to change from bulk dispensing of organic chemicals at the Pittsburgh site to purchasing smaller containers, such as 2-liter bottles, thus reducing potential sources of evaporation; and the second was to discontinue photo developing at the Morgantown site, eliminating the use of process chemicals.

8. Conserve and Enhance NETL's Non-Industrial Land Use. NETL contracts with professional horticulturalists to plan and implement its landscaping based on cost-effective and environmentally sound practices. Native plants are used to ensure adaptability. During 2003, a feasibility study was completed that outlines future landscaping projects including: creating walking trails paved with coal combustion by-products; creating a composting station to deal with cafeteria and landscaping wastes, thus reducing funds spent on fertilizer and reducing non-hazardous wastes; and using the expertise of area universities to keep costs down by using students who are willing to help with planning and implementation in exchange for credit. These ideas will be implemented as funds become available.

2. INTRODUCTION

The ASER serves as a tool to provide information to the public and DOE stakeholders on the environmental conditions at NETL, including site emissions and effluents, environmental impacts both inside and outside the fence, and any significant environmental occurrences and responses during the calendar year. In addition, it provides information to DOE Headquarters on NETL's environmental program performance and confirms compliance with environmental standards and

requirements such as meeting the reporting requirements of DOE Order 231.1, *Environment, Safety and Health Reporting*, and DOE Order 5400.5, *Radiation Protection of the Public and the Environment*. The development of the ASER provides an evaluation of NETL's compliance with relevant environmental laws and regulations in that much of the information reported in this ASER came from interviews in which the authors asked regulatory-based questions and requested selected documents from relevant program managers.

In this report you will find summaries of NETL's regulatory compliance activities, monitoring and measurement activities, and significant facility programs and efforts. NETL takes its responsibility to the environment seriously, both inside and outside the fence. Management commitment and employee involvement are essential to the success of NETL's environmental program, and NETL is dedicated to both.

Description of the Sites

NETL was established during December of 1999 as the fifteenth DOE national laboratory. Prior to this point in time, this organization was known as the Federal Energy Technology Center, which was formed from the merger of the Pittsburgh Energy Technology Center and the Morgantown Energy Technology Center. The National Petroleum Technology Office in Tulsa, Oklahoma, became a part of NETL during August of 2000, and the Arctic Energy Office in Fairbanks, Alaska, opened during September, 2001.

R&D activities are conducted both on site and off site through in-house programs, partnerships, cooperative R&D agreements, grants, financial assistance awards, and various other contractual agreements. Historically, each site focused on different research areas and, therefore, has different environmental concerns. Furthermore, each site falls under different state and local regulation, so there are significant permit and reporting differences. An overview of each site is presented below.

Pittsburgh, Pennsylvania. The Pittsburgh site resides within Allegheny County, Pennsylvania, at the Bruceton Research Center, approximately 13 miles south of Pittsburgh, in South Park Township. The nearest community is Bruceton, which is located about three-quarters of a mile to the north. The towns of Broughton and Pleasant Hills are located one to two miles to the north, and the town of Bethel Park is located one to two miles to the west. Geographically, the region is an expansive area of rolling hills and steeply incised stream valleys that are tributaries to the Monongahela River, which is located a few miles to the east. When the Pittsburgh site was first developed, the immediate vicinity was completely rural; however, the population density and housing density has increased in recent years as new subdivisions of homes are built.

Federal possession of the site began in 1917 when 38 acres were leased from the Pittsburgh Coal Company to the U.S. Bureau of Mines. The tract was partially underlain by the 5 foot thick Pittsburgh Coal seam. An experimental coal mine was developed to serve as a laboratory for full-scale testing under actual mining conditions. The land was purchased by the U.S. Bureau of Mines in 1924.

The Bruceton Research Center was created under the Synthetic Liquid Fuels Act of 1944 and was dedicated in May 1948 to address the growing interest in synthetic fuels production. By 1950, the Bruceton complex had expanded to 200 acres and included an experimental mine containing nearly 2 miles of underground entries and rooms.

In 1975, the Bruceton Research Center, along with the Morgantown and Bartlesville sites, was incorporated into the new U.S. Energy Research and Development Administration. The energy research operation of the Bruceton Research Center became the Pittsburgh Energy Research Center and began to oversee federally funded contracts for fossil energy research and development. In 1977 the Pittsburgh Energy Research Center became the Pittsburgh Energy Technology Center (PETC) under the newly established U.S. Department of Energy (DOE).

In 1996 PETC merged with the Morgantown Energy Technology Center, forming the Federal Energy Technology Center (FETC). Separated by 65 miles and state borders, the merger was made possible by recent advances in communication technology which allow the merged centers to establish a seamless organization. In an unrelated action, the Bureau of Mines was eliminated by Congress in 1996 and most of the Bureau sites were closed. However, the Department of Energy continues to share the Pittsburgh site with the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH).

On December 10, 1999 the Secretary of Energy created the National Energy Technology Laboratory (NETL) as the 15th national laboratory from the former FETC. In 2000 the National Petroleum Technology Office (NPTO) in Tulsa, Oklahoma joined NETL. In 2001 the Arctic Energy Office was opened by NETL in Fairbanks, Alaska to promote energy-related research in arctic areas.

Demographically, the NETL Pittsburgh site draws a work force from Allegheny County, Washington County and surrounding counties. As of 2000, there were 1,281,666 people, residing in Allegheny County. While the county lost population during the 1990s, South Park Township, which surrounds the Research Center, slightly gained population, from 14,292 in 1990 to 14,340 in 2000. Another nearby area, Jefferson Hills Borough also gained population.

These gains show the relative economic attractiveness of the area most closely associated with the Bruceton Research Center and suggest that the Laboratory makes a significant economic impact. The racial makeup of the county is 84.33 percent Caucasian, 12.41 percent African American, 0.12 percent Native American, 1.69 percent Asian, 0.03 percent Pacific Islander, 0.34 percent from other races, and 1.07 percent from two or more races.

Hispanics and Latinos account for 0.87 percent of the population of all races. There are no identifiable areas of minority populations in the immediate vicinity of the Laboratory that would raise environmental justice questions.

With the decline of the steel industry and manufacturing, the area shifted to other industries, first "retail trade" and more recently to the "service" industry. Today the area is known for its hospitals, universities, and remnant industrial centers. Pittsburgh is still home to a number of large companies such as the H.J. Heinz Corporation, PPG Industries, Bayer Corporation, Alcoa, U.S. Steel, Westinghouse Electric, and U.S. Airways. DOE employs about 510 people at the Pittsburgh site. NIOSH and MSHA employ an additional 502 people, so the entire workforce of the Bruceton Research Center is over 1000. The Laboratory is a major employer for the surrounding townships.

The Pittsburgh Site is a partially wooded tract with scattered industrial buildings and office buildings. Common animals, such as deer, turkey, and fox, are frequently seen on site. The west side of the site is a low ridge top with a road and scattered houses. Another road with scattered houses borders the north side of the site. The east side of the site is bordered by Lick Run, the Pleasant Hills Sewage Treatment Plant and a major local road. Housing development is increasing around the boundaries of the site, especially to the southwest, where new homes overlook the site. Commercial zones are found more than three-quarters of a mile away, although some small businesses are located nearby. About 40 percent of the immediately surrounding land is forested, and about 25 percent is pasture or fallow fields. Most of the remainder is residential.

Morgantown, West Virginia. The Morgantown site resides within Monongalia County, West Virginia, on the northern fringe of Morgantown, near a residential area called Suncrest. This location is about 70 miles south of Pittsburgh, Pennsylvania, and about 200 miles west of Washington, DC. Geographically, the facility sits within the rolling hills of the Appalachian Plateau, about 1,000 feet east of the Monongahela River and about 10 miles west of Chestnut Ridge, the westernmost ridge of the Allegheny Mountains.

The Morgantown site was established during 1954, from the consolidation of three Department of the Interior organizations: a petroleum and natural gas recovery group, a federal coal mine health and safety inspections group, and a coal gasification group. It was first known as the Appalachian Experiment Station and, except for the mine inspection group, conducted only in-house research from 1954 until 1975. During 1975, a new federal agency, the Energy Research and Development Administration (ERDA), was created to combine all the federal research programs in energy. In addition to in-

house research, new programs were started at the Morgantown office of ERDA in federally-funded contracts for R&D. With the conversion of ERDA into the new cabinet level agency, DOE, the Morgantown site became the Morgantown Energy Technology Center. Under this organization, the focus became coal utilization technologies and natural gas production and utilization technologies. Most of this work was contracted to outside organizations, but some in-house R&D continued. Today, the Morgantown site focuses on technologies in coal utilization, natural gas production and utilization, and energy efficiency.

Morgantown's demographics are shaped largely by the presence of West Virginia University (WVU), the State's flagship educational institution, which accounts for a large student population and the economy of Morgantown. Morgantown's population was 26,809 during the 2000 census, while the county contained 81,866 people. Because of the University, 44.7 percent of the population of Morgantown is in the age range of 18 to 24. The median income of city residents is $20,649, while the median family income is $44,622. About 38 percent of the people and 15 percent of the families are below the poverty level, but this largely reflects the large student population. Within the area around the Morgantown site, the major employers are (listed starting with the largest): WVU; WVU Hospitals; Monongalia Health System, Inc.; the Monongalia County Board of Education; Mylan Pharmaceuticals; Teletech; University Health Associates; and NETL. Many neighbors of the Morgantown site of NETL work in the education system or in the local health care system.

There are approximately 132 acres of land that make up the Morgantown site, of which 46 acres are developed as an industrial area. Two small streams border the site on the east and northeast sides, and all surface drainage goes into these two streams. Immediately surrounding the Morgantown site, the land use is residential to the west, south, and east with some commercial zones along the road to the west and along the fence line to the south. Property to the north is a combination of residential (~17 percent), commercial, deciduous forest land (~45 percent), and pasture (~25 percent).

Tulsa, Oklahoma. In August 2000, the National Petroleum Technology Office in Tulsa, Oklahoma, was assimilated into NETL. This change connected DOE's oil program, which was based in Tulsa, with its natural gas program, which was located at the Pittsburgh and Morgantown sites. The goal was to improve communication and cooperation between the research groups and to minimize duplicity.

Located in the heart of downtown Tulsa, the NETL office is centrally located relative to the Nation's oil and gas activities. The administrative offices in the Williams Center are leased by NETL from the Southwestern Power Administration.

Tulsa primarily implements DOE's oil technology research, development, and demonstration programs, with most efforts focused on exploration, drilling, production and environmental issues. More than 200 projects nationwide are administered by the Tulsa staff through contracts.

Prior to joining NETL, the National Petroleum Technology Office reported directly to DOE Headquarters. It began as the Bartlesville Experiment Station in 1917, as one of the Bureau of Mines facilities. Bartlesville's selection was influenced by a private land donation and a

$50,000.00 pledge from local oil executives. A new name, the Bartlesville Petroleum Research Center, was assumed in 1959. During 1975, it was assigned to the newly formed ERDA; and 2 years later it was assigned to DOE, when it again changed its name to the Bartlesville Energy Technology Center, to be consistent with the names of other similar DOE field offices. As part of a reorganization during 1983, it was split into the Bartlesville Project Office, which remained government operated, and a laboratory known as the National Institute for Petroleum and Energy Research (NIPER), which is maintained and operated by a contractor. The Bartlesville Project Office moved to downtown Tulsa and became the National Petroleum Technology Office during 1997.

Today, the NETL's Tulsa site has 27 federal and 21 contractor employees working to support the Strategic Center for Natural Gas and Oil. Of the federal employees, 89 percent have at least a Bachelors degree. All of the work focuses on the management and oversight of contracts for R&D in DOE's oil program. The Tulsa office conducts no in-house research and has no laboratories. As a typical office building with typical office operations, it does not share in most of the environmental concerns that the Pittsburgh and Morgantown sites deal with. As a result, only a relatively brief synopsis of environmental issues is given in the regulatory compliance section below.

Tulsa lies in the northeast section of the state and is the largest city in the Green Country region. Located in the rolling Osage Hills, Tulsa encompasses 183 square miles.

Tulsa's largest employers cover a multitude of manufacturing areas including electronic components, aircraft flight training equipment, major household appliances, steel products, aviation and aerospace products, ceramic tile, glass products and outdoor sporting equipment. In addition, Tulsa's workforce is engaged in petroleum refining and distribution, general medical and surgical services, certified air transportation and fleet maintenance, and more.

The 2003 estimated population of Tulsa was 395,729. The average household income was $56,011; per capita income was $23,869. The population consists of 70 percent Caucasian, 16 percent African American, 8 percent Hispanic, 5 percent Native American, and 2 percent Asian.

Fairbanks, Alaska. The Arctic Energy Office (AEO) opened during September of 2001. NETL entered into a cooperative agreement with the University of Alaska at Fairbanks to support research in two main areas: (1) production, transportation, and use of fossil fuels; and (2) power generation for remote areas.

AEO is located on the east perimeter of the University of Alaska at Fairbanks campus in the Duckering Building. The leased space is located on the fifth floor adjacent to non-DOE administrative offices. The Duckering Building contains various faculty offices, classrooms, and educational laboratories.

The mission of AEO is to develop an in-state resource for expansion and coordination of arctic-related research, development, and deployment in energy technology in two primary categories: (1) Fossil Energy – oil recovery, gas-to-liquids, and natural gas production and transportation and (2) Remote Power – electric power in arctic climates, including fossil, wind, geothermal, fuel cells, and small hydroelectric facilities. One federal employee was stationed at AEO during 2003.

The Fairbanks North Star Borough is located in the heart of Interior Alaska and is the second-largest population center in the state. Fairbanks lies 45 minutes by air from Anchorage and 3 hours from Seattle. The North Star Borough encompasses 7,366 square miles of land and 78 square miles of water.

City, borough, state, and federal government agencies, including the military, provide over one-third of the employment in the Borough. The Borough School District and the University of Alaska at Fairbanks are the primary public employers. Approximately 6,000 residents are military. Retail services, gold mining, tourism, transportation, and medical services are the primary private sector activities.

The 2000 estimated population of Fairbanks was 82,840. The average household income was $49,076; per capita income was $21,553. The population consists of 78 percent Caucasian, 7 percent Native American (including Alaskan and Hawaiian Native), 6 percent African American, 2 percent Asian, and 7 percent Other.

Discussion of Sites within the Document

As discussed above, three principal sites and one satellite office constitute NETL. Each office is located in a different state, is subject to different state and local laws, and focuses on different activities. Previous ASERs have attempted to discuss all four sites within each chapter and topical heading, often resulting in confusion for the reader about which site was being addressed by specific statements. Because most members of the public are interested in learning about only one site – the site located nearest them – this document splits the detailed discussions among the sites. Morgantown and Pittsburgh sites are laboratories that have a broad array of environmental concerns, so they have detailed discussions below. Tulsa and the Alaska satellite office serve solely administrative functions, so less can be said about their environmental impacts and regulatory compliance activities.

Awards and Environmental Stewardship Recognition

Year 2003 brought several honors to NETL for outstanding performance. Foremost among the honors was the achievement of certification for environmental management under the ISO 14001 standard, as recognized by an independent third-party registrar. Assistant Secretary for Fossil Energy Carl Michael Smith congratulated NETL saying, "Their accomplishment is helping the Office of Fossil Energy to achieve the environmental goals set forth by Secretary Abraham. Certification makes a statement to the global community that we take seriously our responsibility to environmental stewardship."

On November 4, 2003, Assistant Secretary Smith presented an FE Environment, Security, Safety, and Health Achievement Award to the NETL ES&H training team for their efforts to establish the Electronic ES&H Job Hazard Survey System. The system collects information on the training needs of individual workers based the hazards and risks associated with their job. Each time a worker accesses the online CBT module, the worker is prompted with an opportunity to respond to a questionnaire. The information is fed to managers who are responsible for arranging any training that is not offered online automatically.

Perhaps NETL's most notable achievement in pollution prevention occurred when the Allegheny County Health Department (ACHD) recognized the voluntary system of pollution prevention practices at the Pittsburgh site with a three-star award, the highest under the ACHD Enviro-Star Program. The award was made as part of Earth Day celebrations in Pittsburgh, PA.

The Site Operations Division received two awards in the energy efficiency category. One award was the Departmental "Energy Management Retrofit Project Award" in the amount of $48,600.00. This project was for the lighting retrofit project in B-26 in Morgantown. The second award was presented by the Pittsburgh, PA, Federal Executive Board for accomplishments of the NETL Energy Efficiency Team.

3. ENVIRONMENTAL MANAGEMENT SYSTEM

3.1. NETL's Environmental Management System

NETL has implemented an EMS based on the ISO 14001 standard. During 2003, NETL earned ISO 14001 certification from NSF International Strategic Registrations, Ltd., well ahead of the DOE goal to have an EMS in place before December 31, 2005. The ISO organization was established in 1947 and today is a network involving more than 140 countries who

promote the development of national safety standards for government and private industry throughout the world.

The ISO 14001 certification audit, conducted over 4 days during August 2003, was the culmination of a 3-year process of implementing procedures, practices, and reviews related to the EMS. To maintain certification, surveillance audits will be conducted every 6 months to measure continual improvement to the EMS and adherence to the ISO 14001 standard. By maintaining ISO 14001 certification, NETL demonstrated to its workforce, the surrounding community, DOE, and other stakeholders that NETL takes seriously its responsibilities for environmental stewardship.

NETL's EMS assures due consideration of environmental impacts of day-to-day activities and minimizes these impacts to the maximum extent practicable, consistent with NETL's mission of fossil energy R&D. NETL's EMS, as described in NETL Order 450.1, *Environmental Management System*, includes a policy statement, top-down responsibility, personal accountability for work being performed, regulatory awareness, document control, goals, self assessments, and continuous improvement activities. The scope covers onsite operations involving NETL employees at the Morgantown and Pittsburgh sites, including onsite R&D activities, site operations, and the supporting administrative functions related to these activities and operations. Operations not owned or controlled by NETL are excluded from the EMS, such as the credit unions, childcare facilities, and the Navy tower operations.

The underlying framework of NETL's EMS is DOE's Integrated Safety Management (ISM) system, whereby environmental accountability is integrated into individual decisions and corporate planning processes. ISM provides for a "plan, do, check, act" approach to maximizing safety of the workforce and the public. NETL's EMS uses the same philosophy to maximize environmental protection, both onsite and offsite, during the conduct of NETL operations and projects over which NETL has control.

3.2. Environmental Policy

Senior management created an environmental policy to communicate to the workforce, the public, and others, the view that management uses when considering every environmental issue. NETL's view gives paramount weight to reducing injuries to the workforce and to minimizing hazards to the public and the environment outside the NETL fence. The policy requires the systematic consideration of potential environmental impacts when planning and executing work at all levels. Emphasis is placed on employees planning before they act.

Management commitment and employee involvement are required to minimize oversights and improve communication. Overall responsibility for effective environmental performance rests upon line management. Line management must involve workers in the planning and execution of environmental programs and must fully communicate information to workers and others.

NETL uses the acronym PRISM to illustrate its policy (see Figure 3.2). PRISM also shows the successful incorporation of DOE's ISM within the ISO 14001 standards. The PRISM graphic is prevalent at the sites as a reminder to employees and visitors of the NETL policy.

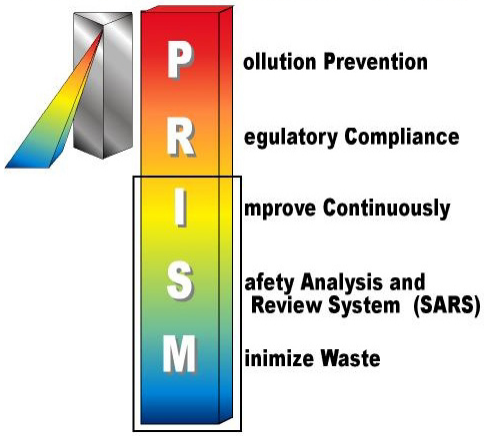


Figure 3.2. Illustration of NETL Environmental Policy.

3.3. Identification of Environmental Aspects and Impacts

Determination of NETL's environmental aspects requires input from a wide range of sources – onsite researchers, site operations personnel, and various ES&H staff. These aspects are ones that NETL can control or influence. All NETL research projects, operations, and facilities have been inventoried and scored in terms of their potential impacts on environmental resources and in terms of their responsibilities under EOs, environmental laws, and regulations.

The Significant Impact Scoring Matrix provides a system by which each project, operation, and facility is inventoried and scored in a relative sense. The scores are reviewed by the EMS Crosscutting Team – a group of ES&H professionals and administrators from both DOE and contractor staff – to determine the most significant aspects of NETL's activities. The Team makes a recommendation to the EMS Representative as to which aspects are the priority aspects for future improvement. The top ten aspects make the Registry of Significant Environmental Aspects.

Data for the Scoring Matrix come, in part, from the SARS process. In addition to the SARS process, NETL can capture aspects through the work control system, feedback process, or continuous improvement process.

The relative ranking of aspects is updated annually by the EMS Crosscutting Team. When the Team updates the ranking of aspects, they publish an update of the Registry of Significant

Environmental Aspects. The 2003 Registry of Significant Environmental Aspects (see Appendix A, Table 3.3. 2003 Significant Environmental Aspects) was approved December 20, 2002. This registry was used to establish goals, plans, and actions for 2003. From the information in the registry, the Team and the EMS Representative recommended an updated list of objectives and targets to the Management Review Team. Once approved, EMPs were established to achieve the objectives and targets, including the identification and description of measurement criteria.

The 2004 Registry of Significant Environmental Aspects was published on October 31, 2003, and includes a report on the analysis made to select the top 10 aspects during 2003. This registry applies to the development of goals, plans, and actions for 2004.

3.4. Environmental Objectives and Targets

Following the annual update and ranking of the most significant environmental aspects of NETL's activities, NETL revised its objectives and targets for the following year. Environmental objectives are goals that an organization sets for itself to achieve. Environmental targets are specific measurable or quantifiable criteria associated with an objective and these targets must be achieved if the objective is to be met. Performance measures are compared to targets to determine the degree of success in reaching an associated objective. When establishing and reviewing its objectives, NETL considers regulatory requirements and DOE requirements; technological options; financial, operational, and business requirements; and views of interested parties.

NETL's EMS Representative assigns responsibility for the objectives and targets to various individuals with expertise in the subject area. These individuals develop EMPs that specify how NETL plans to attain the objectives and how performance measures are used to show progress. Each year's objectives and targets are approved by the Management Review Team. The approved objectives and targets based on the top ten aspects for 2003 appear in Table 3.4.

Table 3.4. 2003 EMP Objectives and Targets

EMP	Objective	2003 Target
Aspect 1 – Waste Generation, Management, and Disposal Practices		
1.1 Non-hazardous Wastes Generation	Reduce non-hazardous wastes.	Generate less than 241 metric tons for a reduction of 63% from the 1993 level (641 metric ton).
1.2 Hazardous Wastes Generation	Reduce hazardous wastes.	Reduce RCRA Hazardous Waste 75% from 1993 baseline (18.46 metric ton).
1.3 Recycling	Increase the amount of recycled material.	Increase recycling of sanitary wastes stream to 37%.
1.4 Construction Waste	Study the feasibility of recycling construction waste.	Study completed.
Aspect 2 – Energy and Fuel Use		
2.1 Energy Conservation	Invigorate the NETL Energy Management Program.	(1) Generate CBT module for general employees; (2) Participate in Energy Awareness Month; (3) Evaluate at least two applications for the use of off-grid generation; (4) Include provisions for purchase of electricity from "clean" sources in competitive solicitations.

Table 3.4. 2003 EMP Objectives and Targets		
EMP	**Objective**	**2003 Target**
2.2 Energy Use	Reduce energy use in buildings at NETL.	Reduce energy use per square foot in laboratory and industrial (mixed-use) facilities by 17% using a 1990 baseline (369 BTU per 1,000 square feet).
2.3 Annual Petroleum Fuel Consumption	Reduce annual petroleum consumption at NETL.	Reduce annual petroleum consumption (adjusted for mileage) for NETL's vehicular fleet by 20% by 2005.
2.4 Usage Rate of Alternative Fuels	Increase usage rate of alternative fuels at NETL.	Increase usage rate of alternative fuels to 75% by 2005.
2.5 Energy and Environmental Leadership in New Building Design and Construction	Energy and Environmental Leadership in New Building Design/Construction.	Obtain LEED certification for the design, construction, and validation of the Morgantown Technology Support Facilities Building.
Aspect 3 – Hazardous Materials Procurement, Consumption, and Storage		
3.1 Chemical Inventory	Reduce the chemical inventory.	Reduce the chemical inventory by 20%.
Aspect 4 – Industrial Waste Water Treatment Plan Operations		
4.1 Notices of Violation (NOVs)	Improve operation of the waste water treatment facility.	Zero NOVs.
Aspect 5 – Air Emissions		
5.1 a Large Chillers Using CFC's	Eliminate Class I ODS refrigerants.	Replace chillers over 150 tons in 2005.
5.1 b Class I Refrigerants	Eliminate Class I ODS refrigerants.	Reduce CFC inventory from 190 pounds to 166 pounds.
5.2 Greenhouse Gases	Reduce emission of greenhouse gases.	Reduce emissions from 1990 level of 67.4 million pounds to 53.995 million pounds.
5.3 Alternate Fueled Vehicles	Obtain alternatively fueled, light-duty vehicles for official use.	Obtain 75% of all light-duty vehicles as alternatively fueled vehicles.
5.4 Emissions of TRI Chemicals	Decrease air emissions of toxic compounds.	Reduce emissions of toxics chemicals by 20%.
5.5 Volatile Organic Compound (VOC) Emissions	Decrease release of VOCs from painting.	Decrease paint emissions from 42 pounds to 35 pounds.
Aspect 6 – Toxic Chemicals and Energy Releases		
6.1 Chemical Handling Facility	Decrease risk levels to the environment and to workers associated with chemical and/or energy releases.	Perform at least two significant facility and process "fixes" to chemical handling and dispensing facility.
Aspect 7 – Surface Water and Storm Water Discharge		
7.1 Water Discharge	Better understand the impacts of NETL and nearby offsite activities on surface water/storm water resources.	Conduct reviews, inspections, sampling, and analysis.
Aspect 8 – Green Purchasing		
8.1 Buying Green	Green purchasing.	(1) Ensure storeroom purchases recycled material whenever possible; (2) Implement "Green Cupboard"; (3) Evaluate tracking recycled-material purchases by credit card.
Aspect 9 – Offsite Noise Generated Onsite		
9.1 Offsite Noise	Reduce "fence line" noise levels attributable to NETL.	Complete baseline measurements and recommend further actions.
Aspect 10 – Non-Industrial Land Use		
10.0 Land Use	Conserve and enhance NETL's "non-industrial" land.	(1) Establish standing committee with yearly meetings; (2) Prepare feasibility study.

3.5. Environmental Planning and Analysis Procedures

NETL takes a tandem approach to planning and managing its activities in an effort to minimize environmental impacts. Some activities require continuous control for the foreseeable future while other things can be completed in a single effort. Those activities requiring continuous control are managed through NETL ES&H directives. Other activities that represent a one-time or concentrated effort are managed through EMPs. Budgeting and budget-based planning is accomplished through the DOE 5-Year ES&H Planning Process.

ES&H Directives. Most activities that can impact the environment are routine or occur repeatedly during ongoing basic laboratory operations. One example would be the recovery and reuse of ozone-depleting refrigerants from appliances when the appliance undergoes maintenance. Because these activities are not one-time events they are best managed through directives (Orders, Operating Plans, and Procedures). These documents are written for the purpose of describing how routine actions are undertaken to achieve the safety and environmental goals of NETL. For activities that are periodic, the periodicity may be specified either in the directive or in the Register of Periodic ES&H Requirements. Managerial responsibilities are attached to EMS/ES&H function titles, which are assigned to people according to a table of assignments. NETL's directives establish the foundation of the NETL EMS.

Environmental Management Plans. Some activities that can impact the environment can be corrected or changed through a one-time or concentrated effort. An example would be swapping chillers that use ozone-depleting refrigerants for chillers that use different refrigerants. Such short-term actions do not justify revising directives, so EMPs are written. NETL's short-term EMPs are developed and implemented to achieve near-term objectives and targets. The specifics of the process and elements of an EMP are explained in NETL Procedure 450.1-6, *Environmental Aspects, Objectives, Targets, and Management Plans*.

Each EMP specifies the nature of the action to be taken, the time frame for the action, the responsible persons, one or more quantifiable targets, and how performance should be measured against these targets. Quarterly status reports are collected for EMPs to show progress on the activities documented in the plans. EMPs are updated, created, or terminated annually.

DOE 5-Year ES&H Plan. The 5-Year ES&H Plan outlines specific actions, managerial oversight, priorities, time frames, and budget for both short-term activities as required by EMPs and long-term programs as required by NETL directives. It also establishes priorities in case there is a budgetary short-fall. This plan is the primary budgetary planning tool of the NETL ES&H program. Annual updates to the 5-Year ES&H Plan assure the inclusion of changes in directives and EMPs.

3.6. Implementation and Operational Controls

NETL's EMS is implemented through an organizational structure as shown in Figure 3.6. Senior level positions include the Director, who serves as the chief responsible administrator

and as a member of the Management Review Team; the Deputy Director who is the Environmental Steward and Champion; and the Division Director for ES&H, who functions as the program administrator and the EMS Representative. Mid-Level titles and responsibilities are defined within several NETL directives that specify key components of the EMS. The ES&H Division Director assigns employees to the function titles and responsibilities.

A high level of internal communication is necessary to successfully implement any program. NETL's system of line management responsibility requires that line managers communicate effectively with those people working for them. Line managers are NETL's chief means of operational control.

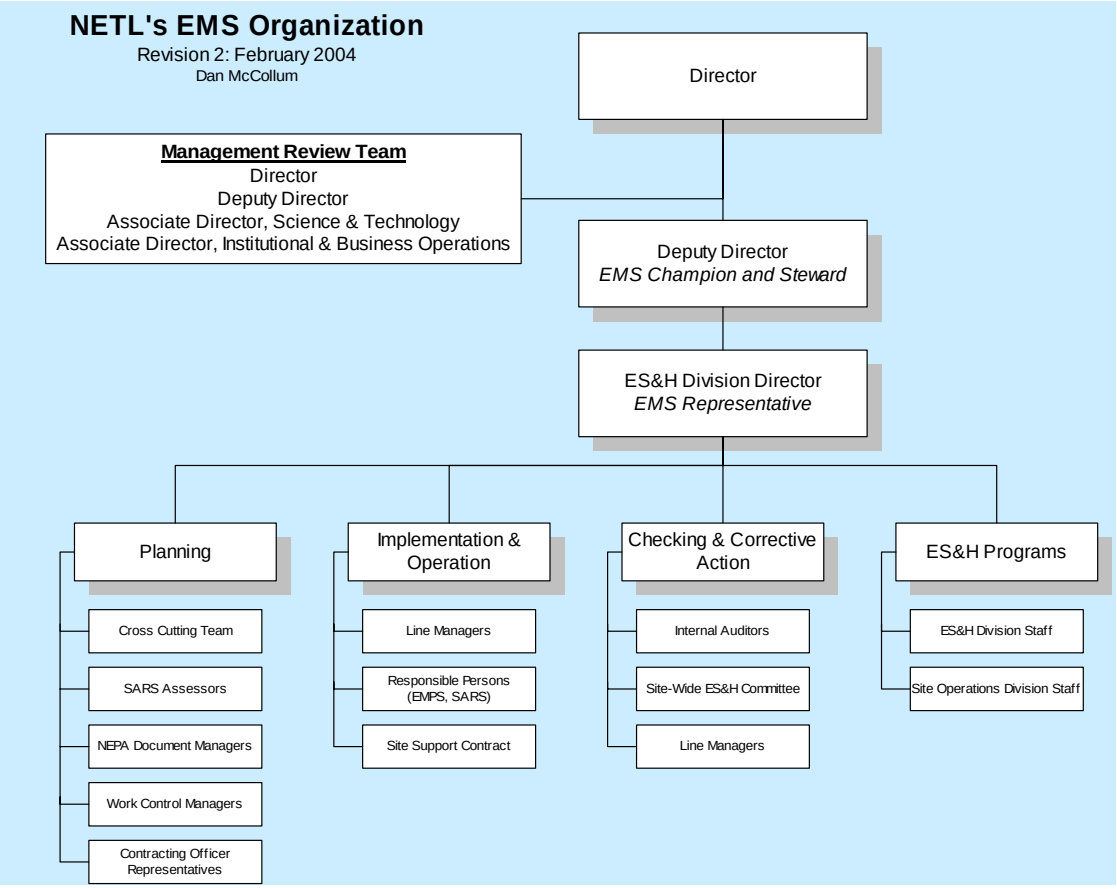


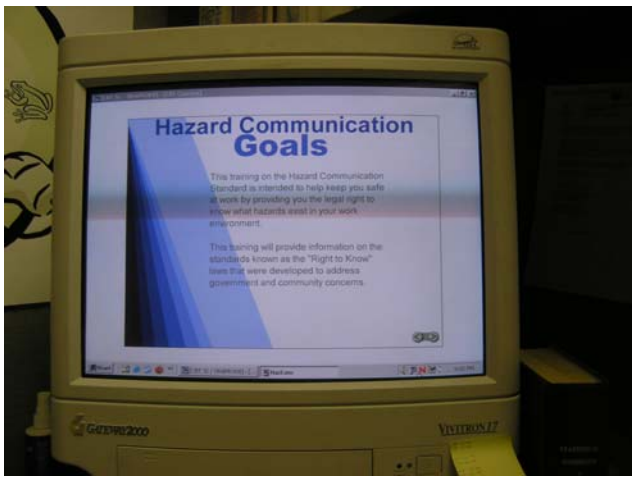
Figure 3.6. NETL's EMS Organization

EMS communication also occurs through the NETL Intranet, a secure internal website containing current versions of all NETL directives, as well as general reference information, forms, and programmatic information. Within the EMS webpage, there is an EMS Roadmap that provides an overview of available information to help employees find the information they need.

An example of the internal communication, one that promotes awareness of regulatory changes and new programs, is the bi-weekly regulatory reviews. Every two weeks, an employee reviews federal and state agency websites while searching for announcements of

changes in environmental laws, regulations, guidance documents, compliance information, and regulatory agency programs. The search also includes a DOE Headquarters website to check for new DOE requirements and guidance. These reviews are circulated to the ES&H staff, and they are posted on the NETL Intranet Post-It Board for all employees to see.

In addition to the Intranet, NETL communicates the EMS to its employees through training, staff meetings, email, and posters. The NETL training program includes general EMS training aimed to make employees aware of the EMS by providing them with information regarding NETL's significant environmental aspects and the potential impacts of their work, employee roles and responsibilities, and potential consequences of a departure from the specified operating procedures. In addition to the general training, program- and job-specific training is required for all staff based on their specific job duties. The NETL CBT software includes an evaluation that asks the user about their work assignments to obtain information regarding which training modules or types of training are needed. Job-specific training can also be requested directly by an employee or line manager. Every employee and their line manager is responsible for ensuring that all required training is complete before beginning work on an assignment.



During 2003, NETL continued to refine its new integrated CBT system. The electronic ES&H Hazard Survey, which is used to determine the list of courses for each employee based on the employee's responses to questions about job duties, was revised to include items related to the ISO 14001 standard, NETL's EMS, and NETL's environmental aspects. Furthermore, upgrades were made to enhance administration efficiency. NETL offered four new CBT courses during FY 2003, Radiological Worker 1 (Morgantown site only), Operations Security, Initial Security Briefing, and Records Management-ES&H Records, as well as several revised courses including ISO 14001 Refresher, General Employee Emergency Response, and Blood-Borne Pathogens.

For purposes of communication with external parties, NETL maintains contact with local community interest groups, keeps an up-to-date Internet site – www.netl.doe.gov – that has EMS information available to the public, and conducts public participation activities under the NEPA program. For projects conducted offsite, NETL uses the NEPA process to identify potential environmental impacts, choose among alternatives that

are available to NETL, invite public comment or participation, plan the project with due regard for the environment, impose mitigation requirements, and make informed decisions about whether to proceed with the proposed project. The NEPA process provides a system for reviewing actions prior to a major expenditure of funds to ensure the environmental and social impacts have been identified, analyzed, and will be mitigated to the extent practicable prior to committing to the project.

To effectively and efficiently implement the EMS, NETL has to maintain operational control of its onsite R&D projects, facilities, and operations. This is accomplished primarily through the SARS process. The process requires proposed projects to be described in writing and subjected to reviews by various subject-matter experts and technical committees. Approval must be granted before a project can proceed beyond the planning stage. Included within this process is a review of the potential environmental impacts, regulatory requirements, safety procedures, and monitoring plans. After a project begins, annual reviews are required to make sure the project is within the bounds and constraints that were previously imposed. If the project requires changes, the SARS package must be modified, and the SARS review is repeated. Other processes for operational control implemented at NETL include the following:

- Environmental Programs: Baseline programs have been established for both defined media (air, surface water, ground water) and likely pollution routes (spills). Each program is explained by a NETL procedure and is managed by a NETL program manager at each site.

- Emergency Response System: NETL maintains processes to respond to accidents and emergency situations and for preventing or mitigating the environmental impacts that may occur. Emergency response staff conduct emergency response drills annually and participate in emergency preparedness training. Following a review of the drills, corrective actions may be undertaken to improve the response capabilities. During 2003, NETL conducted one emergency response drill at the Morgantown site for a release of chemical and biological agents, and NETL conducted another at the Pittsburgh site involving a release of chemicals. In addition, two table-top exercises and other training for the Emergency Response Organization (ERO) were conducted. Emergency Management updated the

certification processes for ERO positions and wrote appointment memos to ensure that everyone involved knows each responder's roles and potential job hazards. The Emergency Response program underwent two external audits: one by the DOE Inspector General's Office and the other as part of the ISO 14001 pre-certification process. The pre-certification audit noted that the program was one of the highlights of NETL's EMS. To further facilitate general emergency response capabilities, NETL designed and began installation of an emergency notification system (ENS) on the research plateau of the Pittsburgh site.

- Contract Requirements: Outside contractor work is controlled at the NETL site through procedures that spell out the ES&H requirements for work on NETL property as well as for NETL-funded work at offsite locations. During 2003, NETL modified the procedure governing offsite contractors performing work on site. The procedure includes additional or revised optional contract clauses that require the contractor to submit an environmental plan and a safety and health plan.

- Affirmative Procurement Program: For procurement of goods at the NETL site, a program has been established to encourage the purchasing of certain goods having recycled content, as outlined in NETL Procedure 541.2-1, *Affirmative Procurement Program.*

An integral part of operational control is documentation. Critical documents are controlled according to a defined process to ensure they can be located; they are periodically reviewed and revised; current versions are readily available; and obsolete documents are promptly removed from potential use. The NETL Intranet is being used as the tool by which up-to-date, approved, and official EMS documentation is being posted and provided to the NETL population.

Core EMS documentation is embodied primarily within NETL's ES&H directives. According to procedure, the most recent and official controlled hard copy versions of NETL directives reside with NETL's Directives Coordinator. Electronic versions of these controlled directives are placed on the NETL Intranet for employee use and are considered to be the official versions. Official copies of ancillary tables, lists, and forms are also maintained on the NETL Intranet and are reviewed and updated as required. ES&H directives that were scheduled for review and updated during 2003 include the following:

Number	Title
450.4A	*Integrated Safety Management Program*
450.4-1C	*Integrated ES&H Management Plan*
450.4-2	*NETL ISMS Processes*
450.1-1A	*Ambient Air Quality Management*
450.1-7	*Drinking Water Protection, Including Backflow Prevention*
450.4-2B	*ES&H Assessments Process*
450.4-3A	*ES&H Performance Criteria and Measurements Process*
450.4-4C	*ES&H Corrective and Preventive Action Process*
450.4-6B	*ES&H Feedback Process*
450.4-7B	*ES&H Continuous Improvements Process*

Number	Title
450.4-9C	*Management of ES&H Aspects of Contracts & Financial Assistance Awards*
450.4-11	*Signs, Labels, Identifiers, and Safety Warning Devices*
450.4-14B	*Environmental Management System (EMS) Auditing*
450.4-16A	*Calibration and Maintenance of Instruments that Monitor and Measure Key Environmental Characteristics*

3.7. Performance Measures

Goal setting is an excellent approach to motivate and monitor performance. NETL's environmental performance and progress toward goals is tracked and reported to satisfy both internal and external requirements. Measures include (1) EMP objectives and targets (see section 3.4. Environmental Objectives and Targets), (2) institutional environmental performance measures, and (3) NETL's 5-year ES&H Management Plan performance measures in response to the requirements of the Government Performance and Results Act (GPRA) of 1993. The set of measures for items (2) and (3) above are presented in Appendix A, Table 3.7a. Environmental Performance Measures. The measures are based on budget cycles and thus are tracked on an FY schedule. They cover performance goals for FY 2003 – October 1, 2002 through September 30, 2003. In addition to these measures, surveillance monitoring is conducted through routine reviews and inspections. This monitoring is presented in Appendix A, Table 3.7b. Surveillance Monitoring.

3.8. Self-assessment Procedures and Corrective Action

NETL uses self-assessment procedures to improve ES&H performance through identification of non-conformances and tracking of corrective and preventive actions. Responsibility and authority for handling and investigating non-conformances, and for initiating and completing corrective and preventive actions, has been clearly defined by NETL as part of its processes. Several practices are employed including internal audits, reviews, and inspections; independent assessments; and reporting through NETL's Assessment Information Input System (AIIS) database.

NETL conducts internal audits of its EMS as required by the ISO 14001 standard (NETL Procedure 450.4-14, *EMS Auditing*). An annual schedule is prepared that ensures the audit of NETL's EMS against the entire standard. There were seven EMS audits performed during 2003, including two readiness assessments and the ISO registration audit which was performed August 19-22, 2003. The readiness assessments used external contractors to review the EMS to ensure conformance to the ISO 14001 standard, regulations, and DOE requirements. These audits have not focused on regulatory compliance; however, the 2003 audits verified that NETL's permits are maintained and that the monitoring and reporting requirements have been met. Maintaining regulatory compliance is part of the ISO standard.

Management's commitment to ES&H is evidenced by participation in management ES&H walkthroughs conducted monthly. DOE and contractor managers, ES&H staff, facility operations staff, and union representatives participate in walkthroughs, which cover all NETL facilities annually. Walkthroughs focus on readily-observable conditions of NETL facilities

(e.g., OSHA regulations, NFPA code, NEC, and environmental requirements). The status of corrective actions resulting from the walkthroughs is provided to senior management quarterly.

SARS assessments are performed on new or modified R&D projects, facilities, and support operation. In addition, annual assessments are performed to ensure continued ES&H compliance. A full discussion of the SARS assessment process can be found in section 3.9. Quality Assurance.

Program reviews are conducted annually by the responsible program managers for each major environmental program (e.g., Water Quality Program, Air Quality Program, and the Ground Water Program). These reviews are informal and may vary in scope and detail. During each review, the program manager attempts to verify that the requirements stated in the procedure are still relevant and are actually being met. When discrepancies are found, the program manager must decide whether to remove a specific requirement from the directive or to enforce the requirement. Some programmatic reviews occur more frequently or focus on monitoring results. These reviews look for trends, with the goal of identifying correctable problems and promptly taking action.

Site support contractor employees inspect various high-risk items periodically (see Appendix A, Table 3.7b. Surveillance Monitoring), document their findings, and provide the results to program managers. For example, daily inspections are performed at the hazardous wastes facility and at selected potential spill sources. Weekly inspections are made of the storm water outfalls and industrial waste water discharge points. Monthly discharge monitoring reports are compiled and reviewed to see if any exceedances have occurred. Likewise, semi-annual surface water monitoring reports are compiled and reviewed. All of this information provides the program managers with an opportunity to assess the effectiveness of their programs.

Meaningful reviews for environmental compliance can occur only if the program managers remain abreast of the changing laws and regulations plus the changing DOE administrative requirements. NETL supports several means of maintaining current awareness of the applicable regulations and laws:

- A bi-weekly regulatory review, generated at NETL, provides updates to the program managers that cover the major changes in laws and regulations, as posted on the websites of selected governmental agencies and as posted by DOE Headquarters (EH-41).

- Private sector publications are received by program managers such as "Environmental Compliance in West Virginia," a quarterly regulatory update bulletin published by Business and Legal Reports, Inc.; environmental compliance updates on CD ROM, published by the Bureau of National Affairs; and various trade journals.

- Program managers also draw on the Pennsylvania Bulletin and the Pennsylvania Code which are produced by the Commonwealth of Pennsylvania, and the Code of Federal Regulations published by the National Archives.

- The NETL library subscribes to several regulatory documents.

- Program managers purchase updated lists of hazardous or regulated chemicals as needed.

- All environmental program managers periodically check the websites of regulatory agencies, such as WVDEP and the Pennsylvania Department of Environmental Protection (PADEP). Currently, NETL staff are testing the possibility of using various on-line regulatory help sources.

- To develop general awareness of new areas of responsibility, program managers may take training classes on relevant statutes and regulations.

Ultimately, NETL relies on the professionalism and personal responsibility of the program managers, who are the subject matter experts of the ES&H Division, to do whatever is necessary for them to stay abreast of the changing laws and regulations.

In addition to internal audits, NETL conducts independent assessments of its ES&H programs through an external contractor to identify strengths, weaknesses, deficiencies, and recommendations for improvement. These external audits aim to provide a fresh look at regulatory compliance and assure that non-compliances are discovered and corrected. The contractor reviews internally- and externally-generated documents associated with the programs; and interviews program managers and other involved personnel.

The independent assessments cover (1) directives, policies, standards (including ISO 14001), permits, and regulations; (2) organization and administration; (3) staffing and training; (4) communication/dissemination of program information; (5) documentation and reporting; and (6) performance measurement. Programs assessed during 2003 were the Chemical Inventory and MSDS System, Fall Protection Program, and Air Quality Program. There were no regulatory compliance findings in any of these three programs. Other noted deficiencies and proposed resolutions that are being implemented include the following:

- <u>Chemical Inventory and MSDS System</u>. *Deficiency*: Area-based MSDS collections were not up-to-date. *Proposed resolution*: Area-based MSDS collections should be eliminated if Intranet access is available to area personnel, if not, the collection should be updated.

- <u>Fall Protection Program</u>. *Deficiency*: There was confusion on the entry procedure for Category I rooftops. HVAC maintenance personnel had concerns about the availability

and adequacy of anchor points. *Proposed resolution*: A combination of engineering and work practice controls should be implemented to safely access all Category I rooftops. An evaluation of anchorage points should be conducted by the site engineering and ES&H divisions to determine the availability and adequacy of anchors.

- Air Quality Program. *Deficiency*: The site support contractor was not providing a quarterly summary of meteorological data to the Air Quality Manager for review. *Proposed resolution*: A quarterly summary of meteorological data should be created by the site support contractor and provided to the Air Quality Manager for review.

Non-conformances generated from all of the self-assessment audits mentioned above are documented using the AIIS database. The AIIS database is used for recording ES&H assessments and tracking corrective and preventive actions. Corrective action status is measured by data provided by AIIS. All NETL employees have access to AIIS, and instructions on the use of the system have been communicated.

NETL Procedure 450.4-4, *ES&H Corrective and Preventive Action Process,* outlines the process by which corrective and preventive action items identified in the various assessments performed at NETL are captured, prioritized, assigned, tracked, closed, analyzed for root cause determination, and incorporated, as appropriate, into the lessons learned and training systems. This process holds responsible persons and their line managers accountable for timely closure of corrective actions implemented within their programs, organizations, or facilities and for dissemination of lessons learned across appropriate organizational elements at NETL.

In brief, after completion of an assessment, the lead assessor uses the AIIS database to generate an assessment record, which is identified by a unique number. Each member of the assessment team can then enter individual findings and concerns that require corrective action. When a finding or concern is entered into the system, a unique number is assigned and cataloged in the database with the associated assessment record. A notification of the finding is sent electronically to the responsible person and line manager. All actions taken regarding the finding are then documented in AIIS.

Other processes used for reporting corrective actions include NETL Procedure 151.1-2, *Occurrence Categorization/Classification and Reporting,* which is used to catalog and investigate major non-conformances as required by DOE; and NETL Procedure 440.1-34, *Injury, Illness, Occurrences Investigation and Reporting,* which sets forth the minimum requirements for injury/illness and property damage investigation and reporting for NETL.

