University of South Carolina
Environmental Advisory Committee
Campus Survey 2000

Conducted by:
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South Carolina Sustainable Universities Initiative
USC’s School of the Environment

All questions were developed during Summer 2000 and information contained within this report is based on information gathered between June 2000 and June 2001.
Quick Links to Document

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DINING SERVICES

Responsibilities:
Dining Services provides food services to students and faculty in university dining facilities.

The People in Charge:
Liz Bohlke serves as Resident District Manager of Dining services for Sodexho Marriott. She may be contacted by phone at 777-6004.

Number of Employees:
XXX administrative

Physical Location of Department:
1718 College Street

Tracking of Environmental Progress:
At this time, there is no formal tracking component in place. Sodexho Marriott manages the food service contract. Therefore, due to the absence of an university environmental policy, employees abide by those of the parent corporation.

Plans/Goals for the Future:
Adopt a formal environmental policy
Launch a more aggressive education sensitivity and awareness program
Investigate possibility of expanding composting efforts
Utilize on-campus expertise (College of Engineering, Chemistry, Environmental Health) to lessen overall impact
Expand and increase visibility of recycling campaign
Reduce styrofoam usage
Increase use of environmentally friendly products
Work closer with contractors especially with extermination and pest management

The Survey:
These questions are a combination of information that was provided in the 1995-1996 Environmental Audit of USC and The National Wildlife Association’s Campus Ecology survey. These questions are intended to serve as indicators for your department’s environmental performance and will be used in future years to track USC’s environmental status. Please include other statistics you feel are relevant.

1. Does the school have a food service committee? If so, who sits on this committee?
   Yes, students (includes some from Student Government) and Dining Service Managers.

2. To what extent does food services purchase from regional growers and food processors?
   We do not.

3. Are vegetarian meals offered on a regular basis?
   Yes, as a matter of fact, we have one outlet in the Mall that is strictly vegetarian.
4. Are certified organically grown produce or meat and dairy products purchased?
   No

5. Have any surveys been conducted to estimate the demand for vegetarian food on campus?
   If so, what were the results?
   *Not exclusively for vegetarians. The concept we opened came out of our food courts.*

6. Has food service discontinued the purchase of any food products for environmental reasons?
   *We did when swordfish was becoming extinct.*

7. Have any programs or events taken place on campus to highlight the connection between diet and the environment?
   *We have Wellness information out in all of our units.*

8. Is the food prep waste composted? If so, in what quantity?
   *Yes, 100 lbs. Per day. If we had more sites, we could do double that amount.*

9. Are there plans to increase composting on campus?
   *Not at this time, unless we receive more funding and more composting space.*

10. What measures have been implemented in an effort to reduce solid waste (i.e. reducing take-out packaging, eco-mugs)?
    *Eco-mugs, providing awareness of what they are doing by making the choice to take-out.*

11. How often are pest management and extermination services required? Briefly describe procedure.
    *We have a contract for monthly service with Steritech.*

Comments by: Liz Bohlke, 777-6004
   Resident District Manager, Sodexho Marriott
   Liz_B@gwm.sc.edu

Conducted by: Meika Washburn, Fall 2000
**HOUSING**

**Responsibilities:**
The Department of Housing at USC provides on-campus housing to students and faculty.

**The People in Charge:**
Dr. Gene Luna serves as Director of Housing. Tom Battenhouse serves as Director of Facility Management and Bob Harmon is Director of Custodial Services. The Department is in the process of hiring an Environmental Manager.

**Number of Employees:**
130 administrative
6000+ residence halls occupants

**Physical Location of Department:**
1215 Blossom Street

**Tracking of Environmental Progress:**
At this time, there is no formal tracking component in place. A formal environmental policy is under development. Information is becoming available as the result of implementation of environmentally practices. The new laundry system is one example of active conservation.

**Plans/Goals for the Future:**
Adopt a formal environmental policy
Construct a green dormitory within five years
Launch a more aggressive education sensitivity and awareness program
Expand and increase visibility of recycling campaign
Increase use of environmentally friendly products
Work closer with manufacturers and contractors especially with renovation projects.

**The Survey:**
These questions are a combination of information that was provided in the 1995-1996 Environmental Audit of USC and The National Wildlife Association’s Campus Ecology survey. These questions are intended to serve as indicators for your department’s environmental performance and will be used in future years to track USC’s environmental status. Please include other statistics you feel are relevant.

1. How many students reside in on-campus housing?  
   **6482**

2. How many residence halls are on campus?  
   **37**

3. What materials are included in the recycling program? (paper, phone books, plastic bottles)
4. Are recycling bins available to all resident students? If so, what kind of bins and where are they located?
   *Individual bins are provided to each resident room and common bathrooms, trash rooms, and meeting spaces have some type of bin accessible for usage. Exterior bins are located around campus at seven sites.*

5. Is recycling education provided? When? (Freshman orientation)
   *Special presentations to groups, i.e. Hall Government, RHA, emphasized in orientation, and promotion during opening/closing periods for academic year.*

6. Are students permitted to use halogen-standing lamps in their dorm rooms?
   *Yes, provided a safety shield is utilized to prevent contact with bulb.*

7. How are hazardous materials stored and disposed? Ex. cleaning supplies
   *Through Health & Safety Services – staff pickup and dispose according to prescribed procedures.*

8. Are refillable soap dispensers or hand dryers available in restroom facilities?
   *Some residence halls have hand dryers and refillable dispensers, but not everyone has one or both.*

9. Are motion sensors or occupancy detectors currently in use?
   *Currently, use is limited.*

10. What energy and water conservation efforts have been made in the residence halls? (i.e. front-loading washers, lighting retrofits, education programs, etc.)
    *Front loading washers have been installed in most laundry areas, low energy lighting fixtures utilized in retrofitting, water reducing shower heads utilized.*

11. Have any cost savings been realized from energy conservation plans in the residence halls? If so, how much?
    *Yes, hard to assign exact dollar amount under current University Energy plan.*

Comments by: Bob Harmon, 777-4286
Dir. Custodial Services
bobha@gwm.sc.edu

Conducted by: Meika Washburn, Fall 2000
Environmental Health and Safety Department

Responsibilities:
At the University of South Carolina, the Environmental Health and Safety’s (EHS) mission is to provide health and safety services to the University community through technical support, information and training programs, consulting services, and periodic auditing of health and safety practices and regulatory compliance. EHS consists of employees working in a coordinated effort to address and help resolve health and safety issues in the University community. Areas of expertise in the department include general safety, chemical safety, radiation safety, biosafety and fire safety.

The People in Charge:
William Dickens (wdickens@gwm.sc.edu) is the current director of the EHS department.

Number of Employees in the EHS Department:
17 (as of Fall 2000)

Physical Location of Department:
The EHS department is located in the Benson School at 226 Bull Street.

