



## MEMORANDUM

TO: Marya Hillesland, Blueprint for a Green Campus Coordinator  
Will Toor, Director, CU Environmental Center

FROM: John Bruning, Director, Physical Plant  
Ed von Bleichert, Environmental Operations Manager

DATE: March 1, 2002

RE: Blueprint for a Green Campus

This memo serves as an update on environmental programs and initiatives within the Department of Facilities Management over the last year. Although, this outline covers some of the efforts of the overall department, it primarily focuses on the efforts of Physical Plant and its associated Trades, specifically Grounds, and Environmental Services (Custodial, Recycling, Solid Waste, and Integrated Pest Management). Other divisions of F.M. not fully represented in this document include the Powerhouse, Design & Construction, Planning, and I.T.

### **I. Creating a Climate-Friendly Campus**

#### **A. CU Commits to meet emissions reduction targets of the Kyoto Protocol, which would reduce CU's greenhouse gas emissions by seven percent below 1990 levels by 2010.**

- Highest potential for Physical Plant is through fleet management: general push has been toward smaller, lighter, more efficient vehicles. Facilities Management purchased nine new "alternative" vehicles in 00/01 including 4 Metro micro vans (gas), 3 Mitsubishi 's (gas), and 2 Club Cars® (electric). **One Club Car was subsequently sold to the Athletic Department due to F.M.'s move to RL-2.** Department now has a total of 20 alternative vehicles (non street-legal).
- Progress has been impeded by a disconnect with State Fleet, in terms of the availability and choice of alternative vehicles when replacing older State vehicles **as State Fleet is not bidding on any alternative vehicles over 1 ton. However, Physical Plant replaced 2 existing trucks with Low Emissions Vehicles (LEV) in the Fall of 01 and is in the process of replacing 3 existing trucks with LEV's as well.**
- **The issue seems to be that State Fleet is concerned with its ability to re-sell alternative fuel vehicles once they are done with them.**
- **5-year plan for energy conservation includes installation of dedicated high efficiency air-cooled chiller for process cooling in Ekeley Chemistry at a cost of \$75,000.**

### III. Creating a Safe and Healthy Campus

#### A. Minimizing Hazardous Waste

1. **CU reduces the amount of hazardous waste generated by the campus while maintaining the quality and quantity of research.**
  - Installation of state-of-the-art membrane filtration waste water treatment plant at Mountain Research Station. The \$1 million system utilizes a combination of membrane filtration and U.V. decontamination. **The plant was commissioned in May 2001 and is currently in operation.**
  - **\$1500 funded for removal of Vinyl Asbestos Tile (VAT) in MCDB.**
2. **CU continues to advance pollution prevention programs to reduce the quantity of hazardous material present on campus and to promote a safer working and learning environment.**
  - Continue to research and implement use of less toxic paints, finishes, and adhesives for use by the East and West zones as well as the paint and Carpentry Shops. **Paint shop employees have been trained in the Redback system to enable them to review current and future painting plans. Have changed campus standards to require “lowest VOC content possible” for each particular application, i.e. paints, stains, urethanes, etc. Paint shop has expanded use of water-based polyurethane and continues to research better products. Zones suggest a review of current inventories held in F.M. Construction Stores.**
  - Environmental Services currently reviewing and rating all cleaners and disinfectants used by custodians based on toxicity. **To date, 158 cleaners have been reviewed and ranked.**
  - Storm water drain assessment completed by Physical Plant. Rerouted worst five illicit storm drain connections to sanitary sewer, including drains in Engineering, Duane Physics, and Chemistry.
  - **Several cooling tower and outdoor fountain drains have been re-routed to sanitary sewer at a cost of \$15,000.**
  - **Fluid labs in Engineering were also re-piped to sanitary sewers at a cost of \$40,000.**
  - Continued progress on storm drain stenciling project. **To date 90% of all ‘hardscape’ drains have been labeled, with Euclid and Regent Autoparks being the exceptions. A plan is currently being devised for storm drains located in turf or other landscape areas.**
  - Currently working on more complete mapping of drain network and emergency contingency plans. **This involves linking catch basins to the next manhole in the system and then to the next outfall to the creek. The primary use of this will be to trace a pollution stream back to the source but can also be used to determine where a pollutant will enter the creek.**
  - **Funded a manhole audit to determine condition of existing manholes and inlets; \$12,500 for sanitary and \$20,000 for storm. Sanitary audit should be complete by June '02. Work on storm audit will commence shortly thereafter. This project also includes working with the city to create a uniform numbering system that can be used by both entities. Once complete, an additional funding proposal to repair deficiencies will be put forth.**
  - **\$20,000 funded in FY01/02 to implement campus Spill Containment and Control Plan (SCCP) for all above ground gas tanks and diesel generators. Includes purchase of emergency spill containment equipment as well as installation of permanent berms around tanks. Future funding will look to replace certain old tanks/generators with newer double-wall tanks.**
  - **\$35,000 funded in FY01/02 to install CFC monitors in RL-3 and Education chiller rooms. Previously installed Engineering monitor also repaired with this money. Refrigeration shop has identified 8 other chiller rooms needing monitors**
  - **Currently working with State on voluntary CFC audit of campus to assure complete compliance with CFC regulations.**

## B. Minimizing Exposure to Toxic Chemicals and Pesticides

### 1. CU significantly reduces the use of harmful chemicals and volatile pesticides in buildings and grounds management through integrated pest management.