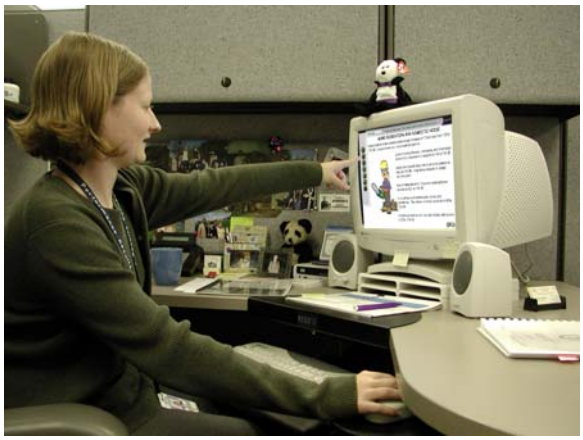
3.9. Quality Assurance

NETL is responsible for a wide range of work activities including basic and applied onsite research; contract administration for offsite research, development and demonstration projects; design, construction, operation, modification, decommissioning, and environmental remediation of NETL facilities; and the management and oversight functions relating to these activities. NETL's Quality Assurance (QA) Program provides the tools to ensure that this work is accomplished safely while minimizing potential hazards to the public, site workers, and the environment. The QA Program is based on DOE's ISM principles and core functions.

Line management accountability for ES&H issues is an integral part of the QA Program and ISM. NETL implements this through work performance goals that are applied to all line managers. Internal assessments and audits also help to ensure that line managers are held accountable for their ES&H responsibilities.

Another principle of ISM is competence commensurate with responsibilities. NETL's ES&H training program provides a process for ensuring that employees get the appropriate ES&H training they need to protect themselves, their coworkers, the public, and the environment.

NETL uses an electronic job hazard survey to identify both general and specific ES&H training courses that employees need. Survey questions focus on potential hazards and responsibilities associated with the various tasks of an individual's job. Training needs are also identified and documented through the SARS process. This training analysis includes defining requirements to show competency including appropriate education, training, and experience, as well as an understanding of the importance of NETL's environmental aspects for project design and operation, including support operations. ES&H training records are managed through NETL's CBT system, DOE and contractor human resource departments, and official SARS files.



The SARS process is the backbone of NETL's QA Program for ES&H. Much of the needed data regarding hazards and environmental impacts is generated from this process; therefore, it is important that it work effectively. Before any project begins, various subject matter experts review all aspects of the proposed project, from construction to operation. The process includes a review of the potential environmental impacts, regulatory requirements, safety procedures, and monitoring plans; and it covers all R&D projects, facilities, and site operations. Findings from these reviews are entered into the AIIS database to be tracked. Tracking assures resolution and closeout of the finding.

NETL's R&D SARS procedure (NETL P 421.1-1B) describes the process and procedural requirements for a safety analysis and review of onsite R&D projects. The purpose of this

safety analysis and review is to ensure that risks associated with NETL's onsite R&D projects are analyzed, understood, and then eliminated, mitigated, or controlled to a degree acceptable by line management before work begins. All onsite R&D projects receive a SARS Operating Permit after successful completion of the SARS review.

During 2003, the R&D SARS procedure was revised to include the addition of NETL's Project Quality Assurance Engineers (PQAEs) as part of the SARS process. PQAEs are involved in hazards analysis, safety analysis review, and the annual ES&H assessment. Other changes adopted include the addition of ISO 14001 requirements and the formal inclusion of project-specific safety analysis requirements, shakedown, and reviews and responses sections in the safety analysis. Screening Analysis Questionnaires (SAQs) were added to the review to collect information that is used in the identification and ranking of environmental aspects.

An annual SARS Review is conducted on all SARS-permitted onsite R&D projects by a team made up of, at a minimum, the project's Responsible Person (or designee), an ES&H Representative, a PQAE, and the site's Environmental Manager. The assessment includes: (1) a check for significant modifications made to the project without appropriate authorization and SARS review; (2) an ES&H Division inspection of the project area covering chemical hygiene, OSHA requirements, and environmental compliance; (3) a review of the SARS files and the project area for engineering design and QA/Quality Control concerns; and (4) a review of problems found in the project area or in the SARS file. Records from each annual assessment are added to the SARS file.

Findings from the annual assessment are assigned a priority by the assessor or ES&H Representative: Priority 1 findings are urgent actions and shall be corrected within 7 days; priority 2 are serious deficiencies – 45 days; priority 3 are non-serious – 120 days; and priority 4 are de minimus – 365 days. After assignment, findings are sent to the Responsible Person for resolution and to the responsible line manager as notification using the AIIS database for tracking.

NETL's Facility SARS procedure (NETL P 421.1-3C) covers onsite facilities including buildings, trailers, utilities, services, structures, roads, and walkways. The purpose of this safety analysis and review is to ensure that facilities are constructed, maintained, and modified in compliance with applicable codes, regulations, and standards. The Facility SARS procedure provides for both construction permits – required prior to new construction or modification of an existing facility – and use permits – required prior to occupancy of a facility or changing the use of a facility.

An annual ES&H assessment is completed on all SARS-permitted facilities by an ES&H assessment team made up of, at a minimum, the facility's Custodian and ES&H staff including the OSHA Safety Manager, Chemical Hygiene Officer, Environmental Manager, and Life Safety Officer. Findings are assigned a priority based on significance and recorded in the AIIS database for tracking.

NETL's Support Operations SARS procedure (NETL P 421.1-2A) covers onsite support operations (construction, operation, maintenance, renovation) and ensures that associated risks

are analyzed, understood, and eliminated, mitigated, or controlled to a degree acceptable by responsible line management prior to potential adverse impacts on workers, the public, the environment, facilities, or equipment.

During 2003, the Support Operations SARS procedure was revised to reflect changes in requirements as a result of incorporation of ISO 14001, EMS considerations, and the revised control of operating procedures. Screening Analysis Questionnaires (SAQs) were added to the review to collect information that is used in the identification and ranking of environmental aspects.

An annual assessment is conducted on all SARS-permitted support operations. The purpose of the annual assessment is to determine the continued validity of the SARS package and to address any changes in the operations. Typical items that might be re-evaluated include changes in site conditions, worker training, operating procedures, and effectiveness of controls.

3.10. Management Review Process

Management review of NETL's EMS ensures that the policy and program remain appropriate and effective. The NETL's EMS Representative and the QA Manager conduct semi-annual reviews with the Management Review Team, which includes the NETL Director, Deputy Director, Associate Director for Institutional and Business Operations, and Associate Director for Science and Technology (see Figure 3.6. NETL's EMS Organization).

During the semi-annual meetings, the Management Review Team reviews the environmental policy, objectives and targets, internal and external audits, and other related issues. Decisions by the Team are documented and implemented. Management involvement guarantees the projects are funded and the appropriate priority is placed on the issues that are identified.

MORGANTOWN, WEST VIRGINIA

4. MAJOR ACTIVITIES IN 2003

The Morgantown site went through many changes during 2003. Following is a brief discussion of the major activities that occurred and their impact on the site.

4.1. Gas Process Development Unit

During 2003, shakedown testing continued on Morgantown's largest lab facility, the Gas Process Development Unit (GPDU). The GPDU is a unique facility designed to study various processes for fuel gas desulfurization at elevated temperatures and to evaluate the commercial readiness of candidate desulfurization sorbents. This facility features two transport reactors and two fluid-bed reactors, any two of which can be fully integrated to allow sulfur absorption in one reactor while sorbent is regenerated in another reactor. This gives four possible reactor configurations. The temperature and pressure limits are 1,400 F and 400 psia. Sulfur-laden fuel gas for the GPDU operation is produced in a Syngas Generator by partially combusting natural gas with air in the presence of sulfuric acid. The benefit of the GPDU facility over smaller, bench-scale facilities is that the gas-solids contact time is more representative of commercial-size processes; solids durability testing is more representative; and commercial-size control and monitoring issues can be addressed. One of the key long-term uses of this facility is to support the development and use of the Integrated Gasification Combined Cycle technology for power generation.

During 2003, the GPDU facility was run only for purposes of shakedown testing, which is the means of checking the equipment for proper operation prior to conducting experiments. When equipment fails to operate correctly, improvements are made. There were 496.79 hours of shakedown operations with emissions during 2003. This value includes 260.84 hours of emissions from the flare stack. The quarterly reports, which are regulatory requirements, are presented in Appendix A, Table 4.1. 2003 Quarterly Operations and Emissions Reports for Gas Process Development Unit.

4.2. New Property

On October 16, 2003, NETL purchased 4.96 acres of land adjacent to the northwest corner of the site. The land was purchased from Augusta Systems Incorporated for use as an access road to the Collins Ferry Substation, as well as for future projects such as a childcare facility.

The location of the property will provide for increased security by keeping non-employees outside the fence, including employees of Allegheny Power and users of the childcare services.

During the summer of 2002, Skelly and Loy, Inc., produced an EA for the proposed Morgantown site improvement projects, including the purchase of the property. As part of the EA development, Skelly and Loy, Inc., conducted a Phase I Archaeological Survey and Historic Resource Survey, which included a professional evaluation of the two houses on the property and 37 shovel test pit examinations for archaeological items. They also reviewed documents and literature at local libraries and at the State Historic Preservation Office to gather further insight into the cultural and archaeological resource potential of the property. To further support the EA and to show due diligence prior to purchase, the Army Corps of Engineers performed a Phase I Environmental Site Assessment to search for evidence of possible hazardous materials or contamination on the parcel of land. The EA resulted in a finding of no significant impact for the proposed project.

Work performed during 2003 included grading for the Collins Ferry substation access road, installation of high-voltage transformer vaults, and installation of conduit from the substation to the power line poles along Collins Ferry Road. During December 2003, the two houses that were standing on the property were removed. Asbestos testing and abatement was performed by Alert Environmental, Inc., prior to demolition by AAMC, Inc. The material from the houses was taken to a State-approved disposal site.

4.3. Parking Garage

As the first Morgantown project of the NETL Technology Support Facilities Program, a parking garage was constructed in anticipation of the need for additional parking space when a new administrative building is constructed (currently scheduled for groundbreaking during 2006). This new administrative building would occupy a part of the existing parking lot, so substitute parking space would be required. The parking garage is a five-floor open-air precast / cast-in-place concrete structure. Upon completion, which is scheduled for 2004, it will contain 347 automobile parking spaces and 21 motorcycle/bicycle spaces. The parking garage is located north of the existing B-7 and is adjacent to the north side of the North Parking Lot. Prior to building the parking garage, this site was occupied by a gravel parking lot and some mowed lawn space.

Construction began during March of 2003 with earth work and the removal of some trees along the margin of the NETL fenced property. The NETL perimeter fence was moved several feet to provide work space around the garage. Erosion and sedimentation control, consisting of silt fencing, was installed according to customary engineering practices. A special storm water permit was not required because the disturbed area was less than 1 acre. Foundation construction began during May, and the pre-cast structure was completed in October 2003. The most notable environmental occurrence was a discharge of orange ground water from the foundation excavation. This water was intercepted by foundation drains and diverted to the nearby ephemeral stream, where this water had previously discharged at a seep. Tests of this water during previous years and the monitoring of nearby wells had documented that the color results from iron minerals that naturally weather from the undisturbed local bedrock. During the construction of the parking garage, there were no reported spills or leaks of fuel or significant quantities of other fluids. One hydraulic hose burst occurred on a piece of equipment.

4.4. Collins Ferry Substation

Through an agreement with Allegheny Power Company, a new substation is being built on DOE-owned land. The Collins Ferry substation will be the fourth to service the Morgantown area as well as the largest. It will be used to increase capacity for customers in the Suncrest/Star City area of Morgantown. NETL will get a dedicated electrical feed – the access point for all electricity for the site – in exchange for leasing the property and maintaining the access road. The dedicated line will allow for quality power and increased reliability to the

site. The substation access road agreement was signed June 1, 2003, which allows Allegheny Power access to the substation as well as installing underground conduit for future projects.

Construction of the Collins Ferry substation began during the Winter of 2002 and is projected to be completed by December 2004. During 2003, the site excavation was completed, the access route from Collins Ferry Road was developed, and high voltage conduit was installed.

The new Collins Ferry substation sits adjacent to the NETL's old substation, which was constructed in 1982. During 2003, a foundation was built to hold the new high voltage breaker switch house. This work was performed in preparation for the increased capacity that will be available once the Collins Ferry substation is completed.

4.5. Ethanol Refueling Station

Installation of an ethanol refueling station was completed at the Morgantown site on July 10, 2003. The refueling station supports the Energy Policy Act of 1992 (described in EO 13031) which requires that by 2005, 75 percent of all light-duty vehicles acquired by federal agencies will be alternative-fuel vehicles. The requirement increases to 90 percent by 2010. In addition, EO 13149 requires the federal government to reduce petroleum use by 20 percent by 2005. NETL has incorporated the ethanol refueling station into an EMP to reach a key objective of increasing the use of alternative fuels.

The ethanol refueling station was built to meet the National Fire Protection Association's (NFPA) Flammable and Combustible Liquids Code and the Code for Motor Fuel Dispensing Facilities and Repair Garages. The ethanol tank has double wall

construction and a capacity of 1,000 gallons. The tank is located on a concrete pad with a fuel catch basin assembly that is used to catch any spillage of fuel that may occur. The refueling station also has a lightning diversion assembly and a leak detection device. The refueling station is operated in the same manner that a person would use to fuel their personal vehicle.

Alternative fuel use has the two-fold benefit of improving air quality and enhancing the nation's energy security. Of the 7,013 gallons of alternative fuels used in 2003, NETL used 6,412 gallons of compressed natural gas (CNG) and 601 gallons of ethanol. NETL has 20 flexible fuel vehicles (operate on both ethanol and gasoline) and 26 CNG or bi-fuel vehicles (operate on either CNG or gasoline).

5. ENVIRONMENTAL COMPLIANCE

5.1. Compliance Assessment Process

The best way to ensure continued compliance is through frequent and comprehensive assessment. NETL has several processes in place to perform environmental compliance assessments including SARS reviews, program reviews, regulatory agency inspections, management walkthroughs, external audits, and in-house audits. These processes are discussed in detail in Sections 3.8 and 3.9 of this report.

In addition to NETL's internal efforts toward quality assurance, regulatory agency inspections are conducted at the discretion of the agency and may include only selected subsets of the regulatory jurisdiction of the agency. These inspections are usually announced in advance or are periodic, so they are rarely a complete surprise. Inspectors from regulatory agencies thoroughly know the applicable regulations under their jurisdiction, so their inspections are the most valuable from a compliance assurance viewpoint.

A regulatory inspection on November 27, 2002, resulted in an NOV. During February 2003, the WVDEP issued a NOV for four violations of the West Virginia solid wastes regulations. All of the violations involved inadequate or improper marking and labeling of waste materials. As a result of these violations, NETL settled with WVDEP on a penalty payment of $20,098.00.

5.2. Compliance Status

5.2.1. Summary of Permits

A summary of environmental permits for the Morgantown site is provided in Table 5.2.1.

Table 5.2.1. Summary of Permits – Morgantown Site

Permit Number and Name	Issue Date Exp. Date	Regulatory Agency	Description
R13-1768 Permit to Construct, Modify, or Relocate Stationary Sources of Air Pollutants	May 1, 1995 to N/A	WVDEP, Office of Air Quality Permitting Section	This permit allows for the construction and modification of the Experimental Syngas Generator/Hot Gas Desulfurization Process Development Unit (GPDU). It sets forth hours/type of operation and required record-keeping including reporting requirements.
061 00064 Certificate to Operate	Jul 1, 2003 to Jun 30, 2004	WVDEP, Division of Air Quality	This permit allows for the operation of the Syngas Generator/GPDU. The certificate is valid for 1 year.
MUB 012 Industrial Waste Water Discharge Permit	Jul 1, 2000 to Jun 30, 2005	Morgantown Utility Board (MUB)	This permit allows for the operation of waste water pretreatment facilities and discharge into the MUB Sanitary Sewer System. It sets discharge limits and monitoring requirements, compliance with the Morgantown Industrial Waste Ordinance, reporting requirements including accidental discharge reporting, and testing procedures.
WV0111457 General WV/National Pollutant Discharge Elimination System (NPDES) Storm Water Permit	Feb 11, 1999 to Feb 10, 2004	WVDEP, Office of Water Resources	This general permit covers storm water associated with industrial activity. It identifies activities that are covered by the permit and the associated monitoring and analysis requirements for each. Also discussed are the Storm Water Pollution Prevention Plan and Ground Water Protection Management Plan required by the permit.
WVG610042 Registration Permit for General WV/NPDES Storm Water Permit	Nov 12, 1999 to Feb 10, 2004	WVDEP, Office of Water Resources	The general permit registration allows NETL to operate under permit WV0111457, above. The registration establishes the schedule for submission of Discharge Monitoring Reports, as well as discussions on monitoring, sampling, and analysis requirements. This registration makes the general WV permit applicable to NETL.

5.2.2. Environmental Restoration Activities

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-type Offsite Cleanups. There are four offsite remediation activities that were ongoing during 2003. All four of these sites have volatile and semi-volatile compounds in the ground water and soils. Primarily the volatiles are benzene, toluene, xylene, and ethylbenzene. The semi-volatiles are primarily phenolic compounds. Tests of underground coal gasification and tests of *in-situ* oil shale retorting caused contamination at these sites.

The largest cleanup activity during 2003 occurred at the Rock Springs Oil Shale Retort Project at Rock Springs, Wyoming. Cleanup activities were ongoing at Sites 4, 5, 7 and 9. Construction of cleanup systems was ongoing at Site 6, where cleanup efforts will soon begin.

The second largest cleanup activity occurred at the Hoe Creek Underground Coal-Gasification Project near Gillette, Wyoming. At both Rock Springs and at Hoe Creek, cleanup was undertaken during 2003 by air sparging and in-situ bio-remediation. Contaminant levels continue to be reduced at each site, with the benzene, toluene, ethylbenzene, and xylene (BTEX) compounds showing reductions of approximately 83 percent and 98 percent, respectively at the two sites. Ground water has been returned to its original category of use at the Hoe Creek site. At Hoe Creek site II, operations were shut down for a 6 month period to evaluate contaminant rebound in the ground water. Following the 6 month period, shutdown and operations modes will alternate between site II and site III for 18 months. A one year stability monitoring period will be required by the Wyoming Department of Environmental Quality (WDEQ) before the sites will be considered for closure of the site remediation efforts.

Ground water sampling at the Hoe Creek Underground Coal Gasification Project near Gillette, Wyoming.

Cleanup activities were also undertaken at the Rocky Mountain One Underground Coal-Gasification Project and the Hanna/DOE Underground Coal-Gasification Project, both located near Hanna, Wyoming. At these two sites, the ground water and soil cleanup actions have been completed to the satisfaction of the WDEQ using conventional pump-

and-treat processes coupled with activated carbon filters. During 2003, DOE undertook a sampling and analysis of the re-vegetated areas, as required by the WDEQ for the close-out phase and reclamation performance bond release.

Additionally, there are three decontamination and decommissioning (D&D) activities that are in the closeout phase, and demolition will soon occur. The Air Products Laboratory D&D Project aims to cleanup contaminants from bench-scale tests of coal gasification processes at the Allentown, Pennsylvania, facility. At this site, improper handling of by-products and cleaning solvents have led to the contamination. Elsewhere, pilot-scale gasification plant operations led to contamination at two other sites: the Air Products Gasification Facility D&D Project in La Porte, Texas, and the Foster-Wheeler Gasification Facility at Livingston, New Jersey. For all three D&D sites, the contaminants are primarily coal tars. Swab sample tests during 2003 have indicated that the coal tars contain phenolic compounds and other semi-volatile (non-chlorinated) hydrocarbons. The next step will undertake disassembly of the project hardware for cleaning and disposal or sale, pending final closeout negotiations and approval.

Project oversight is being provided by NETL for one cleanup activity undertaken by the WVU Water Research Institute jointly with the U.S. Army Corps of Engineers. This cleanup activity is located at the former Lockbourne Air Force Base, located near Columbus, Ohio, where the contamination results from leaking jet fuel (JP4) tanks and lines. The JP4 saturates a shallow soil zone and includes benzene, toluene, xylene, and ethylbenzene. Previously, pilot tests were conducted using the WIDE™ technology for vacuum-operated, close-spaced, wick-drain removal of jet fuel. These tests successfully demonstrated approximately 97 percent recovery of the jet fuel, which could be used to fuel the diesel air compressors for the vacuum pumps. During 2003, this cleanup effort was on standby and awaiting further funding by the U.S. Army Corps of Engineers.

CERCLA/Superfund Amendments and Reauthorization Act (SARA) Onsite Cleanups. The Morgantown site of NETL had no National Priorities List (NPL) sites during 2003, and has never been proposed as an NPL site. Furthermore, NETL has never been on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list or the State Hazardous Waste Site list (state equivalent of CERCLIS). However, when last checked, the Morgantown site was on the EPA CERCLIS-NFRAP (No Further Remedial Action Planned) list, which names sites where either no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require CERCLA action or consideration for the NPL. There were no reportable releases during 2003.

During the past 25 years, there have been several onsite cleanup activities. Some of these activities followed the closure of facilities that had apparently leaked for a number of years. Other cleanup activities followed discrete spills. Table 5.2.2a. provides an overview of these events in terms of the source, contaminants, and current status of the site. A list of the specific chemicals or materials of concern is presented in Appendix A, Table 5.2.2b. Properties of Potential Contaminants.

Table 5.2.2a. NETL Potential Contamination Sources and Cleanup Actions

Potential Source	Potential Contamination	Current Status
Underground Storage Tanks	BTEX	All tanks removed 1991 or before.
42-Inch Coal Gasifier	Coal Tar Polynuclear Hydrocarbons, BTEX	Gasifier removed; soil removed to 10 feet in 1994.
Stretford Pad	Stretford Solution (vanadium and cadmium compounds)	Pad removed; soil removed to 10 feet in 1994.
Waste Water Pond 001	Coal Tar Polynuclear Hydrocarbons, BTEX, metals	Removed 1995; site filled and regraded.
Waste Water Pond 002	Coal Tar Polynuclear Hydrocarbons, BTEX, metals	Removed in mid 1980s.
Waste Water Pond 005	Coal Tar Polynuclear Hydrocarbons, BTEX, cyanide, metals	Removed 1985; backfilled and paved as a parking lot.
Contaminated Sewer Lines	Mercury	Removed from B-1 to a point east of B-3; lines from B-3 to Burroughs Run remain.
Underground Lines from B-4 to Pond 005	Coal Tar Polynuclear Hydrocarbons	In place; soil investigated 1996.

The most recent release occurred on May 2, 1994, when ethylene glycol (a common automotive antifreeze agent) leaked from a commercial-scale air conditioner chiller for B-1, which is an administrative office building. The release was discovered when a pink color appeared in the waste water clarifier, which is a unit that provides pretreatment prior to release into the municipal sewer. All the released material had been directed into a drain pipe, so none of the material escaped into the soil or directly into surface water. NETL immediately reported the spill to the National Spill Response Center and to the Morgantown Utility Board (MUB), the operator of the municipal sewer system that received the contaminated waste water. The leak was repaired and a leak detection system was installed. No regulatory actions or complaints resulted.

Prior to the purchase of 5 acres of land located immediately north of the North Parking Lot, the Army Corps of Engineers conducted a Phase I Environmental Site Assessment on this property. This assessment, conducted during the spring of 2002, aimed to demonstrate "due diligence" when investigating land prior to purchase as a potential defense to CERCLA liability. This investigation found no evidence of hazardous materials that would give rise to CERCLA liability. The purchase was finalized during October 2003.

RCRA Cleanups. The NETL Morgantown site has never had a non-UST RCRA corrective action and, when last checked, was not on the Corrective Action Report (CORRACTS). For purposes of RCRA regulation, the Morgantown site is a large quan-

tity generator, which is defined as an entity that generates in any month more than 1000 kilograms of non-acutely hazardous wastes or more than 1 kilogram per month of acutely hazardous wastes. Therefore, Morgantown is found on the RCRIS-LQG (Resource Conservation and Recovery Information System for Large Quantity Generators) database. The neighboring Mylan Pharmaceuticals, Inc., is also on this list. Three nearby (within a quarter mile) shops for automobile repair and body work are on the RCRIS-SQG list for small quantity generators.

During 2003, there were no RCRA spills or releases, no remediation actions, and no special surveillance actions. Ground water monitoring is conducted routinely and provides base-level surveillance for the entire site.

As indicated in Table 5.2.2a, an underground storage tank removal project was undertaken during and prior to 1991 to properly close several fuel and waste oil tanks. Tank sites were assessed for soil contamination at the time of tank removal. Soil contamination was found and was removed as part of the closure activities. Subsequent ground water monitoring has not detected the presence of dissolved petroleum fractions.

Federal Facilities Compliance Act Actions. The Federal Facilities Compliance Act waived sovereign immunity for the federal government executive agencies regarding the payment of fines and civil penalties for violations of RCRA. However, it permitted executive agencies to avoid RCRA's land storage ban on mixed radioactive wastes. It gave EPA explicit authority to issue compliance orders to federal agencies for violations of RCRA. It also requires EPA to conduct an annual inspection of every federal facility that has a RCRA Treatment, Storage, and Disposal (TSD) permit. EPA's Federal Facilities Division did not contact NETL during 2003 regarding any possible compliance actions or issues. The EPA did not levy any civil fines on NETL during 2003. Because NETL does not own or operate any TSD facilities, the annual inspection provision does not apply. NETL does comply with local and state laws regarding the handling of hazardous wastes and is subject to civil penalties for violations. For example, during February of 2003, the Morgantown site received one citation from WVDEP for a violation of the West Virginia solid waste regulations (WV version of RCRA) resulting in an administrative settlement for $ 20,098.00 on June 25, 2003 (see section 5.2.3).

TSCA Actions. There were no reported spills or releases of TSCA regulated substances [e.g., pesticides, polychlorinated biphenyls (PCBs), formaldehyde, methylene chloride], other than asbestos. However, there has been an ongoing program of asbestos removal or encapsulation during recent years. Most of these actions are small, such as the removal of asbestos coverings from sections of pipe prior to making a plumbing repair. During 2003, there were four asbestos abatement actions at the Morgantown site. One action occurred in B1 on the third floor, one action occurred in a B5 boiler (annual cleaning of the boiler interior), one was the replacement of asbestos side panels and cooling fins on a small project cooling tower, and one action occurred in B2, on the south wall where a hole was cut for a vent pipe penetration. Approximately 1 cubic foot of asbestos was removed from B2. At NETL, asbestos abatement work is performed by an asbestos remediation contractor who utilizes trained and certified technicians. NETL requires that

asbestos abatement firms provide copies of certificates to the Asbestos Program Manager. The contractors provide for the disposal of asbestos and provide NETL with a manifest after they have shipped the wastes to a disposal facility. NETL office workers are not exposed to asbestos hazards during their routine work. Abatement work is performed to minimize the risk to NETL maintenance workers who would perform maintenance work at these locations.

FIFRA Actions. During 2003, there were no restricted-use pesticides, herbicides or defoliants kept on site. Only general use pesticides were kept and used for routine insect control. The NETL ES&H Division is not aware of any spills or releases of FIFRA regulated substances (e.g., pesticides, herbicides, defoliants).

5.2.3. Waste Management and Pollution Prevention Activities

RCRA Program. RCRA classifies sites as generators, transporters, or TSD facilities. The Morgantown site holds a permit as a large quantity generator and is under the jurisdiction of WVDEP. Although hazardous wastes generation rates are low for most months, occasional lab activities result in the generation of larger quantities that exceed the threshold for large quantity generators. See Tables 5.2.3a through 5.2.3c for summary information on wastes generation and management. NETL does not hold a permit as a transporter or TSD facility for hazardous wastes, nor does it hold a permit for treatment or disposal of non-hazardous wastes that would be regulated under RCRA subtitle D. Hazardous wastes may be stored on site for no more than 90 days without a permit. During 2003, hazardous wastes were transported to the storage and treatment facilities of American Environmental Services (AES), Inc., located in Westover, a town adjoining Morgantown. At the AES facility, small packages of similar wastes are combined and repackaged for more cost-effective shipment to a final disposal facility, selected by AES. Non-hazardous wastes (normal office wastes that are not recycled and cafeteria wastes) are transported by Browning Ferris Industries (BFI), Inc., to the Meadowfill landfill, located near Clarksburg, West Virginia.

NETL complies with the RCRA manifest requirements by initiating documentation when hazardous wastes are shipped from the Morgantown site. The NETL Hazardous Wastes Coordinator initiates the documentation and files copies of the manifests, forms, waste profiles, contracts, and other documents. Ultimately, these documents are sent to the NETL ES&H Records Center.

Table 5.2.3a. 2003 Hazardous Waste Generation NETL-Morgantown		
Waste Stream	**Quantity Generated (lbs)**	**Quantity Shipped (lbs)**
Lead Paint Chips	105	105
Waste Mercury	15	15
Waste Paint	220	220
Photographic Lab Water	290	290
Propane Cylinder	5	5
Waste Chemicals (Labpacks)	990	990
TOTAL	**1,625**	**1,625**

NETL does not have an onsite program to treat hazardous wastes or render them harmless; however, NETL does recycle some semi-hazardous materials (materials classified under RCRA as universal wastes). During 2003, NETL recycled batteries, fluorescent light bulbs and various items containing mercury.

Onsite hazardous wastes handling is governed by NETL Procedure 435.1-1, *Waste Handling, Storage, and Disposal*. This procedure requires lab workers to put their own hazardous wastes into labeled containers (drums, buckets, bottles) in their labs. NETL does provide various types of containers and labels for this purpose. Labels must indicate the contents of the container and the responsible party (producer of the wastes). An internal manifest is attached to wastes containers for internal tracking and identification. Laboratories have satellite accumulation areas where the wastes await transport by technicians to the on-site collection area located in B-33. Technicians who transport the wastes on site inspect the wastes for proper containment, labels, and completed documentation – they will not move wastes that lack these items. When unlabeled and unidentified materials are found, NETL sends samples to a contracted laboratory to test for RCRA hazardous characteristics (e.g., toxicity, ignitability, reactivity, corrosivity).

According to the procedure, the collection occurs each month or as needed. At the collection area, a technician checks the containers for appropriate internal manifests, and the wastes may be repackaged into "lab-packs" for purposes of transportation. Wastes are held only temporarily in the collection area until the next pickup by the contracted transporter. Storage on site is less than 90 days for "non-universal" hazardous wastes regulated by RCRA. The Hazardous Wastes Coordinator assures proper labeling in on the wastes at the time of pickup by the contracted transporter.

Despite training and the various administrative controls, including the planning that precedes the issuance of a SARS permit, there is always the possibility that someone would dispose of hazardous materials down a sink or toilet or floor drain. It is a violation of NETL procedures to put hazardous materials into sinks, toilets, floor

drains or regular garbage cans. During annual inspections and during periodic walk-through inspections, ES&H staff visually check garbage cans for evidence of improper disposal practices. To check for improper flushing of chemicals, ES&H staff members sample waste water discharges monthly for metals, various organic compounds, pH, BOD, total suspended solids, and TOC. A full suite of chemical analyses are conducted on waste water annually. If anomalous readings are obtained during the monitoring of the dedicated laboratory waste water sewer system, troubleshooting begins. If necessary, Morgantown ES&H staff will sample fixture traps and drains to locate the source of chemicals. Spill kits are provided in areas where chemicals are handled. Floor drains are connected to the on-site pretreatment facility, where there is a possibility for NETL staff to detain and neutralize spilled chemicals.

Morgantown stores its wastes indoors within a specially designated area, which requires a key for entry. Extra spill protection is provided by an epoxy coating on the concrete floor, which drains to sump pumps connected to catch containers. The building is constructed with blast-abatement and spill containment features to minimize the potential risks of spark-induced ignition and the spread of contaminants in the event of an explosion or leak. Each class of wastes is collected into separate rooms to minimize the chance that a leaked material could come into contact with an incompatible substance to cause a reaction. A site support contractor performs daily inspections and keeps records of the results. RCRA-required worker training is mandatory for all technicians who collect and handle hazardous wastes. That initial training is supplemented periodically with refresher courses. All NETL employees take general awareness training that is offered through NETL's CBT software. Those persons who generate hazardous wastes in the labs take additional lecture-based training.

There are no hazardous waste ponds or underground storage tanks for any materials at the Morgantown site. These items were phased out in the past, and most contaminated soils associated with these items were removed. Currently, there are above-ground storage tanks holding gasoline, diesel fuel, ethanol and fuel oil. The tanks holding gasoline are inspected weekly for leaks. Quarterly interstitial monitoring is performed on the double-walled tanks that hold other materials. NETL installed most of these tanks during the mid 1990s. The ethanol tank was installed during 2003 as an alternative fuel supply for fleet vehicles. Aboveground fuel tanks do not require certifications for the State of West Virginia. At the Morgantown site, there are additional above-ground storage tanks holding acids and bases as lab feeds. For the GPDU, there is one tank holding sulfuric acid (H_2SO_4) at a 93 percent concentration, and there are two tanks holding sodium hydroxide (NaOH) at 50 percent and at 20 percent concentrations. For these tanks, the sump water

(which should be only rainwater) in the secondary containment is monitored before discharge. If the pH of the rainwater collected in the sump is outside the normal range, it is discharged to the clarifier for pH control prior to discharge into the municipal sewer system. Outdoor piping is not automatically monitored, but most pipes are run above ground where leak checks can be performed visually. Acid and base pipes feeding the GPDU run underground and do not have special leak detection devices but are encased in PVC pipes which slope back to the secondary containment pits to prevent soil contamination.

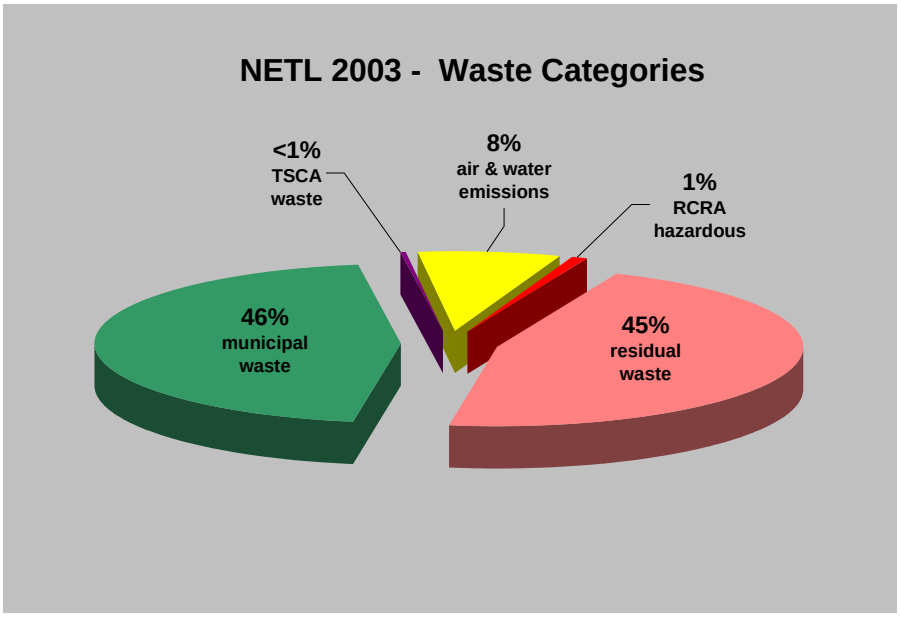
Chemical acquisitions are also controlled. All purchases of chemicals must be approved, and a search is done for existing supplies of the chemicals onsite before a purchase is made. When shipments of chemicals arrive at the warehouse, they are inspected for labels and for MSDSs. If MSDSs are not provided in the shipment or otherwise made available, the shipment will be returned to the sender.

To deal with the possibility of emergencies, the Morgantown site maintains an emergency response system, including a hazmat team. Several NETL directives specify the means of response to emergencies. If a spill occurs the first person to notice the spill has the responsibility to report it immediately to site security. This will initiate an investigation and response that is proportional to the perceived potential threat or risk. NETL personnel who participate in the hazmat team and other response teams are trained to contain and control a spill or cleanup, as warranted. Emergency response drills are conducted annually on a staged accident. Where potentially needed, lab-specific operating procedures specify how to control and shut down various lab activities in the event of an emergency.

During 2003, hazardous wastes management inspections focused on proper control of hazardous materials within the lab spaces. Findings were made and entered into the AIIS tracking system. There were 25 findings of satellite accumulation areas not having locks and not having a designated responsible person to hold the key. There were 21 findings of improper chemical or hazardous wastes segregation. Hazardous wastes must be separated from unused chemicals and from non-hazardous wastes. There were five findings of improper labeling. All hazardous wastes containers must have identification labels and barcodes. There were four locations where a satellite accumulation area was needed but did not exist, and there were four cases of existing satellite accumulation areas not being locked when not attended. There were two instances of hazardous wastes being stored outside of any type of protected area, and one case of improper containment.

These findings resulted in an additional finding against the DOE Program Manager for hazardous wastes management. This finding required a modification to the NETL directive to require each satellite accumulation area to have a responsible person to hold the key, to keep the satellite accumulation area locked when not attended, and to maintain an inventory of the wastes inside each accumulation area, as required by RCRA regulations.

These in-house inspections were prompted by the results of an inspection at the Morgantown site by WVDEP, Office of Waste Management. During February 2003, WVDEP issued an NOV for four violations of the West Virginia solid waste regulations. All of the violations involved inadequate or improper marking and labeling of waste materials. The corrective actions were to: (1) clearly mark or label at the point and time of generation all individual universal waste batteries or containers of waste batteries with the date and one of the following phrases : "Universal Waste Battery(ies)" or "Waste Battery(ies)" or "Used Battery(ies)"; (2) clearly mark or label at the point and time of generation all individual universal waste lamps or containers of waste lamps with the date and one of the following phrases: "Universal Waste Lamp(s)" or "Waste Lamp(s)" or "Used Lamp(s)"; (3) clearly mark or label all containers holding hazardous wastes with the words "Hazardous Wastes," in accordance with the regulations; (4) clearly mark or label all containers holding hazardous wastes with the date on which accumulation begins, in accordance with the regulations. As a result of these violations, NETL settled with WVDEP on a penalty payment of $20,098.00.



TSCA Program. During 2003, the Morgantown site housed only small amounts of TSCA regulated substances. Some asbestos remains on site as building materials. There was an estimated one gallon of formaldehyde that had been used for pickling organisms, plus small amounts of general use pesticides. The formaldehyde is stored within double containment in one of the labs. No PCBs are kept on site for lab use. It is believed by ES&H staff that all PCB-containing devices have been removed from site.

Asbestos is the most abundant TSCA-regulated substance on site. Most is contained within "Cemestos" (cement-asbestos) wall panels found on the exteriors of several lab buildings (B-2, 3, and 4). Asbestos within these panels is well encapsulated by the cement admixture. Air monitoring has revealed no shedding of asbestiform fibers from the Cemestos panels. Occasionally, visual inspections are conducted to check the overall condition of the panels, and the panels have proven to be durable and non-friable. B-1 has Cemestos panels on the clerestory located on top of the building. These panels have been encapsulated in paint-like material as a precaution. B-1 also has asbestos deposited inside the cavities of some hollow concrete block walls. This asbestos is effectively isolated from building occupants and is readily accessible only from the top of the walls, above the suspended ceilings. Most asbestos has been removed from outdoor pipes, where it had once been installed. However, asbestos is found in some patches on the pipe insulation, requiring testing each time a patch is disturbed. Furthermore, asbestos is found on site in some pipeline gaskets and in some lab device refractories, and asbestos-containing bricks line the inside of the boilers in B-5. During 2003, there were no new discoveries of asbestos on site. Asbestos abatement activities are mentioned above in section 5.2.2. on TSCA remediation activities.

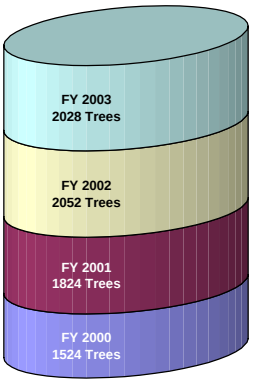
FIFRA Program. During 2003, there were no restricted-use pesticides, herbicides or defoliants kept on site. Only general use pesticides were kept and used for routine insect control. A commercial pest control company provides routine insect control applications where needed around the cafeteria, buildings, and trailers. Terminix, the contracted pest-control company, reportedly had applied restricted use insecticides sold under the brand names of Suspend(R) SC and Demand(R) CS. These pesticides contain the active ingredients Deltamethrin (4.75%) and Lambda-Cyhalothrin (9.7%), respectively. Both substances are restricted to use by commercial applicators because both are extremely toxic to fish and aquatic invertebrates and both are highly toxic to bees. Herbicides were not sprayed on the lawns during 2003 by NETL staff, and the Site Operations Division staff believe that contracted gardeners do not use herbicides during their efforts.

NETL's Pollution Prevention Program. NETL integrates pollution prevention into its daily work and planning activities. Examples were given above in the RCRA section regarding the on-site search for chemicals before more are purchased, and the recycling of some semi-hazardous materials. At NETL, pollution prevention is used in a broad sense to refer to judicious purchasing, the purchasing of less toxic substitutes, procurement of goods manufactured with recycled content, onsite recycling efforts, the purchase of electricity from less polluting sources, maximizing the energy efficiency of buildings, and implementation of an EMS with continual improvement.

The program is implemented in accordance with NETL Procedure P 435.1-2, *Waste Minimization, Pollution Prevention, and Recycling Program*. "It is the NETL policy that waste[s] generation shall be prevented or reduced at the source, whenever feasible. Wastes whose generation cannot be avoided shall be recycled in an environmentally safe, compliant manner, whenever feasible. Disposal or other releases of wastes into the environment shall occur only as a last resort…" The Waste Minimization Coordinator oversees the source reduction efforts and the recycling programs. The idea is to create a culture of waste minimization and pollution prevention by training the employees and facilitating the processes. Computer-based training is provided; messages about recycling, affirmative procurement, and source reduction are posted on the Intranet; and the Waste Minimization, Pollution Prevention, and Recycling Program guidance document is updated annually and made available on the Intranet to emphasize the benefits of NETL recycling. Key requirements of the Waste Minimization and Pollution Prevention Plan are the establishment of goals for reducing the volumes of various waste streams, tracking and reporting of material usage and wastes generation for comparison with the goals, employee awareness training, and specific pollution prevention opportunity assessments. Key requirements of the Recycling Plan are the implementation of collection programs for recyclable materials, the sale or donation of recyclable materials, and employee awareness training. NETL's principle recycling programs are: (1) aluminum cans, (2) corrugated paper, (3) mixed office paper wastes, and (4) leaf wastes. Contractor employees pick up these materials at designated accumulation areas and transport these materials to the recyclables management area or the compost bin (for leaf wastes). Arrangements are then made for the sale, donation or onsite use of these materials. Scrap metals (steel, copper, aluminum) are accumulated in designated dumpsters. Magazines, newsprint, telephone books, plastic bottles and wooden pallets are also recycled on an opportunistic basis (which occurs most of the time).

Trees Saved by Recycling NETL Paper Products

NETL saved 7,428 trees the past 4 years



A few examples of new pollution prevention or recycling initiatives at the Morgantown site are presented below. Other examples are provided throughout the text of this document.

- NETL (Pittsburgh and Morgantown) began purchasing low-volatile paints, instead of high-volatile oil-based paints.

- NETL increased contracting with offsite paint shops where paint volatiles are either captured or burned. NETL does not have a paint booth where volatiles could be captured.

- NETL investigated exhaustively the potential for reducing the quantity of oily rags sent to disposal. Given the rag laundering program currently in place and the rag reuse practices for automotive maintenance (rag reuse until no longer useable), no further reduction is feasible.

- Morgantown reduced photo lab processing wastes – the photo lab has gone all digital.

- Morgantown recycled packaging peanuts on site, and sent the excess to offsite consumers.

Many of the principle pollution prevention activities are addressed by the EMPs, as outlined in Table 3.4.

Near the end of 2002, DOE Headquarters arranged for a PPOA to seek ways to further minimize pollution at the Pittsburgh and Morgantown sites. The report was issued to NETL during January 2003. NETL has been investigating the recommendations. The recommendations and current status for both sites are shown in Appendix A, Table 5.2.3.b. NETL Waste Minimization, Pollution Prevention and Recycling Opportunity Summary.

5.2.4. Radiation Protection Activities

Ionizing Radiation Program. When people think of DOE laboratories, most think of nuclear weapons facilities. But DOE does much more, such as R&D for the improved usage of coal, oil and natural gas. NETL performs no work for nuclear weapons – in fact it has no nuclear programs of any type, except for contract administration of the development of some methods and tools for clean up of sites contaminated with nuclear program materials. Tests of these cleanup technologies occur at other facilities, which have contamination problems. None occur at NETL.

Use of radioactive materials at the Morgantown site is limited to X-ray generating devices and research instrumentation that contain sealed radioactive sources. NETL does not generate, process, or treat radioactive wastes; nor does it have on site any permanent disposal facility. An inventory of radiation sources is actively maintained by the Radiation Control Technician and monitored by the Radiation Safety Officer. Information is listed about the item, isotope, quantity, custodian, location, status, and sealed source activity. Title 10 CFR 835.901(e), DOE Policy 441.1, and NETL Procedure 440.1-17, *Radiation Protection Program*, provide the applicable regulations and requirements. In

addition, best management practices are found in DOE Implementation Guides and EPA information.

Table 5.2.4a. lists the radioactive sealed sources in use at Morgantown during 2003. NETL did not release any radionuclides into the environment. All of the radioactive sources are sealed and are used in instrumentation. In Morgantown, there is one radiological control area, which contains the X-ray mail room scanner. This x-ray scanner is a radiation generating device but not a radionuclide containing device. The x-rays are generated by electricity, so the scanner is not listed in Table 5.2.4a. In addition to the mail scanner, there are two electron spectroscopy chemical analyzers in B-25. There are four phosphorescent exit signs that constitute the largest sources on site, with each emitting 20 curies of radiation from tritium source material. When NETL no longer wants nor needs a sealed source item, NETL preferentially returns these items to the instrument manufacturers. During 2003, the Morgantown site sent no radiation source items to either storage/disposal facilities or the manufacturer.

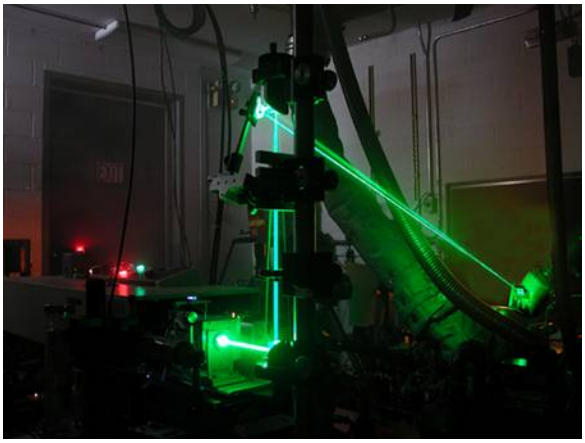
Radiation monitoring performed at NETL consisted of a limited number (approximately 12) of personal dosimeter badges (thermo-luminescent detectors) supplied to each person listed as a source custodian. During 2003, there was one exposure of 25 millirem, which could not be traced to an event or source. The others registered zero exposure (i.e., only background radiation). Every person was found to be below the OSHA exposure limit for the year (1 rem). Usually, personnel show zero exposure from the NETL sources. In addition, the single radiological control area has a dosimeter badge continually exposed. Leak testing is performed when due every six months on all applicable sealed sources. None of the testing or monitoring performed detected any radioactive material leakage during 2003.