Tracking of Environmental Progress:
The supervisors do not have a set environmental policy. However, the department is responsible for radiation safety and tracking and for safety and disposal of chemical, biological and infectious waste. Tracking of environmental issues occurs through the minimization of waste, proper processing of disposal and spills, and monitoring of air and water quality when necessary.

Plans/Goals for the Future:
Over the past five years, hazardous waste disposal costs have steadily been reduced, while costs associated with radioactive and infectious waste disposal have remained more constant. Proposals have been made to establish a decay-in-storage program for solid radioactive waste, which would reduce disposal costs; however, these proposals have yet to be funded. Future goals should include the reduction of all hazardous, infectious and radioactive waste generated by the University. This will lead to a decrease in costs associated with the EHS department.

The Survey
These questions are a combination of information that was provided in the 1995-1996 Environmental Audit of USC and The National Wildlife Association’s Campus Ecology survey. These questions are intended to serve as indicators for your department’s environmental performance and will be used in future years to track USC’s environmental status. Please include other statistics you feel are relevant.

1. Outline procedures you are responsible for in your department.
   Please review the EHS web site (ehs.sc.edu). You can reach the site by going to the Quick Links section on the USC Faculty/Staff homepage. Our mission, programs, and areas of
responsibility are displayed in detail: radiation safety and tracking, chemical safety and disposal, biological safety and disposal, etc.

2. How often and by what method are these procedures reviewed?
The Environmental Health and Safety staff reviews procedures continuously. Processes and procedures are discussed at weekly staff meetings and at semi-annual/annual briefings to Dr. Wertz, Director of Business Affairs, and Mr. Finan, Vice President for Business and Finance. Both the EPA and DHEC have inspected our operations and reported one minor deficiency each.

3. Outline document control (i.e. how do you document environmentally related actions and problems – spills, disposal, hazardous material storage etc.)
All major actions are documented. Tracking is done of all radioactive material accrued and its proper disposal. Chemical waste collected is tracked from the point of pick up from the department site(s) to its final "resolution" in Ohio. We have temporary storage sites where collected waste resides until it is picked up and transported by vendors.

4. Outline weaknesses and strengths in on the job training (environmentally related).
The strength of our training is in the simplicity of the many processes and procedures (i.e. waste collection is a process of "collect and ship out"). We do little to no combining of waste, which is a very safe and sane approach.

5. Is there a procedure to identify your impacts on the environment? (Y/N) Please describe Our processes, along with the methods used by selected vendors, minimizes the impact of the University's waste streams

6. Do you have documented procedures for spills and other environmental emergencies? If yes, please describe how we may review them.
Yes, EHS has documented procedures. Please review the Safety Program Guide and Radiation Safety Manual on the EHS web site (ehs.sc.edu).

7. If you answered yes to Question 6, how often are these procedures reviewed and revised? And who is responsible for this?
Please see refer to the answer given to #2 above.

8. Does your department or office have an environmental policy?
Our 'policy' runs throughout our documents: minimization of waste, proper processing of any waste/spills, performing air motoring as needed, etc.

9. If yes, how is this policy made available to staff in the department and to the public.
The information is readily available on the EHS web site (ehs.sc.edu).

10. Has the organization developed a method for determining environmental impacts of its processes, products or services?
Yes, through our programs.
11. Has the department identified a way to track legal requirements related to the environment?
Yes, the EHS programs were inspected by DHEC and the EPA for chemical issues on February 29, 1999, and by DHEC for radiation issues on April 20 and 27, 2000. In both reviews only one minor deficiency was reported.

12. Has the department developed a program to reduce its impact on the environment? If yes, please describe and who is responsible for the program?
Yes, EHS constantly helps monitor the University and its procedures and processes. However, departments must monitor themselves. They can use our information on the EHS web site (ehs.sc.edu) to assist in and be responsible for safety and environmental concerns.

13. What are your methods for monitoring and measuring environmentally related progress?
Our programs monitor and/or measure environmentally related progress.

14. Who is responsible for environmental issues in your department? (name, phone, e-mail)
Several people in EHS have been given responsibility for a certain area (see Appendix A - Organizational Chart). All EHS personnel have a responsibility to help ensure that environmentally sound practices are used.

15. Are you aware of what type of training is required for your staff? Does your department meet its requirements for environmental training?
Yes. Required training is performed as required by each section: hazardous waste training, radiation training, etc.

16. Do you keep records of training?
Yes, each section of the EHS department keeps records.

17. How does your department handle environmental complaints?
Complaints are immediately investigated and an assessment is made. If there is a hazard to an individual and/or the environment we immediately begin actions to mitigate or eliminate the potential or actual risk(s).

18. Please sketch an organizational chart below in the box. Please indicate names and job titles.
Please refer to Appendix A - Organizational Chart.

19. How does your department respond to environmental problems (i.e. internal communication among employees and external communication with the public and/or authorities)?
All EHS personnel (with exception of the administrative specialist) have pagers and most individuals have cellular telephones. Cell phones are a must to coordinate and define problems in emergencies. The principal contact for campus emergencies is the USC Police


Department. A list of the EHS staff and specified duty officer resides at the operations desk.

We have coordinated HAZMAT team from the city of Columbia to respond to issues beyond the control of the individual departments and the EHS office. Recently that coordination proved to be very beneficial when a professor had a significant 'spill' in his chemistry lab. We also worked with a local hazardous materials disposal vendor who picked up the spilled chemicals (waste) so that normal operations could proceed as quickly as possible.

Any communications with the public normally go through the University's Public Affairs division.

Hazardous Waste
1. What kind of hazardous waste does the school generate and what are the sources?
   1. Waste organic solvents, out-dated reagents, and research samples are generated by the teaching and academic research laboratories.
   2. Waste paint and paint related waste products are generated by the paint shops.
   3. PCB and non-PCB contaminated wastes are generated by the Energy distribution services and the College of Engineering. (These are now very small amounts.)
   4. Photographic chemicals and Nitrocellulose stock films are generated by the USC community.

2. How much hazardous waste is generated annually?
   For the fiscal year 1999-2000 we have shipped close to 46,500 lbs.

3. How has this figure changed over the last five years?
   Please see Appendix A - Hazardous Waste Management Cost at USC Columbia

4. How is this waste disposed of?
   The waste is disposed of through a state contact with Environmental Enterprises Incorporated of Ohio.

5. How much is recycled? >90%  incinerated? <10%  landfilled? 0%

6. What were the total hazardous-waste disposal costs for this year?
   FY 1999-2000 - $79,216

7. How have these costs changed over the last five years?
   Please see Appendix A - Hazardous Waste Management Cost at USC Columbia

8. What is being done on campus to minimize the quantity of hazardous substances used and waste generated?
We try to locate new users for all unwanted hazardous chemicals within the USC community before we declare them as waste. Many researchers are now using micro levels in their experiments.