- Environmental Services hired permanent IPM technician in April 2000. Position focuses on least-toxic pest control with the least potential for exposure to humans and the environment.
- **Physical Plant is currently pursuing an additional FTE to be split between structural IPM and the Integrated Weed Management (IWM) program.**
- Eliminated spraying in all general fund spaces as well as auxiliary spaces using in-house IPM service. **Additional \$21,500 one-time monies funded in FY01/02.**
- Grounds crew discontinued annual spring spraying of Elm trees for Elm Bark Beetle, the vector for Dutch elm disease. Moved to sanitation pruning (**\$17,000 funded for spring, '02**) and routine inspections of trees. **If chemical treatments are needed, they are applied in the form of soil injections.**
- Grounds currently developing Integrated Weed Management plan for noxious weeds (**\$9,000 funded in FY01/02**). **Additionally, a GPS hand-held unit was purchased in Jan. '02 to assist in the mapping of all weed populations.**
- Grounds experimenting with use of Cashmere goats to graze noxious weeds on 12 acres at Research Park (4/00, 11/00). **Goats were again used on the Research Park in Dec. of '01 for the control of knapweed, and various thistles.**
- **Additional releases of seed-head and root-feeding insects were conducted on both the research park and South Campus properties in the summer of '01**
- Division took lead in drafting campus IPM Policy currently under review by the Administration.
- Co-sponsored 19<sup>th</sup> Annual Beyond Pesticides Conference (5/01).
- Environmental Services currently reviewing and rating all cleaners and disinfectants used by custodians based on toxicity. **To date, 158 cleaners have been reviewed and ranked.**

### 2. Campus buildings provide higher indoor air quality through improved ventilation and control of indoor air pollution sources.

- Environmental Services has begun the process of phasing out the use of upright vacuum cleaners in lieu of more ergonomically correct canister and backpack vacuums that do not emit as many particulates into the air. **Of the 266 total vacuums used, 138 are currently either a canister or backpack type, with 112 having been purchased since May of '00. 34 of these were purchased since May of '01.**
- FM Planning and Physical Plant participating on IAQ Response Team to react to indoor air quality concerns and complaints. **Through careful studies and smoke testing, this team was recently able to resolve significant IAQ problems in the Electrical Engineering wing without the need for costly new equipment.**
- Performing minor upgrades to campus ventilation systems such as balancing and improving ventilation of fume hoods, removing obstructions, and improving make-up air. **Funded \$12,000 in FY01/02 for fume hood balancing as needed.**
- **Funded \$35,000 in FY01/02 for significant improvement to Fine Arts duct work and ventilation system including removal of unused fume hoods, improving fans, lowering of exhaust drops to sit directly over emissions sources, and adding exhaust vents to photo lab hazardous waste SAA.**
- **Performed** major upgrades to ventilation systems through deferred and controlled maintenance projects. These have included significant

improvements in Chemistry (fume hoods), Imig Music (raising of fresh air intakes from street level), the Grounds Building (emissions exhaust system and HVAC improvements), and Environmental Design (raising of air intakes).

- \$2.3 million project in Chemical Engineering **currently in Construction Document phase**. Planning an additional \$1.5 million for improvements to ENVD, as well as improvements to Chemistry/Biochemistry. **\$80,000 funded for improvements to Ramaley cadaver room ventilation system.**
- Environmental Services currently reviewing and rating all cleaners and disinfectants used by custodians based on toxicity. **To date, 158 cleaners have been reviewed and ranked.**
- Purchase and use of low/no VOC paints, finishes, and adhesives.

#### IV. Greening Campus Consumption and Disposal Habits

##### A. Purchasing Environmentally-Responsible Products

###### 1. CU adopts an environmentally preferable purchasing policy, which will institute standards for environmentally responsible purchasing.

- Purchase of low/no VOC paints, finishes, and adhesives.
- Environmental Services currently reviewing and rating all cleaners and disinfectants used by custodians based on toxicity. **To date, 158 cleaners have been reviewed and ranked.**
- **Environmental Services continues to research, test, and use least-toxic pesticides for use in the IPM program. All pesticides used have the least possible potential to impacts human health, the environment and non-target species.**

##### B. As CU grows, we will cap the amount of solid waste going to the landfill using market incentives, new technologies, and purchasing policies to reduce waste generation on campus.

- F.M. Recycling services responsible for collections from **765 (over 650 in May '01)** central locations and over 10,000 desk-side bins.
- Successfully completed pilot and formalized collections of Office Pak from Family Housing courts.
- Partnered with Housing and UCSU to implement automated collections of cardboard from residence halls and family housing courts. **Plans in place to expand program further with additional funding from UCSU and Housing.**
- **Working with housing to determine the feasibility of collecting food waste from all food service locations including University Club and College Inn.**
- **Continue to expand** main campus collections of “Magazines and Catalogs”
- Commenced back-hauling of reusable office supplies/paper to campus departments as part of routine collection route
- Grounds partnered with UCSU to establish collection of recyclables from outdoor recycling stations. **Looking at possibility of revising entire grounds trash collection program to maximize efficiency, reduce costs, and include recycling at majority of outdoor trash locations.**
- Participated in expanded Construction and Demolition waste recycling and reuse effort as part of UMC project. Worked with UCSU to determine potential for C&D recovery in the Grandview area.
- Environmental Services is also in the process of testing chemical mixing/dispensing machines - that allows us to purchase in bulk concentrates and reduce the amount of packaging waste. **This program was abandoned, as the majority of cleaners used in these machines were considered too toxic for use by Environmental Services.**