Table 5.2.4a. Morgantown Radioactive Materials Inventory December 2003

Isotope	Activity/Date Determined	Source	Location
Kr-85	2 mCi 3/30/81	Model #3077, Serial #700T, Thermo-Systems Inc.	B-16, Radioactive Material Storage Cabinet
Kr-85	2 mCi 1/02/79	Model #3012, Serial #467T, Thermo-Systems Inc.	B-16, Radioactive Material Storage Cabinet
Kr-85	2 mCi 5/19/80	Model #3012, Serial #626T, Thermo-Systems Inc.	B-16, Radioactive Material Storage Cabinet
Kr-85	2 mCi 5/78	Model #3077, Serial #373T, Thermo-Systems Inc.	B-25, Room 212
Kr-85	2 mCi 3/30/81	Model #3077, Serial #697T, Thermo-Systems Inc.	B-25, Room 212
Ni-63	15 mCi 6/01/84	Model #6000204, Serial #533, Perkin-Elmer Corp.	B-19, Storeroom
Sc-46	0.065 mCi 7/01/90	University of Missouri	B-16, Radioactive Material Storage Cabinet
Sc-46	0.046 mCi 2/12/91	University of Missouri	B-16, Radioactive Material Cabinet
Ra-226	9 uCi 1/56	Model #B-5, Serial #11205, Mettler Corp.	B-25, Room 206
Ra-226	21 uCi 1/56	Model #M-5, Serial #17032, Mettler Corp.	B-25, Room 112

Table 5.2.4a. Morgantown Radioactive Materials Inventory December 2003			
Isotope	**Activity/Date Determined**	**Source**	**Location**
Ra-226	9 uCi 1/56	Model #B-5 GD, Serial #13805, Mettler Corp.	B-3, Area 150
Phosphate Rock	Consumer Product	Model #1080, Sun Nuclear Corp.	B-16, Radioactive Material Cabinet
H-3	20 Ci 5/94	Model #B100/U10, Serial #575263, SRB Technologies	B-33
H-3	20 Ci 5/94	Model #B100/U10, Serial #574434, SRB Technologies	B-33
H-3	20 Ci 5/94	Model #B100/U10, Serial #574435, SRB Technologies	B-33
H-3	20 Ci 5/94	Model #B100/U10, Serial #574436, SRB Technologies	B-33
Co-57	12 mCi 12/95	Model #IPL CUS, Serial #EE661, Isotope Products Lab	B-16, Industrial Hygiene Laboratory
Cs-137	1 uCi 2/99	Tele-Atomic, Inc	B-25, Room 202
Cs-137	10 uCi 2/99	Tele-Atomic, Inc.	B-25, Room 202
Ba-133	1 uCi 2/99	Tele-Atomic, Inc.	B-25, Room 202
Ba-133	10 uCi 2/99	Tele-Atomic, Inc	B-25, Room 202
Tl-204	1 uCi 2/99	Tele-Atomic, Inc.	B-25, Room 202
Tl-204	10 uCi 2/99	Tele-Atomic, Inc.	B-25, Room 202
Cd-109	10 mCi 5/01	Model #XFB3205, Serial #NR2032, IPL Inc.	B-33

Laser Program. There are many lasers at the NETL sites. Most of these are built into common office devices such as laser printers, CD readers within personal computers, fiber-optic communications lines, etc. Because these lasers are built into devices which protect the consumer by engineering design, these laser are rated as Class I. Laboratory applications on site use the more powerful Class II, III and IV lasers. An example of



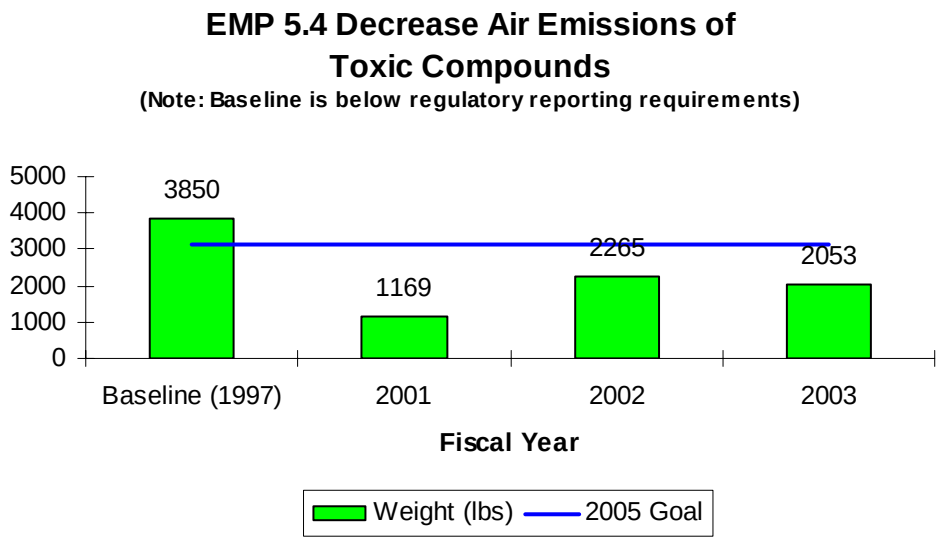
Class II lasers are the laser pointers used on site by speakers during lectures and presentations. It is noted that the typical laser pointer that the public buys at the local office supply store or department store is a Class III laser, a laser that is capable of damaging living tissue. Class II lasers are used in NETL laboratories for sensing applications, which typically feed into control devices, but mostly they are used for alignment of various devices. Class III lasers are used in the laboratories for sensing applications, measurements and imaging. Class IV lasers are used for the same applications as Class III lasers plus ignition of fuels (like a spark plug). Class IV lasers can burn or cut materials.

NETL currently uses ANSI Z136.1-2000, *Standard for Safe Use of Lasers*, as the reference document for laser safety. NETL abides by the OSHA standards 29 CFR 1910.132 for personal protective equipment and 29 CFR 1910.133 for eye and face protection. OSHA provides guidance on the safe use of lasers within STD 01-05-001, Publication 8-1.7 (Aug. 5, 1991). No permits are required for the NETL lasers, and there is no requirement for an inventory of lasers on site. Currently, NETL provides basic training through a CBT module and through lecture-based training. Refresher courses are provided every 3 to 5 years for operators of Class III and IV lasers. Protective glasses or goggles are provided, and interlock warning systems are placed on Class IV lasers. During 2003, there were no mishaps or environmental impacts associated with NETL lasers.

Current laser applications include the development at NETL-Morgantown of laser spark plugs for reciprocating engines burning natural gas. These engines would be used for distributed power generation, with the laser spark plug providing benefits of lower maintenance costs and lower tailpipe emissions. Planar Laser Induced Fluorescence (PLIF) is a technology used at NETL-Morgantown for studying fuel mixing in turbulent flows within natural gas burner nozzles inside gas turbine engines. Laser Doppler Velocimetry (LDV) is used onsite to study particle flows in gasifiers and coal combustors and turbulent flows for fuel mixing.

5.2.5. Air Quality and Protection Activities

The first of three environmental media protection programs is the NETL Ambient Air Quality Program, which is administered by the site's Air Quality Manager. Significant requirements and responsibilities of this program are listed in NETL Procedure 450.1-1, *NETL Ambient Air Quality Management*. Under this program, the Federal Air Quality Manager prepares permit applications, obtains permit renewals as needed, and oversees monitoring programs and reporting. Several EMPs have been created recently to foster continuous improvements by focusing attention on a few of the emissions categories or sources where NETL can make the most improvement. To maintain quality control in our program, NETL selects and subcontracts analytical work only to EPA certified laboratories. These laboratories must submit their QA/QC manuals to NETL for inspection, and the NETL site support subcontractors submit quality control samples (duplicates, blanks, spikes) to the laboratories to verify the quality of the analyses. Where possible, air emissions monitoring systems onsite are checked or calibrated.



In 1995, NETL obtained an air emissions permit (No. R13-1786) from WVDEP for construction of the GPDU. Monitoring activities during 2003 required by the permit were limited to recording the run time of the GPDU. See Appendix A, Table 4.1. 2003 Quarterly Operations and Emissions Report, for further details.

Elsewhere on site, NETL staff began sampling the emissions of TRI-listed compounds in laboratory fume hoods and flues as part of the ISO14001 efforts. Under EMP 5.4 (now 5.5) various sampling devices were employed to sample organic compounds within the ductwork and stacks. These investigations aimed both to identify the various compounds in the vents and to measure the emission rates of these compounds. Site personnel placed within the flues and hoods five-liter evacuated canisters having a nickel lining. Organic compounds adsorb to the nickel and desorb as a function of partial pressure and relative affinity. After the sampling period, each canister was sent to a contracted testing laboratory, where the contaminants were desorbed and measured. The results of the hood emissions monitoring activities may be used for a future EMP aimed at reducing NETL's emissions, as part of the Assistant Secretary's pollution prevention goals under TRI. This study aims to determine NETL's current emissions, which previously have been crudely estimated using material balance approaches. NETL creates and reports annually its air emissions inventory, as an in-house check on its status as a non-regulated source.

During 2003, particulate sampling was performed for the Cold Flow Circulating Fluidized Bed project in B-22. The result of the particulate sampling was an estimated emissions rate of only 1.3 pounds per year of dust (PM 10), which means that this source should be removed from the list of key environmental characteristics that are regularly reported in the ASER.

There are several EMPs that direct NETL's continuous improvement efforts in air-quality protection. Two EMPs aim to reduce its emissions of ODSs. One seeks to phase out NETL's use of Class I ODS in smaller appliances such as drinking water fountains; the other attempts to replace selected large chillers that air condition large office buildings. A third EMP aims to reduce emissions of volatile organic compounds (VOCs) from paint operations. NETL has begun to contract more spray painting of small parts to local commercial paint shops that have paint booths with VOC capture or abatement devices. A fourth EMP deals with vehicles, where the aim is both to reduce the consumption of petroleum products and to reduce emissions of vehicular air pollutants.

WVDEP generally evaluates air quality on a county basis, although the regional data may be aggregated into Air Quality Control Region (AQCR) #6, for North Central West Virginia. Monitoring is performed in Morgantown on a daily basis at several sites, and these data are available through the WVDEP website's Air-quality Index and through the EPA AirNOW web-based system. During 2003, Morgantown was in attainment for all National Ambient Air Quality Standards (NAAQS). During 2003, there were 338 days in which the Air-Quality Index was in the "good" range, 25 days in the moderate range and 2 days in the range of unhealthy for sensitive groups. As of 2004, the EPA will begin to re-evaluate classifying Morgantown and Monongalia County as a non-attainment area for the new 8-hour ground-level ozone criteria and for the PM2.5 criteria, based on the existence of coal-fired power plants within the county. It is believed that the NETL site is not a significant contributor to ambient air quality problems.

During 2003, there were no New Source Reviews (Clean Air Act Pre-Construction Reviews) for any NETL–Morgantown facilities. Nor were there any Morgantown facilities with the potential to emit more than 100 tons/year of any designated air pollutant. WVDEP does regulate NETL's GPDU as a minor source of emissions affecting NAAQS. The permit limits GPDU operations to a maximum of 1,440 hours per permit year (July 1 through June 30). There are four permitted stacks for the GPDU, and each stack has a permitted maximum hourly emission rate for particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides, and VOCs. The permit also caps annual emission quantities for the GPDU as a whole and for each stack other than the flare, which has other restrictions. The permit requires official emission testing of the main stack for particulates and sulfur dioxide after shakedown testing is complete. Best available control technology (BACT) is not required. During 2003, the GPDU was operated in compliance with its permit.

The NETL site in Morgantown is not regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAPS) Program. Nor does the site emit more than 10 tons/year of any single designated toxic air pollutant or more than 25 tons/year in aggre-

gate of all toxic air pollutants to qualify it as a major source requiring regulation under the Clean Air Act for listed toxic air pollutants. Although WVDEP does regulate a number of minor sources of toxic air pollutants, the NETL site has not been regulated in this category. The Morgantown site does not perform nuclear program work and does not have radiological emissions, which would be covered by NESHAPS.

Table 5.2.5. 2003 Air Emissions Permits – Morgantown Site

Permits	Status	Exceedances	NOVs	Sources	Pollutants	Emissions	Criteria
R13-1768 and 061-00064	Renewed for 2003	None	None	Minor emission sources, GPDU	None monitored by requirement	Not monitored by requirement	1440 hours operation per year

During 2003, there were no unplanned releases of air pollutants covered by CERCLA or TRI reporting. There was monitoring of asbestiform fiber concentrations in B-1, 2, 3, 4, 5, and 7. Samples taken in B-2 and in B-5 revealed high fiber concentrations, so the samples were further analyzed by transmission electron microscopy to determine whether the fibers were asbestos. The additional testing revealed no asbestos fiber problems. Air sampling in B-1, B-3, B-4, and B-7 revealed fiber concentrations below the EPA and State of West Virginia clearance levels (0.01 fibers/cc). Some monitoring for asbestiform fibers is performed each year. The observed concentrations of "asbestos" have always been below the clearance levels. However, there are occasions when the total fiber concentrations exceed the clearance levels, with the exceedance caused by high concentrations of non-asbestos fibers.

The site maintains one 150-foot meteorological tower that monitors temperature, precipitation, relative humidity, wind speed and direction, barometric pressure, and snow accumulations. Meteorological information may be viewed in real time, and data are recorded continuously. This data is potentially used for air dispersion modeling or prediction and for informing the ERO during emergency situations.

5.2.6. Surface Water Quality and Protection Activities

The next environmental media protection program deals with surface water quality, including discharges to municipal sewers that eventually discharge to surface waters. Surface water protection on site is controlled by NETL Procedure 450.1-3, *Surface Water Quality Management*, which is administered by the Surface Water Quality Manager (SWQM). Generally, this program includes spill prevention, hazardous wastes control, and emergency actions, which are addressed specifically in other directives. More directly, the surface water program covers permits and monitoring for both storm water sewers (which are separate from sanitary sewers) on site and construction-related disturbances that potentially increase sediment loads in streams. The applicable directives are supplemented by more detailed instructions that are found in the Storm Water Pollution Prevention Plan, which documents the various potential sources of pollution and the prescribed methods for managing the various types of sources. Under the plan, twice every year designated storm water outfalls are sampled and tested for basic pollutants (see Table 5.2.6a.) that might indicate contamination from site applications of fertilizer or leak-

ing sewer lines (see Table 5.2.6b.). Should a spill occur, cleanup would commence and the appropriate outfalls would be monitored as necessary for the contaminants of concern. For all water protection programs, quality control in sample analysis is maintained, in part, by choosing an analytical laboratory from a list of EPA certified laboratories. QA/QC samples are submitted at least annually to further verify the quality of the analytical results. During 2003, NETL completed and closed an EMP that aimed to complete NETL's list of potential sources of surface water pollution. NETL's level of impact on surface water has been about the same as other office complexes in the region.

Table 5.2.6a. NPDES Permit Storm Water Monitoring Requirements and Limits

Outfall	Pollutants of Concern	Limits	Frequency
002	Ammonia Nitrogen Nitrite + Nitrate Nitrogen Fecal Coliform	4 mg/l 0.68 mg/l	6 mo 6 mo 6 mo
005	Total Suspended Solids Ammonia Nitrogen Nitrite + Nitrate Nitrogen Fecal Coliform	100 mg/l 4 mg/l 0.68 mg/l	6 mo 6 mo 6 mo 6 mo
010	Ammonia Nitrogen Fecal Coliform	4 mg/l	6 mo 6 mo

Table 5.2.6b. NETL-Morgantown 2003 NPDES Storm Water Analysis Results

Constituents Cutoff	Conc.	Outfall 002		Outfall 005		Outfall 010	
		5/20/03	9/15/03	5/20/03	9/15/03	5/20/03	9/15/03
Nitrate + Nitrite Nitrogen (Grab)	0.68 mg/L	0.5 mg/L	0.7 mg/L	0.56 mg/L	0.52 mg/L	NS	NS
Ammonia Nitrogen (Grab)	4 mg/L	ND	ND	ND	ND	ND	ND
Fecal Coliform (Grab)	---	>6,000 col/100 mL	>1,993 col/100 mL	>6,000 col/100 mL	>3,085 col/100 mL	3,400 col/100 mL	>6,000 col/100 mL
Total Suspended Solids (Grab)	100 mg/L	NS	NS	2,500 mg/L	220 mg/L	NS	NS

NS = Not Sampled; ND = Not Detected

On the developed portion of the Morgantown site, there are four drainage areas that have rainwater runoff collection systems and regulated outfalls to the nearby surface streams.

- Outfall 002 drains an area that holds the majority of the facilities for material handling and is approximately 509,652 square feet.
- Outfall 003 receives drainage from a hillside beside B-17 and drains an area of approximately 43,560 square feet. The permit does not require monitoring of this outfall.
- Outfall 005 drains an area that includes B-19 (warehouse, machine shop), B-33 (hazardous materials temporary storage) and various research facilities. It drains 209,088 square feet.

- Outfall 010 drains parking areas, offices and a large section of undeveloped land. It drains approximately 3,197,304 square feet.

The outfalls at the Morgantown site are monitored according to General Permit Registration #WVG610042 under National Pollutant Discharge Elimination System (NPDES) Permit #WV0111457. Major sources for potential spills of petroleum products and oils are above-ground storage tanks, oil-filled transformers and switches, a hazardous wastes accumulation facility (B-33) and 55-gallon drums at several locations (B-5, -19, and -36). Presently there are six above-ground storage tanks that contain petroleum products (diesel fuel and gasoline) and one that contains ethanol, for a total capacity of 2,900 gallons. Three of the above-ground storage tanks are located inside the area drained by Outfall 002. There are two additional above-ground storage tanks located in the drainage area of Outfall 005, and the remaining two are in the drainage area of Outfall 010. Currently the site has 25 oil-filled transformers and two oil-filled switches, which have been tested for PCBs. In addition to the tanks of petroleum products and ethanol, there are three storage tanks associated with the GPDU, a project designed to test technologies for removing sulfur gases from hot coal combustion gases. One 6,000 gallon tank holds sulfuric acid, a 15,000 gallon tank holds a 20 percent solution of sodium hydroxide and another 5,000 gallon tank holds a solution of 50 percent sodium hydroxide. Because these tanks pose a significant hazard if their contents are released, the storage facility is designed to contain the entire volume of these tanks. There are no buried or partially buried storage tanks at the Morgantown site. Although the major potential spill sources are described above in this paragraph, there are numerous smaller potential sources that are described in a site inventory list.

During 2003 there were several ongoing and startup construction activities on site. Allegheny Power, Inc., continued the construction of an electrical substation on their right-of-way and on adjoining areas of NETL property. This activity disturbed between 1 and 3 acres of land but commenced during 2002 before the regulatory threshold for storm water permits was reduced from 3 acres to 1 acre. During the spring (April to June) of 2003, a paved parking area was constructed with a disturbed area of slightly over 1.2 acre. Because a storm water permit for construction was not obtained for this project, there was a violation of the State's new storm water regulations. No notice of violation has been issued, however. During the early summer of 2003, construction commenced on the new parking garage with a total disturbed area of less than1 acre. For all projects, best man-

agement practices were employed to reduce erosion and stream siltation. An oil-water separator is installed inside the runoff collection system of the new parking garage, but there are no other treatment systems for storm water at the Morgantown site. Base on previous test results, the primary concern with surface water impacts from the NETL site has been sediment loading.

Sediment loading of surface water runoff affects Burroughs Run along the southeastern margin of the site, West Run along the northeastern margin of the site, and a small ephemeral stream that traverses across the northern portion of the site and empties into West Run. The state of West Virginia has recently launched a program to categorize streams by water quality and to establish minimum water quality criteria for each category. It is anticipated that both West Run and Burroughs Run would be categorized as impaired streams that require the establishment of TMDL limits and further regulation. West Run is highly acidic from mine drainage located on the upper reaches of the drainage basin, and suburban development is increasing within the basin. Burroughs Run drains an area of significant urban and suburban development, which contributes typical urban/suburban pollution (e.g., oil, salt, pesticides, herbicides).

Although storm water runoff is handled by onsite storm water sewer systems, a completely separate and dedicated sewer system handles the industrial waste water. A third separate and dedicated sewer system on site handles the domestic sewage. Industrial waste water quality on site is controlled by NETL Procedure 450.1-4, *Industrial Wastewater Management*, which is administered by the Industrial Wastewater Quality Manager. At the Morgantown site, industrial waste water is that waste water conveyed from laboratory sinks and laboratory facilities where pollutants other than normal domestic sewage might enter the waste water stream. The industrial waste water enters a clarifier located onsite where the waste water is sampled monthly. From the clarifier the industrial waste water enters the onsite domestic sewage sewer lines that empty into the municipal sewers owned and operated by the Morgantown Utility Board. The discharge is regulated under pretreatment permit number MUB 012. Periodic sampling is performed by the site support contractor staff, and the samples are analyzed by a contracted laboratory chosen from a list of laboratories certified by the EPA. Discharge Monitoring Reports (DMRs) detailing monthly sampling and analysis are provided to the Morgantown Utility Board (see Appendix A: Table 5.2.6c. NETL-Morgantown 2003 Waste Water Effluent Analysis). NETL's monitoring activities help to enforce the requirement that hazardous wastes are not permitted in the laboratory drains or other drains, except in the trace quantities that normally originate from washing laboratory equipment and glassware. Line managers are required to provide suitable containers in laboratories for the

collection of materials that are not permitted in the drains. If hazardous materials or petroleum products accidentally spill into the sewer system, NETL must follow the emergency response and notification procedures specified by the *Spill Prevention and Control Management* and the *Comprehensive Emergency Management System* directives (NETL P 450.1-5 and NETL O 151.1, et seq.). Hazardous wastes must be handled in accordance with NETL's directives on this subject. If pollutant concentrations repeatedly exceed permit limits, NETL will initiate surveillance of drains and fixtures that discharge into the industrial waste water system to identify the source.

Protection of surface water and ground water requires the prevention of leaks from storage tanks. Accordingly, NETL instituted a program under NETL Procedure 450.1-5, *Spill Prevention and Control Management*, which is under the oversight of the Federal Surface Water Quality Manager (SWQM). As required by the NPDES storm water permit, this program mandates a written Spill Prevention, Control and Countermeasures Plan (SPCC) for each site and a written operations and maintenance plan for each individual storage tank system. Every system capable of contributing to fire, explosion, emission or spill of hazardous materials must have written operating plans that address precautions to prevent an emergency and actions to be taken during an emergency. The program manager must identify potential spill sources on site, establish visual inspection programs, generate lessons learned (and program improvements) from past spills, and coordinate the implementation of this procedure with the NETL emergency response activities. There have been no reportable spills of toxic or hazardous materials within the notification period (November 1996 to the present) of the current general storm water permit.

Above ground storage tanks are visually inspected on a weekly basis and have their interstitial cavity checked quarterly. Visible leaks are corrected immediately. Oil-filled transformers and switches are visually inspected daily. If leaked materials are observed within secondary containment or on the surrounding ground surface, the material is collected or absorbed with spill kits. To the extent practicable, contaminated soil and rainwater are collected and disposed in accordance with regulations. Steel 55-gallon drums are kept within areas protected from rainwater and within secondary containment. Large spill containment kits are used routinely as a means of secondary containment underneath the drums, and spill kits are kept nearby. The Hazardous Wastes Accumulation Facility (B-33) is designed and constructed to be compatible with the materials stored there and with the conditions of storage. Leaks within this facility will drain to sump areas that have

manual sump pumps for collection of liquids. All of the storage area of B-33 is indoors, and the facility is inspected each week. At the Morgantown site, hazardous materials are not conveyed through underground pipes, with the exception of acids and bases conveyed to the GPDU. GPDU pipes are enclosed inside PVC pipes, which slope back to secondary containment pits to prevent soil contamination. All above-ground pipe valves are inspected when the associated tanks are inspected. All tank filling operations must be attended constantly, and offsite personnel are accompanied by NETL personnel when they enter the site for refueling or loading operations.

Emergency containment actions would consist of placing absorbent materials at the source of the spill, at any potentially affected drains and at the entrances and exits of culverts. Any contaminated materials collected following a spill would be disposed in accordance with applicable regulations. Spill kits of varying types are placed at numerous locations throughout the site. Personnel and equipment are committed and on standby to respond to spills, and emergency notification procedures are taught to the NETL staff via CBT modules.

NETL-Morgantown has only one discharge to the municipal sewer system which is regulated by the Morgantown Utility Board (permit MUB 012). MUB establishes the pretreatment requirements and the effluent standards. Annually, MUB inspects the pretreatment facility plus the sewer connection. When the permit is renewed, MUB requests an update to the description of the industrial waste water system and the sources of waste water on site. When the industrial waste water system is modified or when there is a change in effluent composition, notification is required. MUB may elect to change the monitoring or pretreatment requirements in response to the changes made by NETL. MUB requires monthly sampling and analysis for the parameters listed in table 5.2.6c. They require that NETL annually sample and analyze for priority pollutants in accordance with the MUB permit, and MUB conducts an independent sampling and analysis to verify our results. Biological testing is neither required nor performed. MUB requires that the Morgantown pretreatment system have at least a settling clarifier and a pH control system. Industrial waste water from the Morgantown site could contain almost any chemicals from our laboratories and projects, oil and grease from our motor pool maintenance area, or glycols (ethylene and propylene) from our chiller units (for air conditioning). History has shown that the primary concerns for discharges to the municipal sewer have been trace acids from research projects and alkaline boiler blowdown from the main boiler room. The pesticide detected on one occasion during the 2003 monitoring (Table 5.2.6c.) could be either a false positive or a temporary contamination.

During 2003, there were no tests of the potable water supplies on site to verify compliance with the Safe Drinking Water Act standards. Evidence from testing conducted during the 1990's has indicated that further testing is not justified. NETL-Morgantown's water supply comes from the Morgantown Utility Board's water distribution network.

5.2.7. Ground Water and Soil Quality and Protection Activities

The third environmental media protection program deals with ground water quality, including the monitoring and cleanup of leaks and spills that enter the soil and ground water. Ground water protection on site is controlled by NETL Procedure 450.1-2, *Ground Water Quality Management*, which is administered by the Federal Ground Water Quality Manager. This is a fundamental program that covers regulatory requirements and best management practices for preventing leaks and spills, for ground water and soil monitoring, for contaminated soil removal, and for closeout actions. The directive is supplemented by more detailed information and instructions that are found in the Ground Water Protection Management Plan, which documents the various potential sources of pollution, potential contaminants that should be monitored, methods of well installation and sampling, monitoring strategy, and QA/QC processes related to having water/soil samples analyzed by a contracted laboratory. Under the plan, selected monitoring wells are sampled and tested twice every year for general water quality parameters and for selected chemicals or metals that might indicate contamination from known past leaks and spills. Should a spill occur, containment and cleanup would commence, and the affected soil would be monitored as necessary for the contaminants of concern. Highly contaminated soil would be removed, if practical. Alternatively, in-situ treatment would begin, unless the contamination levels were sufficiently low to warrant only monitoring. For all water protection programs, quality control in sample analysis is maintained, in part, by choosing an analytical laboratory from a list of EPA-certified laboratories. QA/QC samples are submitted at least annually to further verify the quality of the analytical results.

During 2003, NETL reduced its ground water monitoring efforts because 10 years of extensive monitoring had demonstrated little ground water impact (see, e.g., ASER 2002) and because of a decline in activities that could pose a threat to ground water. NETL's impacts on ground water have been primarily deicer salt contamination, a problem that is shared with many businesses and road maintenance activities in this region (see Appendix A: Tables 5.2.7a. through 5.2.7f.).

Primarily, the strategy for ground water protection is one of spill and leak prevention. The Morgantown site has both a Spill Prevention Control and Countermeasures (SPCC) Plan and a Storm Water Pollution Prevention Plan. Together, these plans lay out the strategy for minimizing the risk of unintentional releases and quickly responding to an unintentional release in an effort to minimize environmental contamination. In addition to these efforts, the Morgantown site initiates new projects only after a rigorous ES&H review is conducted in accordance with the SARS directives. As part of the SARS process, the responsible person for each project must prepare a set of written procedures documenting how the project is to be operated, how wastes and feedstocks are to be safe-

guarded, and how to contain and control unintended releases. When a leak or spill does occur and the environment is threatened, the onsite emergency response team is activated and the facility makes the appropriate internal and regulatory-driven notifications.

Ground water monitoring is focused primarily on past spills, leaks, and the effectiveness of the cleanup actions undertaken. The section on CERCLA (section 5.2.2) listed the past events and the current status of these spill sites. Two of these past events provide cause for continued ground water and soil monitoring.

An informal agreement exists between NETL and WVDEP concerning the Pond 005 site located north of B-7. That area is now a parking lot. When the pond was closed and the area was converted into a parking lot during 1985, the closure was not consistent with the state-approved closure plan. Sampling indicated low concentrations of organic semi-volatiles remained in the soil after removal of the pond liner. The plan called for removal of all the contaminated soil; but, after removing many truckloads of soil, NETL decided to forego further removal despite the fact that some contaminated soil remained. NETL then constructed a parking lot on the site. An informal agreement subsequently reached with WVDEP requires ground water monitoring around the parking lot perimeter. NETL continues to comply with this requirement.

During the construction of B-19, coal combustion ash was used as fill beneath the concrete floor slab. After completion of the building, leachate appeared having the characteristics of acid mine drainage. The mitigation method that was employed was the installation of collector drains at the footer of the building to collect the leachate and to convey it to a treatment facility that first raises the pH of the leachate into the alkaline range, filters the resulting precipitates from the leachate, and then adjusts the pH to the normal range.

Twenty-one active monitoring wells exist at the Morgantown site. These wells monitor two shallow aquifers and one deep aquifer. All are sampled annually for pH, water level, conductivity, and temperature. Five wells associated with the now-closed pond 005 are sampled semiannually for benzene, toluene, ethylbenzene, xylenes, naphthalene, phenolics, cadmium, sulfates, sulfides, and chlorides. Two wells near the former pond 005 site were lost during 2003 due to construction of the parking garage and the Allegheny Power, Inc., electrical substation.

The overall ground water monitoring strategy has been to monitor any flow coming onto the site through each aquifer and to monitor the flow after it passes beneath the NETL facilities and moves toward the springs and seeps. Historically (1993 to 2002) ground water monitoring at the Morgantown site was driven by two reasons. The first was the

mandate of the WVDEP regarding the closure of pond 005. The second was the mandate of DOE Order 5400.1, *General Environmental Protection Program.* Although DOE Order 5400.1 no longer exists, samples from a large number of wells were analyzed between 1993 and 2002 for a lengthy list of analytes. This list of analytes (see Table 5.2.2b.) was formulated to include all organic compounds known to have been detected in analyses of the coal tar wastes, the pond 005 bottom sludge, and the sampled soils beneath pond 005. It also included metals alleged to have been in the Stretford solution. However, no organic compounds have been detected consistently during 10 years of sampling, and no consistent indications of contaminant concentrations above the state limits have been found. Only one analyte (cadmium), traceable to the operation of the closed pond, has been detected.

The only contaminants consistently found in significant amounts in the ground water at the Morgantown site are those related to the application of salts for deicing purposes. Sodium chloride (table salt) is applied to the parking lots and roads. Calcium chloride is applied to the sidewalks and outdoor steps. Wells located near these features and near the runoff routes from these features show significantly elevated levels of both sodium and chloride.

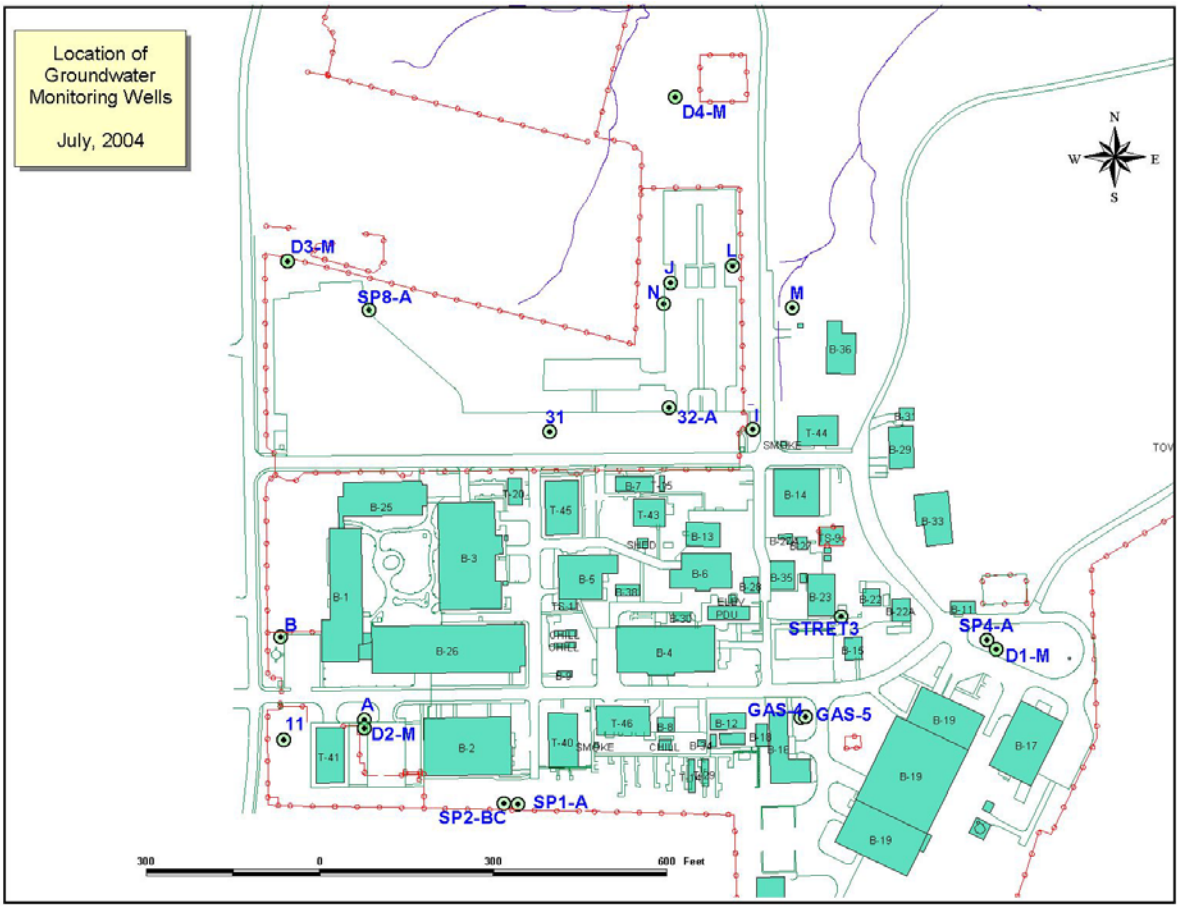


Figure 5.2.7. Location of Ground Water Monitoring Wells at Morgantown Site.

After 10 years of monitoring, ground water conditions are well understood. Spills and leaks in the past have not significantly degraded the ground water on site. The facilities and most of the underlying contaminated soils associated with spills and leaks in the past have been removed. In recent years, operations have changed greatly, and there are now few large projects that could create significant ground water contamination. At this point, most of the research is bench-scale and uses small quantities of chemicals and solvents. Accordingly, the ground water analyses have been significantly curtailed. Under the new scheme, wells will be sampled each Spring and late Summer. Wells located around the perimeter of the developed portion of the site in the two shallow aquifers will be tested to check water quality as it enters and leaves the developed area. For the deep aquifer, sampling will continue for one up-gradient well and three down-gradient wells. The original list of measurements and analytes, as present in the ASERs of previous years, will be reduced to the list presented in this report. The results of the ground water monitoring during 2003 are presented in Appendix A: Tables 5.2.7a. through 5.2.7f. A general location map for the samples wells is given in Figure 5.2.7.

5.2.8. Compliance with Other Major Environmental Statutes

5.2.8.1. SARA Title III, EPCRA

The Emergency Planning and Community Right-To-Know Act (EPCRA) requires facilities that store hazardous materials in quantities exceeding threshold amounts to notify the State Emergency Response Commission, to cooperate in local emergency response planning activities, and to submit hazardous material inventories and MSDS documents to the local and state emergency response and planning organizations. It also requires the reporting to the EPA and designated state officials of annual releases of toxic materials that are used, produced, or processed in quantities exceeding threshold amounts. The inventory requirement is triggered when the facility stores more than 10,000 pounds of a hazardous material (as defined by OSHA) or more than 500 pounds (or 55 gallons or the specific threshold planning quantity) of a listed extremely hazardous substance.

To help comply with these regulatory requirements, NETL developed Procedure 440.1-2A, *Chemical Inventory and SARA Title III Reporting*, which is implemented by the NETL Federal Chemical Hygiene Officer. The program revolves around a computer-based chemical inventory system that is continually updated as materials are purchased, consumed or disposed. Periodically the database is verified by representative samplings of work areas to determine whether observed types and quantities of materials match the database information. Chemicals arriving on site must be accompanied by an MSDS, or they will be held at the warehouse until the MSDS is obtained. When a prospective buyer wants a particular chemical, they must first check the Intranet-based chemical inventory and the wastes accumulation list to see if it is available on site. If not, they may obtain a purchase request for the chemical. The purchase request is reviewed by a specialist who assigns a MSDS number, if a MSDS is already on file. The specialist also attempts to determine if less hazardous substitutes are available. When the purchase request is cleared, the purchase can begin.

When chemicals arrive on site, tracking begins. First the chemicals are logged into the database. When the chemicals are moved to a new location, the database must be updated with the new location of the materials. When the empty container is picked up or when the remaining material is shipped off site for disposal, the item is deleted from the list.

The Morgantown site files chemical inventory reports (Tier 2) and MSDS lists (or individual sheets) with the Monongalia County Local Emergency Planning Committee and the Morgantown Fire Department. Hydrogen sulfide is the only chemical present at the Morgantown site in excess of the Threshold Planning Quantity, as defined by SARA Title III. Hydrogen sulfide is stored as a compressed gas in metal cylinders. Other reported materials are: nitrogen gas (average daily amount 0 to 99 pounds), alumina (average daily amount 1,000 to 10,000 pounds) and coal (average daily amount 10,000 to 100,000 pounds). Alumina and coal are now stored indoors in small containers and in 55-gallon drums. Nitrogen is stored outdoors in an above-ground storage tank.

The Morgantown site does not generate a toxic release inventory because the site does not release any of the listed toxic materials in quantities that exceed the TRI threshold amounts. During 2003, there were no releases that would trigger emergency notification as required by either EPCRA or CERCLA.

5.2.8.2. National Environmental Policy Act

The NEPA program and the preparation of NEPA documents are overseen from the Pittsburgh site by the NETL NEPA Compliance Officer. A joint description of NEPA activities for both the Morgantown and the Pittsburgh sites is provided in section 8.2.8.2.

During 2003, there were no newly proposed site improvement projects or R&D projects at the Morgantown site requiring the development of an EA or an EIS. An EA had been completed during 2002 for the construction projects that commenced during 2003. See DOE/EA 1444, *Environmental Assessment for the Construction of New Office Building, Child-Care Facility, Parking Garage, and Storm Water Retention Pond*. During 2003, the Morgantown site began construction of the parking garage and began site preparation work on a newly purchased five-acre parcel of land, both covered by the EA drafted during 2002.

Construction began during 2003 on an electrical substation located on the existing right-of-way of Allegheny Power, Inc., and on adjoining NETL land. This project was undertaken by Allegheny Power for the benefit of its customers in the northeastern quadrant of Morgantown. Because the project was under the control of Allegheny Power and because NETL had little influence over the development of the electrical substation, NETL addressed its own participation with a Categorical Exclusion during 2002. This activity was not explicitly part of the activities addressed by DOE/EA 1444.

5.2.8.3. Endangered Species Act

Several times during recent years NETL has inquired about the existence of rare, threatened, or endangered species or their critical habitat located within the vicinity of the Morgantown site (Photo: WVDNR). Most recently this inquiry was repeated during 2002 when an EA was conducted for the acquisition of five acres of land and the planned construction of several new buildings and facilities. A letter, dated April 5, 2002, from the West Virginia Division of Natural Resources states: "We have no known records of any rare, threatened, or endangered species or wetlands within the project area. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review." Staff at NETL have not found evidence to the contrary regarding these species or their critical habitats.

(Photo by Larry Master)

The Morgantown site is located on the northern fringe of the city of Morgantown, at the city limits boundary. In the past, this land was cleared and farmed. The surrounding streams are significantly polluted and degraded from acid mine drainage and from urban/suburban runoff. Now, the surrounding land is experiencing both residential growth and commercial development, and this trend is expected to continue. Therefore, the Morgantown site is mindful of its land holdings and the usage of this property by wildlife. One of the EMPs aims to improve habitat quality of the non-industrial portions of the site. Currently the site hosts populations of common animals (deer, rabbits, skunks, snakes, etc.).

5.2.8.4. National Historic Preservation Act

The National Historic Preservation Act requires that federal agencies consider the potential impacts of their proposed projects on historic properties. It also requires the agencies to undertake appropriate consultation with the State Historic Preservation Officer, local governments and other interested parties. There have been at least two activities within the past 10 years that have triggered historic property investigations. During the 1990s, a portion of the site was investigated where a new facility was to be constructed by the Navy. That investigation covered two previous home sites and produced a Phase I archaeological survey of the areas to be disturbed.

More recently, during 2002, as part of an EA for the purchase of five acres of adjoining land and the proposed construction of several new buildings and facilities, NETL commissioned another Phase I archaeological survey and historic resource survey.

The survey addressed an Area of Potential Effect of 10.1 acres on the northwest side of the Morgantown site. The archaeological survey included background research, geomorphological reconnaissance and 37 shovel test pits. It was thought that possibly a Revolutionary War fort or blockhouse (Burrough's Fort) might have been located in this area. The archaeological survey uncovered no evidence of historic or prehistoric artifacts. It is likely that Burrough's Fort was located farther south.

The historic survey resulted in completion of West Virginia Historic Property Inventory Forms for two houses. Neither house is eligible for listing in the National Register of Historic Places. One of these two houses was demolished by NETL during 2003 to potentially prepare for the future construction of a new childcare facility. A second, newer house and a detached garage were also demolished as part of the site preparation work on the new parcel of land.

5.2.8.5. Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 prohibits unauthorized taking, possessing, importing, or other listed actions, with any migratory birds or their eggs. Two EAs have been conducted at the Morgantown site within the past 10 years without any discovery of migratory bird breeding, nesting, feeding or resting sites. During 1993, a survey was conducted of the wildlife resources on site. Again, no concerns associated with migratory birds were identified.

5.2.8.6. Atomic Energy Act of 1954 (42 USC 2011 et seq.)

The Atomic Energy Act (AEA) of 1954 and its amendments require federal control of radiation source materials for the protection of the public and workers. DOE orders, EPA regulations, and Nuclear Regulatory Commission regulations are based on the AEA. To fulfill its obligations, DOE has implemented radiation protection programs at DOE facilities that process, produce, handle, use or dispose of radiation source materials.

NETL's site in Morgantown does not process, produce or dispose of radiation source materials as a part of its routine operations. However, Morgantown does use research instruments that contain sealed radiation sources. Most of these are small quantity emitters used to make various types of measurements. Additionally, the Morgantown site has four phosphorescent exit signs located in the hazardous wastes accumulation facility. The Radiation Safety Officer maintains an inventory of the radiation sources

on site, indicating the item, isotope(s), quantity, custodian, location, status and activity. Table 5.2.4a. lists the 2003 source inventory. During 2003, the Morgantown site did not release any of the radiation source materials into the environment. All of the source materials are sealed from escape or discharge. No radiation source materials were sent to offsite storage or disposal facilities.

Radiation exposure monitoring at the Morgantown site consisted of the use of several personal dosimeter badges supplied under a contract with Radiation Detection Company, Inc. In addition, leak testing and analysis was performed on sealed sources by Applied Health Physics, Inc.

5.2.9. Executive Orders

5.2.9.1. EO 13149, Greening the Government Through Federal Fleet and Transportation Efficiency

Fleet management is provided by the Pittsburgh site. Discussions of fuel efficiency and compliance with this EO are provided in Section 8.2.9.1, as part of the Pittsburgh site descriptions.

5.2.9.2. EO 13148, Greening the Government Through Leadership in Environmental Management

EO 13148 was enacted to ensure federal environmental leadership by requiring executive agencies to do more than is required of private sector organizations. The Order assigns responsibility to federal agency leaders for integrating environmental accountability into agency day-to-day decision making and long-term planning. Environmental management considerations must be a fundamental and integral component of federal policies, operations, planning, and management. It also requires that pollution prevention should be emphasized as a means to address environmental compliance issues.

The goals of the Order include establishing an EMS, environmental compliance, reduction of toxic chemical releases and use, reduction of ODS use, implementation of environmentally-sound landscaping practices, and reporting under EPCRA and the Pollution Prevention Act of 1990.

NETL implemented an EMS well ahead of the Order’s required due date of December 31, 2005. In fact, the NETL EMS was ISO 14001 certified during October 2003 (see Section 3.0 Environmental Management System). NETL Order 450.1, *Environmental Management System*, lays out the process for implementing the NETL EMS including compliance with EMS requirements in EO 13148.

Monitoring and measuring NETL's environmental compliance is accomplished through special audits, program reviews and EMS audits. The EO’s emphasis on pollution prevention as a means of environmental compliance is primarily fulfilled at

NETL through EMPs. EMPs include performance targets in support of EO 13148. Progress made during 2003 toward accomplishing the Order's goals includes the following:

1. Reduce Non-Hazardous Wastes. The target for 2003 was to generate not more than 241 metric tons, for a reduction of 63 percent from the baseline 1993 level of 641 metric tons. NETL's 2003 tonnage was 220 metric tons – a 66 percent reduction. NETL is well on its way to the 75 percent reduction required by 2005.

2. Reduce Hazardous Wastes Generation. The target for 2003 was to generate not more than 4.62 metric tons for a reduction of 75 percent from the baseline 1993 level of 18.46. NETL surpassed this goal by nearly 10 percent – 3.01 metric tons, or an 83.7 percent reduction. The 2005 goal is a 90 percent reduction from 1993 levels.

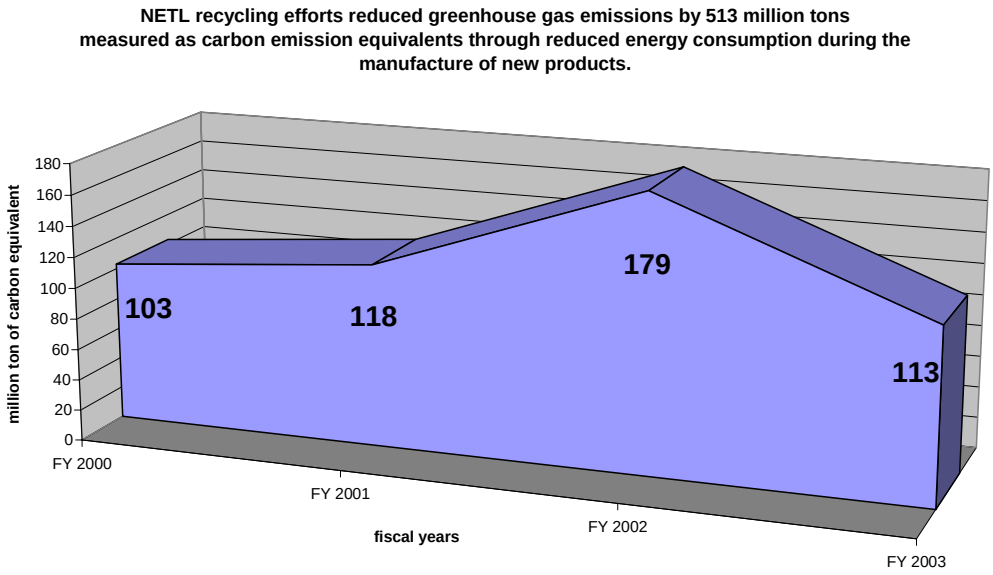
3. Increase Non-Hazardous Wastes Recycling. By 2005, NETL should be recycling 45 percent of its non-hazardous wastes, and 50 percent by 2010. In 2003, NETL exceeded even the long-term goal by recycling 52 percent of its non-hazardous wastes.

4. Reduce Hazardous Materials Procured, Received, and Stored. A major effort was made in 2003 by NETL researchers to dispose of old and expired chemicals. This contribution, along with conscientious buying and monitoring of the onsite supplies, allowed NETL to reduce its chemical inventory by 27 percent from the 2002 baseline. The target set was 20 percent by 2005.