9. Does the school have a system for tracking and inventorying hazardous chemicals bought and used? If so, please describe. The blanket PO's and credit card purchases prevent us from tracing for the entire University. However, each entity/department must keep an up-to-date chemical inventory as required by the Chemical Hygiene plan.

Radioactive Waste
1. What departments and activities on campus generate radioactive waste and use radioactive substances?

| 2. Chemistry | 12. Pathology |
| 4. Geology | 14. OBGYN |
| 5. Engineering | 15. Environmental Health |
| 6. Psychology | 16. Physical Education |
| 7. Pharmacology | 17. Pharmaceutical Sciences |
| 8. Microbiology & Immunology | 18. USC Spartanburg |
| 9. Physiology | 19. USC Aiken |
| 10. Anatomy | |

2. What are the quantities of radioactive substances used and wastes generated on campus annually? See Appendix A - Solid Radioactive Waste Volumes and Disposal Costs and Appendix A-14 Year Trend for Receipt & Disposal of Radioactive Materials

3. How has this figure changed over the last five years? The amount of solid radioactive waste generated over the past five years has been reduced by compaction activities. Liquid waste volumes and scintillation vial waste have decreased somewhat. Radioactive carcasses have shown a significant reduction in volumes since many researchers have gone to non-animal models.

4. How and where is radioactive waste disposed of? We use a waste broker (currently Bionomics, Inc.). The broker removes solid waste, hazardous liquid bulk waste, scintillation waste and radioactive animal carcasses. The solid waste is sent to a facility in Tennessee where it is supercompacted before being sent to the low level waste site in Barnwell, S.C. The liquid hazardous bulk waste and the non-hazardous scintillation become part of the fuel mixture for cement kilns.

5. How much is landfilled? All of the solids are landfilled. Incinerated? All of the bulk hazardous liquids and the scintillation fluids are incinerated.
6. Does the University have an on-site radioactive-waste incinerator?  
*USC does not have an on-site incinerator.*

7. What were the total radioactive-waste disposal costs for the last academic year?  
*Radioactive waste costs were approximately $23,000.*

8. How have these costs changed over the last five years?

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>$14,888</td>
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<tr>
<td>1995</td>
<td>$37,000</td>
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<tr>
<td>1996</td>
<td>$35,400</td>
</tr>
<tr>
<td>1997</td>
<td>$31,900</td>
</tr>
<tr>
<td>1998</td>
<td>$36,000</td>
</tr>
<tr>
<td>1999</td>
<td>$23,000</td>
</tr>
</tbody>
</table>

9. Has a radioactive-waste reduction program been initiated? If so, please describe.  
*Proposals have been made to the administration to establish a decay-in-storage program for solid radioactive waste. This would significantly reduce the volume of waste that would need to be buried at Barnwell, S.C. It would also reduce costs. However, these proposals have yet to be funded.*

**Infectious Waste**

1. What campus facilities generate infectious waste? In what quantities?  
*Facilities that generate infectious waste:*

1. Biology
2. Chemistry
3. Thompson Student Health Center
4. Athletics
5. Animal Resources
6. Psychology
7. School of Medicine
8. Biology departments of Lancaster, Sumter, Spartanburg, Aiken and Beaufort campuses

*The University of South Carolina generates approximately 19,248 pound of what we treat as infectious waste. 49 percent of this waste is preserved and non-preserved animal carcasses, which are not classified as infectious waste, but shipped off campus to be incinerated per USDA regulations.*

2. How have these figures changed over the last five years?  
*The waste generated has remained constant over the past five years.*

3. How is infectious waste disposed of and where does it go?  
*USC has a contract with Environmed, Inc., a medical waste disposal company. The waste is picked up weekly and shipped to be incinerated. Some of the waste generated on campus is treated on campus by steam sterilization or liquid disinfecting. The treated waste is not infectious and is landfilled.*
4. How much is landfilled? 25% incinerated? 75%

5. What are the annual infectious waste disposal costs?
   Approximately $7,500

6. How have these costs changed over the last five years?
   The cost has remained constant. We had a five-year contract with BFI keeping the pricing constant.

7. What percentage of this waste is recyclable?
   None

8. Have any efforts been made to recycle some of this waste?
   No

9. Has an infectious waste reduction program been initiated? If so, please describe.
   No

Workplace Environment
1. What kinds of occupational environmental hazards exist on campus?
   Please see the training matrix on the EHS web site (ehs.sc.edu). Even though it has a safety slant, the matrix lays out the issues of our environment along with the Safety Program Guide and Radiation Safety Manual.

2. Does the University have a history of worker/student health and safety complaints or problems?
   The history is monitored by each section/area of EHS and reviewed with the Director. All incidents and occupational health issues are discussed weekly with the entire staff. If there are any issues, they are immediately addressed.

3. Are there any seminars conducted on art safety for students? Yes for faculty? Yes
   The seminars are performed by the Department of Art according to the department’s safety manager, Mr. Greg Leonard.

4. Is there a non-smoking policy in effect on campus?
   There is a state policy that smoking should be done in designated areas located outside buildings. However, a person occupying a single-person-enclosed office can smoke in his/her office as long as the activity does not infringe upon others.

5. Have workers or students complained of health problems that may be due to poor indoor air quality?
   Yes, in a few cases EHS has received complaints about poor indoor air quality. Each complaint has been investigated by the industrial hygienist.
6. How are indoor air quality complaints handled?

Indoor air quality (IAQ) complaints are generally reported to the industrial hygienist. The industrial hygienist conducts an on-site evaluation of the complaint. The assessment may include air sampling for temperature, humidity, carbon dioxide and other indoor air pollutants as deemed necessary by the industrial hygienist. Conclusions and recommendations are documented in a report which is forwarded to interested parties (originating department, Facilities management, etc.) for resolution.

7. What are the common sources of poor indoor air quality on campus?

Most indoor air quality problems on campus are a result of insufficient amounts of fresh air delivered to the occupied space. The University utilizes many buildings with older air handling systems. Examples of common pollutants include mold, mold spores, and migrating chemical vapors in buildings where research is conducted.

8. Have indoor air-pollution problems been investigated, including radon?

Yes. All IAQ complaints are investigated.

9. What is the status of asbestos abatement in campus facilities?

Facilities Management employs four (4) individuals for its on-site asbestos abatement team. This group is capable of removing relatively small quantities of asbestos material and conducting maintenance where asbestos can possibly be disturbed. Currently, asbestos is being abated as required prior to major construction/renovation projects where asbestos-containing materials may be disturbed. More information on asbestos abatement can be obtained through Facilities Management.

10. What is the quality of drinking water on campus? Has it been tested for contaminants such as lead?

The University obtains its water from the city of Columbia. Columbia's water is rated "excellent."

