

Environmental Challenge
Montana Tech #1
PNWIS Annual Conference
November 5, 2004

Undaunted Consulting



“Integrating our environmental heritage and our economic future”

UC Design Team

- Senior Technical Engineer (Nick Brundin)
 - Provides oversight that includes scheduling, budgeting and planning in addition to civil and mechanical engineering
 - Essentially the “project manager”
- Environmental Engineer (Rich Labbe)
 - Implements the storm water management system
- Architect (Luke Roberts)
 - Composes a plan for the construction and operation of the lot
- Chemical/Laboratory Technician (Marika Henderson)
 - Oversees all biotech laboratory facilities
- LEED Accredited Professional (Lexie Bianchi)
 - Incorporates various sustainability measures into the design to achieve a satisfactory LEED rating

Major Issues

- Building Requirements
- Site Development/Construction
- Storm Water Management
- Waste Generation and Management
- Sustainability (LEED certification)

Building Requirements

Two of the main topics that needed to be addressed for the building were:

- Power Supply: fuel cells will be utilized as backup power generation systems
- Ventilation: a displacement ventilation system will be used (100% outside air).
 - LEED credits

Construction

- When possible the following materials will be used during construction:
 - Recycled
 - Local
 - Renewable
- Indoor air quality
 - Dust, VOCs, and emissions will be kept to a minimum through the use of low VOC paints, sealants, and formaldehyde free particle board
- Energy and water consumption will be curtailed
- Because of disturbance, sediment control measures and dust abatement shall be implemented.

Site Development/Construction

- 50 foot set back (greenway) from the Willamette River
- 30% (43,560 square feet) open space
- 70% (174,240 square feet) building
- Total leasable space of 3,484,800 square feet
- Underground parking

Storm Water Management

- A Low Impact Development (LID) storm water management approach will be used.
- Major aspects
 - Eco roof
 - Rainwater harvesting system (cistern)
 - Storm water retention pond
 - Vegetated swales (Underground Injection Control or UIC system)
- All systems will be designed based on 37 inches of annual rainfall and/or a 24 hour 100 year flood event

Waste Generation and Management

- We will draft a hazardous waste contingency plan in anticipation that the facility may generate more than 2200 lbs of hazardous waste in a given month (i.e. large quantity generator according to RCRA standards).
- Material Safety Data Sheets (MSDSs)
- Spill prevention plans
- Off-site waste shipment protocols
- Chemical storage and labeling
- Environmental Management System (EMS)

Sustainability (LEED certification)

- Energy star appliances
- Daylighting
- Photo and motion sensor lighting
- Double pain windows with thermal breaks
- Our plan will allow for an energy savings of 30-40% with a typical payback period of less than three years
- According to our current design, the building would be certified as “Silver”

But wait.....

The tweak

● Tweak one:

- Archeological finding of unknown significance found on the site
 - A further assessment of the site found no further artifacts
- Contact appropriate agencies i.e. State Historic Preservation Office (SHPO) and tribal governments to determine religious significance.
- Incorporate into design to further the attraction of the site.

The tweak continues

● Tweak two:

- Wood waste landfills found over 65% of the site pose problems:
 - Absorption of water (sponge characteristics)
 - Methane generation from wood degradation
- Re-characterize site for new substrate and any contamination from previous hog burner activities
- Incorporate into excavation by adding soil amendments (topsoil, compost) where necessary.
 - Hospitable root zone for vegetation

Questions??