5. Reduce ODSs - Class 1 Refrigerants and Chiller Replacement. By 2010, EO 13148 requires elimination of all non-exempt Class 1 refrigerants from use. Class 1 ODSs, or chlorofluorocarbons (CFCs), are compounds consisting of chlorine, fluorine, and carbon. When CFCs rise to the stratosphere and are broken down by strong ultraviolet light, they release chlorine atoms that then deplete the ozone layer. CFCs are commonly used as refrigerants, solvents, and foam blowing agents. NETL experienced a setback in 2003 when an additional 127.51 pounds of the refrigerants were identified in NETL's inventory. On a positive note, funds were secured for the purchase of two CFC-free chillers to replace the current Class 1 ODS chillers. Replacement completion is scheduled for 2004.

6. Reduce Generation of Greenhouse Gases. Using emissions from 1990 as a baseline, NETL's target reduction of greenhouse gases, e.g., carbon dioxide, was 21.6 percent for 2003. The actual reduction was 13.8 percent. NETL's carbon dioxide emissions are associated with NETL's consumption of natural gas, electricity, and steam. Better progress toward the 2005 goal of 25 percent reduction will be recognized when the NETL Pittsburgh site discontinues use of the National Institute for Occupational Safety and Health's (NIOSH) coal-fired steam system and when both Morgantown and Pittsburgh sites move toward cleaner electrical energy suppliers, both of which are part of NETL's goals.

Reduced Greenhouse Gas Emissions
Attributed to NETL Recycling



7. Decrease Air Emissions of Toxic Compounds. Even though its toxic releases are below the regulatory requirement to report, NETL has taken upon itself to continue to reduce its TRI-listed emissions. The TRI contains information on releases of nearly 650 chemicals and chemical categories from government facilities as well as industries including manufacturing, metal and coal mining, electric utilities, and others. NETL's reduction from the 1997 baseline was 46.7 percent during 2003, more than double its target. Sampling and analysis, including monitoring of facility hours of operation, was conducted at selected point sources to confirm that the air emission inventories were accurate and to act as a tool to identify sources for reduction. Two activities that helped with NETL's reductions for 2003 were (1) changing from bulk dispensing of organic chemicals at the Pittsburgh site to purchasing smaller containers, such as 2-liter bottles, thus reducing evaporation and (2) discontinuing photo development at the Morgantown site, eliminating the use of process chemicals.

8. Conserve and Enhance NETL's Non-Industrial Land Use. NETL contracts with professional horticulturalists to plan and implement its landscaping based on cost-effective and environmentally sound practices. Native plants are used to ensure adaptability. During 2003, a feasibility study was completed that contains details on future landscaping projects including: creating walking trails using coal combustion by-products; creating a composting station to deal with cafeteria and landscaping wastes, thus reducing funds spent on fertilizer and reducing non-hazardous wastes; and using the expertise of area universities to keep costs down by using students in wildlife biology, forestry, and landscape architecture willing to help with planning and implementation in exchange for credit. These ideas will be implemented as funds become available.

Reporting under EPCRA and the Pollution Prevention Act is another requirement of EO 13148. These reporting requirements ensure the public disclosure of releases of toxic chemicals into the environment. The law requires facilities which manufacture, process, or use significant amounts of toxic chemicals, to report annually on their releases of these chemicals. The reports show the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on toxic chemicals that are shipped to other facilities for disposal. The EPA maintains this information in its TRI database (http://www.epa.gov/tri). NETL's 2003 EPCRA reports are discussed in Section 5.2.8.1.

5.2.9.3. EO 13123, Greening the Government Through Efficient Energy Management

Consistent with this EO, NETL developed a Comprehensive Energy Management Plan that establishes the strategy and annual implementation steps for compliance. The Plan includes the requirements of DOE O 430.2a and an energy curtailment plan (for use in the event of emergencies). As a part of the decision-making about whether to undertake certain projects and investments, NETL undertakes life-cycle cost analyses. These analyses have been used primarily for equipment replacement projects, especially HVAC system replacements. Often, these analyses indicate the optimal time to undertake a retrofit project during the life span of equipment or facilities. To further guide the decisions about priorities for energy efficiency improvements to the infrastructure, NETL has conducted energy audits, completing all facilities by 1999. Several Site Operations Division employees took formal classroom training and passed exams to obtain certification as a Certified Energy Manager.

NETL classifies all of its buildings at the Morgantown site as industrial buildings and laboratories; and, therefore, NETL aims to achieve the EO goals of a 20 percent reduction in energy consumption per unit area by 2005 and a 25 percent reduction by 2010 relative to 1990 levels. During the base year (1990), energy use was 250,909 BTU/GSF. Whereas during FY 2003, energy use was 249,187 BTU/GSF, a reduction of 0.7 percent. The percent change from FY 2002 to FY 2003 was + 22.2 percent, resulting from an extremely severe winter during FY 2003 plus the startup of a new energy intensive R&D project (i.e., GPDU). Because the reduction in energy use between FY 1990 and FY 2002 (an average winter) was 18.8 percent, it is believed that the Morgantown site is on track to meet the intent of this EO.

NETL also attempted to reduce the greenhouse gas emissions that could be attributed to the energy use at its facilities. The EO goal is a 30 percent reduction in greenhouse gas emissions compared to 1990 levels. Part of this has been achieved by the reductions in energy (electricity and natural gas) usage. Additional reductions in emissions have come from the purchase of electricity generated from renewable resources (i.e., wind, solar, geothermal, biomass). During FY 2003, NETL (Morgantown and Pittsburgh combined) purchased 486 megawatt-hours of electricity from renewable resources. In West Virginia and Pennsylvania, the primary new sources of renewable energy are the wind turbines that were recently installed along several ridgelines. No renewable energy was generated on site during 2003.

NETL has made efforts to reduce its consumption of petroleum products (oil, gasoline, diesel fuel, LPG, propane), primarily through the use of ethanol and natural gas in alternative-fueled vehicles. Ordinarily, NETL does not use petroleum products for heating buildings. Only forklifts, front-end loaders, snow-removal equipment and lawn care equipment use petroleum products, which are gasoline and diesel fuel. A new ethanol tank and dispensing system was installed in Morgantown to support compliance with this EO.

There has not been much effort to reduce water consumption and associated energy costs, because NETL's water use is primarily for sanitation purposes. Low demand toilets are installed when opportunities arise. During FY 2003, Morgantown used approximately 9,340,000 gallons of water at an estimated costs of $38,762.00.

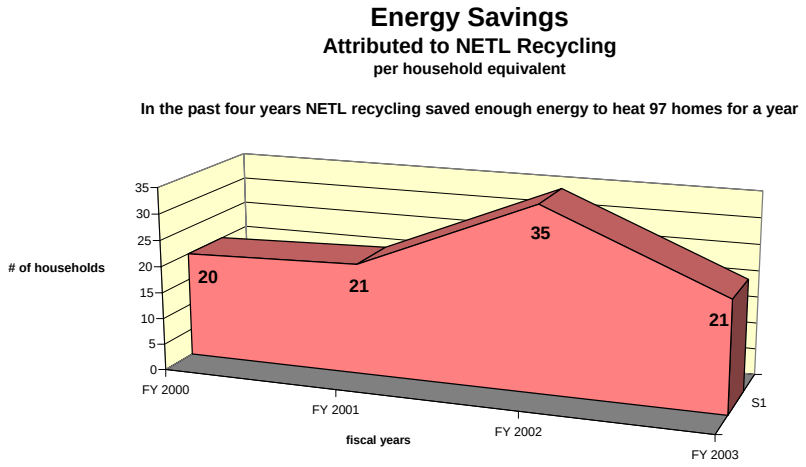
Federal leadership in environmental management is evident in NETL's efforts to renovate existing facilities and to construct new facilities incorporating sustainable building design principles and energy efficiency criteria of the Energy Star program and the Federal Energy Management Program (FEMP). Accordingly, NETL has

plans to obtain Energy Star certification for B-26 after increasing its efficiency levels through a number of retrofits. During 2003, variable frequency fan drives were installed on the 31,000 cfm air handler, to improve its efficiency. Using FEMP funding, a lighting retrofit was completed for the building. NETL has applied for FEMP funding to install another variable frequency drive and to replace all 5 hp and larger motors with more energy efficient models. When B-26 achieves the Energy Star rating, it will become a designated "showcase facility."

An existing "showcase facility" at the Morgantown site is B-3, which was renovated to become a computer simulation facility. Both the HVAC and the lighting systems were completely replaced with energy efficient systems.

During 2003, NETL's architectural and engineering firm continued designing a new administrative building for the Morgantown site. This building is being designed with sustainable design principles and energy efficiency principles so that upon completion the build can qualify for the EPA's Energy Star certification and for a LEED designation. Conceptual design was largely completed during 2003, with detailed design continuing into 2004.

Additional information about our compliance with EO 13123 is found in the *National Energy Technology Laboratory Energy and Utilities Management Self Assessment Report* and in the *NETL's FY 2003 Annual Energy Management Report* (See Appendix 12 of the hardcopy document).



5.2.9.4. EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition

NETL implements through the Pittsburgh site a program for recycling and part of a program for waste prevention. Refer to section 8.2.9.4 within the Pittsburgh discussions for information on waste prevention and recycling. Historically, the affirmative procurement program has been implemented from the Morgantown site. Currently,

many purchases are made by the Morgantown warehouse for both the Pittsburgh and Morgantown sites, so the affirmative procurement program for both sites is presented below.

EO 13101 establishes a general approach and goals for affirmative procurement and for recycling activities by federal agencies. The stated goal is to incorporate waste prevention and recycling into a federal agency's daily operations and to increase and expand the markets for recovered materials through preferential purchasing, consistent with the agency's need for efficiency and cost effectiveness of operations. It directs each agency to establish an affirmative procurement program and a recycling program. Affirmative procurement means the purchasing of goods and services that have a lesser adverse impact on the environment throughout their life cycle and that are reasonable for the government to purchase. Results must be tracked and reported. The goal is 100 percent procurement of goods that meet EPA guidelines, except for those products for which written justification is given for avoidance. The EPA must designate items in their Comprehensive Procurement Guideline. Onsite recycling goals for each agency are to be established progressively for year 2000, 2005, and 2010.

NETL implements this EO, in part, with NETL Procedure P 541.2-1, *Affirmative Procurement Program*. This program attempts to make employees aware of the opportunities for purchasing products designated by the EPA for recycled content. Government credit card purchases will be monitored for compliance, and metrics will be tallied each year for purchases by the warehouse and others.

Basically, NETL takes a two prong approach to this program. The first prong establishes a program of affirmative procurement through the warehouse. The warehouse purchases and distributes common supplies (e.g., office materials) to the sites. The second prong is based on training the professional purchasers and the government credit card holders to make the affirmative choice when purchasing. The trust placed in the purchasers is not blind – the purchases are monitored.

One or more lists of "green" products are produced and made available on the NETL Intranet. When items are needed, the prospective buyer is encouraged to first determine whether used or excess items are already available on site (Intranet-based lists of office supplies, furnishings, tools, chemicals, etc.). If not, the prospective buyer is encouraged to obtain the items from the warehouse (which buys "green"). As a last resort, the prospective buyer can directly purchase the items while under the obligation to make an affirmative choice. Recent enhancements to the SPS software require prospective buyers to provide justifications if they choose to buy non-affirmatively.

NETL's cost-benefit experience with affirmative procurement has been mixed. Some recycled content items have been more expensive than comparable non-recycled content items. Others have been less expensive; so, on average, there is no net cost benefit. Figure 5.2.9.2a. shows the money spent by the Morgantown warehouse on "green" items and the money spent on all items. About 40 percent of the money was

spent on "green" items during 2003. The purchase of "green" items is a function of availability and demand, as shown in Figure 5.2.9.2b. During 2003, NETL purchased nearly 100 percent of the "green" items that could be purchased affordably by the warehouse. This is an improvement over 2002, when the affirmative procurement rate was 98.5 percent. The Morgantown warehouse serves both the Pittsburgh and the Morgantown sites.

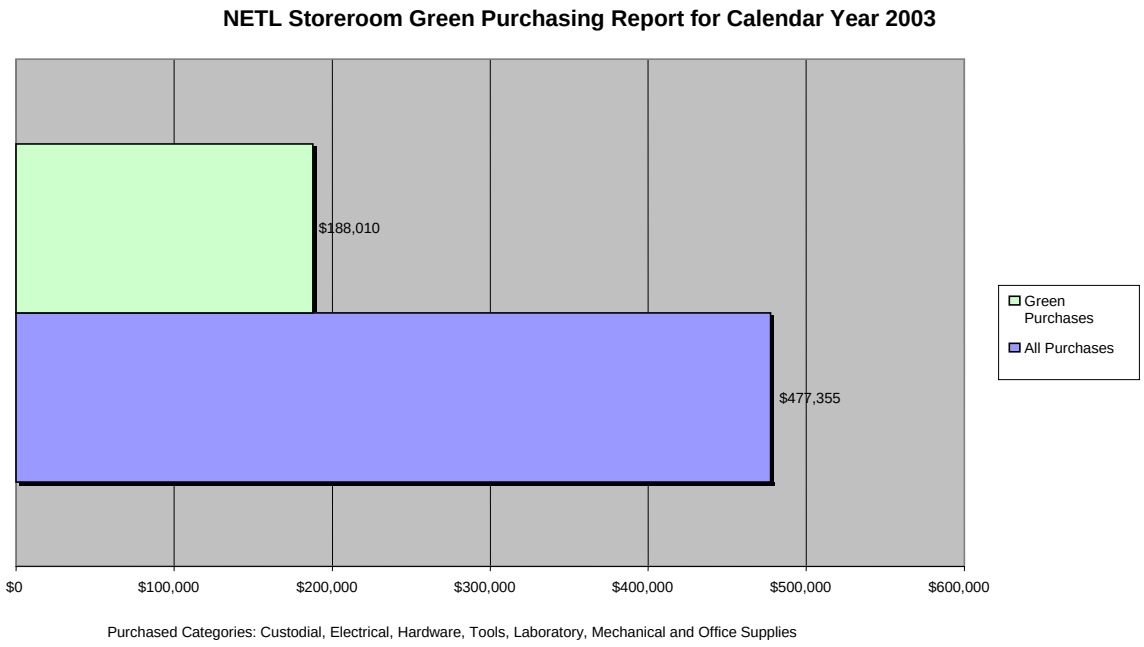


Figure 5.2.9.4a. Affirmative procurement as a percentage of money spent on consumer goods.

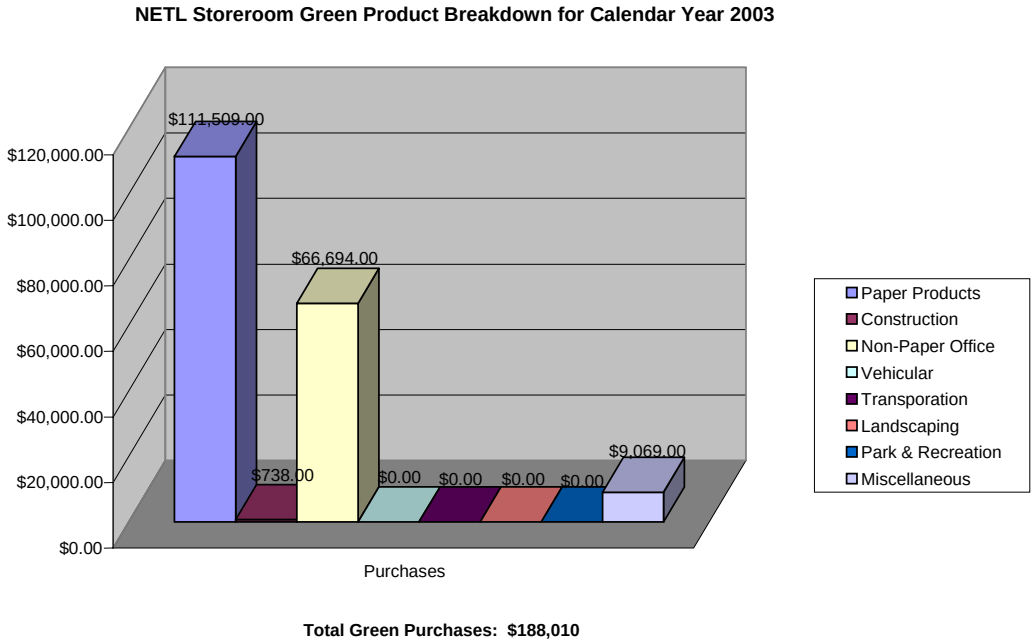


Figure 5.2.9.4b. Affirmative procurement statistics by category of consumer goods.

5.2.9.5. EO 11990, Protection of Wetlands

This EO[1] requires that federal agencies undertake actions to minimize the destruction of wetlands. Basically, wetlands should not be disturbed unless there is no practical alternative. Public review is required for activities that would disturb wetlands.

The Morgantown site has several mapped wetlands within its boundaries. Construction of the new parking garage and the electrical substation resulted in the disturbance or loss of at least two small wetlands, with aggregate acreage of less than 0.1 acres. These two wetlands would be best described as seeps that lacked a well developed hydrophytic plant community (one wetland was a wet spot in the mowed lawn). Because of the small size of these two wetlands, the U.S. Army Corps of Engineers was not interested in further regulatory oversight or control.

5.2.9.6. EO 11988, Floodplain Management

This EO[2] requires justification for a project proposed to be located on a floodplain, a consideration of alternatives to locating the project within the floodplain, and compliance with state and local regulations concerning the use or construction of buildings on floodplains. The Morgantown site does not have buildings or facilities located within floodplains, as delineated on FEMA's Flood Insurance Rate maps. For offsite projects, floodplain impacts and DOE alternatives are addressed during the NEPA process.

5.2.10. DOE Orders

The following is a discussion of key DOE environmental directives that NETL is responsible for implementing. All DOE directives are available for viewing by the public at the DOE Directives Home Page, www.directives.doe.gov.

[1] EO 11990, Protection of Wetlands, which was amended by EO 12608, which was revoked in part by EO 13242, which was amended by EO 13261, which was amended by EO 13344, is still applicable to NETL. The amendments are not significant to NETL. EO 11990 can be downloaded from the EPA at: http://www.epa.gov/owow/wetlands/regs/eo11990.html

[2] EO 11988, Floodplain Management, http://www.fema.gov/library/eo11988.shtm, has not had any amendments that affect NETL and is therefore applicable to NETL.

5.2.10.1. Order 450.1, Environmental Protection Program

NETL implements the requirements of DOE Order 450.1 through its EMS and through NETL's Order 450.1, *Environmental Management System*. The DOE Order calls for "…sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by Department of Energy (DOE) operations…" and, it requires the implementation of an EMS at each site to secure these goals. NETL complies with these requirements through a comprehensive suite of ES&H directives and programs.

NETL is committed to protection of the environment both inside and outside the fence. This commitment is brought into practice through a system of directives and environmental programs and through continuously planning, evaluating, and improving the EMS. Eighty-eight percent of the EMS goals were attained during 2003, with insufficient funding being the primary reason for the goals that were missed. A complete discussion of the NETL EMS and its 2003 goals and accomplishments is contained in Section 3.

Much progress was made during 2003 as part of the effort to achieve ISO 14001 certification for NETL's EMS. This effort included the development of a number of new programs and directives for such things as the identification of significant aspects and targets, development and implementation of EMPs, NETL's EMS, environmental auditing, and control of onsite noise. More specifically, during or by 2003, NETL:

- Developed or reviewed approximately 95 percent of NETL's required ES&H directives for the merged sites.
- Conducted two EMS Management Review Team meetings.
- Developed computer-based training for all NETL employees.
- Conducted four internal EMS audits.
- Reviewed and revised as necessary 22 EMPs, with metrics for each EMP objective.
- Continued to refine the EMS webpage on the Intranet and the ISO 14001 webpage on the external website.
- Finalized the EMS Roadmap (manual).
- Generated bi-weekly regulatory reviews and posted these to the Intranet.
- Undertook a third-party readiness assessment.
- Underwent an EMS Desk Audit by the ISO 14001 registrar.
- Underwent an On-Site Readiness Review by the ISO 14001 registrar.
- Underwent a successful ISO 14001 certification third-party audit by the ISO 14001 registrar.

Generally, NETL is pleased with the progress made in developing its EMS during 2003. NETL emphasized the development of programs for the management of environmental risks, including regulatory compliance risks. Rules and responsibilities

were defined, requirements outlined, and specific activities implemented. As a result, NETL's EMS was verified by the ISO 14001 certification process. The certification auditor interviewed key and randomly selected personnel; plus the auditor inspected key documents, at his request. A functioning regulatory compliance program was required by the auditor. There is always room for improvements, including aggressive tracking and review of implementing requirements for the overall ES&H program.

DOE Order 450.1 requires some activities that only apply to sites that have exceptional impacts on the environment. NETL does not handle nuclear materials or large quantities of toxic materials. Nor have there been any visual indications of adverse impacts on wildlife or vegetation that would prompt such special activities. Therefore, NETL does not undertake certain activities listed in DOE Order 450.1, such as the evaluation of the exposure of aquatic and terrestrial biota to toxic or hazardous materials.

5.2.10.2. Order 231.1, Environment, Safety and Health Reporting

Order 231.1 requires each DOE site to produce and submit various reports on such things as lost work days due to injuries, property loses, and environmental impacts. In fact, this ASER is a requirement of Order 231.1. Please see section 8.2.10.2. for a description of Morgantown's and Pittsburgh's compliance with this Order.

5.2.10.3. Order 435.1, Radioactive Wastes Management

DOE Order 435.1 requires that radioactive wastes are managed to protect workers in accordance with 10 CFR 835 (Occupational Radiation Protection); to comply with applicable federal, state and local laws; and to comply with the guidance in DOE M 435.1-1 (Radioactive Waste Management Manual). Basically, NETL attempts to return sealed radiation sources to the original manufacturer. Only when this is not possible, will NETL send the source item directly to a storage or disposal facility.

This Order would apply to NETL when it disposes of radiogenic sources. However, during 2003 no source items were sent to either disposal facilities or the equipment manufacturer, so the requirements of this Order were not applicable during the year. NETL does not have its own directive regarding radioactive materials disposal; therefore, this Headquarters Order applies directly.

5.2.11. Other Major Environmental Issues and Actions

<u>Compliance and Cleanup Agreements: University of Tennessee Space Institute</u>

NETL has a potential liability for cleanup and for damages resulting from contamination of soil and ground water at the University of Tennessee Space Institute (UTSI), Tullahoma, Tennessee. During the late 1970s, UTSI obtained a contract with NETL to obtain financial support for the continued development and testing of a laboratory-scale coal-fired "magnetohydrodynamic" device. This device simulates a new combustor design for

electric power generation, and the project was called the Coal-Fired Flow Facility (CFFF). During the project, there were various incidents when contamination could occur, such as when project personnel cleaned parts on the lawn using various organic solvents and spilled some of the solvents into the soil. There was also a leaking diesel fuel storage tank that contributed petroleum-related contaminants. When the U.S. Geological Survey investigated ground water quality at the site during 1991, they found contamination in the form of a number of chlorinated solvents and petroleum-related compounds. When the Tennessee Department of Environment and Conservation (TDEC) first investigated the situation during 1993, they requested that UTSI begin a ground water monitoring program. This program further revealed the existence and distribution of contaminants. Sampling has continued from 1991 until the present. Sampling during 2003, indicated that the contaminant concentrations are not rapidly diminishing, so the need for monitoring will continue into the foreseeable future. There are no receptors at risk in the down-gradient direction; however, there is a large public-access lake located downhill (and down-gradient from the spill sites). The monitoring has confirmed that the contaminant plumes are progressing toward the lake and that two aquifers are affected. The shallow aquifer is contaminated with organic solvents, like trichloroethylene and its breakdown products. The deeper aquifer is contaminated with BTEX compounds, apparently from the diesel spill. During 2003, the hired consultants recommended:

> "Based upon the large dimensions of the subject property and the presumed absence of any sensitive receptors, the UTSI site may be an appropriate candidate for a Site-Specific Impaired Classification (SSIC). This process may be appropriate because it is likely that ground water monitoring could extend for many more years before the contamination naturally falls below the Region 9 PRGs [Preliminary Remediation Goals], and because the contamination at the site does not appear to be significant enough to warrant costly corrective action. Therefore, TVG Environmental, Inc., on behalf of the UT Space Institute, recommends that a SSIC be performed on the subject property to determine whether the contamination poses any threat to applicable receptors." [Ground Water Monitoring Report, University of Tennessee Space Institute, June 8, 2003. Conclusions]

Following TDEC orders, ground water monitoring continues at this site with funding from NETL.

6. ENVIRONMENTAL RADIOLOGICAL PROGRAM INFORMATION

Because the Morgantown site is not a nuclear facility, it does not have a radiological program of comparable size and complexity as those programs found at the nuclear facilities. The site does not generate radioactive materials; and it does not transport, process, treat, store, or provide on-site disposal of radioactive wastes. NETL does not have an extensive program for protection of the public and the environment from radiation hazards because its sources are all small, sealed instrumentation sources that preferably would be returned to the instrument manufacturer when not wanted at NETL. For these reasons the radiological program at the Morgantown site has

been described within our regular ES&H (non-radiological) program information. See section 5.2.4, Radiation Protection Activities. Additional information may be found in section 5.2.8.6 (Atomic Energy Act of 1954), and section 5.2.10.3 (DOE Order 435.1, Radioactive Wastes Management).

Non-applicable radiological program requirements for NETL during 2003 are:

- Price-Anderson Amendments Act of 1988, as amended in 1992
- USC, Title 10, Part 71, Packaging & Transportation of Radioactive Material
- 10 CFR 834 (draft), Environmental Radiological Protection Program
- 40 CFR 61, Subpart H, National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities
- DOE Order 5400.5, Radiation Protection of the Public and the Environment
- DOE Order 435.1, Radioactive Waste Management

PITTSBURGH, PENNSYLVANIA

7. MAJOR ACTIVITIES IN 2003

The Pittsburgh site went through many changes during 2003. Following is a brief discussion of the major activities that occurred and their impact on the site.

7.1. Childcare Facility

NETL recognizes the need of federal and other community families to have access to quality care for their children. In response to this need, NETL constructed an 8,600 square foot single-story childcare facility at the Pittsburgh site. Construction of the "Room to Grow Child Development Center" was completed during the summer of 2003, and it began enrolling children that August.

Before any project begins, NETL considers possible adverse effects on the environment. A comprehensive EA of the childcare facility project was conducted during 2002, which concluded that no adverse environmental effects would occur as a result of the project. Energy efficiency was a key consideration during the planning and construction of the facility. Every aspect of the design and construction included a thorough review of energy efficiency and environmental protection. An energy and environmental scorecard was established for the childcare facility to ensure that energy and environmental considerations were addressed in all phases of the construction. These considerations include:

- Radiant heating in the floor of the building, with the floor insulated by foam, stone, and concrete. This creates a large, insulated mass used to heat the building more efficiently.
- Waste water reduction through the installation of low water consumption systems.
- A computerized building management system ensures efficient distribution of heat and electricity to the building 24 hours per day.

NETL has submitted an application to the U.S. Green Building Counsel for certification of the Room to Grow Child Development Center as a LEED building. An application was also made for the EPA's Energy Star certification.

7.2. B-84 Renovations

Old and outdated office and laboratory space in the B-84 research laboratory was renovated during 2003. This building was constructed during the late 1940s (approximately 1948) for use as a pilot-scale Fischer-Tropsch process facility, with supporting bench-scale laboratory capabilities. Fischer-Tropsch process research ended long ago, and current research needs could not be met with the old facilities. In addition to changing mission requirements, new energy efficiency requirements dictate the separation of office space from laboratory space (which has much higher air exchange rate requirements).

Renovations included removal of old unneeded laboratory areas and replacement with modern laboratory space and office space. Laboratory floors were sealed using an epoxy material that prevents penetration by hazardous chemicals. Entry doors were constructed to meet requirements of the Americans with Disabilities Act (ADA). New gas alarms for early detection of carbon monoxide, sulfur dioxide, hydrogen sulfide, oxygen, and nitrogen dioxide were installed and connected into the existing Emergency Notification System. Fire suppression systems were upgraded, asbestos removed, and stairways improved. Low flow bathroom fixtures were installed to conserve water. Improved heating and ventilation systems were installed; and high-lumen, low wattage electrical fixtures were installed to conserve energy. Several years ago, floor drains were rerouted to ensure all materials entering the drains are processed through the Industrial Waste Water Treatment Facility (WWTF).

7.3. B-58 Renovations

Concurrent with the renovations in B-84, renovations were ongoing in B-58. B-58 was constructed during the late 1940s and was used as an administrative office building. Nearly ten years ago, NETL relocated the Office of the Director and central administration functions from B-58 to B-922. Consequently, much of the floor space of B-58 was abandoned or was unsuitable for its current use as professional offices. Hence, a space-efficient floor plan was developed for the building. Old executive offices and an unused cafeteria were removed and replaced with offices. Several environmentally-friendly and energy-efficient systems were

installed. Asbestos-containing materials were removed and modern fire suppression systems were installed. Windows were replaced with low-emission glass to conserve energy. A new high-efficiency boiler was installed to replace the old steam generating boiler. A Building Management System was installed which provides automatic control of mechanical and electrical devices such as air handling units, boilers, water chillers, door openers, exhaust fans, and energy efficient heating/cooling systems. The building now houses the ES&H Division, Site Operations Division, and the Office of Science and Technology.

7.4. Decommissioning of the Coal Preparation Process Research Facility

Several years ago, NETL decided to discontinue research on coal preparation at the Pittsburgh Coal Preparation Process Research Facility. As a result, during 2003 NETL decommissioned the facility by removal of the laboratory gas system and supply cylinders, removal of laboratory chemicals, cleanup of laboratory fume hoods and the laboratory ventilation system, removal of laboratory waste water from the laboratory waste holding tank, removal of laboratory instrumentation, elimination of the building air conditioning, and stabilization of the building winter temperature at 50^0 F. The building is thereby put on standby for future occupancy as office space.

8. ENVIRONMENTAL COMPLIANCE

8.1. Compliance Assessment Process

The Pittsburgh site uses the same processes as the Morgantown site to perform environmental compliance assessments. This includes SARS reviews, program reviews, regulatory agency inspections, management walkthroughs, external audits, and in-house audits. These processes are discussed in Sections 3.8 and 3.9 of this report.

In addition to NETL's internal efforts toward quality assurance, regulatory agency inspections are conducted at the discretion of the agency and may include only selected subsets of the regulatory jurisdiction of the agency. These inspections are usually announced in advance or are periodic, so they are rarely a complete surprise. Inspectors from regulatory agencies know the applicable regulations under their jurisdiction thoroughly, so their inspections are the most valuable from a compliance assurance viewpoint.

There were two NPDES regulatory inspections performed by PADEP at the Pittsburgh site during 2003. One was conducted on January 14, 2003, and the other on January 23, 2003, with neither resulting in any violations being alleged. There were also two industrial waste water inspections performed during 2003 by the Pleasant Hills Authority (PHA) on May 13 and October 29, 2003, with neither resulting in any violations being cited. ACHD's Division of Air Quality conducts an inspection annually of the air emissions facilities at the Pittsburgh site. The 2003 inspection found no violations.

8.2. Compliance Status

8.2.1. Summary of Permits

A summary of environmental permits for the Pittsburgh site is provided in Table 8.2.1.

Table 8.2.1. Summary of Permits – Pittsburgh Site

Permit No. Expiration Date	Permit Type	Regulatory Agency	Description
7032056-000-00500 A Title V permit was administratively accepted but not formally issued. No expiration date has been established for this permit	Air	ACHD	4,500,000 BTU/Hr. Cleaver Brooks Natural Gas Boiler located in B-922.
7032056-000-00501 A Title V permit was administratively accepted but not formally issued. No expiration date has been established for this permit.	Air	ACHD	Three 1,630,000 BTU/Hr. Ray-Pak Finned Coppertube boilers located in B-922
7023056- A Title V permit was administratively accepted but not formally issued. No expiration date has been established for this permit.000-00800	Air	ACHD	500 lb/hr. gas and coal-fired research combustion unit in B-86.
GF 31062.008 12/28/2002. Waiting for PHA to issue a new permit.	Industrial Sewer Use	PHA	Establishes the permissible waste water effluent discharge of certain process/laboratory/ waste-water constituents.
PA0025844 07/11/2001. A renewal application was submitted on 01/11/2001 but a new permit has not yet been issued.	Storm water Discharge	PADEP	National Pollutant Discharge Elimination System (NPDES) permit for the discharge of site storm water into the public waterways of Pennsylvania.

Table 8.2.1. Summary of Permits – Pittsburgh Site			
Permit No. Expiration Date	**Permit Type**	**Regulatory Agency**	**Description**
PA0297201 Not applicable	Industrial Settling Weir	PADEP	Permit for an industrial settling weir owned by the U.S. National Institute of Occupational Safety and Health
02-81183008A 10/04/2004.	Aboveground Storage Tank Registration	PADEP	Permit for tank containing ferric chloride.
02-81183009A 10/04/2004.	Aboveground Storage Tank Registration	PADEP	Permit for tank containing caustic soda.
PAA-030077 04/30/2004 extended to 05/31/2004.	Asbestos	ACHD	Asbestos Abatement Permit for B-94.

8.2.2. Environmental Restoration Activities

CERCLA/SARA Onsite Cleanups. CERCLA Section 120 (40 CFR 300-310; 43 CFR 11) subjects federal facilities to the provisions of CERCLA and imposes an additional set of regulations related to site studies and to notices for the sale and other transfers of federal real property. Specifically, this section makes all CERCLA guidelines, rules, regulations, and criteria applicable to federally-owned or -operated facilities, including: (1) preliminary assessments for facilities at which hazardous substances are located; (2) possible inclusion of such facilities on the NPL; and (3) remedial actions at these sites. Federal facilities are not required to comply with CERCLA provisions regarding financial responsibility and removal/remediation contracts with state governments. Federal facilities that are not on the NPL still may be subject to state laws concerning removal and remediation actions. However, these state laws and regulations may not impose provisions that are more stringent than those applicable to non-federal facilities. EPA administers the CERCLA program in cooperation with the Commonwealth of Pennsylvania. The CERCLIS database lists information about the Pittsburgh site, specifically, that the site is not listed as a NPL site. NETL was not been listed as a NPL site during 2003 or at any other time during the past.

The Pittsburgh site is listed as "Undetermined" on the EPA CERCLA Section 120 List. This is because NETL detected onsite soil and ground water contamination prior to 1997 and has not been issued a No Further Remedial Action Planned letter. Each year, including 2003, NETL provides a status report to the US EPA through the DOE Environment, Safety, and Health Program Office. The status report states the following:

> The site sampling and analysis program has been completed. Remediation for areas of concern was completed during FY 1997. Based on the sampling and analysis, no further significant soil remediation is planned. The human health and ecological risk assessment is in the process of being updated. The current conclusion is that exposure to media at the facility is not expected to generate adverse health effects in onsite or current recep-

tors. Ground water monitoring continued on a routine basis. EPA has been requested to perform a Docket Review, and the Laboratory is waiting on the Docket Status Determination [which is "Undetermined"].

There were no reportable releases during 2003.

During the period from November 1992 to April 1994, the Pittsburgh site performed a broad and comprehensive site sampling and analysis investigation. This investigation included soil, surface water, stream sediment, and ground water throughout each of the areas that are occupied or potentially impacted by DOE operations. One hundred forty-four surface samples and near surface samples were taken from nine study areas at the site. Generally, very low solvent and petroleum contamination was found to be ubiquitous at the site (including background). Table 8.2.2a. provides a summary of the findings from the investigation and the actions taken to remediate the problems.

Table 8.2.2a. NETL Site Sampling and Analysis Investigation and Cleanup Actions

Source	Contaminate	Remediation
Former above-ground storage tank in 900 area	Petroleum	The contamination was cleaned up through excavation and disposal of 493 tons of soil at the Arnoni landfill.
Former fueling boom in 900 area	Petroleum	The contamination was cleaned up through excavation and disposal of 802 tons of soil at the Arnoni landfill.
Former oily water sump in lower 900 area (former Synthane Plant)	Petroleum	The contamination was cleaned up through excavation and disposal of 237 tons of soil at the Arnoni landfill. In addition, 5,750 gallons of oily water were removed from the sump and treated/disposed at the Liquimax Facility.
Former gas holders on main plateau	Lead	The contamination was cleaned up through excavation, treatment, and disposal of 110 tons of hazardous material at the Mill Service Yukon facility and the excavation and disposal of an additional 311 tons of non-hazardous soil at the Arnoni landfill.
Soil piles on the former waste staging area at the 2.2 acre site	Solvent	Prior to scheduled removal, some of the material was accidentally graded flat. Resampling identified only a portion of the graded material as contaminated. Ultimately, 804 tons of soil were disposed at the Arnoni landfill. PADEP reviewed the incident, and decided that since the solvent concentrations were so low, the ground water management plan should be sufficient to detect impacts to ground water and no immediate further action was required.
Soil piles east of B-83	Solvent and mercury	The contamination was cleaned up through excavation and disposal of 6 tons of soil at the Arnoni landfill.
Stained soil near B-910	PCB	The contamination was cleaned up through excavation and disposal of one-half ton of soil at the Arnoni landfill.
Courtyard B-59	Solvent and Petroleum	The contamination was cleaned up through excavation and disposal of previously excavated soil at the Kelly Run landfill.
Main plateau and valley fill area	Tetrachoroethene (PCE) Methylene Chloride, Nickel, solvent, and pesticides in ground water	Ground water monitoring wells were installed to monitor the contamination. No remediation is required.

Table 8.2.2a. NETL Site Sampling and Analysis Investigation and Cleanup Actions

Source	Contaminate	Remediation
Contaminated soil outside B-90	TPHs	Removal of 160 tons of contaminated soil.
Contaminated soil west of B-93	TPHs	Removal of 112 tons of contaminated soil from the site of former above-ground storage tanks.
Contaminated soil near B-902	TPHs	Removal of 30 tons of contaminated soil at site of former under-ground storage tank.
Contaminated soil near B-922	TPHs	Site capped by installing a compacted clay cover.

RCRA Cleanups. The NETL Pittsburgh site has never had a RCRA corrective action and, when last checked, was not on the Corrective Action Report (CORRACTS). For purposes of RCRA regulation, the Pittsburgh site is a large quantity generator, which is defined as an entity that generates in any month more than 1000 kilograms of non-acutely hazardous wastes or more than 1 kilogram per month of acutely hazardous wastes. Therefore, Pittsburgh is found on the RCRIS-LQG (Resource Conservation and Recovery Information System for Large Quantity Generators) database.

During 2003, there were no RCRA-regulated spills or releases, no remediation actions, and no special surveillance actions. Ground water monitoring is conducted routinely and provides base-level surveillance for the entire site.

Federal Facilities Compliance Act Actions. The Federal Facilities Compliance Act waived sovereign immunity for the federal government executive agencies regarding the payment of fines and civil penalties for violations of RCRA. It gave EPA explicit authority to issue compliance orders to federal agencies for violations of RCRA. However, it also permitted executive agencies to avoid RCRA's land storage ban on mixed radioactive wastes. There were no occasions during 2003 when EPA's Federal Facilities Division contacted NETL about possible compliance actions. The EPA did not levy any civil fines on NETL during 2003. NETL does comply with federal, state, and local laws regarding the handling of hazardous wastes and is subject to civil fines for violations of those requirements.

TSCA Actions. There were no documented spills or releases of TSCA regulated substances (e.g., pesticides, PCBs, formaldehyde, and methylene chloride) occurring during 2003. The site does have some residual asbestos from earlier construction methods. There has been an ongoing program of asbestos removal or encapsulation during recent years in an effort to eliminate or secure all asbestos-containing materials. During 2003, there was one asbestos abatement action at the Pittsburgh site, which was for remediation of B-94. This remediation involved the removal of 9 cubic yards of asbestos-containing material, including wastes created by removal of 3,000 square feet of ductwork with asbestos caulking on joints and 2 cubic feet of asbestos-containing furnace materials. The balance of this waste consisted of floor tiles contaminated with asbestos-containing mastic, as well as some miscellaneous laboratory equipment containing asbestos material. All asbestos abatement work is performed by an asbestos remediation contractor who utilizes trained and certified technicians. NETL requires that asbestos abatement firms

provide copies of certificates to the Federal Asbestos Program Manager. The contractors arrange for the disposal of asbestos and also provide NETL with a manifest after they have shipped the wastes to a disposal facility. NETL office workers are not exposed to asbestos hazards during their routine work. The abatement work is performed to minimize the risk to NETL maintenance workers who would perform maintenance work at these locations.

8.2.3. Wastes Management and Pollution Prevention Activities

RCRA Program. Hazardous wastes operations at the Pittsburgh site complied with all applicable federal, state and local regulations that apply to the handling, storage, and disposal of hazardous wastes during 2003. RCRA (42 U.S. Code 6901 et seq.) is regulated through 40 CFR parts 260-271, and the transportation of hazardous wastes is regulated through 49 CFR 171-179. The regulations found in 40 CFR 261, Identification and Listing of Hazardous Wastes; 40 CFR 262, Standards Applicable to Generators of Hazardous Wastes, and 49 CFR 171-179 DOT Hazardous Materials regulations, all apply to the NETL hazardous wastes program. NETL Procedure 435.1-1B (now P 450.1-9), *Waste Handling, Storage and Disposal,* is used to implement these regulatory requirements.

PADEP is authorized to enforce the federal and state hazardous wastes management requirements at the Pittsburgh campus. To help ensure they are current on regulatory requirements, the hazardous wastes operations personnel frequently review current wastes industry newsletters and bulletins, receive information from the Academy of Certified Hazardous Materials Managers, read NETL's regulatory compliance reviews, and attend every three years the hazardous wastes operations training and the hazardous materials transportation training.

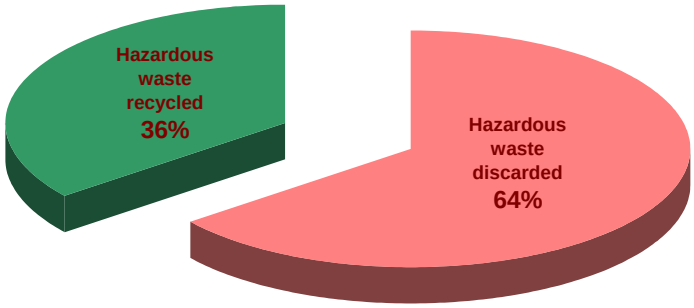
NETL is a large quantity generator and has an EPA Large Quantity Generator Identification Number. Although Pittsburgh generates relatively small amounts of hazardous wastes during most months of the year, occasional lab activities result in the generation of larger quantities that exceed the threshold for small quantity generators. Hazardous wastes are not retained on site for more than 90 days because NETL does not have a permit to store non-universal hazardous wastes for a longer period of time. Most wastes are shipped in laboratory packs containing combinations of several different compatible chemicals inside a single container. Significant hazardous wastes generated during 2003 are listed in Appendix A: Table 8.2.3a. Pittsburgh RCRA Hazardous Wastes Generation.

The Pittsburgh site is not authorized and does not transport hazardous wastes. All hazardous wastes transported during 2003 were transported to the storage and treatment fa-

cilities of American Environmental Services (AES), Inc., using AES to transport the wastes. The AES facility combines small packages of similar wastes and repackages the wastes for more cost-effective shipment to a final disposal facility, selected by AES. Non-hazardous wastes (normal office wastes not being recycled and cafeteria wastes) are transported to a local landfill.

The hazardous materials handling and wastes generation operations were improved during 2003. Total hazardous wastes generated were 6,075 pounds during 2003, which were 1.63 tons less than the target established for 2003. Please see section 3.4 on Environmental Objectives and Targets for an explanation of how this target quantity was established. This reduction was accomplished using a multitude of reduction efforts. For example, when unused and unopened chemicals were received for disposal, they were offered to other researchers for potential use. Less hazardous or non-hazardous chemicals were substituted when possible for requested hazardous chemicals. Smoke detectors and batteries were sent to manufacturers for recycling. Used computers were offered to schools or offered for sale as excess government property.

FY 2003 RCRA Hazardous Waste Disposition Profile



Design and engineering studies of facility modifications to improve hazardous wastes operations were also completed during 2003. Design changes for the Chemical Handling Facility were submitted through a multiple-level peer review process to ensure that all stakeholder considerations were included and construction costs kept within budget. Included in the design changes were the closing of two ends of the open building to reduce the impact of weather on the facility. One end was left open to facilitate ventilation to the building. A new HVAC system was designed into the facility to protect employees from exposure to hazardous vapors. Also, epoxy sealants were evaluated for use on the building floors to protect against chemical penetration into the building foundation. The chemical storage racks were evaluated and determined to be satisfactory for reuse upon resurfacing. Construction is scheduled to start during 2004.

Liquid wastes are kept in drums. NETL Pittsburgh does not have a storage or treatment pond. There are no underground storage tanks in Pittsburgh for petroleum or hazardous wastes, and there are no above-ground storage tanks for hazardous wastes. No leaks were

reported from storage tanks during 2003. Liquid acids and bases are collected monthly at the satellite accumulation areas and are analyzed for acidity.

Wastes handling and management personnel ensure regulatory compliance by:

- Weekly walkthrough inspections of the Chemical Handling Facility.
- Monthly pickup at satellite accumulation areas.
- Participation in the SARS process.
- Participation in ERO exercises.
- Training on hazardous wastes management.
- Regulatory reviews.
- Attendance at conferences addressing hazardous wastes requirements.

NETL complies with the RCRA hazardous wastes manifest requirements, by initiating the documentation before wastes are shipped from the site. The NETL Hazardous Waste Coordinator initiates the documentation and coordinates the completion of the manifest with AES, Inc. and the NETL Federal Hazardous Waste Manager. When AES is ready to ship the wastes, the manifest is again checked against the actual shipment to ensure accuracy. All information collected for the manifests, including wastes generation forms, waste profiles, contracts, and other documents are retained by the Hazardous Wastes Manager with copies sent to the ES&H Records Center.

At NETL, the hazardous wastes generators have full responsibility for managing wastes that they generate from the moment of generation until the wastes are transferred to the wastes management organization. The wastes generators ensure that all hazardous or potentially hazardous wastes are properly contained and identified at the point of generation. Generators are held accountable for wastes that are not properly contained or identified or are otherwise mismanaged.

Wastes handling personnel who collect the hazardous wastes first inspect the container, the labels, and the internal manifest to ensure that the wastes are properly packaged and labeled and that the required documentation is complete and accurate. The wastes handling personnel are not allowed to accept or move any hazardous wastes without proper packaging, labeling, and identification. The responsibility for identifying the wastes rests primarily with the hazardous wastes generator.

NETL's Federal Hazardous Waste Manager ensures compliance with applicable regulations by overseeing the entire NETL hazardous wastes program. Periodically, the Hazardous Waste Manager reviews the program and brings any deficiencies to the attention

of the appropriate individuals or managers. He also ensures the development, accuracy and submission of the Biennial Hazardous Wastes and Waste Minimization Reports to the state of Pennsylvania. The Manager audits hazardous wastes management operations, hazardous wastes generators, and TSD facility subcontractors. The Manager signs the RCRA manifests and other relevant documentation (e.g., Land Disposal Restriction [LDR] forms, waste profiles, bills of lading, etc.) and maintains the original copy of the RCRA manifests, biennial reports, and certificates of disposal or destruction. The Manager ensures that training is provided to employees who require the annual Hazardous Wastes Operations and Emergency Response training (HAZWOPER) so that they may properly perform their duties and responsibilities. Training includes the proper handling techniques and disposal methods for chemical wastes.

TSCA Program. The Pittsburgh campus uses more than 100 different materials containing TSCA-regulated substances. Nearly all of these substances are present in very small amounts, either as preservatives for stock chemicals or as chemical reagents used in the laboratories. None of these TSCA-regulated substances are manufactured by NETL, and consequently NETL is not subject to TSCA reporting requirements. Table 8.2.3b. lists the TSCA-regulated chemicals used at NETL Pittsburgh in quantities greater than 10 pounds.

Table 8.2.3b. TSCA Chemicals Held at NETL-Pittsburgh In Quantities Greater than 10 Pounds

Common Name	CAS	Quantity (lbs.)
Naphthane	000119-64-2	35
Carbon Tetrachloride	000056-23-5	13
Boric Acid	010043-35-3	39
Nitric Acid	007697-37-2	165
Hydrochloric Acid	007647-01-0	2,132
Hexane	000110-54-3	55
Sodium Acetate	000127-09-3	19
Carbon Dioxide	000124-38-9	2,323
Ferric Chloride	007705-08-0	2,291
Methanol	000067-56-1	110

During 2003, some asbestos remained on site encased within building materials such as floor tile, floor tile mastic, roofing tar paper, laboratory counter tops, laboratory hoods, muffle furnaces, and drying ovens. No PCBs are kept on site for lab use or as a dielectric fluid inside electrical transformers. ES&H staff are not aware of any PCB-containing devices on site.