11. How are drinking water complaints handled?

Each complaint is investigated by the special projects coordinator. In situations where old unused water lines have been reopened some issues have been found in regards to levels of iron and lead. A supply of bottled water has been established for offices/departments where appropriate.

12. What is the history of drinking water complaints on campus?

There are few complaints.

13. Has the University developed policies and procedures regarding the use of Video Display Terminals (VDTs)?

Dr. Zurosky, Director of Radiation Safety, states that the radiation emitted from the screens now used pose little risk to individuals. Therefore, no policy regarding VDTs is in effect.
14. Is there any cause for concern on campus regarding electromagnetic fields (EMFs)?

There is no concern regarding EMFs. Those areas that were suspect have been checked. There had been a plan to place microwave relays on campus buildings, but the plan was debated and was eventually scraped.

Comments by: William Dickens
Director, Environmental Health and Safety (EHS)
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Conducted by: Sarah VanWye and Jeff Kaufman, Summer 2000
ENERGY SERVICES

Responsibilities:
The Department of Energy Services at USC creates, manages, and distributes energy in the form of electricity, steam, and chilled water throughout the University campus.

The People in Charge:
The Energy Services Department is under the direction of the Director of Facilities Services. Jim Demarest is the Director of Facilities Services and Charles Stevenson is the Energy Services Manager. Charles Stevenson’s phone number is 777-3504 and his e-mail address is cls@fmc.sc.edu.

Number of Employees at Energy Services:
33 (as of Summer, 2000)

Physical Location of Department:
The main Facilities Management office is at the bottom of the hill on Greene Street, just past the railroad tracks. (803) 777-7334

Tracking of Environmental Progress:
The supervisors do not have a set environmental policy. However, they do generate reports of monthly activities. There are no procedures for the Energy Management system to determine their environmental impact.

Plans/Goals for the Future (Energy Services Master Plan):
- Replace Boilers
- Campus Wide Lighting Retrofits
- Replace Energy Facility Chillers
- Expand Energy Management System
- Replace Energy Facility Cooling Towers
- Install Thermal Energy Storage System

The Survey:
These questions are a combination of information that was provided in the 1995-1996 Environmental Audit of USC and The National Wildlife Association’s Campus Ecology survey.

1) How many gallons of water did the University consume last fiscal year (98-99)?
   428,248,000 gallons

2) How many gallons did the University consume per square foot of building space? 49.8 gallons
   Per capita: 16,471 gallons (used 26,000 students/faculty)

3) How has this figure changed over the past five years? Increased about 5% per year
4) What percentage of water is used indoors vs. outdoors? Difficult to determine because some meters measure both inside and outside water usage.

5) What were the water utility costs for the University for the last fiscal year (98-99)? $1,479,388

6) What is the cost of water (per CCF)? $2.58 OR $3.38/gal How has this changed over the past five years? Increased about 2% per year (See Appendix B - Utility Cost & Consumption Data Sheet)

7) What water conservation program measures have been implemented? a) Leak detection and repair? Repaired leaking pumps, valves, and piping b) Low-flat showerheads and faucets in new bathrooms? Back in the 1970’s c) Low-flat showerheads and faucets in existing bathrooms? d) Automatic timers? Some e) Automatic sensors? f) Use of reclaimed water? g) Other? Replacement of 7 old cooling towers, 3 more to replace

8) Are there any estimates of water savings from such programs? If so, how much in terms of gallons and cost? N/A

9) How much energy did the campus consume in the last year, and what were the associated costs? To do this, there are many chemicals that must be used (see table 2).
   a) Electricity: Total KWH: 158,559,548 Total Cost: $7,446,084 $/KWH $0.045/KWH
   b) Natural Gas: Total BTU: 532,224,000,000 Total Cost: $2,499,307 $/MMBTU: $4.70/MMBTU
   c) Fuel Oil: N/A Have not used fuel oil in 2 years.

10) How has campus energy use changed over the past five years? Why? Usage has only increased about 1% per year. Many energy conservation projects have been implemented. (See Appendix B - Utility Cost & Consumption Data Sheet)

11) Do you feel USC has an energy-efficiency program? Yes- Energy Management System

12) Which of the following does it include: a) Regular energy audits of campus buildings? Energy audits of selected facilities b) Replacement of incandescent lighting with more efficient lighting systems? Yes c) Computerized energy-management system? Yes d) Energy conservation awareness program for staff and/or on-campus residents? e) Solar water heating? f) Passive solar building design?
g) On-campus cogeneration?
h) Energy-efficient windows?  \textit{For new facilities}
i) Energy-efficient appliances?
j) Other?  \textit{Energy master plan}

Comments by: Charles Stevenson  
Energy Services Manager  
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cls@fmc.sc.edu.

Conducted by: Halle McWilliams, Summer 2000
**GROUNDS MANAGEMENT DEPARTMENT**

**Responsibilities:**
At the University of South Carolina, the responsibility of grounds management lies within the Office of Facilities Management’s Campus Services division. The Grounds Management department is a division of Campus Services with the responsibility encompassing nearly everything outside of the buildings. The department's main functions are the care and maintenance of the campus grounds, installation and care of irrigation systems, pest control (indoor and outdoor), landscape development, horticulture planning, parking, and road maintenance.

**The People in Charge:**
Presently the position of Assistant Director of Grounds Management is vacant, however Jerome Provence is the acting manager of the grounds department.

**Number of Employees in Grounds Management:**
There are currently 30 employees in the department, with 8 vacancies.

**Physical Location of Department:**
The offices within the Grounds Management department are located in the Facility Management Center at 743 Greene Street.

**Tracking of Environmental Progress:**
There are no programs in place to track environmental progress; however, there is interest within the department in setting up methods to measure environmental impacts.

**Plans/Goals for the Future:**
Landscaping waste is currently composted and should continue to be a future goal. Reducing both costs and amounts of the chemicals used in the grounds department should also be a goal. The costs and amounts of pesticides and fertilizers currently used by the department can establish a baseline condition to which future comparisons can be made. Impacts of these chemicals on the environment are not currently known. In the future, these impacts should be researched.

**Status of the Program**
The department, whenever possible, has minimized certain environmental impacts. Yard waste is composted, there have been efforts to restore areas on campus to natural landscapes and, when possible, drip irrigation systems are installed which reduces the amount of water used. However, grass predominates and there is no easy way to reduce water used to maintain lawns.

The responsibilities of the Grounds Department can make it difficult to always be environmentally friendly. The department is responsible for controlling pests such as insects, weeds, pigeons and possums, and must also keep the campus landscapes looking nice. Pesticides, fertilizers and pest control all affect the campus environment, and can be expensive. Pest control contracts have remained constant over the past five years, fertilizer use has steadily decreased, while pesticide costs have increased (see table 1). For specific herbicides, insecticides, and pest control chemicals used on campus (see table 2).
The department does not have an official policy, nor does it have a way to measure its impact on the environment. The department would welcome any programs which may lessen their environmental impact.

### Table 1. Grounds Purchases Over the Last Five Years

<table>
<thead>
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<th>Fiscal Year</th>
<th>Pest Control</th>
<th>Pesticides</th>
<th>Fertilizers</th>
</tr>
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<tr>
<td>Herbicides</td>
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<td>--------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Isoyaben</td>
<td>1 Quart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ozyzalin</td>
<td>1 Gallon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pendimethalin</td>
<td>35 Bags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trifluralin</td>
<td>20 Bags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bentazon</td>
<td>1 Quart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluazifop-P-butyl</td>
<td>3 Quarts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imazaquin</td>
<td>2 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metolachlor</td>
<td>(Sub-contractor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bentazon</td>
<td>1 Gallon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diquat</td>
<td>8 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dithiopyr</td>
<td>2.5 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dithiopyr</td>
<td>25 Bags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triclopyr/Clopyralid</td>
<td>2 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simazine</td>
<td>25 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glyphosate</td>
<td>15 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,4-D</td>
<td>(Sub-contractor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dicamba</td>
<td>(Sub-contractor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSMA</td>
<td>(Sub-contractor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insecticides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorpyrifos</td>
<td>2.5 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydramethylnon</td>
<td>100 Pounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imidacloprid</td>
<td>12 Ounces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diazinon</td>
<td>40 Pounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lawn and Garden</td>
<td>2 Quarts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pest Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cynoff</td>
<td>1 Quart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flee</td>
<td>1 Quart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Termiticide</td>
<td>5 Gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maki, Rat and Mouse bait</td>
<td>50 Pounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roach bait</td>
<td>400 Ounces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roach bait</td>
<td>300 Cans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procide Foggier</td>
<td>28 Ounces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ant bait</td>
<td>5 Bags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fertilizer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesco</td>
<td>Not known</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conducted by: Jeff Kaufman, Fall 2000
PURCHASING DEPARTMENT

Responsibilities
The Purchasing Department is responsible for procuring paper, toilet tissue and paper towels for the University. They also are involved in other purchasing decisions made by departments for items over $1500, such as furniture and equipment. The Office of Consolidated Services, within the department, is responsible for Inventory Control.

The People in Charge
The Purchasing department is under the direction of the Division of Business and Finance. The Director of the Purchasing Department is Scott Reynolds (reynolds@gwm.sc.edu).

Number of Employees
22 employees

Physical Location of the Department
516 South Main Street
Columbia, South Carolina 29208
http://purchasing.sc.edu/
Voice: 803-777-4115
FAX: 803-777-2032

Plans/Goals for the Future
The Department does not have an official environmental policy and though several of its staff members are environmentally minded, an official policy would help in supporting some of the good efforts already being undertaken.

Both Scott Reynolds and Margaret Woodson pointed out that education is the key to the success of some of their programs. For instance, they noted a decrease in the number of remanufactured printer cartridges that are being purchased form them. Faculty and staff throughout campus who are in charge of making purchasing decisions need to be educated about their options. Because University purchasing decisions are decentralized with the introduction of the Purchasing Cards, educating people has not been easy.

NOTE: The information below was based on a questionnaire completed by Margaret Woodson, Procurement Specialist, interviews with both Margaret Woodson and Scott Reynolds and other supporting documentation from the department. All information was collected during Summer and Fall 2000.

The University of South Carolina is required to purchase items from a central state distributor. With the introduction of personal purchasing cards, many purchasing decisions are made by individuals throughout campus. Even with these limitations, the Department has been creative and innovative in making environmental progress.
**Supplies**
Forms and Supplies, the office supply catalog, has approximately 300 items available that have been remanufactured or have recycled content. The Department of Purchasing is unable to track how many of the items purchased buy the University have recycled content due to the personal purchasing cards. They are, however, responsible for supplying all copy paper, toilet tissue, and paper towels for the University and they all have post consumer recycled content (see Table 1).

<table>
<thead>
<tr>
<th>Table 1. Paper Products with Recycled Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
</tr>
<tr>
<td>Copy Paper</td>
</tr>
<tr>
<td>Bond Paper</td>
</tr>
<tr>
<td>Hand Towels/Jumbo roll</td>
</tr>
<tr>
<td>Hand Towels/Multi-Fold</td>
</tr>
<tr>
<td>Toilet Tissue/Standard</td>
</tr>
<tr>
<td>Toilet Tissue/Jumbo</td>
</tr>
</tbody>
</table>

**Closing the Loop**
Laser cartridges are collected for remanufacture from throughout campus. The Department of Purchasing also purchases remanufactured cartridges for resale to the campus community. This also offers a tremendous cost savings to the buyer. New cartridges cost approximately $70 while the remanufactured cartridges cost approximately $40 (see Table 2).

<table>
<thead>
<tr>
<th>Table 2. Laser cartridges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartridges collected for remanufacture</td>
</tr>
<tr>
<td>Remanufactured cartridges sold</td>
</tr>
</tbody>
</table>

**Diverting from the Landfill**
Consolidated services collects several items for recycling or resale, diverting tons of material from landfills every year. Table 3 shows the breakdown of materials that are collected. Items returned to Inventory Control first are attempted to be reused elsewhere within the University, then sent to State surplus, sold for recycling or as a last resort, landfilled.

<table>
<thead>
<tr>
<th>Table 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td>Scrap metal</td>
</tr>
<tr>
<td>Surplus Electronics</td>
</tr>
<tr>
<td>Flourescent Tubes</td>
</tr>
<tr>
<td>Items sent to Inv. Control</td>
</tr>
<tr>
<td>Items reused at USC</td>
</tr>
<tr>
<td>Items sold to State Surplus</td>
</tr>
</tbody>
</table>

The Department of Purchasing has been proactive in “greening” its services. This quarter, they put out a newsletter article in the Business and Finance Update encouraging the university community to look for recycled options when ordering supplies. Though they can’t mandate
what is bought, they actively try to educate University employees about the benefits, both environmental and social, to reducing waste.

Comments by:
Scott Reynolds  Margaret Woodson
Director, Purchasing Department  Procurement Specialist
reynolds@gwm.sc.edu  margaret.woodson@sc.edu

Conducted by:  Julie Bixby, Summer 2000
VEHICLE MANAGEMENT AND PARKING SERVICES

Responsibilities:
The primary responsibility of Vehicle Management is to meet the transportation needs of the University of South Carolina. These needs include acquisition, issuance, and maintenance of all state owned vehicles assigned to the University. Parking Services is responsible for the registration of all vehicles parked on campus and the implementation of all policies and regulations governing parking on campus.

The People in Charge:
Derrick Huggins is the Director of Parking; Chris Howard is the Assistant Director of Vehicle Management; and C. Marc Johnson is an Administrative Assistant. Marc Johnson’s phone number is 7-3153 and his e-mail address is cjohnson@sc.edu.