Asbestos is perhaps the most abundant TSCA-regulated substance retained on site. NETL has never manufactured asbestos but has used it primarily in building materials that were purchased during previous years. Most is contained within floor tile and floor tile mastic found on the floors of several lab buildings (B-84, 58, 95, 74, 94, 920 and 83). The remainder is contained in the roofs (B-83 and 94) and within laboratory furniture (B-83, 94, and 74). Asbestos located inside buildings is well encapsulated by the matrix material (e.g., floor tiles). Air monitoring has revealed no shedding of asbestos fibers. Asbestos has been removed from outdoor pipes where it had once been installed. However,

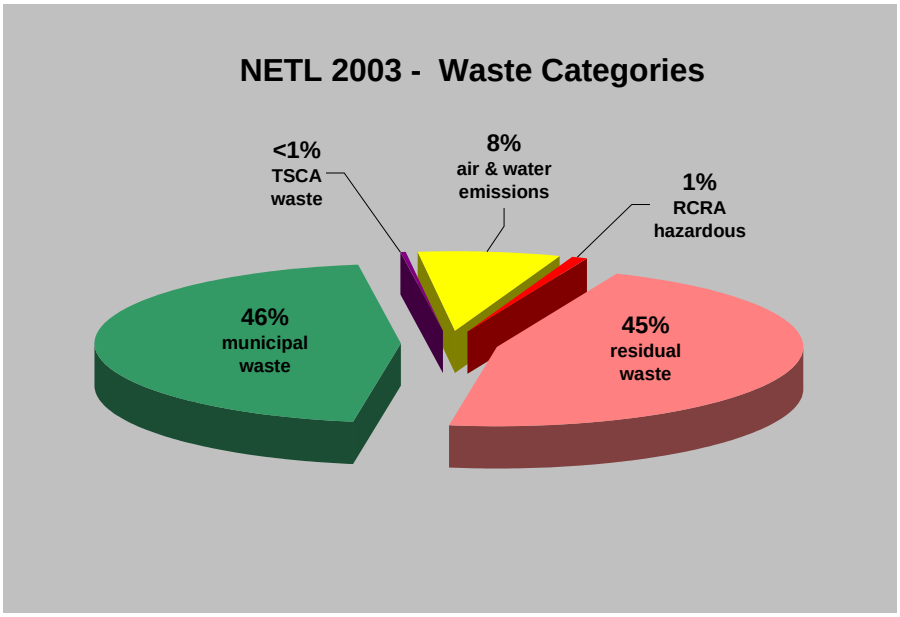
asbestos is found on site within some gaskets, inside some lab device refractories, and in asbestos-containing bricks lining the inside of some boilers. During 2003, there were no new discoveries of asbestos on site. Asbestos abatement activities are discussed above in the section on TSCA remediation activities.

FIFRA Program. During 2003, there were no restricted-use pesticides, herbicides or defoliants kept on site. Only general use pesticides were kept and used for routine insect control. A commercial pest control company provided routine insect control applications where needed around the cafeteria, buildings, and trailers. Herbicides were not sprayed on the lawns during 2003, but controlled spraying was performed to remove poisonous plants such as poison sumac and poison ivy.

NETL's Pollution Prevention Program. NETL integrates pollution prevention into its daily work and planning activities. At NETL, pollution prevention is used in a broad sense to refer to judicious purchasing, the purchasing of less toxic substitutes, procurement of goods containing recycled materials, onsite recycling efforts, the purchase of electricity from less polluting sources, maximizing the energy efficiency of buildings, and implementation of an EMS with continual improvement. Some of these topics are addressed in other sections.

The Pollution Prevention (P2) program is implemented in accordance with NETL Procedure P 435.1-2, *Waste Minimization, Pollution Prevention, and Recycling Program*. "It is the NETL policy that wastes generation shall be prevented or reduced at the source, whenever feasible. Wastes whose generation cannot be avoided shall be recycled in an environmentally safe, compliant manner, whenever feasible. Disposal or releases of wastes into the environment shall occur only as a last resort…" The Waste Minimization Coordinator oversees the source reduction efforts and the recycling programs. The idea is to create a culture of waste minimization and pollution prevention by training the employees and facilitating the processes. Computer-based training is provided; and messages about recycling, affirmative procurement, and source reduction are posted on the Intranet. Key requirements of the Waste Minimization and Pollution Prevention Plan include the establishment of goals for reducing the volumes of various waste streams, tracking and reporting of material usage and wastes generation for comparison with the goals, employee awareness training, and specific pollution prevention opportunity assessments (PPOAs). Key requirements of the Recycling Plan are the implementation of collection programs for recyclable materials, the sale or donation of recyclable materials, and employee awareness training. NETL's principle recycling programs are: (1) aluminum cans, (2) corrugated paper, (3) mixed office paper

wastes, and (4) leaf wastes. Contractor employees pick up these materials at designated accumulation areas and transport them to the recyclables management area or the designated area (for decomposition of leaf wastes). Arrangements are then made for the sale, donation, or onsite use of these materials. Scrap metals (steel, copper, aluminum) are accumulated in designated dumpsters. Magazines, newsprint, telephone books, and wooden pallets are also recycled on an opportunistic basis (which occurs most of the time).



A few examples of new pollution prevention or recycling initiatives are presented below. Other examples are provided throughout the text of this document.

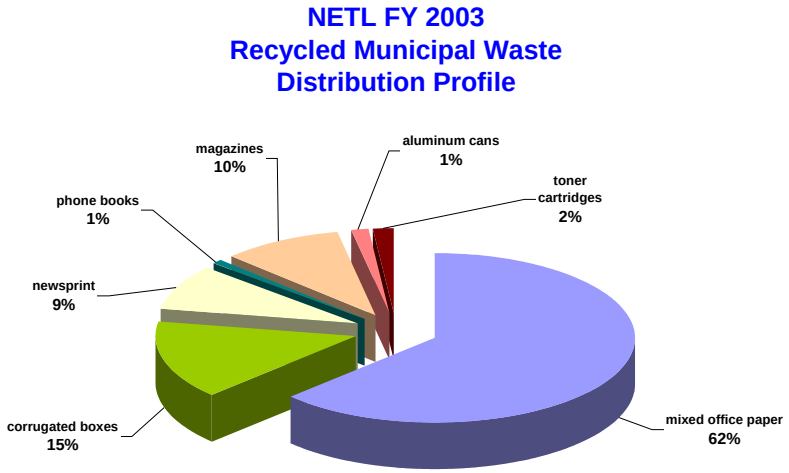
- NETL began purchasing low-volatile paints, instead of high-volatile oil-based paints.

- NETL increased contracting with offsite paint shops where paint volatiles are either captured or burned. NETL does not have a paint booth where volatiles could be captured.

- NETL exhaustively investigated the potential for reducing the quantity of oily rags sent to disposal. Given the rag laundering program currently in place and the rag reuse practices for automotive maintenance (rag reuse until no longer useable), no further reduction is feasible.

- Reduction of waste water treatment sludge – the Pittsburgh site is investigating low-cost options for drying the sludge to decrease its weight and for reducing the quantity of sludge generated by lowering the amount of ferric chloride used as an “agglomerate” for precipitating metals.

- Pittsburgh is seeking opportunities for disposing of coal combustion ash and for reuse of treated waste water effluent as process/cooling water.



Many of the principle pollution prevention activities are addressed by the EMPs, as outlined in Table 3.4.

Near the end of 2002, DOE Headquarters arranged for a PPOA to seek ways to further minimize wastes generation at the Pittsburgh and Morgantown sites. The report was issued to NETL during January of 2003. NETL has been investigating the recommendations. The recommendations for both sites are shown in Appendix A, Table 5.2.3b, along with the actions taken and current status.

8.2.4. Radiation Protection Activities

Use of radioactive materials at NETL is limited to research instrumentation that contains sealed radioactive sources (see Table 8.2.4a.) and radiation generating devices (see Table 8.2.4b.). NETL does not generate, process, treat, or have on site any permanent disposal facility for radioactive wastes. An inventory of radiation sources is actively maintained and monitored by the Federal Radiation Safety Officer. Information is retained about the item, isotope, quantity, custodian, location, status, and sealed source activity. Title 10 CFR 835.901(e), DOE Policy 441.1, and NETL Procedure 440.1-17 are the applicable regulations and requirements. In addition best management practices include DOE Implementation Guides, EPA information, and Commonwealth of Pennsylvania recommendations and requirements.

Table 8.2.4a. lists the radioactive sealed sources in use at Pittsburgh during 2003. NETL did not release any radionuclides into the environment. All of the radioactive sources are sealed and are used in instrumentation. The site support contractor (Parsons) has the required NRC license for the three Ronan Engineering Company Level Density Gauges. Parsons also held the NRC license for the four Berthold Systems, Inc., Level Density Gauges prior to March 2003 when these sources were returned to Berthold Systems, Inc., for recycling. The sealed source Electron Capture Device is licensed through the manu-

facturer. In addition, there are nine radiation generating devices in six radiological control areas at Pittsburgh. Four of the devices used radioactive source materials, and the other five are in instruments that produce only X rays (see Table 8.2.4b). These instruments are two scanning electron microscopes, an electron spectroscopy chemical analyzer, an X-ray diffractometer, and an X-ray mailroom scanner.

Radiation monitoring performed at NETL consisted of using a limited number (less than 20) of personal dosimeter badges and rings supplied to potentially exposed employees. In addition, there are specific radiological control areas which have dosimeter badges continually displayed. Leak testing is performed every 6 months on all applicable sealed sources and swipe tests are performed randomly. None of the testing or monitoring detected any radiation leakage or exposure problems during 2003.

Table 8.2.4a. 2003 Radioactive Sealed Sources in Use at the Pittsburgh Site

Isotope	Qty	Activity	Supplier/Source	NRC License
Ni-63	1	15 mCi	Gas Chromatograph Electron Capture Device	Held by Hewlett Packard
Cs-137	4	30 mCi (3); 6 mCi (1)	Berthold Systems, Inc., Model LB-7400D, Level Density Gauge	Source returned to Berthold in March 2003
Cs-137	3	40 mCi (2); 20 mCi (1)	Ronan Engineering Company, Model 137; Level Density Gauge	Held by Parsons
Assorted	80	Consumer Product	Smoke Detectors	Not Required

Table 8.2.4b. 2003 Radiation Generating Devices: X-ray Devices

Device	Quantity	Location
X-Ray Tube	1	B-922 Mail Sorting Facility
X-Ray Diffraction Instrument	1	B-94 X-Ray Diffraction Laboratory
Scanning Election Microscope	2 Devices	B-94 and B-84 SEM Laboratories
Electron Spectroscopy for Chemical Analysis	2 X-Ray Tubes	B-94 Electron Spectroscopy for Chemical Analysis Laboratory

8.2.5. Air Quality and Protection Activities

The NETL Ambient Air Quality Management Program is concerned with protection of outdoor air quality. This includes the applications for air emissions permits that allow NETL to conduct research into the science of reducing air emissions. The Program is regulated by the ACHD, which is authorized to administer Title V permits under the Clean Air Act Amendments.

The Federal Air Quality Manager prepares permit applications, obtains permit renewals as needed, and oversees monitoring programs and reporting. Air emissions are reported annually in accordance with the three air permits maintained at the site. One permit (7032056-000-00500) is for a 4,500,000 Btu/hr Cleaver Brooks natural gas-fired boiler, located inside B-922. The second permit (7032056-000-00501) is for three RayPak Finned Copper Tube Boilers, located inside B-922, each having a 1,630,000 Btu/hr input rat-

ing. The third permit (7023056-000-00800) is for the 500 lbs/hr gas and coal-fired research unit located inside B-86.

The site was designated as an "administratively synthetic minor source" by the ACHD, and this designation continued through 2003. A "synthetic minor source" is a source that accepts an emissions limit that allows it to remain outside of the federal permit program.

It is any source that has its emissions administratively limited below certain thresholds by means of a federally enforceable order, rule or permit condition. A synthetic minor source pays a fee for the work involved in establishing the order, rule or permit condition. After the synthetic minor source determination is complete, the source then becomes a registered source with the agency. An administratively synthetic minor source must have a completed application form; a written certification signed by a responsible official; a fee deposit sufficient to cover the estimated costs to the Division of Air Quality to review, evaluate, and act on the application; and submittal of sufficient information to PADEP. The designation provides interim permitting under Title V pending final approval of the permit by PADEP.

This designation provides full compliance with Title V of the Clean Air Act. For the Pittsburgh site, three R&D combustion units follow operating requirements as outlined in the Title V application submitted to Allegheny County. Although not yet permitted under Title V, Allegheny County requires NETL to follow the limitations submitted in their application. NETL has never exceeded these operating limits.

The model used by the ACHD, Bureau of Environmental Quality, Division of Air Quality to calculate air emissions is based on fuel usage and provides worst-case emissions estimates. This model takes into account the type, quantity, and total time of fuel burned to determine the estimated emission level. The results of this modeling are summarized in Table 8.2.5. The 500 lb Combustion Unit generates the largest single amount of emissions at the Pittsburgh site, while several other operations contribute a substantial amount of the remaining site emissions. These other sources include: the flexible Modular CO_2 Capture Facility (MCCF); Raypak Boilers in Bldg 58, 84, 900, 920, 921, and 922; three Kewanee Boilers in Bldg. 84; unpaved roads (particulates); and paved roads. The Combustion and Environmental Research Facility (CERF) was not operated during 2003 and is not included in these estimates.

Table 8.2.5. 2003 Air Emissions Annual Report						
Pollutant	**Estimated Emissions (Tons/Year)**					
	500 lb Combustion Unit	**MCCF**	**Combined Boilers**	**Unpaved Roads**	**Paved Roads**	**Total Site**
Carbon Monoxide	0.077505	0.003066	0.09681	0.013012	0.149667	0.34006
Lead	1.78 e-5	0	0	0	0	1.78e-5
Nitrogen Dioxide	1.0009	0.00365	0.11525	0.00125	0.01448	1.13553
Particular Matter <10 micron	0.00132	6.94 e-5	0.0021837	1.00554	0.52884	1.537953
Particular Matter Total	0.00148	6.94 e-5	0.0021837	2.83179	2.71029	5.545813
Sulfur Dioxide	5.64625	2.19 e-5	6.923 e-4	0	0	5.646964
VOCs	0.00580	2.01 e-4	0.0063193	0.00094	0.01089	0.024150

NETL is not required to perform continuous air monitoring to determine emission levels and is in compliance with all permit requirements for the 500 lbs/hr research combustion unit and for the boiler air emissions permits. There were no NOVs and no unplanned air emissions during 2003.

Several improvements were made to the Ambient Air Quality Management Program during 2003. This included adding a new baghouse filter to the 500 pounds per hour research combustion unit. This new baghouse filter provides for more effective removal of particulates from the exhausts, especially for particulates above 2.5 microns. In addition, NETL voluntarily elected to further limit the allowable run time for the 500 lbs/hr research combustion unit to provide for even lower emissions.

NETL actively participates in a program for a reduction in the use of Class I ODSs. This program aims to recover and reclaim chlorofluorocarbon refrigerants from HVAC equipment for subsequent reuse. The inventory of ODS-containing equipment on site is steadily decreasing. Older ODS-containing equipment is being replaced, and the usage of Class I ODS is being phased out for the HVAC equipment. For example, water fountains that contained Class I ODS in their chiller units were replaced across the site during 2003. Systems and appliances with environmentally friendly substitutes are being used to replace the Class I ODS systems and appliances.

The site maintains three, 30-foot meteorological towers that monitor temperature, relative humidity, precipitation, and wind speed. The towers are not used for emissions monitoring. Data are collected twice per week for use by the site's HVAC programs, for providing critical meteorological information to the ERO during emergency situations, and for providing meteorological information used in the models for the air emissions program.

8.2.6. Surface Water Quality and Protection Activities

The topography of the NETL Pittsburgh site is comprised of rolling hills which separate the natural flow of water on the site. In addition, NETL has separated many of the activities performed on the site. Consequently, the surface water quality and protection program is essentially divided into two distinct areas. One area is located south of Wallace Road, and the other is located north of Experimental Drive. The north area houses all of the laboratory and process facilities for the DOE portion of the site. The south side primarily houses administrative, project management, and contractor maintenance operations.

The site is staffed by ES&H professionals who review site activities to ensure that the site does not contaminate storm water, industrial waste water, or sanitary waste water discharges. All onsite research projects and support activities are reviewed by ES&H staff, as part of the SARS process, for possible impacts on air, surface water, ground water, and soil. Applicable federal, state, and local regulations potentially affecting these activities are reviewed, and compliance is ensured before approval by the ES&H staff.

Laboratory waste water from the north area is routed to the WWTF located in B-74. Treated industrial waste water effluent from the site's WWTF is then routed to, and given final treatment in, the Pleasant Hills publicly owned sewage treatment plant. All treated industrial waste water, which consists of laboratory and process waste water from the site's R&D operations, is regulated by the Pleasant Hills Industrial Sewer Use Permit Program. Treatment in the WWTF consists of flow equalization with subsequent pH adjustment by adding caustic soda or ferric chloride. Metals and particulates are removed by agglomeration in the flocculation tank, coupled with solids separation in the plate separator, and final removal of the metals and particulates occurs in the filter press. An activated clay/activated carbon filtration system provides additional removal of organics and metals from the treated waste water prior to discharge into the sanitary sewer. The effluent can be re-circulated from a point just beyond the plate separator (prior to the filtration system) if additional pretreatment is required prior to filtration and discharge. Final effluent pH adjustment occurs just prior to discharge into the effluent monitoring tank.

PHA issued the current Industrial Sewer Use Permit to NETL on December 28, 2001. Conditions placed on NETL by the permit limit the quantity of effluent constituents (free cyanide, phenolics, mercury, copper, chloroform, and pH) that may be discharged in the waste water. The permit requires NETL to submit to PHA's consulting engineering firm, Gannett Fleming, Inc., waste water analysis data semiannually for the treated waste water effluent discharged through the WWTF, which is located in B-74. NETL also provides

the PHA with the monthly sampling analysis at their request, although this data is not required by the permit.

In addition, NETL is required to prepare an annual waste water survey report that contains no analytical data but rather summarizes information about the site's industrial waste water discharge, including the volume of waste water discharged, the number of site employees, the type of wastes discharged, and the type of pretreatment performed.

NETL did not receive an NOV for the Industrial Sewer Use Permit during 2003. The concentration of free cyanide was detected at 0.0051 mg/L on November 7, 2003, which is 0.0001 mg/L higher than the permit limit (0.0050 mg/L). The PHA did not deem this exceedance significant enough to issue an NOV. No other concentrations of regulated contaminants were reported as exceeding the permit's monthly discharge limits. This was a substantial improvement over the three NOVs received during the same period of 2002. Table 8.2.6a. NETL-Pittsburgh 2003 Industrial Sewer Use Permit Monthly Waste Water Treatment Facility (B- 74) Effluent Analysis (Appendix A), provides the monthly industrial waste water effluent sampling results taken at the B-74 WWTF during 2003, including the free cyanide exceedance that was not cited by the PHA (exceedances are indicated by shading).

Table 8.2.6b. 2003 Industrial Sewer Use Permit Semi-Annual Monitoring Analysis (Appendix A), provides the semiannual industrial waste water effluent grab sampling results for the Industrial Sewer Use Permit. None of the B-74 grab samples exceeded permit limits.

During August of 2003, U.S. Filter (formerly Chester Engineers) was contracted to evaluate and optimize the WWTF performance and to assess the possibility of minimizing treatment process wastes, including waste sludge and waste water and the recycling or reuse of treated industrial waste water on site for cooling water and other non-potable uses.

The south area does not have and does not need an industrial waste water sewer system, separate from the sanitary sewer system that drains to the Clairton (PA) plant, because there are no laboratory operations on the south side of the site.

NETL's sanitary sewage from the north area is combined with sanitary sewage from CDC/NIOSH. This sanitary sewage discharge is separate from the discharge of the treated laboratory/process waste water. Sampling of the sanitary sewage occurs at the sub-interceptor location, which is adjacent to the site's main entrance road approximately 200 feet inside the main entrance gate, at the point where sanitary waste water from the CDC/NIOSH area is combined with sanitary waste water from NETL. Analytes for this waste stream are the same ones required for the industrial waste water permit. Sampling of the effluent entering this shared sub-interceptor revealed that the NETL-generated sanitary sewage contribution was not a source of discharge contamination. Subsequently, NETL was removed from the sub-interceptor stream sampling requirement beginning in 2001. However, NETL continues to perform sampling of this waste water stream at the

request of the PHA. No NOVs were issued for the sub-interceptor discharge monitoring analysis presented in Table 8.2.6b.

In addition to the sampling and analysis performed by NETL and CDC/NIOSH, PHA conducts independent sampling and analysis of waste water effluent from all these locations. This information is used by the PHA to determine whether any discharges of the treated effluent were in excess of the local limits and required issuance of a NOV.

MSHA has a separate sanitary sewer line from the NETL and NIOSH sub-interceptor discharge on the north side of the site. The MSHA sanitary sewer line discharges directly into the South Park main sanitary line. The sanitary sewer discharge from the NETL/NIOSH sub-interceptor also discharges into the South Park main sanitary line, but at a point much closer to the PHA WWTF.

All NETL sanitary sewage from the south area is routed to, and treated in, the separate Clairton publicly-owned municipal sewage treatment plant.

Storm water (surface water) runoff from the 69-acre NETL north side portion of the site exits the site through the north storm drainage system, a dedicated storm water system that drains directly into nearby Lick Run. This discharge occurs at the NPDES-permitted North Outfall (001). Lick Run is a small natural stream that flows along the eastern boundary of the 238-acre, Bruceton Research Center. Contaminants to the storm water effluent are regulated by a NPDES storm water discharge permit and consist of air conditioning condensate, runoff from various impervious surfaces into the site storm sewers, and treated acid-mine drainage from a safety research coal mine operated by CDC/NIOSH. Monitoring results can be found in Appendix A: Table 8.2.6c. National Pollutant Discharge Elimination System Storm Water Analysis Results.

Storm water collected from the south side of the site exits through the south storm drainage system, a dedicated storm water system that enters Lick Run through the NETL NPDES-permitted South Outfall (002). NETL is required to monitor and report the re-

sults for the two site storm water discharge outfalls on a quarterly basis, although there are no discharge limits established for this discharge.

Storm water discharged from the north side of the site is regulated through a NPDES permit issued to NETL, NIOSH and MSHA. Storm water discharged from the south side of the site is regulated through a NPDES permit issued to only NETL. Table 8.2.6c provides the storm water North Outfall monitoring results for flow, suspended solids, carbonaceous biochemical oxygen demand 5-day test ($CBOD_5$), oil and grease, aluminum, iron, manganese, lead, mercury, pH, and ammonia. Table 8.2.6c. also provides the storm water South Outfall monitoring results for flow, suspended solids, aluminum, iron, manganese, lead, pH, and ammonia.

8.2.7. Ground Water and Soil Quality and Protection Activities

The Ground Water Monitoring Program has as its primary objective the monitoring of the shallow, weathered bedrock zone as the first significant aquifer or water-bearing unit beneath NETL facilities. Contamination entering the ground from surface sources would be expected to impact this zone first; hence, the majority of monitoring wells are placed in this zone. The Program also requires monitoring wells in the deeper water-bearing zone to provide data on water quality at greater depths and deeper contaminant migration (if any).

By properly determining and characterizing local ground water conditions, it should be possible to ensure that potential contamination and potential migration routes are suitably identified and investigated. This should enable sources of continuing contamination to be characterized and remediated (if warranted).

The Ground Water Monitoring Program provides the following information:

- Baseline conditions of ground water quality and quantity related to the site.
- Characterization of the ground water and surface water relationship.
- Identification of potential sources of ground water contamination.
- Data useful in the development and implementation of remedial measures for any NETL facilities/sites that could pose a concern to the environment.
- Measurement of petroleum hydrocarbons (diesel range organics) in ground water at selected wells surrounding abandoned (or previously removed) storage tanks and oil spill areas at the Pittsburgh site, per state request.

The scope of the Ground Water Monitoring Program was substantially reduced during 2003 because the previous level of sampling and analyses are no longer justified. The monitoring system will now focus on indicators that can provide early detection of potential concerns. Specifically, the total number of monitoring wells was reduced from 23 to 8, and the number of laboratory-analyzed constituents was reduced from 64 to 1, which is Total Petroleum Hydrocarbons (TPH). Selection of the eight wells that will continue to be monitored is based on a storage tank closure plan that was submitted to the State during 1994. The selected eight wells are close to the site of two removed underground storage tanks that are the subjects of the closure plan. The single constituent that is now monitored at these wells, TPH, will indicate ground water contamination from these removed tanks should such contamination ever appear. TPH measurements by EPA method 8015B (TPH-DRO) is normally the best test to perform for # 2 fuel oil (# 2 fuel oil has the same composition as diesel fuel) according to the U.S. EPA. No TPH were detected in any of the ground water samples taken during 2003. The results of the Ground Water Monitoring Program are provided in the Table 8.2.7.

Table 8.2.7. Ground Water Detection Monitoring Program Results of Analysis

Well	Sample Date							
	05/07/03				10/08/03			
Constituents	pH	Specific Conductance	Temperature	TPH-DRO	pH	Specific Conductance	Temperature	TPH-DRO
VFW-2	6.91	5360	14.6	ND	7.30	1830	15.2	ND
VFW-4	6.96	2420	16.4	ND	7.92	1230	15.7	ND
VFW-7	6.88	4350	14.7	ND	7.29	2720	15.7	ND
VFW-9	7.03	1470	14.2	ND	7.67	1010	14.5	ND
VFW-10	7.15	1860	14.8	ND	7.38	1670	16.1	ND
VFW-11	7.50	1310	13.8	ND	7.55	1100	15.4	ND
VFW-12	7.09	2360	12.5	ND	7.37	1460	15.1	ND
VFW-14	6.90	2810	14.0	ND	7.89	1730	14.8	ND

pH unit: standard unit; Specific conductance unit: umhos/cm @ 25 ^{0}C; Temperature unit: degree centigrade; TPH-DRO: Total Petroleum Hydrocarbons – Diesel Range Organics; ND: Non Detected

8.2.8. Compliance with Other Major Environmental Statutes

8.2.8.1. SARA Title III, EPCRA

SARA Title III requires the reporting of hazardous chemicals present at a facility in excess of certain quantities during the preceding year. This includes solid chemicals designated as “extremely hazardous substances” in amounts greater than or equal to 500 lbs. or liquids in amounts greater than or equal to 55 gallons, or amounts greater than or equal to the threshold planning quantity (TPQ). It also requires reporting of all other hazardous chemicals present at the facility during the preceding calendar year in amounts equal to or greater than 10,000 lbs. Table 8.2.8.1. lists those chemicals reported by NETL for 2003, commonly known as the Tier II Chemical Inventory Reporting List.

Table 8.2.8.1. Tier II Chemical Inventory Reporting List			
Chemical Name	**CAS**	**Maximum Daily Amount (lbs)**	**Average Daily Amount (lbs)**
Nitrogen (liquid and gaseous)	7727-37-9	114,650	94,420
Nitric oxide	10102-43-9	600	600
Sulfur dioxide	7446-09-5	1,950	1,950
Hydrochloric acid	7647-01-0	2,132	2,132

The NETL Pittsburgh site does not prepare a TRI (Form R) because the site does not use, produce or process any of the listed toxic materials in quantities that exceed the threshold amounts. During 2003, there were no releases that would trigger emergency notification as required by either EPCRA or CERCLA.

Section 312 of SARA Title III requires NETL to provide an MSDS to the Pennsylvania Emergency Response Commission, the Local Emergency Planning Commission, and the local Fire Department for each hazardous chemical and each extremely hazardous substance existing on site at or above the limits. NETL maintains an active inventory of all hazardous and extremely hazardous chemicals on site along with the MSDS for each of these substances. The Pennsylvania Emergency Response Commission, the Local Emergency Planning Commission, and the local fire departments have all been advised of all materials, quantities, and their location on the Pittsburgh campus.

As part of the ongoing commitment to improve emergency planning under the SARA Title III program, NETL has established targets for reducing the accumulation of hazardous chemicals on site. The intent of these targets is to avoid the unnecessary accumulation of potentially hazardous chemicals in the laboratories while maintaining sufficient chemical stores to complete mission related research. Year 2002 inventories provide a baseline for the target to reduce the number of containers that contain hazardous chemicals. The number of containers that contain hazardous materials in 2002 was 6600 containers. The objective for this target is to reduce the number of containers by 20% by the year 2005. A 20% reduction of such containers would result in 5280 containers by the year 2005.

In order to achieve this 20% reduction in the number of containers by 2005, interim targets were established to ensure adequate progress is being made during 2003 and 2004. The target for 2003 was set at 6130 containers. The actual number of containers held on-site during 2003 was 4801. This exceeded the target by nearly 22% and resulted in the 2005 target already being exceeded during 2003.

The reduction in number of containers by 1329 containers over the target reveals the efforts of the program in striving to reduce the risk posed by such chemicals. The target was exceeded because laboratory personnel were encouraged to clean out their laboratories and dispose of old chemicals. This accomplishment was assisted by an improvement to the program which involved the implementation of a real-time chemical inventory system that enables NETL to submit chemical inventory reports in a

timely manner, thus avoiding a time lag in removing chemicals from the inventory list.

8.2.8.2. National Environmental Policy Act

NEPA (42 U.S.C. 4321 et seq., 1969) established federal policy for protecting environmental quality. Under this policy, an EIS must be prepared to evaluate the environmental consequences of any major federal action that might have significant impact on the quality of the human environment and must include a comparative analysis of reasonable alternatives to accomplish the goals to be addressed by the federal action. Based on the EIS, a Record of Decision would be prepared to document the alternative selected for pursuit by the federal agency. If the need for an EIS is not clear or if a proposed action has uncertain potential for environmental impacts, etc., and does not meet the criteria specified by DOE for preparation of an EIS, an EA would be prepared. Subsequent to preparing an EA, a decision would be made to prepare either an EIS or a Finding of No Significant Impact (FONSI). A FONSI means that an EIS was determined to be unnecessary.

Specific classes of actions that do not have a significant effect on the environment, either individually or cumulatively, can be categorically excluded from more in-depth NEPA review (i.e., preparation of either an EIS or an EA). DOE's NEPA implementing procedures (10 CFR 1021) identify those categories of excluded actions and the eligibility criteria for their application.

NETL conducts NEPA reviews for proposed onsite actions and offsite federal actions. This includes actions that are planned in cooperation with other governmental organizations, educational institutions, or private industry. During 2003, approximately 310 NEPA reviews resulted in categorical exclusions.

Western Greenbrier High School students learn kick-net sampling of benthic organisms in Little Clear Creek, Greenbrier County, WV. The effort is part of a summer program to involve students in the NEPA process for a proposed Clean Coal Power Initiative project. The data will provide a baseline to gage future improvements in stream quality resulting from the proposed project.

Six new or continuing activities at NETL during 2003 required work towards preparation of EAs.

- A final EA (DOE/EA-1420) was completed for a project to test Enhanced Coal Bed Methane Production and Sequestration of CO2 in Unmineable Coal Seams. This project was proposed to test a system for carbon dioxide injection into a coal seam for enhanced methane recovery and carbon sequestration, using wells to be installed on a 207-acre site in Marshall County, WV. The EA resulted in issuance of a FONSI on March 3, 2003.

- An EA (DOE/EA-1472) was prepared and completed for a project to demonstrate commercial application of technologies for reducing emissions of nitrogen oxides from conventional coal combustion. The technologies were proposed for demonstration at Sunflower Electric Power Corporation's Holcomb Station in Finney County, KS. The EA resulted in issuance of a FONSI on March 11, 2003.

- A final EA (DOE/EA-1476) was completed for a project to demonstrate the retrofit of a mercury and multi-pollutant control technology on a 90 megawatt coal-fired boiler at the Presque Isle Power Plant operated by WeEnergies in Marquette, MI. This environmental control technology demonstration was proposed to test the integration of systems to reduce emissions of mercury and particulate matter, and potentially control emissions of sulfur dioxide, oxides of nitrogen, and acid emissions. The EA resulted in issuance of a FONSI on September 25, 2003.

- An EA (DOE/EA-1477) was prepared and completed for a project to analyze the potential environmental impacts from commercial application of a lignite fuel enhancement project at Great River Energy's Coal Creek Station near Underwood, ND. This project was proposed to demonstrate technology for increasing the heating value of lignite and other high-moisture coals by reducing the moisture content using waste heat that would normally be discharged through a cooling tower. A final decision in response to the final EA was pending at the end of 2003.

- An EA (DOE/EA-1482) was prepared and completed to analyze the potential environmental consequences of conducting a field experiment to test systems for geological sequestration of carbon dioxide in saline aquifer brine formations. The test was proposed to involve a controlled injection of a limited quantity of carbon dioxide into a brine formation of the South Liberty oil field located in Liberty County, TX, northeast of Houston. The EA resulted in issuance of a FONSI on October 8, 2003.

- An EA was launched for a project by the University of Kentucky Research Foundation, Center for Applied Energy Research, for a coal ash beneficiation plant to be constructed and demonstrated at the Ghent Power Station located near Ghent, Kentucky, along the Ohio River. The project would use hydraulic sorting and froth flotation to separate ash particles by size and type to produce a suite of useful products.

Four new activities at NETL during 2003 resulted in plans for the preparation of EISs.

- During March, a Determination was made to prepare an EIS (DOE/EIS-0357) for the Gilberton Coal to Clean Fuels and Power Project located in Gilberton, PA. This project was selected from a competitive solicitation for Clean Coal Power Initiative demonstration projects and would involve the construction and operation of a plant to produce about 5,000 barrels per day of clean liquid fuels (diesel fuel and naphtha) and about 41 megawatts of electricity from 4,700 tons per day of anthracite coal waste. A Notice of Intent was published in the Federal Register and a public scoping meeting was held on May 5, after which information gathering to support preparation of a draft EIS was initiated.

- During May, a Determination was made to prepare an EIS (DOE/EIS-0361) for the Western Greenbrier Co-Production Demonstration Project located in Rainelle, Greenbrier County, West Virginia. This project was selected from a competitive solicitation for Clean Coal Power Initiative demonstration projects and would involve the construction and operation of a plant using about 1,610 tons per day of coal wastes from existing gob piles in a circulating fluidized bed boiler to produce 85 megawatts of electricity, recover waste heat for supporting an Eco-Park, use coal ash for production of structural brick, and generate alkaline product ash for use in remediating acid mine drainage. A Notice of Intent was published in the Federal Register and a public scoping meeting was held on June 19. Selection of a contractor to prepare the draft EIS was in progress by late 2003.

Photo: Students from Marshall University sample aquatic biota to describe baseline aquatic habitat quality in Sewell Creek, at the location of the proposed Western Greenbrier Co-Production Demonstration Facility, Greenbrier County, WV.

- During May, a Determination was made to prepare an EIS (DOE/EIS-0362) for the Next Generation Circulating Fluidized Bed Coal Generating Unit located in Fountain, CO. This project was also selected from the competitive solicitation for Clean Coal Power Initiative demonstration projects and would involve the construction and operation of an advanced circulating fluidized-bed combustion system using multi-layer emission control to produce 150 megawatts of electricity

from the cleanest coal-fired generating unit in the world. A Notice of Intent was published in the Federal Register and a public scoping meeting was held in Fountain on July 15. Information gathering was initiated to support preparation of a draft EIS. This project was on hold at the end of 2003.

- During October, a Determination was made to prepare a Programmatic EIS (DOE/EIS-0366) for implementing FE's Carbon Sequestration Program. Planning was initiated for public outreach and public scoping meetings. By the end of 2003, a contractor had been selected for this EIS.

The following two efforts to prepare EIS documents remained on hold, pending resolution of economic issues related to the proposed projects.

- Clean Power from Integrated Coal/Ore Reduction (CPICOR) (DOE/EIS-0280) at Vineyard, UT.

- McIntosh Unit 4 Pressurized Circulating Fluidized-Bed Demonstration Project (DOE/EIS 0282) at Lakeland, FL.

8.2.8.3. Endangered Species Act

There are no endangered species within the zone of potential effect of the Pittsburgh site. The U.S. Fish and Wildlife Service and the Pennsylvania Fish and Boat Commission were consulted to confirm that there is no indication of rare, threatened, or endangered species within the vicinity of the site. During 1981, there was a terrestrial and aquatic ecologic survey, which also failed to identify any endangered species on the site (Photo: PADEP).

8.2.8.4. National Historic Preservation Act

NETL has evaluated all potential landmarks at the site and determined that there are no historically significant landmarks owned by DOE that require preservation. The historically significant landmarks on the site are all owned and maintained by the National Institute of Occupational Safety and Health Administration which shares the site with DOE. NETL undertakes appropriate section 106 reviews, as part of its NEPA process, prior to undertaking any actions that could impact historically significant landmarks.

8.2.8.5. Migratory Bird Treaty Act

The NETL site has only minimal areas that could be used as habitat for migratory bird populations. No migratory birds were observed at the site, and NETL did not take any action that had, or was likely to have had, a measurable negative effect on migratory bird populations. The construction of the site's childcare facility during 2003 is not deemed to have had a measurable effect on migratory bird populations because the site selected for the facility was not known to be used by migratory bird populations. No migratory birds of any species were intentionally taken during the conduct of any program, activity, or action, including but not limited to banding, marking, scientific collection, taxidermy, or depredation control.

8.2.8.6. Atomic Energy Act of 1954 (42 USC 2011 et seq.)

The Atomic Energy Act (AEA) of 1954 and its amendments require federal control of radiation source materials for the protection of the public and workers. DOE radiation protection orders, EPA regulations applying to radiation control, and Nuclear Regulatory Commission regulations are all based on the AEA. DOE complies with these requirements by implementing radiation protection programs at all facilities that process, produce, handle, use or dispose of radiation source materials.

The Pittsburgh site does not process, produce or dispose of radiation source materials as a part of its routine operations. Please see section 8.2.4 for a more complete description of Pittsburgh's radiation protection program.

8.2.9. Executive Orders

8.2.9.1. EO 13149, Greening the Government Through Federal Fleet and Transportation Efficiency

This EO aims to ensure that the federal government exercises leadership in the reduction of petroleum consumption through improvements in fleet fuel efficiency and the use of alternative fuels in alternative fuel vehicles (AFVs). The primary goal is to reduce the fleet's annual petroleum consumption by at least 20 percent by the end of FY 2005, compared to FY 1999 levels. "Petroleum" refers to gasoline and diesel fuels; so the substitution of compressed natural gas (CNG) or ethanol (E85) for petroleum is an acceptable means of reducing the petroleum consumption. Of course, using more fuel efficient vehicles is also an acceptable solution. Table 8.2.9.1. shows that the usage of alternative fuel has increased during the past several years at the Pittsburgh and Morgantown sites.

Table 8.2.9.1. Consumption of Fuel and Miles Driven (Morgantown and Pittsburgh)			
Year	**CNG and E85 (gal)**	**Gasoline + Diesel (gal)**	**Miles Driven**
FY2003	7,013	31,810	764,466
FY2002	5,722	28,789	757,653
FY2001	3,855	24,084	655,729
FY2000	2,961	29,661	711,884
FY 1999 (base yr)	1,884	29,602	710,466

However, while it is not entirely clear why this has happened, the fleet's annual petroleum consumption has not decreased as would be expected by the substitution of alternative fuels. NETL will continue working on ways to achieve the goal of a 20 percent reduction in petroleum consumption by 2005.

The second goal is to increase the use of alternative fuel vehicles and alternative fuels, to the extent practicable and consistent with the agency's mission. Although the EO directs agencies to consider hybrid electric vehicles, NETL has not considered them because of the additional vehicle costs and because of the goals (e.g., DOE's Clean Cities Initiative) to support market growth for alternative fuels. Total electric vehicles (carts) are used on site for site maintenance operations. Each agency is expected to fulfill the AFV acquisition requirements of section 303 of the Energy Policy Act of 1992, and alternative fuels should provide the majority of the fuel consumed in these vehicles. The goal is to acquire alternative fuel vehicles for at least 75 percent of the purchases of light-duty vehicles by FY 2005. During 2003, 26 of 28 light-duty vehicles in the Pittsburgh fleet were AFVs; and 15 of 21 light-duty vehicles in the Morgantown fleet were AFVs. In addition, 7 of 13 medium-duty vehicles in the Pittsburgh fleet were AFVs, while none of the medium-duty vehicles in the Morgantown fleet were AFVs. Some vehicles are "ethanol flexible", meaning they can use either ethanol or regular petroleum fuel. Most others are CNG-dedicated vehicles, while only a few can use either CNG or gasoline. For the two sites combined, the goals have been met for recent acquisitions.

The third goal is to acquire conventional vehicles with higher fuel efficiencies. The fleet average EPA fuel economy rating of passenger cars and light-duty trucks should increase by at least 3 mpg by the end of FY 2005, compared to FY 1999 acquisitions. No statistics are readily available for the average EPA ratings of the vehicles purchased during 2003. There is no indication that NETL is on track to meet this goal.

To support the development of an alternative fuel infrastructure, agencies should refuel AFVs at commercial facilities that offer this service to the public. Where public commercial refueling is not available, the agencies should install nonpublic refueling stations. The Pittsburgh site uses Columbia Gas and Equitable charge cards for purchasing CNG at the various public refueling stations located around Pittsburgh. The Morgantown site purchases CNG from the WVU refueling station, a local Exxon station and a local BP station. During 2002, NETL obtained two quick-fill CNG refueling systems that had been put into excess by Pantex. Cost estimates were obtained during 2003 for implementation, but installation has not begun. The systems will need to be modified, and expensive support facilities will be required.

During 2003, the Morgantown site installed one ethanol refueling station, and the Pittsburgh site signed a contract for installation of an ethanol refueling station. Ethanol (E85) fuel, a blend of 85 percent ethanol and 15 percent gasoline, is not readily available for the Pittsburgh and Morgantown sites. Until recently, the ethanol was produced in Indiana or Illinois using Midwestern crops of corn, wheat or barley. Recently, a production plant began production in Ohio, greatly reducing the transportation costs for these two NETL sites. Since the installation of the first ethanol refueling system, ethanol has made an important contribution to NETL's efforts. Of the 7,013 gallons of alternative fuel used during FY 2003, NETL used 601 gallons of ethanol and 6,412 gallons of CNG.

Photo: NETL Director Rita Bajura fuels an NETL fleet vehicle at the Morgantown site's new ethanol station as NETL Property Manager Rick Price (left) and GSA Fleet Operator Dick Hall of EG&G look on.

To the extent available, the EO directs agencies to use re-refined motor oils for lubrication purposes, retread tires or recycled-content tires, and bio-based motor vehicle products. The Pittsburgh site installs re-refined motor oils in all vehicles; but the Morgantown site does not. Recycled-content tires are installed on all DOE-owned vehicles at the two sites. However, most vehicles are owned by GSA, and GSA may choose other options.

8.2.9.2. EO 13148, Greening the Government Through Leadership in Environmental Management

Compliance with this EO is described within the Morgantown site discussions in section 5.2.9.2.

8.2.9.3. EO 13123, Greening the Government Through Efficient Energy Management

NETL has been challenged to demonstrate efficient energy management leadership through our role in DOE. This challenge is made difficult by the age of many of the facilities and systems used on the site. These facilities and systems were constructed using inefficient materials at a time when energy conservation was not a priority. Despite this handicap, NETL is aggressive in providing the most energy efficient management of facilities possible. For example, lighting retrofits are now a routine part of the re-lamping program. T-8 fluorescent bulbs are used to replace T-12 fluorescent bulbs and compact fluorescent spotlights are used to replace incandescent spotlights. Motion sensors have been installed to conserve energy in areas without constant use.

The current Energy and Utilities Management Performance Agreement includes the following seven energy management performance objectives: (1) administer energy management initiatives consistent with the comprehensive Energy Management Plan; (2) meet the FY 2005 energy reduction goal of 20 percent per square foot in laboratory and industrial facilities compared to a 1990 baseline; (3); develop and implement water efficiency programs and plans; (4) evaluate and attempt to qualify office buildings for receipt of the Energy Star Building label by December 31, 2003; (5) increase the number of energy management retrofit projects that are funded and completed on site; (6) increase use of off-grid generation; and (7) plan for and ensure the efficient and economical acquisition, management, and use of energy and utilities.

NETL has incorporated energy efficient designs and energy star equipment into construction packages, remodeling, and maintenance projects. The childcare facility constructed during 2003 was designed and built while keeping in mind the EPA Energy Star label and the LEED designation. NETL has a Comprehensive Energy Management Plan (NETL Operating Plan 430.2-1), which includes the requirements of an energy curtailment plan (for use in the event of emergencies) plus the requirements of EO 13123.

The Comprehensive Energy Management Plan establishes the strategy and annual implementation steps for compliance. As a part of the decision-making about whether to undertake certain projects and investments, NETL undertakes lifecycle costs analyses. These analyses have been used primarily for equipment replacement projects, especially HVAC system replacements. Often, these analyses indicate the optimal time to undertake a retrofit project during the life span of equipment or facilities. To further guide the decisions about priorities for energy efficiency improvements to the infrastructure, NETL has conducted energy audits. Several employees have attended for-

mal classroom training and passed exams to obtain certification as a Certified Energy Manager.

NETL received funding during 2003 through the Department of Energy Management Program for Retrofit Projects. This energy management retrofit project, which was cost shared between FEMP and NETL, involves upgrading one of NETL's analytical chemistry buildings. The "Building 94 Energy Management Retrofit Project" integrates six energy conservation measures into the building upgrade and they include: expansion of the building management system; upgrade of laboratory hoods and installation of laboratory hood controls; installation of variable speed drives on supply air fans; decommissioning of the makeup air system; replacement of two 225 ton Class I CFC chillers with two high efficiency CFC-free 150 ton chillers; and replacement of existing fluorescent fixtures with high efficiency 3 tube T-8 fluorescent fixtures.

When completed, the 51,823 square foot B-94 will provide an annual energy and cost savings of 8,200 Mbtu and $80,000 respectively. The design/construction schedule for this project will encompass FY 2002 through 2006. FY 2002 included design efforts and first floor demolition with some construction activities. FY 2003 activities include expansion of the roof penthouse, upgrade of fans for air supply, purchase of high efficiency natural gas fired boilers and associated mechanical equipment, purchase of the two 150 ton CFC-free chillers, continued retrofit of laboratory hoods with purchase and installation of laboratory hood controls, and purchase and installation of high-efficiency 3 tube T-8 fluorescent fixtures.

B-58 (34,357 square feet) was redesigned from a research facility to an Office of Science and Technology administrative support facility. This redesign and subsequent construction involved the installation of energy efficient electronic ballasts and T-8 lamp lighting fixtures; installing perimeter wall insulation; installing natural gas-fired energy efficient hot water boilers (replacing a landlord-supplied coal-fired steam heating system); installing an energy-efficient variable speed drive rooftop mounted HVAC system; installing lighting occupancy sensors in appropriate spaces; replacing existing window glazing with energy-efficient window glazing; and installing electro-optic sensor controlled faucets, urinals, and commodes in newly constructed restrooms.

NETL enrolled in a GSA Electric Power Procurement Contract during the Pennsylvania right-to-choice for electric power purchasing opportunity. This contract allows NETL to purchase electricity more competitively and less expensively as a member of a large federal consortium. The negotiated price per generated kWH of electricity is $0.267/kWH, which resulted in NETL saving approximately $35,000 in 2003 energy costs.

NETL aims to achieve the EO goals of a 20 percent reduction in energy consumption per unit area by 2005 and a 25 percent reduction by 2010, relative to 1990 levels. During the base year (1990), energy use at the Pittsburgh site was 457,846 BTU/GSF, and energy use during FY 2002 was 280,367 BTU/GSF. Energy use during FY 2003 was 303,040 BTU/GSF, a reduction of 33.8 percent from energy use during 1990 but an increase of 8.1 percent from energy use during FY 2002. This was caused by an extremely severe winter during FY 2003.

NETL has also attempted to reduce the greenhouse gas emissions that could be attributed to the energy use at its facilities. The EO goal is a 30 percent reduction in green house gas emissions compared to 1990 levels. Part of this has been achieved by the reductions in energy (electricity and natural gas) usage. Additional reductions in emissions have come from the purchase of electricity generated from renewable resources (i.e., wind, solar, geothermal, biomass). During FY 2003, NETL purchased 486 megawatt-hours of electricity from renewable resources. In Pennsylvania, the primary new sources of renewable energy are the wind turbines that were recently installed along several ridgelines (Photo: Atlantic Renewable Energy Company). No renewable energy was generated on-site during 2003.

NETL has made efforts to reduce its consumption of petroleum products (oil, gasoline, diesel fuel, LPG, propane), primarily through the use of ethanol and natural gas in alternative fueled vehicles. Ordinarily, NETL does not use petroleum products for heating buildings. Only forklifts, front-end loaders, snow-removal equipment and lawn care equipment use petroleum products, which are gasoline and diesel fuel.

8.2.9.4. EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition

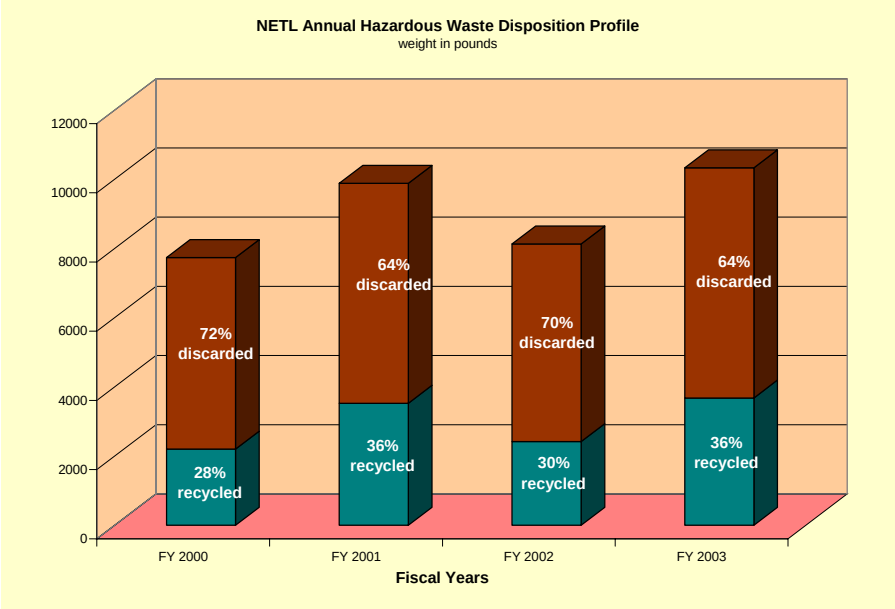
This EO is implemented at NETL through a DOE program titled *Pollution Prevention (P2)*. In addition to the traditional subjects of waste reduction and recycling, the DOE P2 Program includes source reduction, energy use reduction, and affirmative procurement. See section 5.2.9.4 for a description of affirmative procurement. At NETL, the P2 Program is administered, in part, through NETL's "Waste Reduction and Recycling Program." Consistent with the Pollution Prevention Act; Act 101, Pennsylvania's Municipal Waste Planning, Recycling, and Waste Reduction Act; and EO 13101, it is NETL's policy to prevent or reduce wastes generation at the source.

Wastes that are generated must be recycled in an environmentally safe and compliant manner to the extent that recycling can be accomplished. Disposal or other releases of wastes into the environment occurs only as a last resort.

Perhaps the most notable achievement in pollution prevention occurred when the ACHD recognized the voluntary system of pollution prevention practices at NETL with a three-star award, the highest under the ACHD Enviro Star Program. The award was presented to NETL as part of the Earth Day celebrations in Pittsburgh, PA on April 15, 2004.

At NETL, pollution prevention is the focus of continual improvement initiatives undertaken through the EMS. The EMS in place at NETL complies with ISO Standard 14001 requirements and is applied to the areas of onsite R&D, site operations, and administrative support activities. Built upon the Department's policy of integrating environmental concerns into day-to-day decision-making, the EMS has yielded many improvements in pollution prevention, regulatory compliance, waste minimization, and QA/QC activities at NETL.

Key achievements involved implementation of the source reduction policy at NETL. For example, the chemical inventory was reduced, which will result in source reduction of hazardous chemicals that would be wasted when excess chemicals exceed the chemicals' shelf lives and must be disposed. Additional source reduction of hazardous chemicals was achieved through an aggressive Safety Analysis Review System (SARS) process that was amended to include a source reduction opportunity review.

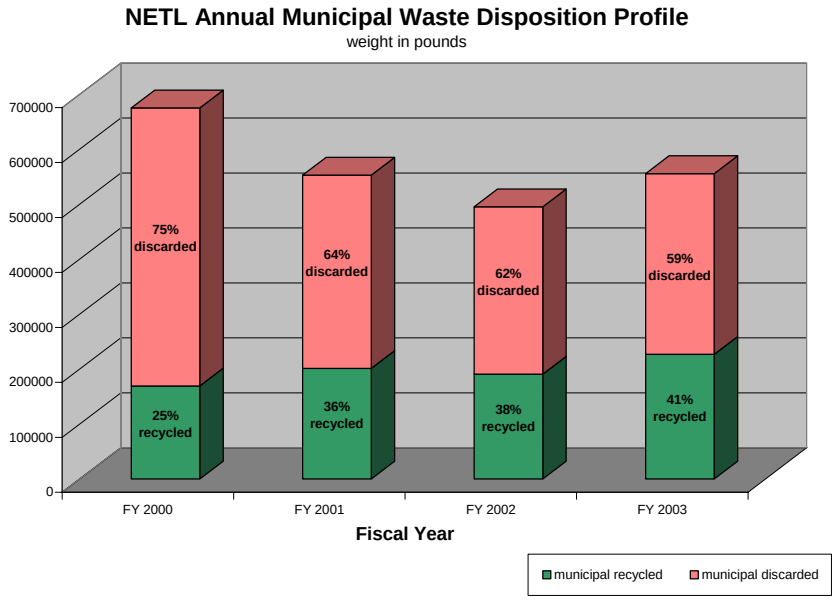


Pollution prevention requires the tracking of both RCRA hazardous and non-hazardous wastes to the point of recycling or disposal. Table 5.2.3c, located in appendix A, shows the weight of various types of wastes generated. Rows highlighted in

green indicate the wastes that were recycled. Those not highlighted were sent to disposal.

The NETL Waste Reduction and Recycling Program was affected by the volatility in the recycling market during 2003. Several potential recyclers (interested companies), went out of business as prices fluctuated for recyclable products. While NETL program managers sought to find new recycling facilities or dealers/brokers to process or accept NETL's recyclable wastes, they ultimately curtailed NETL's program to those items that available recycling facilities and dealers/brokers would accept.

Special efforts during 2003 included locating new market outlets for recyclable materials and providing mandatory training to all employees about the need to reduce wastes and to recycle materials at NETL. During 2003, the NETL Pittsburgh site began recycling plastics and later stopped when there was no longer an available outlet. Recycling opportunity assessments were made and distributed, and articles were published in the NETL newsletter to raise employee awareness.



The only regulatory requirement related to waste reduction and recycling exists in South Park Township (Pittsburgh site's host township). There is a requirement under Pennsylvania Act 101 to report the amount of wastes generated. The Township incorporates this information into their submittal to the State of Pennsylvania.

NETL exceeded the target for reduction of non-hazardous wastes by 21 tons (Pittsburgh and Morgantown sites combined) by recycling materials where there is a market. Perhaps more importantly, NETL exceeded the target reduction of hazardous wastes by 1.61 tons. Please see section 5.2.9.2 for brief synopses of these accomplishments.

Most of the Pittsburgh site's non-hazardous wastes consist of assorted mixed office paper, newspaper, magazines, fly ash, scrap metal, and water treatment plant sludge, which includes spent treatment adsorbents that have been analyzed and are not hazardous or toxic. In Pennsylvania, residual wastes not recycled must be disposed in a sanitary landfill. Fiber recovered from NETL paper wastes constitutes more than 96 percent by weight of the municipal wastes recycled. The other major category of recycled material was scrap metal.

RCRA hazardous wastes must be disposed through a permitted TSD facility. Types of RCRA hazardous wastes recycled during 2003 include: (1) flammable liquids that are blended with other fuels for energy recovery, (2) glass and metals recovered from spent mercury-containing lighting, and (3) battery components recovered for manufacture of new batteries.

NETL increased recycling of non-hazardous wastes by 53 percent during 2003, compared to 1993 recycling levels. DOE classifies non-hazardous wastes as "sanitary wastes," which includes primarily paper, cardboard, and food wastes. This value exceeded by 16 percent the target 37 percent increase that was established for recycling of non-hazardous wastes and exceeded the amount recycled during 2002 by 2 percent. The increase was aided by identification and inclusion of retired computer equipment that was donated to schools or offered for sale. Essentially 100 percent of this equipment is credited for being recycled. At the same time, there was an unexpected increase in sanitary wastes generated when NETL placed B-141 on cold standby, although the impact was lessened by reusing as much of the excess material as possible. The long term targets for recycling of sanitary wastes are a 45 percent increase by the year 2005 and a 50 percent increase by the year 2010, both of which are expected to be met.

8.2.9.5. EO 11990, Protection of Wetlands

The only site activity that might have impacted wetlands during 2003 was the construction of a childcare facility on a 2.1 acre, previously disturbed, grass and tree covered area. This area contains fill material that was deposited during construction of coal processing pilot plants of the 1970s. Wetland investigations were conducted during April of 2002 as part of the NEPA process prior to construction of the childcare facility. The investigation identified one wetland covering 0.002 acres and delineated the wetland utilizing the U.S. Army Corps of Engineers Wetlands Delineation Manual (Technical Report Y-087-1). The wetland was classified as "palustrine emergent" in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979). Using the WET 2.0 predictive model, the wetland received a high rating in the "ground water discharge" category. In other words, most people would call this wetland a "seep."

The wetland investigation concluded that construction of the childcare facility would not impact the wetland. Therefore, construction was permitted to proceed during 2003 without further review.

Potential impacts to wetlands resulting from proposed offsite projects are covered by EO 11990 and are addressed during the NEPA process. Avoidance of this small prime wetland has been a significant concern for the proposed Western Greenbrier Co-Production Demonstration Project, Greenbrier County, West Virginia.

8.2.9.6. EO 11988, Floodplain Management

The only site activity during 2003 of concern for floodplains was the construction of a childcare facility on a 2.1 acre, previously disturbed, grass and tree covered area. This area contains fill material that was deposited during construction of coal processing pilot plants of the 1970s. Prior to construction of the childcare facility, the project area was inspected for the existence of floodplains by reviewing existing information depicted on the U.S. Geologic Survey (USGS) 7.5 minute Glassport quadrangle and the applicable National Flood Insurance Program, Flood Insurance Rate Map (FIRM).

The assessment revealed no floodplains within the project site. During the 1970s, the project site had been filled and the previously existing unnamed tributary to Lick Run was diverted through culverts below the fill material. The FIRM community-panel number used was: 4211650001B.

8.2.10. DOE Orders

Following is a discussion of DOE environmental directives that NETL is responsible for implementing. All DOE directives are available for viewing by the public at the DOE Directives Home Page, www.directives.doe.gov.

8.2.10.1. Order 450.1, Environmental Protection Program

DOE Order 450.1 requires the implementation of an EMS at each site. It also requires various environmental programs and evaluations. NETL's compliance with this Order is discussed in section 5.2.10.1. The same programs are established at both the Pittsburgh site and the Morgantown site.

8.2.10.2. Order 231.1, Environment, Safety, and Health Reporting

A major responsibility of every field office is reporting information on ES&H issues. NETL is accountable to DOE Headquarters and regulatory agencies to provide timely data reporting on activities that could adversely affect the health and safety of the public, workers, or the environment, as well as data reporting that is required by law.

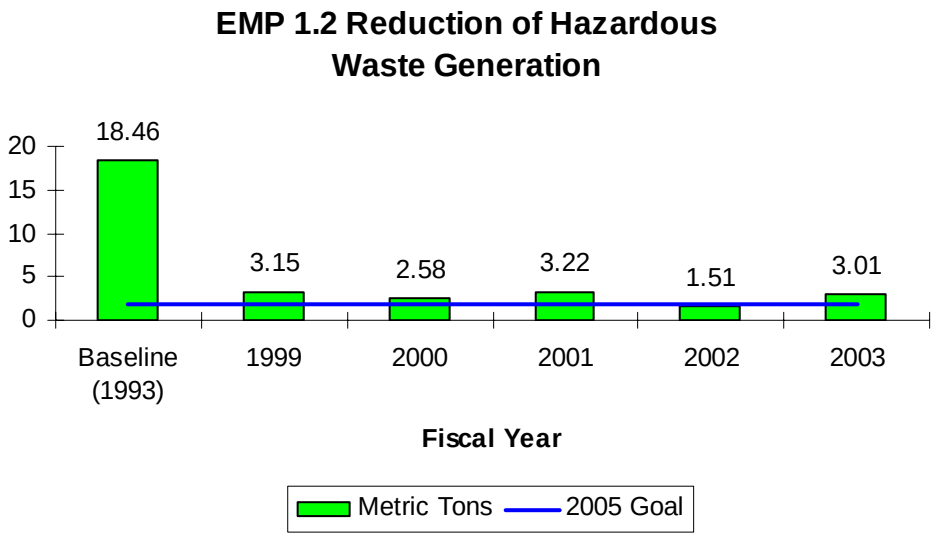
DOE Order 231.1A, *Environment, Safety, and Health Reporting*, sets forth DOE reporting requirements for all field offices and laboratories. The accompanying manual, DOE M231.1-1A, provides details on each requirement, such as reporting method, data elements to be reported, and due dates. The manual divides the reporting requirements into three chapters: (I) Reporting Environmental Protection Information; (II) Reporting Occupational Safety and Health Information; and (III) Reporting Ionizing Radiation Exposure Information. Table 8.2.10.2. summarizes NETL's reporting requirements derived from DOE Order 231.1A. A discussion of how NETL reports under each chapter of the reporting manual follows.

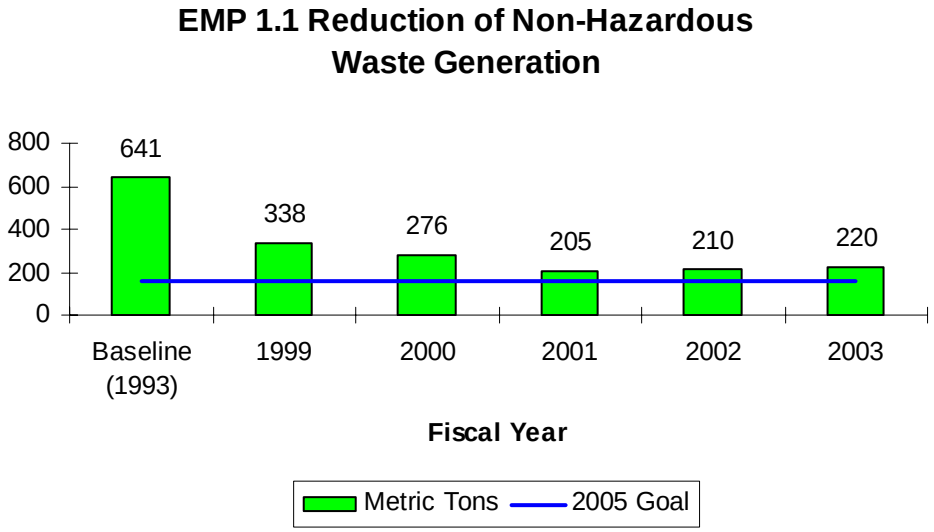
Table 8.2.10.2. NETL Reporting Requirements for DOE M 231.1-1A *Environment, Safety, and Health Reporting Manual*

Requirement	Responsible Person	Periodicity	Recipient	Date
ASER	Director, ES&H; Environmental Manager; ES&H Division; SSC ES&H staff	Annually	General Public; HQ/ES&H; HQ/FE (ESH); Senior Management; Internet; Intranet; ES&H Records Retention	10/2004
Annual NEPA Compliance Summary	NETL Director; NEPA Compliance Officer	Annually	General Public; DOE Assistant Secretary, ES&H; HQ/FE (ESH); ES&H Records	1/31/2004
NEPA Report	NEPA Compliance Officer	Annually (or as needed)	DOE Office of NEPA Policy and Compliance; HQ/FE (ESH); ES&H Records	N/A
Work-Related Fatalities, Injuries, and Illnesses Report	Director, ES&H; CAIRS Manager	Quarterly	DOE Assistant Secretary, ES&H; HQ/FE (ESH); Intranet; ES&H Records	10th of month following end of qtr
Work-Hours Information	Director, ES&H; CAIRS Manager; Property Manager	Quarterly	DOE CAIRS Data Coordinator; Intranet; ES&H Records	10th of month following end of qtr
Annual (Calendar Year) Summary of Fire Damage Report	Director, ES&H; Fire Protection Program Manager	Annually	DOE Fire Protection Authority Having Jurisdiction (AHJ); HQ/FE (ESH); ES&H Records	04/30/2004
Epidemiologic Analyses – Excess Injuries and Illnesses	Director, ES&H; Occupational Medicine Program Manager	Every 5 years (or as needed)	DOE Assistant Secretary for ES&H; ES&H Records	N/A
Occurrence Reports	Director, ES&H; ORPS Facility Manager, ORPS Facility Representative	As needed.	DOE EH ORPS Database	N/A

<u>Chapter I. Reporting Environmental Protection Information</u>. There are three major reporting requirements under Chapter I. The first, environmental protection program reporting, ensures that the information needed to meet the requirements of DOE Order 450.1, *Environmental Protection Program*, is reported annually. NETL accomplishes this through various reporting mechanisms including the Annual Air Emissions Inventory, Meteorological Data Reports, NETL Air Toxics Sampling and Analysis Plan, the Ozone Depleting Substances Inventory, and the ASER. These reports contain infor-

mation which is used to evaluate the effectiveness of NETL's EMS as well as NETL's progress on meeting Order 450.1 requirements (see Section 5.2.10.1.). More specifically, these reports provide details about NETL's environmental programs, progress towards goals, and monitoring and measurement data. In addition, NETL provides input to the *DOE Annual Report of Waste Generation and Pollution Prevention Progress*, which is produced by DOE-EH. The information provided to DOE-EH includes information on NETL's progress in reducing wastes generation, use of Class I ODS, and procurement of recycled-content materials. Finally, NETL reported on its environmental protection programs by submitting to the DOE P2 Program during 2003 an award nomination entitled "Positive Experiences in Undergoing ISO-14001 Certification Process at NETL."





As the above charts demonstrate, NETL has been very successful in meeting its hazardous and non-hazardous waste reduction goals. The target for 2003 was to generate

not more than 4.62 metric tons of hazardous waste for a reduction of 75 percent from the baseline 1993 level of 18.46. NETL surpassed this goal by nearly 10 percent, producing only 3.01 metric tons for an 83.7 percent reduction. The 2005 goal is a 90 percent reduction from 1993 levels. The target to reduce non-hazardous wastes for 2003 was to generate not more than 241 metric tons, for a reduction of 63 percent from the baseline 1993 level of 641 metric tons. NETL's 2003 tonnage was 220 metric tons – a 66 percent reduction. NETL is well on its way to the 75 percent reduction required by 2005.

A key reporting requirement of Chapter I is the ASER. NETL's ASER is prepared annually and contains summary environmental data (such as that shown in the figures shown above) that allow the public and DOE Headquarters to understand NETL's significant environmental programs and the work being done to reach its environmental goals. ASER data include effluent releases, environmental monitoring, environmental occurrences and responses reported during the calendar year, compliance with environmental standards and requirements, and environmental performance measures.

The last requirement in Chapter I is NEPA reporting. NEPA reporting includes an Annual NEPA Compliance Summary that is submitted to DOE-EH and made available to the public through the NETL website by January 31 of each year. The summary includes both completed and planned milestones for EAs and EISs that NETL is responsible for executing. It shows NETL's progress and effectiveness in implementing the NEPA program. A complete discussion of the 2003 NEPA activities can be found in Section 8.2.8.2. An annual NEPA report provides the status on mitigation action plans for projects. There were no mitigation actions to report during 2003.

Chapter II. Reporting Occupational Safety and Health Information. This Chapter addresses reporting requirements for (1) accident and injury information, (2) fire protection, and (3) epidemiological analysis. Accident and injury information is reported through the Computerized Accident/Incident Reporting System (CAIRS) managed by DOE-EH. NETL provides updates to CAIRS information quarterly. Other reports for occupational safety and health information are: Monthly OSHA Report to Senior Management; Workday Case Rate and Occupational Safety and Health Cost Index Report; Quarterly Performance Report for NETL; and the Quarterly and Annual NETL Functional Activity Comparisons with Industrial Standard Rates and DOE (FE) Cost Index. Additional occupational safety and health information that is reported includes:

- OSHA Form 300A: Annual reporting of work-related fatalities, injuries, and illnesses.
- DOE F 5484.3, Individual Accident/Incident Report: Reporting of all DOE employee recordable work-related injuries and illnesses.
- DOE F 5484.4, Tabulation of Work Hours: Reporting of total employee hours worked.

NETL ensures that accident reports and related records for DOE and DOE contractors are kept, maintained, and accessible as required by Order 231.1A. Public access to these records is limited according to the exemptions of the Freedom of Information Act (FOIA), and the reports are restricted to information that does not constitute an unwarranted invasion of personal privacy.

Fire protection is an important program that ensures the safety of workers, property, and the public. Each year, NETL submits to DOE-FE an annual report, *NETL Annual Fire Protection Summary*, of the previous year's fire damage. The report is submitted prior to April 30 of each year. The report for 2003 was submitted during April 2004 and reported no fire damage for 2003.

Lastly, NETL must notify the Assistant Secretary of Environment, Safety, and Health of suspected illnesses or injuries that may require epidemiologic investigation. If there were an unusually high number of illnesses or injuries occurring among a group of workers, an epidemiologic analysis could help determine whether the illnesses were associated with working conditions. As part of the investigation, NETL would provide to officials of the Centers for Disease Control and Prevention (CDC) and their contractors access to NETL's facilities, workers and data as needed. During 2003, NETL did not record an unusually high number of illnesses or injuries and, therefore, did not request an investigation.

<u>Chapter III. Reporting Ionizing Radiation Exposure Information</u>. Chapter III addresses radiation exposure reporting to the Radiation Exposure Monitoring System (REMS) repository. There are two types of required reports: (1) annual individual radiation exposure records and (2) radiation exposure records for special individuals. The first report includes all DOE and DOE contractor employees who are exposed to radiation at their workplace. The second report covers individuals who are conducting official DOE-related business at a DOE or DOE contractor site that causes them to be exposed to a radiation source. NETL did not have any radiation exposures during 2003.

The final requirement of M231.1-1A is the Contractor Requirements Document (CRD), which applies to contractor-operated sites. NETL is a government owned and operated site so the CRD requirements do not directly apply.

8.2.10.3. Order 435.1, Radioactive Waste Management

DOE Order 435.1 requires that radioactive wastes are managed to protect workers in accordance with 10 CFR 835 (Occupational Radiation Protection); to comply with applicable federal, state and local laws; and to comply with the guidance in DOE M435.1-1 (Radioactive Waste Management Manual). Basically, NETL attempts to return sealed radiation sources to the original manufacturer. Only when this is not possible, will NETL send the source item directly to a storage or disposal facility.

This Order would apply when NETL disposes of radiogenic sources. However, during 2003 no sources were sent to disposal facilities, so this Order's requirements were not applicable during the year. Please see section 8.2.4. for discussions on NETL Pittsburgh's radiation protection activities.

8.2.11. Other Major Environmental Issues and Actions

Staff members identified no other significant environmental issues or actions. There were no lawsuits, public accusations of regulatory violations, non-routine releases that would trigger reporting requirements, compliance agreements, clean-up agreements or un-resolved compliance issues, other than those described in various sections above.

9. ENVIRONMENTAL RADIOLOGICAL PROGRAM INFORMATION

Because the Pittsburgh site is not a nuclear facility, it does not have a radiological program of comparable size and complexity to those programs found at the nuclear facilities. NETL performed both area radiological monitoring and individual radiological dosimeter monitoring during 2003 in those areas where sealed radiation sources are located. No radiological contamination has been detected anywhere at NETL during 2003, or any other year. The site does not generate radioactive materials; and it does not transport, process, treat, store, or provide onsite disposal of radioactive wastes. NETL does not have a program for protection of the public and the environment from radiation hazards because all sources are contained in small, sealed instrumentation and would preferably be returned to the instrument manufacturer when not wanted at NETL. For these reasons the radiological program at the Pittsburgh site has been described within our regular ES&H (non-radiological) program information. See section 8.2.4, Radiation Protection Activities. Additional information may be found in section 8.2.8.6 (Atomic Energy Act of 1954), and section 8.2.10.3 (DOE Order 435.1, Radioactive Waste Management).

Non-applicable radiological program requirements during 2003 include:

- Price-Anderson Amendments Act of 1988, as amended in 1992
- USC, Title 10, Part 71, Packaging & Transportation of Radioactive Material
- 10 CFR 834 (draft), Environmental Radiological Protection Program
- 40 CFR 61, Subpart H, National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities
- DOE Order 5400.5, Radiation Protection of the Public and the Environment
- DOE Order 435.1, Radioactive Waste Management

TULSA, OKLAHOMA

MAJOR ACTIVITIES IN 2003

All facilities of the NETL office in Tulsa are located within a downtown office building complex. The offices are leased by DOE from the Southwest Power Administration. During 2003, the Tulsa office undertook no actions to alter facilities or operations in a manner that could change the current impacts on the environment around the offices.

ENVIRONMENTAL COMPLIANCE

Compliance Assessment Process

The Tulsa office, having no laboratory facilities, does not engage in the same compliance assessment processes as the Morgantown and Pittsburgh sites. Because building and facility operations and maintenance are under the control of the landlord, the Tulsa office itself has to comply with few environmental, safety, or health regulations. Therefore, the Tulsa office does not undertake in-house audits, external audits, or subject matter reviews. Furthermore, regulatory agencies do not conduct environmental, safety, or health inspections or investigations of NETL-Tulsa activities. However, in-house inspections and regulatory agency inspections (e.g., by the local fire marshal or municipal building inspectors) of the building and facilities could occur with findings assessed against the landlord.

Building occupants participate in fire drills, which are conducted according to local fire marshal requirements and in cooperation with the building management. NETL-Tulsa fire wardens are selected by the onsite safety and health manager to conduct roll calls during drills and to facilitate orderly evacuations. Tornado drills are announced through a building-wide public address system and are conducted in accordance with OSHA emergency response requirements.

The city of Tulsa does not impose recycling requirements that would apply directly to office space lessees. Nevertheless, building management has arranged for various recycling activities throughout the office building complex.

During 2003, there were no citations for violations of environmental, safety, or health laws, regulations, or ordinances.

Compliance Status

Summary of Permits

There are no permits issued to NETL-Tulsa for activities or facilities at the Tulsa office regarding environmental, safety, or health issues.

Environmental Restoration Activities

CERCLA-type Offsite Cleanups. Tulsa has no offsite remediation activities that were ongoing during 2003. In fact, at no time during the past has the Tulsa office been involved in or been financially responsible for clean-ups at off-site locations. According to Tulsa managers, there are no NPL sites for which the Tulsa office has liability under CERCLA/SARA.

CERCLA/SARA Onsite Cleanups. There were no onsite CERCLA/SARA cleanups at the Tulsa office during 2003; nor were there any releases that would trigger reporting to DOE Headquarters Emergency Operations Center or to the U.S. Coast Guard National Response Center or any other governmental agency.

RCRA Cleanups. During 2003, there were no spills or leaks from facilities, operations, or other activities that would lead to RCRA cleanups. Furthermore, there were no clean-ups or surveillance activities during 2003 for leaks or spills during prior years.

Federal Facilities Compliance Act Actions. The Federal Facilities Compliance Act waived sovereign immunity for the federal government executive agencies regarding the payment of fines and civil penalties for violations of RCRA. There were no occasions during 2003 when EPA's Federal Facilities Division contacted the Tulsa office regarding any possible compliance actions. The EPA and state agencies did not levy any civil fines on the Tulsa office during 2003.

TSCA Actions. Tulsa's staff are not aware of any spills or releases of TSCA regulated substances (e.g., pesticides, PCBs, formaldehyde, methylene chloride, asbestos). Any removal or remediation actions would be undertaken by the landlord through the building management organization. However, the Tulsa staff are not aware of any specific actions taken by building management. NETL employees were not exposed to any known TSCA-related risks.

FIFRA Actions. During 2003, there were no restricted-use pesticides, herbicides, or defoliants kept or used by NETL staff in Tulsa. Applications of pesticides inside and outside the building and the application of herbicides were under the control of the landlord and the building management organization. Tulsa staff are not aware of any spills or releases of FIFRA regulated substances (e.g., pesticides, herbicides, defoliants).

Waste Management and Pollution Prevention Activities

RCRA Program. RCRA classifies sites as generators, transporters, treatment facilities, storage facilities, or disposal facilities. The Tulsa office of NETL holds no RCRA permits and does not engage in RCRA-regulated activities.

The Tulsa office does not have a program to deal with hazardous wastes, however, building management does recycle some RCRA Universal (semi-hazardous) waste materials.

During 2003, building management provided pickup and handling services for the disposal or recycling of dry-cell batteries, fluorescent light bulbs, and light ballasts.

The Tulsa office does not have aboveground storage tanks or underground storage tanks for fuel or other materials.

TSCA Program. During 2003, the Tulsa office housed no TSCA regulated substances.

FIFRA Program. During 2003, there were no restricted-use pesticides, herbicides, or defoliants kept within the offices. The landlord and building management organization provides pest control services and groundskeeping services.

Pollution Prevention Program. Because of the nature of the work (contracts administration), the small number of employees (less than 55), and the waste management services provided by the landlord under the terms of the lease agreement, the Tulsa office has never formally implemented a pollution prevention program. At NETL, pollution prevention is used in a broad sense that includes some things done by the Tulsa staff, such as affirmative procurement (i.e., the procurement of goods containing recycled content or having less life-cycle impact on the environment), contribution to the landlord's onsite recycling efforts, donation of unwanted PCs, and energy-saving steps (such as turning off lights and PCs when not needed).

Recycling efforts are managed by the building management contractor and include: office paper, aluminum cans, light bulbs, light ballast, dry-cell batteries, and toner cartridges. No statistics are kept on the NETL-Tulsa contributions to recycling or on the total amounts of wastes generated.

Radiation Protection Activities

Ionizing Radiation Program. There are no ionizing radiation sources in the Tulsa offices. Tulsa staff would wear dosimetry badges when they visit other sites where radiation protection and monitoring would be required.

Laser Program. There are hundreds of lasers at the NETL sites. Most of these are built into common office devices such as laser printers, CD readers within personal computers, fiber-optic communications lines, etc. Because these lasers are built into devices which protect the consumer by engineering design, these laser are rated as Class I. Laboratory applications use the more powerful Class II, III, and IV lasers. An example of Class II lasers are the laser pointers used on site by speakers during lectures and presentations. It is noted that the typical laser pointer that the public buys at the local office supply store or department store is a Class III laser, a laser that is capable of damaging living tissue.

The Tulsa office has Class I lasers that are built into common office devices. Staff members may also have laser pointers that are either Class II or Class III. A laser safety program has not been implemented at the Tulsa site.

Air Quality and Protection Activities

As an administrative office, Tulsa has no air quality protection program and no emissions that require monitoring, reporting, or permits. During 2003 there were no New Source (Pre-Construction) Reviews for any facilities or projects owned or managed by the Tulsa office. Operation of the Tulsa office does not contribute significantly to any violations of National Ambient Air-Quality Standards (NAAQS). There are no Tulsa office facilities or projects that are regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAPS) program. In other words, Tulsa office facilities and projects do not have the potential to emit more than 10 tons per year of a single designated toxic air pollutant or more than 25 tons per year in aggregate of all toxic air pollutants. Nor are any facilities or projects regulated for any of the 189 toxic air pollutants.

Any ozone-depleting refrigerants used for air conditioning inside the offices are under the control of the building management organization. There are no plans or activities relating to the phase-out of ODSs by the NETL-Tulsa staff, because such activities would be undertaken by the building management organization.

Surface Water Quality and Protection Activities

The building landlord and the landlord's building management contractor deal with sewer use permits and with storm water runoff control and permits. It is assumed that the level of impact on surface water has been about the same as for other office complexes in the region. Tulsa office activities during 2003 resulted in no unplanned releases, leaks, or spills that would require reporting to governmental agencies.

During 2003, there were no tests of the potable water supplies on site to verify compliance with the Safe Drinking Water Act standards. NETL-Tulsa's water supply comes from the municipal water distribution network.

Ground Water and Soil Quality and Protection Activities

There are no ground water quality or soil quality protection activities for the Tulsa office or any Tulsa projects or facilities.

Compliance with Other Major Environmental Statutes

SARA Title III, EPCRA. The Tulsa office does not use or store hazardous materials in excess of threshold quantities that would trigger EPCRA reporting or emergency response planning. Therefore SARA Title III planning notification (sec. 302-303), EHS release notification (sec 304), MSDS/chemical inventory (sec. 311-312), and TRI reporting (sec. 313) do not apply. During 2003, the Tulsa office did not use or store more than two pounds of any of the more than 300 "extremely hazardous chemicals" found in 40 CFR 355, Appendix A.

National Environmental Policy Act. NEPA (42 U.S.C. 4321 et seq., 1969) established federal policy for protecting environmental quality. For every federal action that cannot be categorically excluded from the requirements of the Act, either an EIS or an EA must be prepared.

NETL-Tulsa conducts NEPA reviews for proposed offsite federal actions. These actions relate to contract awards or grants to other governmental organizations, educational institutions, and private industry. Project managers complete questionnaires regarding the potential for environmental impacts associated with project proposals that are under consideration for funding or financial support. The completed forms are evaluated by the two NEPA Compliance Officers at the Tulsa office for a determination of the appropriate level of NEPA review (i.e., EIS, EA or categorical exclusion). During 2003, all funded projects were determined to fall within the realm of categorical exclusions. There were approximately 59 NEPA reviews that resulted in categorical exclusions. None resulted in the development of an EA or EIS. Tulsa office NEPA Compliance Officers follow Council on Environmental Quality (CEQ) regulations, DOE regulations, and DOE orders and guidance documents.

Endangered Species Act. Urban development occupies all of the space immediately surrounding the building that houses the Tulsa office. The office should not impact any threatened or endangered species.

Before contracts are made for financial support of R&D projects, applicants must provide information on potentially impacted threatened or endangered species and their critical habitats. These issues are considered during the NEPA process.

National Historic Preservation Act. Operations at the Tulsa office do not impact surrounding buildings or neighborhoods. The Williams Center, which houses the Tulsa office, is much less than 50 years old, so this building complex does not qualify for protection under the National Historic Preservation Act.

Before contracts are made for financial support of R&D projects, applicants must provide information on historic structures, cultural resources, and Native American interests that potentially could be impacted. These items are considered during the NEPA process.

Migratory Bird Treaty Act. The Williams Center, which houses the Tulsa office, is a high-rise modern office building. There is no indication that migratory bird species roost on the building or that migratory birds use any areas around the building complex.

Migratory bird issues are addressed as a part of the NEPA process before contracts for financial assistance are awarded. NETL does not knowingly support projects that would adversely impact protected migratory bird species.

Atomic Energy Act of 1954 (42 USC 2011 et seq.). There are no radiation sources at the Tulsa office; therefore, there is no radiation protection program.

Executive Orders

EO 13149, Greening the Government Through Federal Fleet and Transportation Efficiency. This EO aims to ensure that the federal government exercises leadership in the reduction of petroleum consumption through improvements in fleet fuel efficiency and the use of alternative fuels in alternative fuel vehicles. The Tulsa office has one van, which is owned by GSA. This van is ethanol compatible, but no ethanol fuel supplies are available locally. NETL does account for the Tulsa vehicle in the NETL statistics that are reported to Headquarters.

EO 13148, Greening the Government Through Leadership in Environmental Management. This EO requires federal agencies to implement an EMS and to do more than is required of the private sector in terms of environmental protection and stewardship. However, as previously discussed, the Tulsa office engages in minimal ES&H activities. The building and facilities consist of 1-1/2 floors of leased space inside an office building complex. Onsite ES&H primarily focuses on Order 231.1 reporting (e.g., worker injury and lost work day data), the NEPA process, and affirmative procurement of office supplies and miscellaneous items. NETL-Tulsa does not maintain an EMS and is not covered by NETL's system that is in effect at the Pittsburgh and Morgantown sites. Inclusion of the Tulsa office will be considered in the future.

This EO focuses heavily on pollution prevention activities. The Tulsa office does not engage in pollution prevention activities other than the ones described under the Pollution Prevention Program section (above).

EO 13123, Greening the Government Through Efficient Energy Management. This EO mandates a comprehensive effort to reduce energy consumption by federal facilities. For example, it aims to reduce greenhouse gas emissions attributed to federal facility energy use by 30 percent by 2010, compared to emission levels in 1990. Unfortunately, the NETL Tulsa office is constrained by the limitations of the tenancy agreement. Electricity costs are included in rent, so there is even less incentive to save electricity. There is no

education program on energy usage; however, employees do turn off lights and PCs when they are not needed. Lights and air conditioning are governed by a building energy management system that uses timers. During evenings and weekends, the building energy management system turns off lights and air conditioning. NETL-Tulsa staff have requested that light bulbs be replaced with more efficient models, and the staff will buy Energy Star products when the opportunity arises.

EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition. EO 13101 establishes a general approach and goals for affirmative procurement and for recycling activities by federal agencies. The Tulsa office participates in a recycling program established by the landlord and the building management contractor (TRIZEG, Inc.). Receptacles are provided for the collection of waste office paper and aluminum cans. Building management sends to local recyclers the items that can be marketed. All recycling efforts are led by the building management organization. Various scrap materials from building maintenance are also sent to recycling. There are no statistics on the amount of materials recycled on behalf of the Tulsa office of NETL.

Affirmative procurement means the purchasing of goods and services that have a lesser adverse impact on the environment throughout their lifecycle and that are reasonable for the government to purchase. The Tulsa office purchases office paper made with recycled materials. Toner cartridges are purchased as refills. However, there has been no formal program for affirmative procurement. Individuals who regularly purchase items are instructed or trained to give preference to the purchase of items with recycled content. Beginning in 2004, the Tulsa office will use the Small Purchase System (SPS) to buy supplies. This system will further encourage affirmative procurement. Large volume items will be purchased by the Morgantown site warehouse.

EO 11990, Protection of Wetlands. Before contracts are made for financial support of R&D projects, applicants must provide information on wetlands that potentially could be impacted. This information, which includes the extent of proposed wetland impacts, is considered during the NEPA process.

EO 11988, Floodplain Management. Before contracts are made for financial support of R&D projects, applicants must provide information on floodplains that potentially could be impacted. These areas and the extent of floodplain impacts are considered during the NEPA process.

DOE Orders

Order 450.1, Environmental Protection Program. Because of the relatively benign onsite activities of the Tulsa office, implementation of onsite environmental protection programs has not been needed. NEPA processes are used to address potential concerns associated with offsite projects funded under contract with the Tulsa office.

Order 231.1, Environment, Safety and Health Reporting. Every field office must report information on ES&H issues. NETL is accountable to DOE Headquarters and to regula-

tory agencies to provide timely data reporting. The Tulsa office sends data to the Pittsburgh site of NETL for inclusion within the comprehensive NETL reporting. See section 8.2.10.2.

Order 435.1, Radioactive Waste Management. There are no radiation sources at the Tulsa office; therefore, there is no radioactive wastes management program.

Other Major Environmental Issues and Actions

Staff at the Tulsa office were not aware of any ongoing or pending lawsuits, notices of violation of regulations, public accusations of regulatory violations, environmental occurrences, non-routine releases of pollutants, compliance agreements, cleanup agreements, or unresolved compliance issues. There were no audits conducted during 2003 under the sponsorship of the DOE Headquarters.

FAIRBANKS, ALASKA

MAJOR ACTIVITIES IN 2003

The Arctic Energy Office (AEO) of the DOE has one employee and is located within rented office space on the campus of the University of Alaska at Fairbanks. During 2003, the AEO undertook no actions to alter facilities or operations at the Fairbanks office in a manner that could change the current impacts on the environment around the office. Any significant new environmental impacts would be associated with offsite projects supported or funded through the Fairbanks office.

ENVIRONMENTAL COMPLIANCE

Compliance Assessment Process

The Fairbanks office, having no laboratory facilities, does not engage in the same compliance assessment processes as the Morgantown and Pittsburgh sites. Because building and facility operations and maintenance are under the control of the University of Alaska, the Fairbanks office itself has to comply with few environmental, safety, or health regulations. Therefore, the Fairbanks office does not undertake in-house audits, external audits, or subject matter reviews. Furthermore, regulatory agencies do not conduct environmental, safety, or health inspections or investigations of the office's in-house activities. However, regulatory agency inspections (e.g., by the local fire marshal or municipal building inspectors) of the building and facilities could occur with findings assessed against the University.

The state of Alaska, North Star Borough, and the city of Fairbanks do not impose recycling requirements. Nevertheless, North Star Borough and the University of Alaska have arranged for limited recycling activities for the community.

During 2003, there were no citations for violations of environmental, safety or health laws, regulations or ordinances.

Compliance Status

Summary of Permits

There are no permits issued to the Fairbanks office for onsite activities or facilities.

Environmental Restoration Activities

CERCLA-type Offsite Cleanups. The AEO has no offsite remediation activities that were ongoing during 2003.

CERCLA/SARA Onsite Cleanups. There were no onsite CERCLA/SARA cleanups at the Fairbanks office during 2003. Nor were there any releases that would trigger reporting to DOE Headquarters Emergency Operations Center or to the U.S. Coast Guard National Response Center or any other governmental agency.

RCRA Cleanups. During 2003, there were no spills or leaks from facilities, operations or other activities that would lead to RCRA cleanups. Furthermore, there were no cleanups or surveillance activities during 2003 for leaks or spills during prior years.

Federal Facilities Compliance Act Actions. AEO staff is not aware of any occasions during 2003 when EPA's Federal Facilities Division contacted the office regarding any possible compliance actions. The EPA and state agencies did not levy any civil fines on the AEO during 2003.

TSCA Actions. AEO staff is not aware of any spills or releases of TSCA regulated substances (e.g., pesticides, PCBs, formaldehyde, methylene chloride, asbestos). Any removal or remediation actions at the Fairbanks office would be undertaken by the University.

FIFRA Actions. During 2003, there were no restricted-use pesticides, herbicides, or defoliants kept or used by AEO staff. Applications of pesticides inside and outside the building and the application of herbicides were under the control of the University. AEO staff is not aware of any spills or releases of FIFRA regulated substances (e.g., pesticides, herbicides, defoliants).

Waste Management and Pollution Prevention Activities

RCRA Program. The AEO holds no RCRA permits and does not engage in RCRA-regulated activities. The Fairbanks office does not have aboveground storage tanks or underground storage tanks for fuel or other materials.

TSCA Program. During 2003, the Fairbanks office housed no TSCA regulated substances.

FIFRA Program. During 2003, there were no restricted-use pesticides, herbicides or defoliants kept within the office. The University provides pest control services and grounds-keeping services.

Pollution Prevention Program. Because of the nature of the work (contracts administration), the small number of employees (one), and the wastes management services provided by the University under the terms of the rental agreement, the Fairbanks office has never formally implemented a pollution prevention program. AEO staff does engage in affirmative procurement (i.e., the procurement of goods containing recycled content or having less life-cycle impact on the environment), contribute to the local recycling efforts, and undertake energy-saving steps (such as turning off lights and PCs when not needed).

Recycling efforts are managed by the University in coordination with the local Borough and include office paper, cardboard and glass bottles. The AEO ships its spent toner cartridges to Morgantown for recycling.

Radiation Protection Activities

Ionizing Radiation Program. There are no ionizing radiation sources in the Fairbanks office.

Laser Program. AEO's onsite lasers are built into common office devices such as laser printers and CD readers within personal computers. Staff members may also have laser pointers that are either Class II or Class III. A laser safety program has not been implemented at the Fairbanks office and is currently viewed as unnecessary.

Air Quality and Protection Activities

As an administrative office, the Fairbanks office has no air quality protection program and no emissions that require monitoring, reporting or permits. The AEO does not own or manage facilities, other than the Fairbanks office, so air quality regulations do not directly apply.

Surface Water Quality and Protection Activities

The University deals with sewer use permits and with storm water runoff control and permits for the Fairbanks office. AEO activities during 2003 resulted in no unplanned releases, leaks, or spills that would require reporting to governmental agencies.

Ground Water and Soil Quality and Protection Activities

There are no ground water quality or soil quality protection activities for the Fairbanks office.

Compliance with Other Major Environmental Statutes

SARA Title III, EPCRA. The Fairbanks office does not use or store hazardous materials in excess of threshold quantities that would trigger EPCRA reporting or emergency response planning. Therefore SARA Title III planning notification (sec. 302-303), EHS release notification (sec 304), MSDS/chemical inventory (sec. 311-312), and TRI reporting (sec. 313) do not apply. During 2003, the Fairbanks office did not use or store more than two pounds of any of the more than 300 "extremely hazardous chemicals" found in 40 CFR 355, Appendix A.

National Environmental Policy Act. NEPA (42 U.S.C. 4321 et seq., 1969) established federal policy for protecting environmental quality. For every federal action that cannot be categorically excluded from the requirements of the Act, either an EIS or an EA must be prepared.

The AEO requires NEPA reviews for proposed offsite actions. These actions relate to contract awards to other governmental organizations, educational institutions, and private industry. Project proponents fill in forms (questionnaires) regarding the potential for environmental impacts associated with project proposals that are under consideration for funding or financial support. The completed forms are reviewed by the NEPA Compliance Officer at the Pittsburgh office of NETL for a determination of the appropriate level of NEPA review (i.e., EIS, EA or categorical exclusion). During 2003, all funded projects were determined to fall within the realm of categorical exclusions.

Endangered Species Act. Urban development occupies all of the space immediately surrounding the building that houses the Fairbanks office. The office should not impact any threatened or endangered species.

Before contracts are made for financial support of R&D projects, applicants must provide information on potentially impacted threatened or endangered species and their critical habitats. These issues are considered during the NEPA process.

National Historic Preservation Act. Operations at the Fairbanks office do not impact surrounding buildings or neighborhoods. The Duckering Building, which houses the Fairbanks office, is less than 50 years old, so this building does not qualify for protection under the National Historic Preservation Act.

Before contracts are made for financial support of R&D projects, applicants must provide information on historic structures, cultural resources, and Native American interests that potentially could be impacted. These items are considered during the NEPA process.

Migratory Bird Treaty Act. The Duckering Building, which houses the Fairbanks office, is a typical university office building. There is no indication that migratory bird species roost on the building or that migratory birds use any areas around the building.

Migratory bird issues are addressed as a part of the NEPA process before contracts for financial assistance are awarded. The AEO does not knowingly support projects that would adversely impact protected migratory bird species.

Atomic Energy Act of 1954 (42 USC 2011 et seq.). There are no radiation sources at the Fairbanks office; therefore, there is no radiation protection program.

Executive Orders

EO 13149, Greening the Government Through Federal Fleet and Transportation Efficiency. The AEO has no vehicles. Employees provide their own transportation for work purposes. Because of the relatively high costs of gasoline in Alaska, employees are conscientious about the energy efficiency of the vehicles they purchase and about their driving habits.

EO 13148, Greening the Government Through Leadership in Environmental Management. This EO requires federal agencies to implement an EMS and to do more than is required of the private sector in terms of environmental protection and stewardship. However, as previously discussed, the Fairbanks office engages in minimal ES&H activities. The office consists of approximately 1,000 square feet of leased space inside a university building. Onsite ES&H primarily focuses on the NEPA process, and affirmative procurement of office supplies and miscellaneous items. The AEO does not maintain an EMS and is not covered by NETL's EMS system that is in effect at the Pittsburgh and Morgantown sites. Inclusion of the Fairbanks office will be considered in the future.