Number of Employees at Vehicle Management and Parking Services:
Contacted Parking Service to obtain number of employees – have not yet received a response.

Physical Location of the Department:
Vehicle Management: Parking Services:
703 Pendleton Street Pendleton Street Garage
Columbia, SC 29208 1501 Pendleton Street
803-777-5160 Columbia, SC 29208

The Survey:
1. Outline the procedures for which you are responsible in your department. Director of Carolina Shuttle, dispatcher for USC vehicles, Safety Officer, CDL instructor and test administrator.

2. How often and by what method are these procedures reviewed? Annually by supervisor.

3. What are the document control procedures (i.e. how are environmentally related actions and problems (spills, disposal, hazardous materials storage) documented)? Manifest files and computer files.


5. Are there any procedures to identify your department’s impact on the environment? If yes, please describe. No.
6. Do you have documented procedures for spills and other environmental emergencies? If yes, please describe how we may review them. **Yes, contact Health and Safety and proceed with spill based on their instruction.**

7. If you answered “yes” to Question 6, how often are these procedures reviewed and revised? Who is responsible for this? **Based on Health and Safety training classes that are held.**

8. Does your department have an environmental policy? **We have a hazardous materials procedure manual and abide by disposal guidelines of DHEC and EPA.**

9. If yes, how is this policy made available to the staff in the department and to the public? **It is made available through a bulletin and Internet.**

10. Does the department have a method for determining environmental impacts of its processes, products, or services? **We follow the guidelines of DHEC and EPA. Their studies include impacts of environment when writing guidelines.**

11. Has the department identified a way to track legal requirements related to the environment? **Yes, DHEC files are kept and maintained.**

12. Does the department have a program to reduce its impact on the environment? If yes, please describe and denote the person responsible for the program. **We follow the guidelines of DHEC and EPA. These guidelines are generated with respect to their impact on the environment.**

13. What methods are used to monitor and measure environmentally related progress? **Veeter Root System for gas tanks.**

14. Who is responsible for environmental issues in your department (name, phone number, e-mail)? **Marc Johnson, 7-3153, cjolson@sc.edu.**

15. Are you aware of what type of training is required for your staff? Does your department meet its requirements for environmental training? **Only Health and Safety Training.**

16. Are records kept documenting training? **Yes.**

17. How does the department handle environmental complaints? **None.**

18. Please fill in the organizational chart below.

```
Derrick Huggins
Director of Parking

  ↓

Chris Howard
Asst. Director of VM

  ↓

Marc Johnson
Administrative Asst.
```
19. How does the department respond to environmental problems (i.e. internal communication among employees and external communication with the public and/or authorities)? By way of staff meetings internally and rely on Health and Safety department bulletins externally.

The following questions are a combination of information that was provided in the 1995-1996 Environmental Audit of USC and the National Wildlife Association’s Campus Ecology survey.

1. How many parking spaces are available on campus for
   a. Faculty? 1,924 spaces for faculty and staff
   b. Staff?
   c. Students? 3,235 spaces
   d. Meters? 1,286
      Total – 11,044 spaces

2. How many parking permits are issued for
   a. Faculty and Staff? 6,699
   b. Students? 4,271
   c. Visitor Passes? N/A
   d. Service Vehicle Passes? 255
   e. Parking Garage Passes? 4,855

3. What is the average commuting distance?
   N/A

4. What percentage of campus is devoted to roads and parking lots?
   Will supply answer at a later date.

5. Does the campus have a program to promote ride-sharing? (i.e. carpool, matching services, preferential parking, reduced rates, subsidized van pools)
   Yes – Carpool

6. Does the campus have enough parking to meet demand? Yes

7. Is it campus policy to provide enough parking to meet demand?
   Yes, but based on turnover model

8. How many vehicles are in the University Motor Pool? 400

9. How many gallons of fuel were used in fiscal year 1999-2000?
   a) Unleaded 162,263 gallons  Price/gallon $0.92
   b) Diesel 23,794 gallons  Price/gallon $0.97
   c) Total Fuel Costs $172,361
10. How many busses make up the USC Shuttle Bus system? 6
   What is the capacity of each bus? 35

11. Shuttle Bus usage:
   a) Months in operation – 12
   b) Miles/year – 18,000
   c) Passengers/year – 440,000

12. What is the average mile per gallon of the shuttle busses? 10 miles/gallon

13. Are any of the campus fleet vehicles operated using alternative fuels? Yes

14. Does the University own or lease any electric vehicles? No

15. Are there plans for the purchase or conversion of any of the University vehicles to alternative fuels? Yes

16. What hazardous materials are handled by Transportation Services? In what quantities?
   Used oil

17. Are the above named hazardous materials recycled or landfilled? Recycled

18. Does your department purchase items such as recycled batteries and retreaded tires? If so, in what quantities? No

19. How many underground storage tanks are operated for fuel storage? 3

20. Who is in charge of maintenance and operation of these tanks? Vehicle Management, Jones & Frank, and PTS

Comments by:
C. Marc Johnson
Administrative Assistant
(803)777-3153
cjohnson@sc.edu

Conducted by: Halle McWilliams, Fall 2000
RECYCLING

Name: Laura Pergolizzi  
Department: Facility Services – Recycling and Waste Management  
Job Title: Recycling and Waste Manager  
Phone: 7-8733  
E-mail: recycle@sc.edu  
Years Worked at USC: 5 yrs full time

These are questions about your department and its procedures. Please answer all that apply.

1. Outline procedures you are responsible for in your department
Responsible for solid waste collection, contracts, markets, education, etc. And meeting goals of SC Solid Waste Management and Policy Act.

2. How often and by what method are these procedures reviewed?
We constantly look at the logistics of our operation to see how we can make improvements. There is no formalized method for reviewing these procedures.

3. Outline document control (i.e. how do you document environmentally related actions and problems – spills, disposal, hazardous material storage, etc.)
Submit annual report on recycling, buying recycled products, trash disposal, etc. to DHEC. Meet with Jim Demarest, head of Facilities Management, twice a month.

4. Outline weaknesses and strengths in on the job training (environmentally related)
Most of the training that I receive is management training (human resources policies and procedures, etc.). I am involved in trade associations and attend conferences and workshops each year to learn the latest in my field. There is no formalized on the job training for my job.

5. Is there a procedure to identify your impacts on the environment? (Y/N) Please describe
Yes, the annual report

6. Do you have documented procedures for spills and other environmental emergencies? If yes, please describe how we may review them.
No, but we don’t have environmental emergencies.

7. If you answered yes to Question 6, how often are these procedures reviewed and revised? And who is responsible for this?

8. Does your department or office have an environmental policy?
Sort of. We are working on various policies at the moment regarding waste management. If yes, how is this policy made available to staff in the department and to the public. Once they are finalized and approved we will promote them by various means (word of mouthy, email, websites, mailings to departments, etc.)
9. Has the organization developed a method for determining environmental impacts of its processes, products, or services?

*We are in the process of identifying a lot of this in each of the areas of Facility Services. We have made strides to reduce of chemicals used in cleaning and pest control.*

10. Has the department identified a way to track legal requirements related to the environment?

Yes, It is important to keep abreast of current regulations; this is done through involvement in trade organizations, networking and research.

11. Has the department developed a program to reduce its impact on the environment? If yes, please describe and who is responsible for the program?

Everything that is done in our office is done with sustainability in mind.

12. What are your methods for monitoring and measuring environmentally related progress?

Annual report. Also, with our new database management system, we can track recycling requests. Now that we are getting weight-based info from our trash contract, we will be able to better determine our progress towards waste reduction and recycling.

13. Who is responsible for environmental issues in your department?

Me, see above.

14. Are you aware of what type of training is required for your staff? Does your department meet its requirements for environmental training?

Safety training is done through Health and Safety. I also train my staff on work procedures, customer service, waste management concepts, etc. I am not aware of any other requirements for training other than safety and human resource information; all other training is based on my judgment.

15. Do you keep records of training?

**Yes**

16. How does your department handle environmental complaints?

We receive complaints through phone calls from customers. We try to determine what the problem is and see how we can resolve it. Usually it is a complaint about missed pickups so I wouldn’t classify it as environmental.

17. Please sketch an organizational chart below in the box. Please indicate names and job titles.

18. How does your department respond to environmental problems (i.e. internal communication among employees and external communication with the public and/or authorities?)

*We don’t really have “environmental” problems or emergencies.*
19. Do you have any additional comments or questions?
We are in the process of a major reorganization of recycling and watts management at USC. Once the reorganization plan is finalized and approved, we will share our plans with the campus and move forward. As a result, the organization chart above will be outdated within a couple of months.

These questions are a combination of information that was provided in the 1995-1996 Environmental Audit of USC and The National Wildlife Association’s Campus Ecology survey. These questions are intended to serve as indicators for your department’s environmental performance and will be used in future years to track USC’s environmental status. If there are other statistics that you feel are relevant or would serve as better indicators of your department’s performance, please let us know and include those numbers here. Thank you again for your time.

Solid Waste and Recycling

1. How much total solid waste does the University generate annually?
   We do not know. With our new contract we are finally able to get weight based information for disposal. In December of this year we will have 12 months worth of weight based data for disposal and can combine that with other data that we have.

2. Have any waste composition studies been conducted? If so, when? And what were the results?
   Yes, in 1993 a small waste audit was done. Paper = 63.06%, Trash = 8.99%, Glass and Metal = 6.95%, Wood and Plastic = 10.67%, Other = 10.32%. Another study, which is undated, found the following: glass = 11.5%, plastic = 4.46%, aluminum = 3.58%, food waste = 8.56%, other = 14.5%, paper = 57.32%

3. When is the next waste composition study planned for?
   Some time this coming fall.

4. For the past academic year, how much solid waste was:
   a. Landfilled? Do not know. We’ll have our first annual figures for this in December.
   b. Incinerated? None
   c. Recycled? 3600 tons
   d. Composted and Mulched? Rough estimate 25 tons

5. What were the costs of solid waste disposal for the last academic year?
   About $250,000 for trash disposal.

6. How have these costs changed over the past five years?
   Costs have been decreasing over the past few years in part because of increased efficiencies in management of our trash contract. Additionally, increases in recycling have led to decreases in
trash costs. We expect that costs for trash disposal will continue to decrease as recycling, waste reduction and composting increases on campus.

7. When was the campus recycling program started? Who operates the program?
   Recycling began in 1988 and has evolved from a resource center to a fully operating unit. Recycling and Waste Management in Facility Services is responsible for the operation.

8. What is the budget for the recycling program? How is it funded? What revenues were received from recyclables sold last year?
   The budget for recycling is now part of the Waste Management budget, so it is impossible to separate them. Almost all funds are state funds. We receive some grant funds and some revenue from the sale of recycled materials.

9. How many tons of each material were recycled during the last year?
   a. Glass 1 ton
   b. Plastic 500 lbs
   c. Paper 250 tons
   d. Aluminum 1.5 tons
   e. Cardboard 125 tons
   f. Other see above for totals

10. What programs have been implemented on campus to promote source reduction?
    As part of our reorganization plan, we will be addressing increased waste reduction options to meet our goals.
    Green Purchasing Conference
    Purchasing Teleconference
    Personal communication and continual education in daily encounters with other campus personnel
    Green Campus Clinic 1998
    Composting – The Earth Tub
    Programs to encourage eco-mug use (cost savings for students using eco-mugs) and availability of mugs
Appendix A
Department of Environmental Health and Safety

Hazardous Waste Management Cost at USC, Columbia

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount in lbs</td>
<td>37900</td>
<td>31200</td>
<td>43000</td>
<td>36970</td>
<td>37000</td>
<td>46500</td>
</tr>
<tr>
<td>Cost in $</td>
<td>169014</td>
<td>112207</td>
<td>143561</td>
<td>132305</td>
<td>73700</td>
<td>81000</td>
</tr>
</tbody>
</table>

![Chart showing the comparison of hazardous waste management cost and amount in pounds from FY 1995 to FY 2000.]
## Appendix B
### Department of Energy Services