This EO focuses heavily on pollution prevention activities. The Fairbanks office does not engage in pollution prevention activities other than the ones described under the Pollution Prevention Program section (above).

EO 13123, Greening the Government Through Efficient Energy Management. The Fairbanks office is constrained by the limitations of the rental agreement in controlling office space energy use. Electricity costs and heating costs are included in rent, so there is minimal incentive to conserve energy. There is no education program on pollution prevention or energy usage; however, employees do turn off lights and PCs when they are not needed.

EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition. The Fairbanks office participates in a recycling program established by the University and the Borough. Receptacles are provided for the collection of waste office paper, cardboard and glass bottles. The University sends waste paper and cardboard to a power plant located at the Eilson Air Force Base, where the wastes are mixed with coal and burned to generate electricity. Glass bottles are hauled to market in Anchorage.

Affirmative procurement means the purchasing of goods and services that have a lesser adverse impact on the environment throughout their lifecycle and that are reasonable for the government to purchase. The Fairbanks office purchases office paper made with re-

cycled materials. Toner cartridges are purchased new because refills are not available locally.

EO 11990, Protection of Wetlands. Before contracts are made for financial support of R&D projects, applicants must provide information on wetlands that potentially could be impacted. This information, which includes the extent of proposed wetland impacts, is considered during the NEPA process.

EO 11988, Floodplain Management. Before contracts are made for financial support of R&D projects, applicants must provide information on floodplains that potentially could be impacted. This information, which includes the extent of possible floodplain impacts, is considered during the NEPA process.

DOE Orders

Order 450.1, Environmental Protection Program. Because of the relatively benign onsite activities of the Fairbanks office, implementation of onsite environmental protection programs has not been needed. NEPA processes are used to address potential concerns associated with offsite projects funded under contract with the AEO.

Order 231.1, Environment, Safety and Health Reporting. Every field office must report information on ES&H issues. NETL is accountable to DOE Headquarters and to regulatory agencies to provide timely data reporting. The Fairbanks office sends data to the Pittsburgh site of NETL for inclusion within the comprehensive NETL reporting.

Order 435.1, Radioactive Waste Management. There are no radiation sources at the Fairbanks office; therefore, there is no radioactive wastes management program.

Other Major Environmental Issues and Actions

AEO staff is not aware of any ongoing or pending lawsuits, notices of violation of regulations, public accusations of regulatory violations, environmental occurrences, non-routine releases of pollutants, compliance agreements, cleanup agreements, or unresolved compliance issues. There were no audits conducted during 2003 under the sponsorship of the DOE Headquarters.

10. APPENDIX A: ACRONYMS AND TABLES

Acronyms	
ACHD: Allegheny County Health Department **AEO:** Arctic Energy Office **AIIS:** Assessment Information Input System **ASER:** Annual Site Environmental Report **B-:** Building **CBT:** Computer-Based Training **CERCLA:** Comprehensive Environmental Response, Compensation, and Liability Act **CERCLIS:** Comprehensive Environmental Response, Compensation, and Liability Information System **DOE:** U.S. Department of Energy **EA:** Environmental Assessment **EIS:** Environmental Impact Statement **EMP:** Environmental Management Plan **EMS:** Environmental Management System **EO:** Executive Order **EPA:** Environmental Protection Agency **EPCRA:** Emergency Planning and Community Right-to-Know Act **ES&H:** Environment, Safety, and Health **FE:** Office of Fossil Energy **FEMP:** Federal Emergency Management Program **FY:** Fiscal Year **GPDU:** Gas Process Development Unit **HVAC:** Heating, Ventilation, and Air Conditioning **ISM:** Integrated Safety Management **ISO:** International Standards Organization **LEED:** Leadership in Energy and Environmental Design	**MGN:** Morgantown, West Virginia **MSDS:** Material Safety Data Sheet **NEPA:** National Environmental Policy Act **NETL:** National Energy Technology Laboratory **NOV:** Notice of Violation **NPL:** National Priorities List **ODS:** Ozone-depleting Substance **P2:** Pollution Prevention Program **PADEP:** Pennsylvania Department of Environmental Protection **PCBs:** polychlorinated biphenyls **PGH:** Pittsburgh, Pennsylvania **PHA:** Pleasant Hills Authority **PPOA:** Pollution Prevention Opportunity Assessment **PQAE:** Project Quality Assurance Engineer **QA/QC:** Quality Assurance/Quality Control **R&D:** Research and Development **RCRA:** Resource Conservation and Recovery Act **SARA:** Superfund Amendments and Reauthorization Act **SARS:** Safety Analysis and Review System **TPH:** Total Petroleum Hydrocarbons **TRI:** Toxic Release Inventory **TSD:** Treatment, Storage, and Disposal **VOC:** Volatile Organic Compound **WVDEP:** West Virginia Department of Environmental Protection **WWTF:** Waste Water Treatment Facility

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Table 3.3. 2003 Significant Environmental Aspects
Aspect 1: Waste Generation, Management, and Disposal Practices
NETL generates, manages, and disposes of significant volumes of wastes, including non-hazardous sanitary wastes, hazardous wastes, and construction and demolition wastes. To implement EO requirements, DOE Headquarters recently established waste reduction/pollution prevention goals to be implemented and tracked at all DOE facilities. Compliance with DOE's pollution prevention goals will help improve, reinforce, and reinvigorate NETL's pollution prevention and waste minimization programs, which are the foundations of NETL's environmental policy and its environmental management system.
Aspect 2: Energy and Fuel Use
The physical plant that is under NETL control is a significant consumer of electrical energy, petroleum, and natural gas. While it is not possible to eliminate the use of these resources, there are methods by which the impact of en-

Table 3.3. 2003 Significant Environmental Aspects
ergy use can be reduced. Reduction of impacts would include decrease in consumption of natural gas and electricity, increased purchase of energy from renewable sources, and increased purchase of energy from less greenhouse-gas intensive sources. DOE has mandated energy efficiency goals for the various operating Departments, including NETL (e.g., in DOE Order 430.2 and EO 13123).
Aspect 3: Hazardous Materials Procurement, Consumption, Storage, and Release
The nature of the R&D activities at NETL (coal-, gas-, and oil-related research) as well as its support activities require the use of significant quantities of hazardous materials, primarily in the laboratories. NETL's chemical inventory is very diverse, ranging from minute quantities of expensive chemicals to large quantities of relatively inexpensive chemicals like road salt. In addition to quantity and cost, the type of chemicals purchased is also an issue. For example, biologicals are being used more frequently than in the past. Because of their hazardous and toxic nature these biologicals are a growing concern. By reducing the amount of chemicals inventoried and stored at NETL, there will be less risk of potential exposure to the general population and the environment. In addition, chemical inventories will become less costly both in terms of worth and management/maintenance.
Aspect 4: Control over Industrial Waste Water Treatment Facility Operations and Discharges
NETL-Pittsburgh discharges laboratory waste water to the local Pleasant Hills publicly-owned treatment works (POTW) via its WWTF. The current facility is not able to consistently remove mercury, cyanide, and copper contaminants from the waste water to a level that complies with the requirements set forth in the recently enacted Pleasant Hills, Pennsylvania Authority Industrial Sewer Use Pretreatment Permit Program. As a result, NETL has received three NOVs for seven violations of the permit discharge limits. This is contrary to the NETL Environmental Policy regarding compliance with relevant federal, state, and local environmental laws, regulations, and other requirements. The primary benefit of managing this aspect is that the NETL-Pittsburgh site will achieve and maintain compliance with its industrial waste water permit and thus eliminate the NOVs received from the PHA. This would remove the possible threat by the local authority to disallow the flow of waste water to the POTW and subsequently insure that R&D operations can continue. Additionally, NETL will be discharging cleaner water that should benefit both the local POTW and community.
Aspect 5: Air Emissions
The scoring process for environmental aspects identified air emissions as the most crosscutting aspect at NETL. This resulted primarily from the volume of flue gases generated by combustion processes, both from onsite R&D and from offsite electricity generation (e.g., purchasing electricity from cleaner sources). NETL's concerns about air emissions are driven primarily by DOE goals, which are based on EOs. There have been no regulatory violations to date, and compliance with regulations and permit requirements has not been a significant problem. Managing this aspect allows NETL to meet the goals established by EO 13148 (Greening the Government through Leadership in Environmental Management) and EO 13123 (Greening the Government Through Efficient Energy Management), and reduces the possibility of causing adverse environmental impacts in nearby neighborhoods. The specific air emission aspects are: (1) NETL has numerous devices containing ODSs, primarily chlorofluorocarbon (CFC) and hydroclorofluorocarbon (HCFC) refrigerants, which pose a risk to stratospheric ozone concentrations. (2) Most greenhouse gas emissions associated with NETL's operations are indirect, and come from the offsite generation of electricity and from motor vehicle operation. The direct onsite generation of greenhouse gases, on the other hand, is relatively small and is an unavoidable result of our mandated research in fossil fuel combustion. (3) NETL regularly replaces aging vehicles with new ones, providing an opportunity for DOE to showcase its commitment to cleaner-burning automotive fuels. This is an easy opportunity for NETL to reduce its incidental emissions of greenhouse gases and smog-causing gases. (4) One continuing concern is the emission of toxic substances from the R&D projects on site. These substances are mostly VOCs, but include other compounds and metals. There are two emission categories: combustion flue gases and hood vent gases. Combustion flue gases may contain trace amounts of dioxins, furans, acid gases, metals and other pollutants. Hood vent gases frequently contain various volatile and semi-volatile organic compounds. The exhaust rate of toxic substances is currently undetermined for at least some vents/stacks. (5) Painting operations have been identified as a possible significant source of VOC emissions at NETL. These

Table 3.3. 2003 Significant Environmental Aspects
emissions pose a hazard to both workers and the environment. No paint booths exist at NETL to capture VOC emissions for treatment.
Aspect 6: Potential Exposure to Toxic Chemicals and Energy Releases (Improving Chemical Handling Facility and its Operations)
For a variety of reasons, NETL-Pittsburgh's chemical handling facility and its associated buildings may pose potential chemical exposure risks to employees and the local environment. Addressing this aspect would result in decreased potential for toxic chemical exposures for employees and the surrounding environment. Working conditions would improve and the probability of accidents would be reduced.
Aspect 7: Understanding of Surface Water and Storm Water Discharge Impacts
The impact on surface water at NETL is considered significant due to an unknown source of volatile organics in the storm water runoff sewer lines and an incomplete knowledge of all potential sources of spills to surface water.
Aspect 8: Raw Materials Usage (Increasing "Green" Purchasing)
Activities at NETL, as well as those at many government research facilities, consume a significant quantity of raw materials each year. EO 13101, Greening of the Government Through Waste Prevention, Recycling, and Federal Acquisition, requires purchasing EPA-designated items with recycled content to lessen the impact of virgin raw material use. Reducing raw materials usage will encourage the recycling industry. In addition, addressing this aspect directly coincides with NETL's environmental policy and its focus on waste minimization.
Aspect 9: Offsite Noise Generated Onsite
Noise generated by NETL can impact its neighbors in the local communities. Groundskeeping, tree removal, construction activity, R&D operations, and alarms are typical sources of noise extending offsite. Though DOE has not mandated specific noise pollution standards, NETL intends to reduce its fence line noise levels. NETL's target will be to maintain off-property noise levels for normal operations below local ordinance standards 100% of the time. The cost and effort required to measure relevant noise levels and to institute controls should be minimal. By reducing property line noise levels, NETL will minimize the impact on its neighbors and maintain its standing in the surrounding community.
Aspect 10: Non-Industrial Land Use
NETL owns and manages onsite non-industrial lands of ecological significance that should be conserved and enhanced. Management of this aspect would demonstrate NETL's commitment to environmental stewardship, enhance community relations, and increase the quality and value of non-industrial land. Because new facilities are tentatively planned for the Morgantown and Pittsburgh sites, conservation and enhancement of non-industrial land will require prudent planning during these renovation activities.

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Table 3.7a. Environmental Performance Measures

MEASURE	TARGET	END OF FY 2003 STATUS
NETL's Institutional Environmental Performance Measures		
Environmental performance	Environmental Management Plan (EMP) achievement (85% milestones completed).	88% of EMP milestones were completed.
	Environmental Management System (EMS) target achievement (85% milestones completed).	88% of EMS milestones were completed.
	Environmental releases, occurrences, and non-compliance (less than 90% of prior year).	There were 3 incidences in FY 2003, which exceeds the FY 2002 environmental non-compliances (NOVs). Please note that two of these NOVs occurred during November of 2002.
	EMS FY 2003 internal audit findings resolution (100% within 4 months).	94% of audit findings were completed within 4 months.

Table 3.7a. Environmental Performance Measures		
MEASURE	**TARGET**	**END OF FY 2003 STATUS**
	Achievement of ISO 14001 certification.	The ISO 14001 registration audit was completed on August 22, 2003, with a recommendation for registration. Certificate of registration was received in October 2003.
GPRA	Elements/activities listed in 5-year ES&H Management Plan that allocate environmental restoration budget (100% on track for completion).	94% of activities were on track for completion. One asbestos removal project was not completed due to funding issues.
ES&H corrective actions	Urgent and serious actions (90% of prior year actions).	There were 223 corrective actions in FY 2003. This represents 96% of prior year actions.
	Preventive actions identified (10).	18 preventive actions were identified. They satisfy ISO 14001, OSHA, best management practices, and emergency response requirements.
	Management of urgent and serious corrective actions (100% of urgent and 80% of serious resolved on schedule).	100% of the urgent corrective actions and 73% of the serious corrective actions were resolved on schedule.
Independent program review	Program reviews conducted (3).	Independent program reviews were conducted on three ES&H programs: Chemical Inventory and MSDS Management Program, Air Quality Program, and Fall Protection Program.
NETL's 5-year ES&H Management Plan Performance Measures		
Implement plans and programs to achieve objectives and targets of ISO 14001 at FE sites.	Perform surveillance audits and other activities related to achieving/maintaining environmental management system certification at NETL.	Audits were scheduled and executed on time.
	Achieve ISO certification at NETL.	The ISO 14001 registration audit was completed on August 22, 2003, with a recommendation for registration. Certificate of registration was received in October 2003.
Perform lead and asbestos abatement actions at FE sites.	Identify lead and asbestos problems at NETL.	B-4 pipe rack: Section of pipe insulation discovered that did not match other insulation on same line, sampled and tested, no asbestos found. B-1 clerestory: Determined cemestos (asbestos impregnated concrete) wall panels were in need of new encapsulation. B-8: Judged condition of asbestos panels used for troughs in waterfall cooling tower, began seeking alternate construction material to replace them. B-19 warehouse: Internal insulation in research pressure vessel tested for asbestos before vessel was put on excess property list.
	Remove exterior asbestos associated with one of the large administrative buildings at NETL-Pittsburgh.	Due to funding issues this project will not be completed.
	Remove lead and asbestos at R&D buildings and associated support structures at NETL.	B-94, 306: Asbestos abatement completed on March 6, 2003. B-20: Loose lead paint abated from exterior of metal building. Remaining lead paint encapsulated. Completed in April 2003. Removed lead-based paint from the industrial waste water clarifier at the Morgantown site.
Perform environmental and indoor air fixes at FE sites.	Conduct environmental monitoring and surveillance activities (air, water, waste water) in support of permit maintenance.	Environmental monitoring and surveillance completed.

Table 3.7a. Environmental Performance Measures		
MEASURE	**TARGET**	**END OF FY 2003 STATUS**
	Complete indoor quality/ventilation fixes at NETL-Pittsburgh R&D building.	B-58, 1st and 2nd floors: Indoor air quality projects completed. B-94: Phase I renovations in process, will take 14 months to complete. A&E Phase II Design completed and renovation contract awarded. Renovations will continue through all four phases.
	Complete a series of small-scale site-wide air quality/ventilation fixes at NETL-Morgantown.	B-2: Completed construction of computer room's HVAC system. B-22: Completed the design for a climate-controlled control room. B-1: Continued evaluation. B-2, area 20 and 40: Began evaluations. Began: modification of B-13 air conditioning unit, B-2 computer room air flow design, and B-3 photo lab cooling coil design.
Perform remediation, decontamination, and decommissioning at FE onsite and offsite locations.	Perform remediation actions at Hoe Creek, Wyoming.	Air Sparge/Bioremediation operations continued at Hoe Creek III, while Hoe Creek II has been closed down for a 6 month period to measure hydrocarbon rebound in the ground water. The rebound values are an indication of levels of contaminant source material that continues to leach into the ground water. A water sampling event was conducted in September 2003 to determine current contaminant levels and aerial extent. Sampling results will be available in the 1st quarter, FY 2004.
	Perform remediation actions at Rock Springs, Wyoming.	Air sparge/bioremediation operations continued at Sites 4, 7, and 9, while bioaugmented aerobic bacterial activities occurred at Site 12. Site 6 activities included installation of electrical service to the compressor building, completion of a security fence around the building and wellheads, installing air line piping to wellheads, and painting of frac tanks with an earth-tone color paint to satisfy Sweetwater County Zoning and Planning Board requirements.
Implement infrastructure corrective actions at FE sites.	Perform facility evaluations at NETL to identify infrastructure problems.	Facility evaluations completed including an evaluation of the Office of Science and Technology's research facilities.
	Continue NETL chiller replacement in B-94 Pittsburgh to eliminate ODSs.	A construction contract modification was awarded to NETL's Site Support Construction Contractor to purchase the two 150-ton CFC-free chillers for the B-94 Energy Management Retrofit.
	Complete first phase of ES&H-related renovations to NETL-Pittsburgh's chemical handling facilities.	Design completed, renovation and reconfiguration contract awarded, construction scheduled to begin in November 2003.
Improve emergency preparedness and response, and security capabilities at FE sites.	Implement NETL emergency power systems for ES&H-critical operations.	Design completed, contract awarded for the generator, its installation, and construction of the weather-tight enclosure. Project scheduled to begin in December 2003.
	Upgrade gas alarm systems in five NETL buildings.	Gas alarm systems were installed in B-84, 212 and B-84, 125 to support R&D operations being conducted. Gas alarm systems were installed in B-84, 216 and B-58, Boiler Room to support research and service operations. Gas alarm system was installed in B-925, Day Care Center Mechanical Room to support service operations.
Implement waste reduction and pollution prevention programs at FE sites.	Identify waste minimization and energy efficiency activities necessary to comply with EOs.	Activities were identified.
	Maintain programs for purchasing environmentally preferable products and services.	Programs were kept current. Green Cupboard and Green Page on the website were functioning.

Table 3.7a. Environmental Performance Measures		
MEASURE	**TARGET**	**END OF FY 2003 STATUS**
	Complete scheduled waste minimization and energy efficiency actions necessary to comply with EOs.	Actions were completed on schedule.

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Table 3.7b. Surveillance Monitoring

Type of Surveillance	Contact	Type of Monitoring	Key Characteristics	Frequency	Location
SARS Review	ES&H Division	Review of requirements in SARS Procedure	Operational control, document control	Annually	Various laboratories, support operations, facilities
ES&H Walkthrough	ES&H Division	Visual inspection of work sites	ISM observance	Monthly	Site-wide
Transformer Inspection (Morgantown)	EG&G	Visual assessment of oil filled transformer	Regulatory compliance	Weekly	Site-wide
Transformer Inspection (Pittsburgh)	SAIC	Visual assessment of oil filled transformer	Regulatory compliance	Weekly	Site-wide
Storage Tank Inspection (Morgantown)	EG&G	Visual assessment of oil filled storage tanks	Regulatory compliance	Weekly	Site-wide
Interstitial Storage Tank Monitoring (Morgantown)	EG&G	Interstitial monitoring of dual-wall tanks	SPCC plan compliance, regulatory compliance	Quarterly	B29, B36, and Navy Facility Fuel Storage Tanks
Storage Tank Inspection (Pittsburgh)	SAIC	Visual assessment of oil filled storage tanks	Regulatory compliance	Weekly	Site-wide
Radiation Gauge Survey	Parsons	Leak test of radiation sources	Regulatory compliance	Semi-Annual	At Radiation Sources B-84
Safety Observer Inspection (Pittsburgh)	SAIC	Visual inspections of worksites	Contractor ISM observance, operational control	Quarterly	Sitewide
Water Usage (Pittsburgh)	EG&G	Document water usage	Operational	Daily	B-83, 84, 93, 94, Chillers & Boilerhouse
Backup Generators (Pittsburgh)	EG&G	Backup generators inspection	Operational	Weekly	Site-wide
Chemical Handling (Pittsburgh)	EG&G	CHF operations inspection checklist	Operational	Daily	B64, B91, B92
Hazardous Waste Accumulation Areas	EG&G	Visual inspection	Waste accumulation regulatory compliance	Weekly	Hazardous waste buildings in Pittsburg and Morgantown

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Table 4.1. 2003 Quarterly Operations and Emissions Reports for Gas Process Development Unit

QUARTER 1: January 1, 2003 through March 31, 2003

PROJECT STATUS: A shakedown test of the Syngas Generator was conducted February 3-4 to improve high-pressure (about 450 psi) operation. During the test, sulfuric acid feed to the Syngas Generator was maintained for 14.03 hours at a low rate in accordance with Permit requirement (A)8 (flare operation with hydrogen sulfide concentration in the vent gas to the flare less than 50 grains per 100 cubic feet of gas). The test was successful and demonstrated that the Syngas Generator is now ready for high-pressure integrated shakedown testing with the GPDU.

OPERATIONS SUMMARY: The reportable hours of operation are given in the attached tables. All emissions were from the flare stack (emission point number 1e).

Table 4.1. 2003 Quarterly Operations and Emissions Reports for Gas Process Development Unit

January: 0 hours
Breakdown of January for emission point number 1e
None

February: 31.42 hours
Breakdown of February for emission point number 1e
February 3 = 810 minutes; No sulfuric acid used
February 3 = 42 minutes; Sulfuric acid used, H2S < 50 grains/100 ft3
February 4 = 233 minutes; No sulfuric acid used
February 4 = 800 minutes; Sulfuric acid used, H2S < 50 grains/100 ft3
Total = 1885 minutes = 31.42 hours

March: 0 hours
Breakdown of March for emission point number 1e
None

QUARTER 2: April 1, 2003 through June 30, 2003

PROJECT STATUS: During April, GPDU pressure testing was conducted on 6 separate days with some sorbent in the unit. The incinerator and preheaters were fired during one of those days for refractory dryout purposes. The incinerator was also fired stand-alone on May 2 and June 26 for checkout purposes. Additional EXSO3 sorbent was loaded into the GPDU on April 30, May 1, and May 12. Cold integrated testing was conducted during the May 5-9 time frame to improve interlocks and controls. Following that, a hot integrated shakedown test was attempted during the May 19-24 time frame. The primary test objective was to demonstrate continuous (as opposed to batch) sulfidation-regeneration operation for the first time. Although the goal was to operate at this condition for at least 24 hours, only about 1.5 hours were actually achieved due to various problems.

OPERATIONS SUMMARY: The reportable hours of operation are given in the attached tables. There were emissions (essentially sulfur-free) from the flare stack (emission point number 1e) during about 64% of the integrated shakedown test because of the lengthy time spent in non-integrated startup.

April: 40.03 hours
Breakdown of April for emission point number 1e
None

May: 179.92 hours
Breakdown of May for emission point number 1e
May 19 = 568 minutes; No sulfuric acid used
May 20 = 1182 minutes; No sulfuric acid used
May 21 = 871 minutes; No sulfuric acid used
May 22 = 1382 minutes; No sulfuric acid used
May 23 = 746 minutes; No sulfuric acid used
May 24 = 7 minutes; No sulfuric acid used
Total = 4756 minutes = 79.27 hours

June: 5.25 hours
Breakdown of June for emission point number 1e
None

QUARTER 3: July1, 2003 through September 30, 2003

PROJECT STATUS: During July, EXSO3 sorbent was removed from the GPDU to make modifications to slide valves. On September 15, the incinerator was fired for a nominal 1-hour period to keep rain out of the stack during leak testing activities. Beginning September 16, EXSO3 sorbent was reloaded into the GPDU, which was then followed by a hot integrated shakedown test during the September 17-25 time frame. The primary test objective was to demonstrate continuous sulfidation-regeneration operation and was essentially a repeat attempt of the May shake-down test. The goal was to operate at this condition for about 44 hours, but only about 17.6 hours of continuous operation were actually achieved due to various problems. Although more successful than the nominal 1.5 hours achieved in the May test, this test showed that additional shakedown testing is required to resolve operational problems.

During shutdown on September 25, filter elements failed in the secondary fuel gas filter (air pollution control device number 2c) due to ignition of soot collected on the elements. This resulted in an abnormal release of some soot and sorbent fines from the incinerator stack (emission point number 2e) from about 05:55 to 07:45. The emission rate and total release quantity are unknown. The opacity of the stack emissions exceeded 20% for most of this time interval. Although corrective actions were promptly taken to complete shut down quickly, small nitrogen purge flows were maintained for most of this time interval for safety reasons. Since the nitrogen purge flows were just a tiny fraction of the normal volumetric flow from the stack, this greatly contributed to the high opacity readings. All visible emissions stopped approximately 4 minutes after these purge flows were finally terminated when it became clear that all reactions had been extinguished in the unit.

OPERATIONS SUMMARY: The reportable hours of operation are given in the attached tables. There were emissions (essentially sulfur-free) from the flare stack (emission point number 1e) during about 63% of the integrated shakedown test because of the lengthy time spent in non-integrated startup.

July: 6.63 hours
Breakdown of July for emission point number 1e
None

August: 0 hours
Breakdown of August for emission point number 1e
None

September: 204.27 hours
Breakdown of September for emission point number 1e
September 17 = 192 minutes; No sulfuric acid used
September 18 = 1,181 minutes; No sulfuric acid used
September 19 = 1,292 minutes; No sulfuric acid used
September 20 = 571 minutes; No sulfuric acid used
September 21 = 896 minutes; No sulfuric acid used
September 22 = 1,349 minutes; No sulfuric acid used
September 23 = 1,065 minutes; No sulfuric acid used
September 24 = 394 minutes; No sulfuric acid used
September 25 = 313 minutes; No sulfuric acid used
Total = 7,253 minutes = 120.88 hours

Table 4.1. 2003 Quarterly Operations and Emissions Reports for Gas Process Development Unit

QUARTER 4: October 1, 2003 through December 31, 2003

PROJECT STATUS: To reduce soot formation in the Syngas Generator (which caused integrated operation problems and filter failure in September), a new burner was designed and fabricated that allows fully premixed firing of the air and natural gas feeds to the unit. A shake-down test of the Syngas Generator was then conducted December 15-17 to test the effectiveness of the new burner. To make the test as representative as possible, sulfuric acid was also used (for 4.42 hours). The acid feed rate was set at a low rate in accordance with Permit requirement (A)8 (flare operation with hydrogen sulfide concentration in the vent gas to the flare less than 50 grains per 100 cubic feet of gas). Test results were encouraging and suggested that less soot was produced with the new burner design.

During the next reporting period, failed filter elements in the secondary fuel gas filter (air pollution control device number 2c) will be replaced. EXSO3 sorbent will then be reloaded into the GPDU, and another hot integrated shakedown test will be conducted (but perhaps not until the following quarter). The primary test objective, as in the similar May and September shakedown tests, will again be to demonstrate continuous sulfidation-regeneration operation.

OPERATIONS SUMMARY: The reportable hours of operation are given in the attached tables. All emissions were from the flare stack (emission point number 1e), except for a 17-minute period during which there were also emissions from a brief test firing of the incinerator.

October: 0 hours
Breakdown of October for emission point number 1e
None

November: 0 hours
Breakdown of November for emission point number 1e
None

December: 29.27 hours
Breakdown of December for emission point number 1e
December 15 = 69 minutes; No sulfuric acid used
December 16 = 1,288 minutes; No sulfuric acid used
December 16 = 43 minutes; Sulfuric acid used, H2S < 50 grains/100 ft3
December 17 = 134 minutes; No sulfuric acid used
December 17 = 222 minutes; Sulfuric acid used, H2S < 50 grains/100 ft3
Total = 1,756 minutes = 29.27 hours

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Table 5.2.2b. Properties of Potential Contaminants

Contaminant Suite	Potential Contaminant	Density (g/ml)	Physical State	Water Solubility	Sorption Coefficient	Carcino-genic
			@ approx. 20 deg C		log K_{OC}	
Coal Tar	Acenaphthalene	0.899	Solid	3.93 mg/l	3.68	
Polynuclear Hydrocar-bons	Acenapthene	1.069	Solid	3.47-3.93 mg/l	3.79	
	Benzo(b)fluoranthene		Solid	0.0012 mg/l	5.74	potential
	Benzo(k)fluoranthene		Solid	0.00055 mg/l	6.64	potential
	Benzo(a)anthracene	1.274	Solid	0.01-0.44 mg/l	6.14	+
	Benzo(a)pyrene	1.351	Solid	0.003 mg/l	5.60-6.29	+
	Benzo(e)pyrene	0.8769	Solid	0.004 mg/l	5.6	+
	Biphenyl (diphenyl)	0.866	Solid	7.5 mg/l	3.23	
	Chrysene	1.28	Solid	0.0015-0.006mg/l	5.39	weak
	Coronene		Solid	0.00014 mg/l	7.8	
	o-Cresol (2-methylphenol)	1.041	Solid	24,500 mg/l	1.34	
	Dibenzofuran	1.0886	Solid	10 mg/l	3.91-4.10	
	Dibenz(a,h)anthracene	1.282	Solid	0.005 mg/l	6.22	+
	Fluoranthene	1.252	Solid	0.275 mg/l	4.62	potential
	Fluorene	1.203	Solid	1.9 mg/l	3.7	potential
	Indene	1.006	Liquid			
	3-Methylcholanthrene					+
	Methyldibenzofuran					

Table 5.2.2b. Properties of Potential Contaminants

Contaminant Suite	Potential Contaminant	Density (g/ml)	Physical State	Water Solubility	Sorption Coefficient	Carcino-genic
	Methylphenanthrene (1,2,3,4-)	1.161	Solid	0.073 mg/l	4.56	
	1-Methylnaphthalene	1.025	Liquid	26-28 mg/l		
	2-Methylnaphthalene	1.006	Solid	24.6-25.4 mg/l	3.87-3.93	
	4-Methylphenol (p-cresol)	1.0347	Solid	19,400 mg/l	1.69	
	Naphthalene	1.152	Solid	30 mg/l	2.74-3.52	-
	Phenanthrene	1.025	Solid	1.6 mg/l	3.72-4.59	-
	Phenol (carbolic acid)	1.0576	Solid	82,000 mg/l	1.24-1.43	
	Pyrene	1.271	Solid	0.16 mg/l	4.22-5.65	+
	Triphenylene	1.302	Solid	0.38 mg/l	4.0-6.9	
BTEX	Benzene	0.878	Liquid	1780 mg/l	1.69-2.00	+
	Ethylbenzene	0.867	Liquid	152 mg/l	1.98-2.41	
	Toluene	0.8669	Liquid	538 mg/l	1.89-2.49	
	m-Xylene	0.8842	Liquid	146-160 mg/l	2.26	
	o-Xylene	0.8802	Liquid	176 mg/l	1.68-1.83	
	p-Xylene	0.8611	Liquid	156-185 mg/l	2.52	
Stretford Solution	Vanadium	6.11	Solid			
	Cadmium	8.642	Solid			
Contaminated Sewer	Mercury	13.534	Liquid			

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Table 5.2.3b. NETL Waste Minimization, Pollution Prevention and Recycling Opportunity Summary

Identified Recommen-dation	Waste Category	Reduction Opportunity	Status	Action
NETL PPOA	Coal ash	Discuss with local municipality potential as an anti-skid material.	Rejected by Pleasant Hills Public Works.	Phone call.
		Discuss w/NIOSH availability of their coal ash for recy-cling. Intent to combine their larger quantity with ours.	Complete?	
		Contact concrete/lightweight aggregate block manufac-turer to determine feasible course of action.	In progress.	Called Trumbel Corp.
		Discuss with NETL SOD (construction) the feasibility for use of NETL ash as fill material for onsite projects.		Previous usage in Morgantown caused acid-mine drainage from the fill.
		Contract w/consultant for ash marketing study to identify best reuse path.	Last resort.	
	Waste Water Treatment Sludge	Explore alternative to ferric chloride as coagulant medium for sludge reduction.	In progress.	Sought expert recommendation.
		Reduce weight of sludge by drying in existing B-83 coal drying oven.	Cost prohibitive.	Moisture determination per-formed on filter press sludge approximately 70% moisture.
		Reduce weight of sludge by passive de-watering (e.g., semi-permeable membrane).		
Chester En-gineer's Assessment	Waste Water Treatment Sludge	Reduce sludge generation by optimizing agglomerant (ferric chloride) usage. Assessment called for 1/6th of current injection rate to accomplish a 50% reduction in sludge generation.	Ferric chloride study needs to be tied in with cyanide removal.	
NETL PPOA	Waste Water Treatment	Route/reuse treated effluent as B-84 satellite boiler makeup water.	Does not appear feasible.	

Table 5.2.3b. NETL Waste Minimization, Pollution Prevention and Recycling Opportunity Summary

Identified Recommendation	Waste Category	Reduction Opportunity	Status	Action
	Effluent	Route/reuse treated effluent as Computational Chemistry Building non-potable water supply or boiler feed water.	Does not appear feasible.	
		Route/reuse treated effluent as B-94 chiller cooling water.	Does not appear feasible.	
		Route/reuse treated effluent as general purpose OST cooling water.	Feasibility study in progress.	Under consideration.
	Solvent-Contaminated Debris	Characterize nature of solvent-contaminated debris to determine proper classification as RCRA or non-RCRA hazardous wastes.		
		Develop point-of-generation segregation program–all types of debris.		
		Clarify status of oily rag laundering program–both sites.	Closed–no further action feasible.	Preliminary findings: Morgantown: Used rags are too oily to launder. Pittsburgh: Rags from vehicle maintenance (EG&G) are used until non-reusable, then disposed. Rags used by Parsons are presently in a rag laundering program.
NETL PPOA	Solvent-Contaminated Debris	Formulate wastes segregation training program for all employees as applicable.		
	Morgantown Photo Lab Waste	Consider converting photo operations to 100% digital.	Complete.	Photo operations have converted to 100% digital photography.
	Construction/ Demolition Waste	Revise A/E contract SOWs to incorporate P2/Wastes Min. and ISO 14001 principles for flow-down to construction contractors.	Complete.	NETL Procedure 440.4-12A "ES&H Requirements For Off-site Contractors Working At NETL," which details ES&H requirements for contractors, has been added to all construction packages.
		Revise A/E contracts to include provisions requiring contractor/subcontractor accountability for wastes generation.	Complete.	NETL Procedure 440.4-12A has been added to all construction packages.
		Revise A/E contracts to offer financial incentives to contractors/subcontractors for practicing P2/Wastes Min.		
		Incorporate P2 into the bid evaluation process and include P2 as an evaluation criterion for the award of subcontracts.		
NETL PPOA	Construction/ Demolition Waste	Assemble and provide to SOD a list of vendors for construction materials manufactured with recycled content.	Complete.	
		Assemble and provide to SOD a list of recyclers who will accept demolition debris/construction leftover materials.	Complete.	

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Table 5.2.3c. NETL Quarterly Waste Report: FY 2003 (reported in pounds)

Waste Category	Waste Description	PA Waste Code #	PGH QTR 1		PGH QTR 2		PGH TR 3		PGH QTR 4		PGH TOTAL	MGN QTR 1		MGN QTR 2		MGN QTR 3		MGN QTR 4		MGN TOTAL	NETL TOTAL
RCRA Hazardous Waste	waste corrosive liquids	n/a			91		796		120	c	1007	10		45		20		315		390	1397
	waste oxidizers	n/a					48		9	c	57			5		5		30		40	97
	coal derived liquid	n/a									0									0	0
	poison (toxic solids & liquids)	n/a			26		83		33	c	142									0	142
	ferric chloride	n/a									0									0	0
	lead paint chips	n/a			111						111					150				150	261
	activated carbon	n/a									0									0	0
	chemical waste	n/a	145				43				188	180								180	368
	paint	n/a	175								175									0	175
	waste solvents (flammable liquid)	n/a	476	r	23	r	457	r	656	r	1612	150	r	5	r	50	r	250	r	455	2067
	solvent contaminated debris	n/a	695		405		770		590		2460									0	2460
	waste oil/gas (RCRA hazardous)	n/a	287	r	273	r	864	r		r	1424		r	190	r		r		r	190	1614
	mercury/mercury compounds	n/a	2				12		15		29			5		5		5		15	44
	toxic organics	n/a									0	170		10		5		190		375	375
	other RCRA hazardous	n/a					848		9	c	857			40		20		15		75	932
	photo lab water	n/a									0	80		290						370	370
	flammable solids	n/a									0			20		5				25	25
	RCRA Haz. Disposed	n/a	1017		632		2600		776		5025	440		415		210		555		1620	6645
	RCRA Haz. Recycled	n/a	763	r	296	r	1321	r	656	r	3036	150	r	195	r	50	r	250	r	645	3681
	RCRA Hazardous Total	n/a	**1780**		**928**		**3921**		**1432**		**8061**	**590**		**610**		**260**		**805**		**2265**	**10326**
Universal Waste	fluorescent light tubes (spent)	n/a	780	r	653	r	564.0	r	557	r	2554	480	r	410	r	330	r	480	r	1700	4254
	lead acid batteries	703	5459	r	1019	r		r	120	r	6598	1310	r	170	r	190	r	330	r	2000	8598
	nickel cadmium/lithium batteries	n/a		r	18	r		r	5	r	23		r	30	r	25	r	20	r	75	98
	Universal Total	n/a	**6239**		**1690**		**564**		**682**		**9175**	**1790**		**610**		**545**		**830**		**3775**	**12950**
Biohazard Waste	infectious waste (biohazardous)	499	3.8		27.5		34.5		47.5		113.3	20				20				40	153
TSCA Waste	PCB contaminated waste	n/a	0				461.0				461									0	461
	asbestos containing waste		3000		1000						4000									0	4000
	TSCA Total		**3000**		**1000**		**461**		**0**		**4461**	**0**		**0**		**0**		**0**		**0**	**4461**
Sanitary Waste	adhesive										0									0	0
	ADP surplus			r		r		r		r	0	5819	r	10968	r	8702	r	14929	r	40418	40418
	batteries (non RCRA hazardous)	703									0			120		70		60		250	250
	block filler										0									0	0
	coal derived fly ash	002	17700		1665		755.0		3470		23590									0	23590
	refractory cement				49.2																
	coal derived bottom ash	001	1710				4470	c			6180									0	6180
	dry ink (copy machine)		156								156									0	156
	non-hazardous fuel oil										0									0	0
	magnetite								680	c	680									0	680
	mercury filters										0									0	0
	water treatment plant sludge	201	5250		1030				5680		11960									0	11960

Table 5.2.3c. NETL Quarterly Waste Report: FY 2003
(reported in pounds)

Waste Category	Waste Description	PA Waste Code #	PGH QTR 1		PGH QTR 2		PGH TR 3		PGH QTR 4		PGH TOTAL	MGN QTR 1		MGN QTR 2		MGN QTR 3		MGN QTR 4		MGN TOTAL	NETL TOTAL
	paint	206									0									0	
	dessicant		1155						10		1165			65						65	1230
	acidic chemicals (pH<6)	301									0									0	
	spent activated carbon	305									0							720		720	
	paint trash	306									0	1200		230		720		800		2950	2950
	glycols/antifreeze	317	2634		98				208		2940			160						160	3100
	photographic chemicals										0									0	
	photographic silver paper										0									0	
	other chemical waste	399	106		26				181		313			240		145		20		405	
	organophallic clay				1470						1470									0	1470
	glass waste	406	720		780		610.0	c	640		2750	90		170		100		90		450	3200
	chlorofluorocarbons(containerized)										0									0	
	PPE										0			200		680				880	
	plastic	407									0			150						150	
	plastic containers	407									0	680		760		1060		760		3260	3260
	non-haz waste water	421									0			310						310	
	oil contaminated water	422			371						371			960		540		290		1790	2161
	spent HEPA filters										0									0	
	spent filters (underdrain)	471									0			100						100	
	furnace refractory	480	460								460									0	
	spent ballasts (lighting)		350						510		860	400				200		100		700	1560
	spent light bulbs	499		r		r		r		r	0		r		r		r		r	0	
	oil filters (spent)										0							140		140	
	hydraulic oil																	280			
	oily rags	503									0	340		140		170		200		850	
	waste petroleum (RCRA non hazardous)	509	9639	r	830	r		r	810	r c	11279	10	r		r		r	100	r	110	1138
	motor oil			r		r		r		r	0		r	280	r		r	270	r	550	
	coal waste used for energy			r		r	370	r	26000	r	26370		r		r		r		r	0	2637
	coal waste discarded								7230	c	7230										7861
	coal water slurry				890				5870	c	6760										6760
	landfill waste (industrial)		16000				24720		8000		48720	33,000		17,360		27820		31720		109900	1586
	metal chips										0	470		160		320		210		1160	1160
	scrap metal (mixed metal)	107/108	16000	r	8000	r	16000	r		r	64720	37500	r	17460	r	64780	r	30100	r	149840	2145
	vehicle tires			r		r		r		r	0		r		r		r		r	0	
	recycled construction material		735	r		r		r		r	735		r		r		r		r	0	
	wood waste (pallets)	403		r		r		r		r	0		r		r		r		r	0	
	cafeteria cooking oil	205							233	r	233								r	233	
	residual disposed		46241		6379		30555		32479		115605	36180		21125		31825		35390		124240	2401
	residual recycled		26374		8830		16370		27043		103337	43329		28708		73482		45399		191151	2944
	Residual Total		**72615**		**15209**		**46925**		**59289**		**218709**	**79509**		**49833**		**105307**		**80789**		**315158**	**6052**

Table 5.2.3c. NETL Quarterly Waste Report: FY 2003
(reported in pounds)

Waste Category	Waste Description	PA Waste Code #	PGH QTR 1		PGH QTR 2		PGH TR 3		PGH QTR 4		PGH TOTAL	MGN QTR 1		MGN QTR 2		MGN QTR 3		MGN QTR 4		MGN TOTAL	NETL TOTAL
	mixed office paper	404	21078	r	10810	r	17449	r	12716	r	62053	21000	r	23625	r	20125	r	15750	r	80500	142553
	corrugated paper	404	16818	r	1872	r	2606	r	2220	r	23516	1000	r	4000	r	3000	r	2000	r	10000	33516
	newsprint	404	2470	r	1994	r	708	r	1720	r	6892	1750	r	3500	r	4375	r	3500	r	13125	20017
	phone books	404		r	796	r		r	616	r	1412		r		r		r		r	0	1412
	magazines	404	3376	r	2848	r	1016	r	2238	r	9478	2625	r	4375	r	3500	r	2625	r	13125	22603
	aluminum cans	108	400	r	544	r	447	r	773	r	2164		r	395	r		r		r	395	2559
	landfilled office & food waste		48220		29860		53800		40880		172760	32240		33280		33280		33280		132080	304840
	plastic containers			r		r	15	r		r	15		r		r		r		r	0	
	toner cartridges		800	r	175	r	280	r	252	r	1507	823	r	276	r	835	r	627	r	2560	4067
	Styrofoam packaging (peanuts)										0			10	r			33	r	43	
	sanitary disposed		48220		29860		53800		40880		172760	32,240		33280						65520	2382
	sanitary recycled		44942	r	19039	r	22521	r	20535	r	107037	27198	r	36181	r	31835	r	24535	r	119748	2267
	Municipal Total		**93162**		**48899**		**76321**		**61415**		**279797**	**59438**		**69461**		**65115**		**57815**		**251828**	**5316**
Other	**regulated pollutant effluents (air)**		1493		6131		6283		6202		20,109	24,990		12914		9082		9082		56068	76,177
	regulated pollutant effluents (water)		40		106		40		98		284	141		387		277		182		987	1271
	neutralized acid/caustic waste		925	r	5145	r	2585	r	2122	r	10777									0	1077

Green shading = Recycled; r = Recycled; c = Cleanup remediation waste that is counted differently in the pollution prevention report

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Table 5.2.6c. NETL-Morgantown 2003 Waste Water Effluent Analysis (lb/d); Pretreatment Permit, Outfall 001, One sample/month

Parameter	Limit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flow (MGD)													
Monthly Avg	0.09	0.05	0.02	0.02	0.02	0.008	0.02	0.01	0.01	0.03	0.01	0.01	0.01
Daily Max	0.15	0.06	0.06	0.06	0.06	0.01	0.03	0.02	0.02	0.07	0.06	0.07	0.03
BOD5													
Monthly Avg	None	2.2	0.8	1.7	2.5	0.4	0.4	0.2	ND	ND	ND	1.8	0.2
Daily Max	None	2.6	2.4	5.0	7.5	0.5	0.6	0.4	ND	ND	ND	12.9	0.5
TSS													
Monthly Avg	None	ND	9.7	ND	0.8	2.7	5.0	3.1	1.2	5.5	ND	1.1	0.4
Daily Max	None	ND	29.0	ND	2.5	3.4	7.5	6.2	2.3	12.9	ND	7.6	1.3
Arsenic													
Monthly Avg	0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Daily Max	0.008	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium													
Monthly Avg	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Daily Max	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium													
Monthly Avg	0.007	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Daily Max	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper													
Monthly Avg	0.04	0.00	0.003	0.002	0.02	0.002	0.005	0.002	0.001	0.003	0.002	0.003	0.001
Daily Max	0.06	0.01	0.011	0.005	0.05	0.003	0.008	0.004	0.002	0.006	0.01	0.02	0.003
Cyanide													
Monthly Avg	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Daily Max	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead													
Monthly Avg	0.025	ND	ND	ND	ND	ND	ND	0.0007	0.0006	ND	ND	ND	ND
Daily Max	0.038	ND	ND	ND	ND	ND	ND	0.0010	0.0012	ND	ND	ND	ND
Mercury													
Monthly Avg	0.0006	ND	ND	ND	ND	ND	ND	0.00003	0.00002	ND	ND	ND	ND
Daily Max	0.0009	ND	ND	ND	ND	ND	ND	0.00007	0.00004	ND	ND	ND	ND
Nickel													
Monthly Avg	0.01	ND	ND	ND	ND	ND	0.001	ND	ND	ND	0.0004	ND	ND
Daily Max	0.015	ND	ND	ND	ND	ND	0.002	ND	ND	ND	0.003	ND	ND
Silver													
Monthly Avg	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Daily Max	0.017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc													
Monthly Avg	0.2	0.03	0.04	0.01	0.02	0.01	0.03	0.01	0.01	0.04	0.01	0.01	0.01
Daily Max	0.3	0.04	0.12	0.04	0.06	0.02	0.05	0.02	0.02	0.09	0.04	0.05	0.02
Iron													
Monthly Avg	None	0.18	0.28	0.06	0.08	0.05	0.27	0.021	0.04	0.13	0.04	0.04	0.05
Daily Max	None	0.22	0.85	0.18	0.23	0.06	0.40	0.042	0.08	0.30	0.26	0.26	0.14
Manganese													
Monthly Avg	None	0.08	0.02	0.03	0.06	0.01	0.05	0.02	0.01	0.02	0.01	0.03	0.01
Daily Max	None	0.09	0.06	0.10	0.17	0.01	0.07	0.04	0.02	0.04	0.07	0.20	0.03
Phenolics													
Monthly Avg	None	ND	0.003	ND	ND	0.0007	ND	ND	ND	ND	0.002	ND	ND
Daily Max	None	ND	0.010	ND	ND	0.0008	ND	ND	ND	ND	0.01	ND	ND
Total Organic Halogens													
Monthly Avg	None	0.024	0.008	0.009	0.009	0.003	0.007	0.004	0.003	0.010	0.003	0.006	0.004
Daily Max	None	0.029	0.023	0.028	0.028	0.004	0.011	0.008	0.005	0.022	0.020	0.044	0.011
Organics													
Alachlor-1254	None	NS	NS	NS	NS	NS	NS	NS	NS	.51 ppb	NS	NS	NS
All other parameters	None	NS	NS	NS	NS	NS	NS	NS	NS	ND	NS	NS	NS

Table 5.2.6c. NETL-Morgantown 2003 Waste Water Effluent Analysis (lb/d); Pretreatment Permit, Outfall 001, One sample/month													
Parameter	**Limit**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
pH (s.u.)													
Minimum	6.0	6.8	7.3	6.7	6.4	6.1	7.3	6.6	7.2	6.4	7.0	6.4	6.1
Maximum	9.0	8.9	8.9	7.9	7.9	7.9	7.9	7.7	8.4	8.3	8.0	8.5	7.7

MGD = millions of gallons per day; NS = not sampled; ND = not detected; TSS = total suspended solids; BOD5 = biological oxygen demand for 5-day period; s.u. = standard units

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Table 5.2.7a. NETL-Morgantown March 2003 Ground Water Data for "A" Aquifer													
Parameter	**Sample Location**												
	A	**B**	**SP1 -A**	**SP4 -A**	**SP8 -A**	**SP9 -A**	**I**	**J**	**K**	**L**	**M**	**N**	**GAS -4**
pH (s.u)	6.4	6.2	6.2	6.1	6.2	5.4	6.45	5.43	5.53	5.94	5.24	5.35	6.7
Specific Conductance (µmhos)	291	236	337	300	395	1781	4240	751	1107	2508	3495	786	2360
Temperature (°C)	16	15	15	17	16	15	15.4	15.9	11.4	14.69	11.3	15.6	17
Cadmium (total, mg/L)	NT	NT	NT	NT	NT	NT	ND	.0011	.0036	.0038	.0007	.0015	NT
Benzene (mg/L)	NT	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	NT
Toluene (mg/L)	NT	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	NT
Ethylbenzene (mg/L)	NT	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	NT
Total Xylenes (mg/L)	NT	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	NT
Chloride (mg/L)	NT	NT	NT	NT	NT	NT	34	170	320	930	41	180	NT
Sulfide (mg/l)	NT	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	NT
Sulfate (mg/L)	NT	NT	NT	NT	NT	NT	30	47	55	120	94	55	NT
Total Recoverable Phenolics (mg/L)	NT	NT	NT	NT	NT	NT	ND	ND	ND	ND	.0061	ND	NT
Naphthalene (µg/L)	NT	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	NT

ND = not detected; s.u. = standard units; NT = not tested

Table 5.2.7b. NETL-Morgantown August 2003 Ground Water Data for "A" Aquifer													
Parameter	**Sample Location**												
	A	**B**	**SP1 -A**	**SP4 -A**	**SP8 -A**	**SP9 -A**	**I**	**J**	**K**	**L**	**M**	**N**	**GAS -4**
pH (s.u)	6.4	6.1	6.1	6.3	6	P&A	6.44	5.34	P&A	6.2	4.34	4.83	7.2
Specific Conductance (µmhos)	288	254	287	287	349	P&A	2271	4492	P&A	985	2894	541	1790
Temperature (°C)	16	16	15	15.6	14.7	P&A	15.8	15.0	P&A	15.9	16.7	15.5	16.5
Cadmium (total, mg/L)	NT	NT	NT	NT	NT	P&A	ND	.0007	P&A	.0012	.0006	.0013	NT
Benzene (mg/L)	NT	NT	NT	NT	NT	P&A	ND	ND	P&A	ND	ND	ND	NT
Toluene (mg/L)	NT	NT	NT	NT	NT	P&A	ND	ND	P&A	ND	ND	ND	NT
Ethylbenzene (mg/L)	NT	NT	NT	NT	NT	P&A	ND	ND	P&A	ND	ND	ND	NT
Total Xylenes (mg/L)	NT	NT	NT	NT	NT	P&A	ND	ND	P&A	ND	ND	ND	NT
Chloride (mg/L)	NT	NT	NT	NT	NT	P&A	65	200	P&A	490	56	220	NT
Sulfide (mg/l)	NT	NT	NT	NT	NT	P&A	ND	ND	P&A	ND	ND	ND	NT
Sulfate (mg/L)	NT	NT	NT	NT	NT	P&A	38	51	P&A	120	67	62	NT
Total Recoverable Phenolics (mg/L)	NT	NT	NT	NT	NT	P&A	ND	ND	P&A	ND	ND	ND	NT

Table 5.2.7b. NETL-Morgantown August 2003 Ground Water Data for "A" Aquifer

	Sample Location												
Naphthalene (µg/L)	NT	NT	NT	NT	NT	P&A	ND	ND	P&A	ND	ND	ND	NT

ND = not detected; s.u. = standard units; NT = not tested; P&A = well plugged

Table 5.2.7c. NETL-Morgantown April 2003 Ground Water Data for "B-C" Aquifer

Parameter	Sample Location					
	11	**SP2-BC**	**32A**	**31**	**GAS-5**	**STRET3**
pH (s.u)	6.4	6.4	4.7	5.3	6.8	5.5
Specific Conductance (µmhos)	156	487	2637	812	899	81
Temperature (° C)	16	14	13	15	15.3	14

ND = not detected; s.u. = standard units.