### University of South Carolina

#### Department of Energy Services

#### Utility Cost and Consumption Data

<table>
<thead>
<tr>
<th></th>
<th>FY 92/93</th>
<th>FY 93/94</th>
<th>FY 94/95</th>
<th>FY 95/96</th>
<th>FY 96/97</th>
<th>FY 97/98</th>
<th>FY 98/99</th>
<th>FY 99/00</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electricity</strong></td>
<td>$4,182,347</td>
<td>$4,069,485</td>
<td>$4,995,124</td>
<td>$7,208,181</td>
<td>$7,214,388</td>
<td>$7,328,181</td>
<td>$7,337,245</td>
<td>$7,446,084</td>
</tr>
<tr>
<td>Consumption Kwh</td>
<td>145,719,987</td>
<td>149,298,720</td>
<td>149,357,873</td>
<td>153,898,776</td>
<td>151,188,283</td>
<td>152,412,561</td>
<td>156,903,333</td>
<td>158,559,548</td>
</tr>
<tr>
<td>Unit Cost $/Kwh</td>
<td>0.0440</td>
<td>0.0443</td>
<td>0.0468</td>
<td>0.0468</td>
<td>0.0477</td>
<td>0.0481</td>
<td>0.0468</td>
<td>0.0470</td>
</tr>
<tr>
<td>Total BTUs MMBTU</td>
<td>497,342</td>
<td>509,557</td>
<td>509,758</td>
<td>525,257</td>
<td>516,006</td>
<td>520,184</td>
<td>535,511</td>
<td>541,164</td>
</tr>
<tr>
<td><strong>Natural Gas</strong></td>
<td>$2,048,538</td>
<td>$1,966,257</td>
<td>$1,840,062</td>
<td>$2,159,236</td>
<td>$2,186,628</td>
<td>$2,149,090</td>
<td>$1,953,597</td>
<td>$2,499,307</td>
</tr>
<tr>
<td>Consumption MCF</td>
<td>567,375</td>
<td>500,282</td>
<td>489,907</td>
<td>527,322</td>
<td>499,179</td>
<td>506,754</td>
<td>513,760</td>
<td>524,050</td>
</tr>
<tr>
<td>Unit Cost $/MCF</td>
<td>3.61</td>
<td>3.93</td>
<td>3.76</td>
<td>4.09</td>
<td>4.38</td>
<td>4.24</td>
<td>3.80</td>
<td>4.77</td>
</tr>
<tr>
<td>Total BTUs MMBTU</td>
<td>585,465</td>
<td>516,232</td>
<td>505,527</td>
<td>544,135</td>
<td>515,094</td>
<td>511,142</td>
<td>532,224</td>
<td>535,981</td>
</tr>
<tr>
<td>$/MMBTU</td>
<td>3.50</td>
<td>3.91</td>
<td>3.64</td>
<td>3.97</td>
<td>4.20</td>
<td>4.20</td>
<td>3.67</td>
<td>4.66</td>
</tr>
<tr>
<td><strong>Energy Facility Gas</strong></td>
<td>$1,700,484</td>
<td>$1,703,432</td>
<td>$1,575,346</td>
<td>$1,858,036</td>
<td>$1,919,917</td>
<td>$1,968,267</td>
<td>$1,693,746</td>
<td>$2,175,204</td>
</tr>
<tr>
<td>% of Total Cost</td>
<td>% 86</td>
<td>% 87</td>
<td>% 86</td>
<td>% 87</td>
<td>% 88</td>
<td>% 87</td>
<td>% 87</td>
<td>% 87</td>
</tr>
<tr>
<td>Consumption MCF</td>
<td>528,367</td>
<td>468,284</td>
<td>459,584</td>
<td>489,658</td>
<td>468,725</td>
<td>472,947</td>
<td>484,570</td>
<td>487,740</td>
</tr>
<tr>
<td>% of Total Use</td>
<td>% 93</td>
<td>% 94</td>
<td>% 94</td>
<td>% 94</td>
<td>% 94</td>
<td>% 94</td>
<td>% 94</td>
<td>% 94</td>
</tr>
<tr>
<td>Unit Cost $/MCF</td>
<td>3.33</td>
<td>3.64</td>
<td>3.43</td>
<td>3.81</td>
<td>4.10</td>
<td>3.95</td>
<td>3.50</td>
<td>4.46</td>
</tr>
<tr>
<td>Steam Produced KLbs</td>
<td>369,857</td>
<td>327,799</td>
<td>321,709</td>
<td>342,761</td>
<td>328,108</td>
<td>312,063</td>
<td>330,199</td>
<td>341,418</td>
</tr>
<tr>
<td>Steam Cost $/KLbs</td>
<td>4.76</td>
<td>5.20</td>
<td>4.90</td>
<td>5.45</td>
<td>5.08</td>
<td>4.64</td>
<td>4.99</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>$1,013,494</td>
<td>$1,139,400</td>
<td>$1,020,559</td>
<td>$1,109,167</td>
<td>$1,246,543</td>
<td>$1,206,012</td>
<td>$1,493,495</td>
<td>$1,479,388</td>
</tr>
<tr>
<td>Consumption CCF</td>
<td>492,866</td>
<td>535,585</td>
<td>436,123</td>
<td>489,658</td>
<td>500,590</td>
<td>507,043</td>
<td>522,705</td>
<td>517,486</td>
</tr>
<tr>
<td>Consumption 1000 gals</td>
<td>368,688</td>
<td>400,644</td>
<td>326,545</td>
<td>351,216</td>
<td>379,294</td>
<td>391,009</td>
<td>442,162</td>
<td>426,248</td>
</tr>
<tr>
<td>Unit Cost $/CCF</td>
<td>2.06</td>
<td>2.13</td>
<td>2.34</td>
<td>2.36</td>
<td>2.46</td>
<td>2.50</td>
<td>2.53</td>
<td>2.58</td>
</tr>
<tr>
<td>Unit Cost $/1000 gals</td>
<td>2.75</td>
<td>2.84</td>
<td>3.13</td>
<td>3.16</td>
<td>3.29</td>
<td>3.34</td>
<td>3.38</td>
<td>3.45</td>
</tr>
<tr>
<td><strong>Total Gas &amp; Electric</strong></td>
<td>$8,466,885</td>
<td>$8,575,742</td>
<td>$8,935,186</td>
<td>$9,367,417</td>
<td>$9,400,966</td>
<td>$9,477,271</td>
<td>$9,290,842</td>
<td>$9,945,392</td>
</tr>
<tr>
<td><strong>Total Consumption</strong></td>
<td>$10,828,907</td>
<td>$10,258,789</td>
<td>$10,152,258</td>
<td>$10,693,919</td>
<td>$1,031,100</td>
<td>$1,031,326</td>
<td>$1,067,735</td>
<td>$1,077,145</td>
</tr>
<tr>
<td><strong>Total Sq. ft. (GSF)</strong></td>
<td>$8,178,064</td>
<td>$8,562,139</td>
<td>$8,563,739</td>
<td>$8,620,344</td>
<td>$9,009,764</td>
<td>$9,449,295</td>
<td>$9,578,352</td>
<td>$9,615,097</td>
</tr>
<tr>
<td><strong>w/o garages and stadium</strong></td>
<td>$7,802,128</td>
<td>$7,957,169</td>
<td>$7,958,769</td>
<td>$8,015,374</td>
<td>$7,991,098</td>
<td>$8,430,629</td>
<td>$8,566,868</td>
<td>$8,596,431</td>
</tr>
<tr>
<td><strong>Average BTU/GSF</strong></td>
<td>138,784</td>
<td>128,914</td>
<td>127,568</td>
<td>133,374</td>
<td>129,031</td>
<td>122,331</td>
<td>124,784</td>
<td>125,301</td>
</tr>
<tr>
<td><strong>Average Cost/GSF</strong></td>
<td>$0.09</td>
<td>$0.10</td>
<td>$0.11</td>
<td>$0.11</td>
<td>$0.17</td>
<td>$0.17</td>
<td>$0.19</td>
<td>$0.19</td>
</tr>
</tbody>
</table>

| Totals            | $9,480,579 | $9,715,142 | $9,855,745 | $10,476,584 | $10,647,509 | $10,783,283 | $10,784,337 | $11,424,760 |