Table 5.2.7d. NETL-Morgantown September 2003 Ground Water Data for "B-C" Aquifer

Parameter	Sample Location					
	11	**SP2-BC**	**32A**	**31**	**GAS-5**	**STRET3**
pH (s.u)	6.2	6.3	4.5	5.6	7	5.9
Specific Conductance (µmhos)	151	459	3358	736	812	101
Temperature (° C)	16	15	17	16	18	16

ND = not detected; s.u. = standard units

Table 5.2.7e. NETL-Morgantown April 2003 Ground Water Data for Morgantown Aquifer

Parameter	Sample Location			
	D1M	**D2M**	**D3M**	**D4M**
pH (s.u)	6.43	8.9	NT	6.5
Specific Conductance (µmhos)	421	607	NT	423
Temperature (° C)	17	17	NT	15

ND = not detected; s.u. = standard units

Table 5.2.7f. NETL-Morgantown September 2003 Ground Water Data for Morgantown Aquifer

Parameter	Sample Location			
	D1M	**D2M**	**D3M**	**D4M**
pH (s.u)	6.9	9	7.7	7.6
Specific Conductance (µmhos)	400	760	400	391
Temperature (° C)	15.6	17	14	15

ND = not detected; s.u. = standard units

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Table 8.2.3a. Pittsburgh RCRA Hazardous Wastes Generation

Hazardous Wastes Identification	Quantity Generated/Shipped (lbs.)
Waste Flammable Liquid (Isopropyl Alcohol & Toluene)	169
Waste Flammable Liquid (Oil and Gasoline)	257

Table 8.2.3a. Pittsburgh RCRA Hazardous Wastes Generation	
Hazardous Wastes Identification	**Quantity Generated/Shipped (lbs.)**
Hazardous Waste Solids (Solvent containing debris)	2,465
Waste batteries	800
Hazardous Waste Solid (Lead Paint Chips)	110
Waste Corrosive Liquid (Ammonium Hydroxide & Ethanolamine)	14
Waste Hydrochloric Acid	117
Waste Mercury	93
Waste Toxic Liquid, Organic (Chloroform and Mercuric Chloride)	23
Waste Toxic Solid (Barium Oxide)	6
Hazardous Waste Solid (Mercury and Lead)	9
Waste Hexamethylenetetramine	9
Waste Activated Carbon	44
Waste Oxidizing Solid (Magnesium Perchlorate and Manganese Dioxide)	106
Waste Oxidizing Solid, Toxic (Sodium Nitrate & Barium Perchlorate)	15
Waste Perchloric Acid	19
Waste Hydrogen Peroxide	19
Waste Chromium Trioxide	13
Waste Flammable Liquid (1,4-Dioxane and 2,2,4-Trimethylpentane)	152
Waste Flammable Liquid (Tetrahydrofuran & Toluene)	95
Waste Carbon Disulfide	30
Waste Flammable Liquid, Corrosive (Methanol & Tetrabutylammonium Hydroxide)	19
Waste Trimethylchlorosilane	13
Waste Hydrofluoric Acid	19
Waste Acetic Acid	76
Waste Corrosive Liquid, Acidic, Inorganic (Sulfuric & Hydrochloric Acid)	61
Waste Corrosive Liquid, Acidic, Inorganic (Nitric & Hydrobromic acid)	75
Waste Nitric Acid	33
Waste Formic Acid	17
Waste Toxic Liquid, Organic (Nitrobenzene & 1,1,1-Trichloroethane)	117
Waste Toxic Solid, Inorganic (Arsenic Trioxide & Barium Chloride)	72
Waste Phenol, Solid, Toxic	12
Waste Flammable Solid (Iron II Oxide & Molybdenum)	12
Waste, Water-Reactive, Solid, Flammable (Magnesium Nitride and Aluminum)	10
Hazardous Waste Liquids (Silver Chloride & Barium Chloride)	41
Hazardous Waste Solid (Mercury & Chromium)	54
Waste Acetic Anhydride	30
Waste Corrosive Liquid (Sodium Sulfide & Sodium Deuteroxide)	12
Hazardous Waste Liquids (Biphenyl & Diphenyl Oxide)	106
Waste Flammable Liquid, Toxic, Corrosive (Acetone & Hydrofluoric Acid)	14
Waste Flammable Liquid (Ether & Acetonitrile)	112
Waste Flammable Liquid, Toxic (Xylene & Trichloroethene)	37
Waste Propylamine	6
Waste Flammable Liquid, Corrosive (Acetyl-1-13C Chloride & Butyl Chloride)	28
Waste Oxidizing Solid (Manganese Nitrate and Manganese Dioxide)	15
Waste Oxidizing Liquid, Toxic (Lead Perchlorate & Potassium Nitrate)	11
Waste Flammable Solid, Organic (Camphor & Naphthalene)	11
Waste Titanium Sponge Granules	8
Waste Toxic Solid, Inorganic	13
Waste Toxic Solid, Organic (Thiourea & Phenol)	28
Waste Methyl Iodide	22

Table 8.2.3a. Pittsburgh RCRA Hazardous Wastes Generation	
Hazardous Wastes Identification	**Quantity Generated/Shipped (lbs.)**
Waste Toxic Liquid, Organic (Chloroform & Nitrobenzene)	43
Waste Corrosive Liquid, Acidic, Inorganic (Nitric & Hydrochloric Acid)	68
Waste Bromine	16
Waste Corrosive Liquid, Flammable (Acetic Acid & 2-Trimethylsily Ethoxymethyl Chloride)	10
Waste Corrosive Liquid, Acidic, Organic (Gluconic Acid & Hydrogen Fluoride pyridene)	15
Waste Corrosive Liquid, Oxidizing (Perchloric Acid & Sodium Chloride)	11
Waste Mercury	20
Waste Corrosive Liquid (Oxalyl Chloride)	8
Hazardous Waste Solid (Selenium & Mercury)	20
Waste Corrosive Liquid, Basic, Inorganic (Ethanolamine & Trimethylenetetramine)	16
Waste Sodium Sulfide, Hydrated	40
Waste Corrosive Liquid, Basic, Inorganic (Ammonium Hydroxide & Sodium Sulfide)	93
Waste Corrosive Liquid, Acidic, Inorganic (Hydrochloric & Nitric Acids)	34
Waste Flammable Liquid (Tetrabutyl Ammonium Fluoride)	10
Waste Corrosive Liquid (Acetyl Chloride & Trimethylchlorosilane)	10
Waste Corrosive Liquid, Flammable (4-Vinylpyridine)	8
Waste Trifluoroacetic Acid	7
Waste Corrosive Liquid, Oxidizing (Chromic & Sulfuric Acids)	10
TOTAL Hazardous Waste Generated/Shipped	**6,088**

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Table 8.2.6a. NETL-Pittsburgh 2003 Industrial Sewer Use Permit Monthly Waste Water Treatment Facility (B-74) Effluent Analysis (mg/l)

Constituent	Permit Limit	Sample Date											
		Jan 7	Feb 11	Mar 11	Apr 8	May 6	Jun 10	Jul 8	Aug 5	Sep 9	Oct 7	Nov 4	Dec 9
Aluminum	None	0.10	0.36	0.49	0.21	0.58	0.70	2.0	0.60	0.39	0.54	1.4	0.71
Cadmium	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	0.08	0.017	0.0052	ND	0.0088	0.0074	ND	0.0058	0.0069	0.0061	ND	ND	ND
Cyanide (Free)	< 0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0051	ND
TOX	None	ND	ND	0.038	0.029	0.037	0.033	0.032	0.026	ND	ND	ND	ND
Iron	None	0.22	0.26	0.14	0.18	ND	0.20	0.12	0.20	0.093	ND	0.070	0.11
Lead	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	< 0.0002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oil & Grease	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (s.u.)	6.0 – 9.0	8.3*	6.8*	6.4*	7.6*	7.9*	7.0*	7.5*	7.9*	6.8*	8.5*	7.8*	7.0*
Phenolics	0.025	0.0062	0.0063	0.0084	0.0092	0.0083	ND	0.0079	ND	ND	0.0079	ND	ND
TSS	None	10	5.0	7	ND	ND	9.0	7.0	9.0	6.0	ND	9.0	ND
Tin	None	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloro-methane	< 0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	None	0.025	ND	ND	0.021	ND	0.022	ND	0.022	0.021	0.022	ND	ND

ND = not detected; TOX = total organic halogens; TSS = total suspended solids; s.u. = standard units; Standard/Guideline – Pleasant Hills Authority Industrial Sewer Use Permit, December 28, 2001; Permit exceedances = shaded value.

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Table 8.2.6b. 2003 Industrial Sewer Use Permit Semi-Annual Monitoring Analysis

Constituent Permit Limit	Free Cyanide <0.010 mg/L	Phenol 0.050 mg/L	Copper 0.08 mg/L	Mercury <0.0002 mg/L	Chloroform <10 ug/L	pH 6.0 – 9.0 s.u.
April 8, 2003 Sampling Date						
Subinterceptor Location*						
Composite	N/A	N/A	0.058 mg/L	0.00030 mg/L	N/A	N/A
Grab #1	ND	0.028 mg/L	N/A	N/A	ND	8.00 s.u.
Grab #2	ND	0.034 mg/L	N/A	N/A	ND	8.28 s.u.
Grab #3	ND	0.050 mg/L	N/A	N/A	ND	8.49 s.u.
Grab #4	ND	0.016 mg/L	N/A	N/A	5.8 µg/L	7.65 s.u.
B-74 Effluent						
Composite	N/A	N/A	0.0092 mg/L	ND	N/A	N/A
Grab #1	ND	0.0098 mg/L	N/A	N/A	ND	7.69 s.u.
Grab #2	ND	0.012 mg/L	N/A	N/A	ND	7.56 s.u.
Grab #3	ND	0.012 mg/L	N/A	N/A	ND	8.39 s.u.
Grab #4	ND	0.0051 mg/L	N/A	N/A	ND	7.58 s.u.
October 7, 2003 Sample Date						
Subinterceptor Location*						
Composite	N/A	N/A	0.069 mg/L	0.00055 mg/L	N/A	N/A
Grab #1	ND	0.025 mg/L	N/A	N/A	ND	7.54 s.u.
Grab #2	ND	0.038 mg/L	N/A	N/A	ND	7.94 s.u.
Grab #3	ND	0.061 mg/L	N/A	N/A	ND	8.00 s.u.
Grab #4	ND	0.098 mg/L	N/A	N/A	ND	8.43 s.u.
B-74 Effluent						
Composite	N/A	N/A	ND	ND	N/A	N/A
Grab #1	ND	ND	N/A	N/A	ND	8.10 s.u.
Grab #2	ND	ND	N/A	N/A	ND	7.83 s.u.
Grab #3	ND	ND	N/A	N/A	ND	8.45 s.u.
Grab #4	ND	ND	N/A	N/A	ND	8.50 s.u.

ND = not detected; N/A = not applicable; s.u. = standard units; mg/L = milligrams per liter; µg/L = micrograms per liter.

*Subinterceptor location monitoring is not required by the permit, therefore the limits are not applicable for this location.

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Table 8.2.6c. National Pollutant Discharge Elimination System Storm Water Analysis Results

Constituent	Sample Date			
	03/13/03	06/27/03	09/15/03	11/05/03
North Outfall – Pittsburgh				
Flow	0.388 MGD	0.101 MGD	2.841 MGD	0.259 MGD
Suspended Solids	31 mg/L	5.0 mg/L	320 mg/L	10 mg/L
CBOD5	ND	ND	11 mg/L	5.6 mg/L
Oil and Grease	ND	ND	ND	ND
Aluminum	0.23 mg/L	ND	6.1 mg/L	0.12 mg/L
Iron	0.92 mg/L	0.16 mg/L	15 mg/L	0.26 mg/L
Manganese	0.26 mg/L	0.21 mg/L	0.40 mg/L	0.32 mg/L
Lead	ND	ND	18 ug/L	ND
Mercury	0.28 ug/L	ND	0.54 ug/L	ND
pH	7.67 s.u.	8.15 s.u.	6.14 s.u.	7.73 s.u.
Ammonia Nitrogen	ND	ND	ND	ND
South Outfall – Pittsburgh				
Flow	0.593 MGD	0.285 MGD	1.641 MGD	1066 MGD

Table 8.2.6c. National Pollutant Discharge Elimination System Storm Water Analysis Results				
Constituent	**Sample Date**			
	03/13/03	**06/27/03**	**09/15/03**	**11/05/03**
Suspended Solids	62 mg/L	14 mg/L	30 mg/L	28 mg/L
Aluminum	ND	0.48 mg/L	1.1 mg/L	1.5 mg/L
Iron	ND	0.13 mg/L	0.82 mg/L	0.84 mg/L
Manganese	0.63 mg/L	0.48 mg/L	0.056 mg/L	0.18 mg/L
Lead	ND	ND	6.8 ug/L	10 µg/L
pH	7.02 s.u.	7.63 s.u.	6.37 s.u.	7.40 s.u.
Ammonia Nitrogen	1.4 mg/L	ND	ND	ND
MGD = millions of gallons per day; s.u. = standard units: ND = Non Detected				

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11. APPENDIX B: NETL ENERGY MANAGEMENT REPORTS

NATIONAL ENERGY TECHNOLOGY LABORATORY
ENERGY AND UTILITIES MANAGEMENT SELF ASSESSMENT REPORT

A. Management Overview

This is NETL's Self-Assessment Report for Energy and Utilities Management. The Self-Assessment period for this report is 10/01/2002 to 9/30/2003.

During FY 2003 NETL continued its efforts to become more energy efficient following Executive Order (EO) 13123. NETL's current Energy and Utilities Management Performance Agreement was signed by the NETL Director, Rita Bajura on 8/24/2001 and has the concurrence of the Assistant Secretary for the Office of Fossil Energy on 11/16/2001 and the Assistant Secretary for Energy Efficiency and Renewable Energy on 9/03/02. This performance agreement includes the following seven energy management performance objectives: (1) energy management initiatives are managed consistent with the Comprehensive Energy Management plan; (2) meet the FY 2005 energy reduction goal of 20% per square foot in laboratory and industrial facilities using a 1990 baseline; (3); develop and implement water efficiency programs and plans; (4) evaluate and attempt to qualify office buildings for receipt of the Energy Star Building label by December 31, 2003; (5) increase the number of energy management retrofit projects that are funded and completed on site; (6) increase use of off-grid generation; (7) plan for and ensure the efficient and economical acquisition, management, and use of energy and utilities.

NETL has been very active in supporting EO 13123. NETL energy use reductions are on target to meet the FY 2005 requirement of 20% reduction in energy use per square foot from FY 1990**.** NETL has provided annual energy management reports to the Federal Energy Management Program (FEMP). They have responded to the Plan of Action, Energy Conservation at Federal Facilities. They have developed a new performance agreement with FEMP. They have developed goals for the NETL Implementation Plan for Energy Efficiency Leadership Goals. They have developed energy management goals for NETL's ISO14001 certification process. One of the Environmental Aspects identified for improvement at NETL was Energy and Fuel Usage. This

Aspect was comprised of six Targets: improving the energy management program, reducing energy use per square foot, increasing purchase of electricity from clean sources, reducing petroleum consumption, acquiring more alternative fuel vehicles, and increasing the usage rate of alternative fuel in vehicles. NETL became ISO14001 certified in FY 2003. NETL has been very active in pursuing alternative financing and successfully obtaining funds from FEMP for an energy audit, lighting retrofits, and for replacing two 250 ton class 1 (ozone depleting) chillers. NETL received funding from FEMP in FY 2003 for the B-26 lighting retrofit project. The funding for the chiller replacement was obtained in FY 2002. NETL has also been very active in completing energy and water audits for NETL and pursuing an ESPC with an ESCO. Even though the ESPC was terminated due to economics and fuel market conditions, NETL has pursued and initiated energy projects during FY 2002 and FY 2003 from some of the Energy Conservation Measures (ECM's) identified by the ESCO.

NETL is currently designing two new buildings utilizing sustainable design principles. The new building when completed will meet the requirements for EPA's Energy Star designation, and the Leadership in Energy and Environmental Design (LEED) designation. Additionally NETL is pursuing EPA Energy Star rating for its newly designed and constructed daycare facility "Room to Grow" as well as LEED certification through the U.S. Green Building Council (USGBC).

NETL has also developed designs incorporating energy efficient designs and energy star equipment in construction packages, reconfigurations, and maintenance projects. As part of the relamping program, lighting retrofits have been completed replacing T12 lamps with electronic ballasts and T8 lamps, and replacing incandescent spot lights with compact fluorescent spot lights. Motion sensors have also been installed in areas of limited use. Also as part of the relamping program, all incandescent exit lights have been retrofitted with LED's.

Both NETL sites installed new ethanol tanks and fill systems to support the ISO-14001 Aspect for reduction of petroleum consumption. Engineering designs were completed for compressed natural gas (CNG) installations in FY 2004.

The Comprehensive Energy Management Plan for NETL has been updated to include minimum requirements of the updated DOE O 430.2a, an energy curtailment plan and the requirements of EO 13123. The Plan has been approved as NETL Operating Plan 430.2-1.

All of NETL's buildings energy usage will be reported in the Industrial and Laboratory Facilities category.

NETL's energy usage is on target to meet the 20% reduction from the 1990 baseline by FY 2005. The percent change from 1990 to FY 2003 is -25.7%.

B. DETAILED ASSESSMENT

OBJECTIVE 1

Energy management initiatives are managed consistent with a Comprehensive Energy Management Plan that includes the minimum requirements of the updated DOE O 430.2a, an energy curtailment plan and the requirements of EO 13123.

MEASURE 1

Comprehensive Energy Management Plan has been updated to include minimum requirements of the updated DOE O 430.2a, an energy curtailment plan and the requirements of EO 13123.

Performance Results

The Comprehensive Energy Management Plan for NETL has been updated to include minimum requirements of the updated DOE O 430.2a, an energy curtailment plan and the requirements of EO 13123. The Plan has been approved as NETL Operating Plan 430.2-1.

MEASURE 1.1

Energy requirements accomplished/requirements scheduled to be accomplished during the fiscal year in accordance with the Comprehensive Energy Management Plan.

Performance Results

The installation of new variable frequency drives on the primary 31,000 cfm air handler in B-26 was completed. The supply and return variable frequency fan drives replace problematic vortex dampers and are more energy efficient than dampers.

NETL received FEMP funding in FY 2003 to complete a lighting retrofit for the remainder of B-26. The contract was awarded and construction initiated in FY 2003 for the B-26 lighting retrofit project.

NETL applied for and received $222,008 in FEMP funding through Departmental Energy Management Program Retrofit Projects. This cost-shared Energy Management Retrofit Project between FEMP and NETL involves upgrading one of our analytical chemistry buildings. The "Building 94 Energy Management Retrofit Project" integrates six energy conservation measures into the building upgrade and they include: expansion of the building management system; upgrade of laboratory hoods and installation of laboratory hood controls; installation of variable speed drives on supply air fans; decommissioning of the make up air system; replacement of two 225 ton Class I CFC chillers with two high efficiency CFC free 150 ton chillers; and replacement of existing fluorescent fixtures with high efficiency 3 tube T-8 fluorescent fixtures. When completed this 51,823 ft^2 facility will demonstrate an annual energy and cost savings of 8200Mbtu and $80,000 respectively. The design/construction schedule for this project will encompass FY 2002 thru 2006. This multiphase project has committed over $1,039K in FY 2002 and 2003. FY 2002 included design efforts and first floor demolition with some construction activities. FY 2003 activities will include expansion of the roof penthouse, supply air fans upgrade, purchase of high efficiency natural gas fired boilers and associated mechanical equipment, purchase of the two 150 ton CFC free chillers and continued retrofit of laboratory hoods with purchase and installation of laboratory hood controls and purchase and installation of high efficiency 3 tube T-8 fluorescent fixtures.

B-58 (34,357 square feet) at the NETL Pittsburgh site has been redesigned from a Research facility to an Office of Science and Technology Administrative support facility. This redesign and subsequent construction involves installing energy efficient electronic ballast and T-8 lamp lighting fixtures; installing perimeter wall insulation; installing natural gas fired energy efficient hot

water boilers(replacing landlord supplied coal fire steam heating system); installing an energy efficient variable speed drive rooftop mounted HVAC system; installing lighting occupancy sensors in appropriate spaces; replacing existing window glazing with energy efficient window glazing; and installing electro-optic sensor mounted faucets, urinal and commodes in newly constructed restrooms.

Approximately 180 feet of old fiberglass steam and condensate pipe insulation was replaced with more energy-efficient perlite insulation. Plans are in place to expand this new system throughout the Morgantown site.

The NETL Morgantown site has installed a new ethanol tank and fill system to support the ISO-14001 Aspect for reduction of petroleum consumption. The design for the ethanol tank and fill system for the NETL Pittsburgh site has been completed. Engineering designs were completed for compressed natural gas (CNG) installations in FY 2004.

Design drawings and specifications were completed for a new restroom in the B5 Boiler-room facility including water-efficient toilet, high efficiency water heater, and light fixtures with electronic ballasts and T-8 lamps.

A new 60-ton energy-efficient centrifugal chiller was installed for the B2 Computer Room to replace two old condensing units as the primary cooling source for the room.

As part of the relamping program, all incandescent exit lights at the Morgantown site have been retrofitted with LED's.

OBJECTIVE 2

NETL begins reporting its energy consumption under the Laboratory and Industrial Category and its energy use reductions show continuous improvement and are on target to meet the FY 2005 requirement of a 20 percent reduction in energy use per square foot in laboratory and industrial facilities using a 1990 baseline.

MEASURE 2

$[(CY - PY) \times N] / (0.20 - PY) \geq 1$

N = Number of years remaining until FY 2005
0.20 = FY 2005 buildings energy reduction requirement

Performance Results

The base year (FY 1990) energy use was 369,240 BTU/GSF. The energy use for FY 2003 is 274,300 BTU/GSF. The energy use for FY 2002 was 247,440 BTU/GSF. The percent change from 1990 to FY 2003 is -25.7%.

OBJECTIVE 3

Develop and Implement Water Efficiency Program and Plans.

MEASURE 3

Establish a Water Efficiency Program and Plan to implement at least four of the Best Management Practices published by FEMP to facility planning processes and operations.

Performance Results

NETL has implemented several Best Management Practices including: (1) steam trap inspections for 100% of facilities; (2) utilizing condensate returns for site boilers; (3) utilizing closed loop cooling systems; (4) installation of a chilled water closed loop process cooling water system to reduce the use of an ambient air evaporative closed loop process cooling water system which reduces the amount of potable makeup water used for the evaporative closed loop system; (5) installation of water saving urinal, commodes and sink/faucets in newly constructed restrooms as part of our continual construction/upgrade/retrofit program these water saving devices incorporate the use of electro-optic unit mounted control devices (approximately 35% of facilities have these water savings devices).

OBJECTIVE 4

Evaluate and attempt to qualify office buildings for receipt of the Energy Star Building label by December 31, 2003.

MEASURE 4

Number of current office buildings or new office buildings that receive the Energy Star Building label.

Performance Results

NETL has evaluated and attempted to qualify NETL office buildings for receipt of the Energy Star Building label by December 31, 2003-----Two office buildings have been evaluated to determine what cost effective modifications are required to achieve an Energy Star Building label. Three of the five recommendations needed to qualify one of NETL's buildings as an Energy Star building are in the process of being completed. The other two recommendations have been submitted for funding considerations. The Energy Star Evaluations for each building were submitted with last years Self Assessment report. NETL is still pursuing Energy Star for B-26. Additionally NETL is pursuing EPA Energy Star rating for its newly designed and constructed daycare facility "Room to Grow" as well as LEED certification through USGBC.

OBJECTIVE 5

Increase the number of energy management retrofit projects that are funded and completed on site.

MEASURE 5

Number of energy management retrofit projects that are identified as cost effective and submitted for funding consideration under the call for projects by the Federal Energy Management Program, calls for general plant projects or line item Construction projects or are pursued for funding under alternative financing mechanisms including Energy Savings Performance Contracting (ESPC) or Utility Energy Service Contracts.

Performance Results

NETL submitted three energy management projects to FEMP for funding consideration at the end of FY 2003 and the beginning of FY 2004. These projects included; 1) installing meters for all energy sources in B-26, 2) installing a variable frequency drive for the second air handler in B-26, and 3) replacing all motors that are 5 hp and greater in B-26 with energy efficient motors.

OBJECTIVE 6
Increase use of off-grid generation.

MEASURE 6
Number of off-grid generation systems (solar hot water, solar electric, solar outdoor lighting, small wind turbines, fuel cells, and other off-grid alternatives) where such systems are life cycle cost-effective and offer other benefits.

Performance Results
Two off-grid generation systems have been evaluated. The two systems are a Direct Photovoltaic, Pond Aeration Demonstration for NETL's new Technology Support building and a Grid-Tied, Net-Metered, Photovoltaic Demonstration. NETL is also considering using Photovoltaics for its new Technology Support building. These projects have not been submitted for funding considerations since the construction of the new Technology Support building has not begun yet. The evaluations were submitted in last years Self Assessment report.

OBJECTIVE 7
The National Energy Technology Laboratory will plan for and ensure the efficient and economical acquisition, management, and use of energy and utilities at their Laboratories.

MEASURE 7.1
Plan for and then acquire utilities after developing utility options and preparing utility procurement plans using the LCAM graded approach. (Planning and Acquisition of Utilities - 6.h).

Performance Results
NETL's FY 2002 Utility Contracts are current and in execution. NETL will continue to review utility market conditions and suppliers. These reviews will permit NETL to develop future Life Cycle Cost Effective utility/energy procurement.

MEASURE 7.2
Monitor utility rates, rules, regulations, and industry activities in a teaming effort with suppliers and Headquarters' for potential DOE effect. (Utility Rules, Regulations, and Industry Activities - LCAM 6.d(2)).

Performance Results
NETL continually monitors all current utility suppliers' rates and regulation. Where applicable, NETL teams with these suppliers to enhance NETL's utility supplied services.

MEASURE 7.3
Seek opportunities for economical or improved utility service arrangements. (Economical Utility Services - LCAM 6.d.(2)).

Performance Results

NETL's FY 2002 utility contracts are current and in execution. As current utility contracts expire NETL will incorporate **Life Cycle Cost Effective** methods to process and procure future NETL utility requirements.

NETL's FY 2003 Annual Energy Management Report

I. Management and Administration. This section will describe (1) the Operation/Field Office's use of management tools to implement EO 13123.

A. Management Tools

1. Awards (Employee Incentive Programs).

Any NETL employee can be nominated for an on the spot award by another employee for exceptional performance. This may include exceptional performance in implementing EO 13123. Team awards are also available for exceptional performance, which may include energy management and implementing EO 13123. NETL employees have also been nominated for Federal Energy Management Program (FEMP) awards and The Excellence in Government awards sponsored by the Federal Executive Board.

2. Performance Evaluations.

NETL's Energy management personnel have established work goals for energy management, which are tied to performance evaluations.

3. Training and Education.

NETL has an energy management team, which has participated in various training classes including FEMP-sponsored training classes. NETL has four members of its energy management team who have completed the North Carolina State University Energy Management Diploma Program. NETL has several members of their energy management team who make energy presentations to the local schools as part of NETL's educational outreach program. They promote energy conservation and refer attendees to DOE's EREN and EPA's ENERGY STAR websites. Also, as part of NETL's educational outreach program, two Site Operations employees are providing engineering consultation and advice to the Director of Main Street Morgantown to assist in generating a list of energy savings projects for the Morgantown, WV City Hall building. An energy management article is included in the site newsletter each month communicating energy policy and detailing methods to save energy in the workplace and at home. FEMP information is distributed to employees and energy conservation posters are displayed throughout the sites. Energy awareness displays are set up periodically. Energy awareness articles are posted on the NETL Intranet periodically.

NETL has been in the process of attaining ISO 14001 environmental performance certification. One of the Environmental Aspects identified for improvement at NETL was Energy and Fuel Usage. This Aspect was comprised of six Targets: improving the energy management program, reducing energy use per square foot, increasing purchase of electricity from clean sources, reducing petroleum consumption, acquiring more alternative fuel vehicles, and increasing the usage rate of alternative fuel in vehicles. NETL obtained the ISO 14001certification in FY 2003.

Four NETL employees enrolled in the FEMP Lights lighting efficiency training course. The web-based distance learning class focused on managing lighting efficiency retrofits for the workplace stressing the impact on whole building energy savings and using life cycle cost analysis. Each participant completed 36 lessons and nine quizzes, and received three college credits. Much of the information was applied to the B-26 lighting retrofit project.

Several NETL employees attended the Energy 2003 Workshop in Orlando, Florida and the EEWG meetings following the conference. A Certified Energy Manager certification class and test has been completed by 24 NETL employees for FY 2003. All 24 NETL employees passed the test and received their certification.

4. Showcase Facilities.

NETL has one existing showcase facility, which had an energy efficient lighting retrofit project completed in FY 1999. The facility also had its 20 year old electric heat pump HVAC systems replaced with high efficiency gas forced air HVAC systems with programmable thermostats.

NETL is in the process of attempting to qualify an existing NETL office building for receipt of the ENERGY STAR Building designation. All of the lighting in the 4800 sq.ft. B-26 Cafeteria/Kitchen was replaced with more energy efficient products. Forty-six old 120 watt spot-lights were replaced with 15 watt reflective compact fluorescent fixtures. Electronic ballasts and T-8 lamps were retrofitted for the old 3', 4', and U-tube fluorescent fixtures in the kitchen and dining areas. NETL has received FEMP funding in FY 2003 to complete a lighting retrofit for the remainder of B-26. The contract has been awarded for the lighting retrofit project. The installation of new variable frequency drives on the primary 31,000 cfm air handler in B-26 was completed. The supply and return variable frequency fan drives replace problematic vortex dampers and are more energy efficient than dampers. NETL has applied for FEMP funding for FY 2004 to install another variable frequency drive, to replace all 5 hp and greater motors with energy efficient motors identified using DOE's Motor Master program, and to install meters for all energy sources in B-26. B-26 will become a showcase facility when it receives ENERGY STAR designation.

An existing showcase area is a former research laboratory in B-3 that was transformed into a computer simulation center. The HVAC system was subsequently modified from total outside air ventilation to completely automated mixed air control with economizer capabilities. All fluorescent lighting in the area was changed to electronic ballasts with T-8 lamps.

Another potential show case facility is the NETL "**Building 94 Energy Management Retrofit Project".** NETL applied for and received $222,008 in FEMP funding through Departmental Energy Management Program Retrofit Projects. This cost-shared Energy Management Retrofit Project between FEMP and NETL involves upgrading one of our analytical chemistry buildings. The "**Building 94 Energy Management Retrofit Project" integrates** six energy conservation measures into the building upgrade and they include: expansion of the building management system; upgrade of laboratory hoods and installation of laboratory hood controls; installation of variable speed drives on supply air fans; decommissioning of the make up air system; replacement of two 225 ton Class I CFC chillers with two high efficiency CFC free 150 ton chillers; and

replacement of existing fluorescent fixtures with high efficiency 3 tube T-8 fluorescent fixtures. When completed this 51,823 ft^2 facility will demonstrate an annual energy and cost savings of 8200Mbtu and $80,000 respectively. The design/construction schedule for this project will encompass FY 2002 thru 2006. This multiphase project has committed over $1,039K in FY 2002 and 2003. FY 2002 included design efforts and first floor demolition with some construction activities. FY 2003 activities will include expansion of the roof penthouse, supply air fans upgrade, purchase of high efficiency natural gas fired boilers and associated mechanical equipment, purchase of the two 150 ton CFC free chillers and continued retrofit of laboratory hoods with purchase and installation of laboratory hood controls and purchase and installation of high efficiency 3 tube T-8 fluorescent fixtures.

Another showcase facility at NETL is the Design and Construction of our daycare facility **"Room to Grow"** at our Pittsburgh, PA site. This 8,900 Ft^2 single floor building integrates various energy conservation measures. The measures include: sustainable building design criteria; installation of high efficiency 3 tube T-8 fluorescent fixtures; high efficiency natural gas fired boiler; installation of a building management system: and installation of an in-floor radiant heating system. NETL is pursuing EPA Energy Star rating for this building as well as Leadership in Energy and Environmental Design (LEED) certification through the U.S. Green Building Council (USGBC).

Other areas to showcase energy efficiency include the following:

- Approximately 180 feet of old fiberglass steam and condensate pipe insulation was replaced with more energy-efficient perlite insulation. Plans are in place to expand this new system throughout the Morgantown site.
- Both NETL sites installed new ethanol tanks and fill systems to support the ISO-14001 Aspect for reduction of petroleum consumption. Engineering designs were completed for compressed natural gas (CNG) installations in FY 2004.
- Design drawings and specifications were completed for a new restroom in the B5 Boilerroom facility including water-efficient toilet, high efficiency water heater, and light fixtures with electronic ballasts and T-8 lamps.
- A new 60-ton energy-efficient centrifugal chiller was installed for the B2 Computer Room to replace two old condensing units as the primary cooling source for the room.

These facilities are the only showcase facilities at this time but NETL is in the process of renovating other facilities and building new facilities, which may become showcase facilities in the future. NETL is evaluating and attempting to qualify an existing NETL office building for receipt of the Energy Star Building designation. NETL is also utilizing sustainable design principles for two new buildings, so that upon completion the new buildings will meet the requirements for the Environmental Protection Agency's (EPA's) ENERGY STAR designation, and the LEED designation.

II. Energy Efficiency Performance. This section will highlight data calculated for reporting on the Data Report. The purpose of the section is to provide narrative information in support of these data.

A. Energy Reduction Performance

1. Standard Buildings. Report energy use for standard buildings in units of BTU/GSF for FY 1985 (the Base Year) and FY 2003. Report the percent change from FY 1985 and from the FY 2002. Discuss any extenuating factors that may be skewing the accuracy of this performance measure.

For FY 2002 (and out years) NETL will be reporting all energy usage in the Industrial and Laboratory Facilities category.

2. Industrial and Laboratory Facilities. Identify the facility inventory subject to this goal, referencing Section IV D that lists the buildings included. Describe the performance measure(s) used (Btu/square foot, Btu/production unit, etc.). (Refer to FEMP Web site for the guidance document *Section 203 Performance Goals for Industrial, Laboratory, Research, and Other Energy-Intensive Facilities*
[www.eren.doe.gov/femp/aboutfemp/indust.html]).

All of NETL's buildings energy usage will be reported in the Industrial and Laboratory Facilities category.

The base year (FY 1990) energy use was 369,240 BTU/GSF. The energy use for FY 2003 is 274,300 BTU/GSF. The percent change from FY 1990 to FY 2003 is -25.7%. The percent change from FY 2002 to FY 2003 is + 7.29%. NETL experienced a very cold winter during FY 2003. Also a new project was brought online which used a significant amount of natural gas. Both the cold winter and the new project contributed to the increase in natural gas usage for FY 2003 which contributed to NETL's increased energy usage.

3. Exempt Facilities. **Refer to Section IV E–a list of exempt facilities and an explanation of why they were exempted. (Refer to DOE's *Criteria for Exempting Facilities from the Goals of Executive Order 13123 and Guidance for Reporting Exemptions***
[www.eren.doe.gov/femp/aboutfemp/indust.html]).

No exempt facilities have been identified for NETL.

4. Tactical Vehicle and Equipment Fuel Use. Refer to the Data Report to identify the fuel use for tactical vehicles and other equipment. Discuss trends in the use of each type of fuel and methods employed to reduce fuel use.

The equipment used at NETL is lawn care equipment, snow removal
Equipment and emergency generators. The types of fuel used are diesel and
Gasoline.

B. Renewable Energy. Discuss Operation/Field Office's policy and efforts to encourage purchase of electricity generated from renewable energy sources. (Note: The quantitative information related to this section [see below] will be reported on the operation/field office's Data Report.

1. Self-generated renewable energy. Identify/estimate energy use from electricity self-generated from renewable sources (photovoltaics, wind turbines) and renewable energy thermal projects (solar thermal, biomass, geothermal).

NETL had 0 BBTU in self-generated renewable energy.

2. Purchased renewable energy. Identify the renewable (i.e., wind, solar, geothermal, biomass) energy component of power purchases under competitive contract in megawatt-hours.

NETL has 486 megawatt-hours of purchased renewable energy.

C. Petroleum. Identify petroleum-based fuels (fuel oil, LPG/propane) used in buildings in FY 1985 and FY 2003 and the percentage change from FY 1985.

NETL has used no petroleum-based fuels in buildings in FY 1985 and FY 2003.

D. Water Conservation. Identify/estimate water consumption and cost by the operations/field office in FY 2003 and outline any specific issues related to collection of water consumption data. Refer to DOE's *Guidance to Federal Agencies for Determining Baseline Water Usage and Guidance to Establish Water Efficiency Improvement Goal for Federal Agencies* on the FEMP Web site.
(http://www.eere.energy.gov/femp/resources/waterguide.html).

NETL used approximately 15,300,000 gallons of water in FY 2003 at an estimated cost of $63,410. No issues to report.

III. Implementation Strategies. The purpose of this section is to identify and describe the use of strategies to reduce energy consumption and improve energy efficiency. It is not expected that each Operation/Field Office will have employed every strategy; rather, each strategy identified in EO 13123 is listed as a subsection to remind agency officials of the existence of these strategies and to encourage their use where practical and life-cycle cost effective. In each of the following subsections, present highlights for each of the strategies that were used. If certain strategies were not used, explain why not.

A. Life-Cycle Cost Analysis. Outline procedures in place to ensure the use of life-cycle cost analysis in making investment decisions about in products, services, construction, and other projects to lower the Federal Government's costs and to reduce energy and water consumption. Highlight examples where life-cycle cost analysis was used in capital budgeting decisions concerning energy efficiency. Report on the successes and challenges of implementing life-cycle cost effective projects. (Under EPACT, energy conservation projects that will pay back investment costs within 10 years must be undertaken).

NETL has used life cycle cost analysis in the past to evaluate aging equipment and facilities. It has been used to plan for equipment replacement especially HVAC equipment. NETL has used

life cycle costing also when evaluating energy retrofit projects. NETL will continue to use life cycle cost analysis as a means of evaluating projects.

B. Facility Energy Audits. Describe the number/percentage of Operation/Field Office facilities audited for energy and water efficiency during FY 2003, and the total percentage of facilities audited to date. (In accordance with EPACT and EO 13123, approximately 10% of facilities should be audited each year).

100% of NETL facilities have been audited. This was completed in FY 1999. NETL continues to perform internal audits.

C. Financing Mechanisms. Provide narrative information related to the use of Energy-Savings Performance Contracts (ESPC's) and Utility Energy Services Contracts (UESC's). (Note: Quantitative information related to ESPC's and UESC's will be reported on the Data Report).

NETL and its ESCO (COGENEX) mutually terminated ESPC discussions due to increased energy costs. The project proposed was dependent on natural gas prices, which almost doubled during the ESPC process. The projects had been presented and approved by the DOE review board just prior to the significant increase in natural gas prices.

D. Energy Star and Other Energy-Efficient Products. **Describe steps ® taken to promote the purchase of ENERGY STAR products and/or ® products that are in the upper 25 percent of energy efficiency as designated by FEMP. Note whether energy efficient criteria have been incorporated into all guide specifications and product specifications developed for new construction and renovation. Also note whether such criteria have been incorporated into product specification language. (See the ENERGY STAR products and "green" products web sites by GSA** [www.fsa.gsa.gov/environ]**, DOE** [eren.doe.gov/femp/procurement/begin.html]**, and EPA [www.epa.gov/uiseerko/index.html]).**

NETL purchases Energy Star products and Other Energy-Efficient Products. This is accomplished through NETL's procurement group which has Energy Star products incorporated into their procurement packages. The majority of the Energy Star products are associated with computer equipment. NETL incorporates energy efficient products such as HVAC equipment into their designs using EPA's and DOE's FEMP guidelines.

E. Energy Star Buildings. Report the number and percentage of ® buildings that have met the ENERGY STAR Building criteria and have ® officially been designated ENERGY STAR Buildings. (Buildings must ® rank in the top 25 percent in energy efficiency relative to comparable commercial and Federal buildings to be eligible for the ENERGY STAR ® Buildings designation. See www.epa.gov/buildings/label).

NETL does not have any buildings designated ENERGY STAR Buildings. However, NETL is in the planning process for building two new administrative buildings. These buildings will be designed utilizing sustainable design principles, so that upon completion the new buildings will meet the requirements for the EPA's Energy Star designation, and the LEED designation. NETL

is also attempting to qualify an existing NETL office building for receipt of the Energy Star Building designation. NETL has completed several retrofit projects for this office building and plans to complete several more for FY 2004. NETL also plans to install meters for all energy sources in this office building. If all of the planned retrofit projects and meter project are completed in FY 2004 then NETL will be in a position to apply for ENERGY STAR Building designation in FY 2005. Additionally NETL is pursuing EPA Energy Star rating for its newly designed and constructed daycare facility "Room to Grow" as well as LEED certification through USGBC.

F. Sustainable Building Design. Report whether sustainable building design principles have been incorporated into the siting, design, and construction of new facilities. (See www.wbdg.org for a description of sustainable building design principles).

NETL is in the design phase for building a new administrative building at the Morgantown site. NETL's A&E firm has been incorporating sustainable building design principles into the new building design. NETL has also applied for FEMP design assistance for new construction. After some discussions with the Philadelphia Regional Office it appears that the design assistance may be provided by FEMP in FY 2004. Sustainable building design principles have been incorporated into the siting, design, and construction of NETL's daycare facility **"Room to Grow"** at the Pittsburgh, PA site.

G. Energy Efficiency in Lease Provisions. Describe how energy and water efficiency are considered when agencies enter into new leases or renegotiate/extend existing leases (e.g., preference for buildings with sustainable design and development, preference for certified ENERGY STAR Buildings, etc.). ®

NETL has recently entered into a temporary lease agreement and is currently evaluating the energy and water efficiency of the leased space.

H. Industrial Facility Efficiency Improvements. **Highlight activities undertaken to explore efficiency opportunities in energy-intensive facilities. This may include activity in the following areas: steam systems, boiler operation, air compressor systems, industrial processes, fuel switching, cogeneration, and other efficiency and renewable energy technologies.**

NETL has installed Natural Gas fired High Efficient low-pressure satellite steam boilers at its Pittsburgh Facility to reduce Energy costs and Operation and Maintenance costs of its current steam heating systems. NETL is also considering a boiler replacement project at the Morgantown Facility for FY 2004. The design for two new site steam boilers has been completed. These boilers when installed will be more energy efficient and have automated controls for better operational efficiencies. The installation of these boilers is funding dependent.

I. Highly Efficient Systems. **Describe new construction and/or retrofit projects for which combined cooling, heating, and power systems were installed. Report whether local natural resources were surveyed to optimize use of available biomass, geothermal, or other naturally occurring energy sources.**

Nothing to report.

J. Off-Grid Generation. Describe the installation of new solar hot water, solar electric, solar outdoor lighting, small wind turbines, fuel cells, and other off-grid alternatives.

No new installations to report. However NETL has evaluated some off-grid alternatives for existing buildings. NETL also plans to incorporate some off-grid alternatives in the design of its two new buildings.

K. Electrical Load Reduction Measures. Describe operations/field office activities undertaken to reduce electricity load during power emergencies. These activities are required under the President's Memorandum of May 3, 2001 on Energy Conservation at Federal Facilities. (See www.eren.doe.gov/femp/resources/presidential_direct .html for more information on electrical load reduction measures.

NETL has completed its Energy Management Plan which includes an electrical load curtailment plan.

DEPARTMENT OF ENERGY
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