



# CSM Recycling Team

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## From CSM Mission Statement

- *“CSM has dedicated itself to responsible stewardship of the earth and its resources... We believe that the world faces a crisis in balancing resource availability with environmental protection and that CSM and its programs are central to the solution of that crisis.”*



# Requirements

- Create one efficient infrastructure
- Low initial cost
- Higher quantity of recycling/ determine total diversion
- Self-sustaining
- Efficient space usage
- More types of recycling



# Constraints

- Costs
  - Funds from Sustainability committee
  - Past supporters of EPICS
- Limited Space





# Decision Criteria

- Receptacles: obvious, appealing, and easy to use
- Contractors: fewest number possible/ closest location
- Waste Processing: least amount done on campus
- Divergence: reduce the most amount sent to landfills

# Colorado School of Mines Recycling Process Design Block Diagram

Source → Transport → Processing → Fate

## Compostables

Location	Type	Quantity (m <sup>3</sup> /week)
Student Center State Cafe Digger Den I-Club	Food waste and compostable food packaging	1
On Campus Events Celebration of Mines Sporting Events Green Center Activities	Food waste and compostable food packaging	TBD TBD TBD
Campus Landscaping	Yard Waste	TBD

Total = TBD

## Comingled Materials

Source	Type	Quantity* (m <sup>3</sup> /week)	Current Cost* (\$/week)	Projected Cost** (\$/week)
Student Center	OP, GL, PL, AL	≤ 0.04	10	TBD
Departmental Buildings	AL	0.20	\$15 (\$50.6/ton)	TBD
Administrative Buildings	OP	14.1	TBD	TBD
Greek Housing	NP	4.00	TBD	TBD
Residence Halls	CB, GL, PL, SP	TBD	TBD	TBD

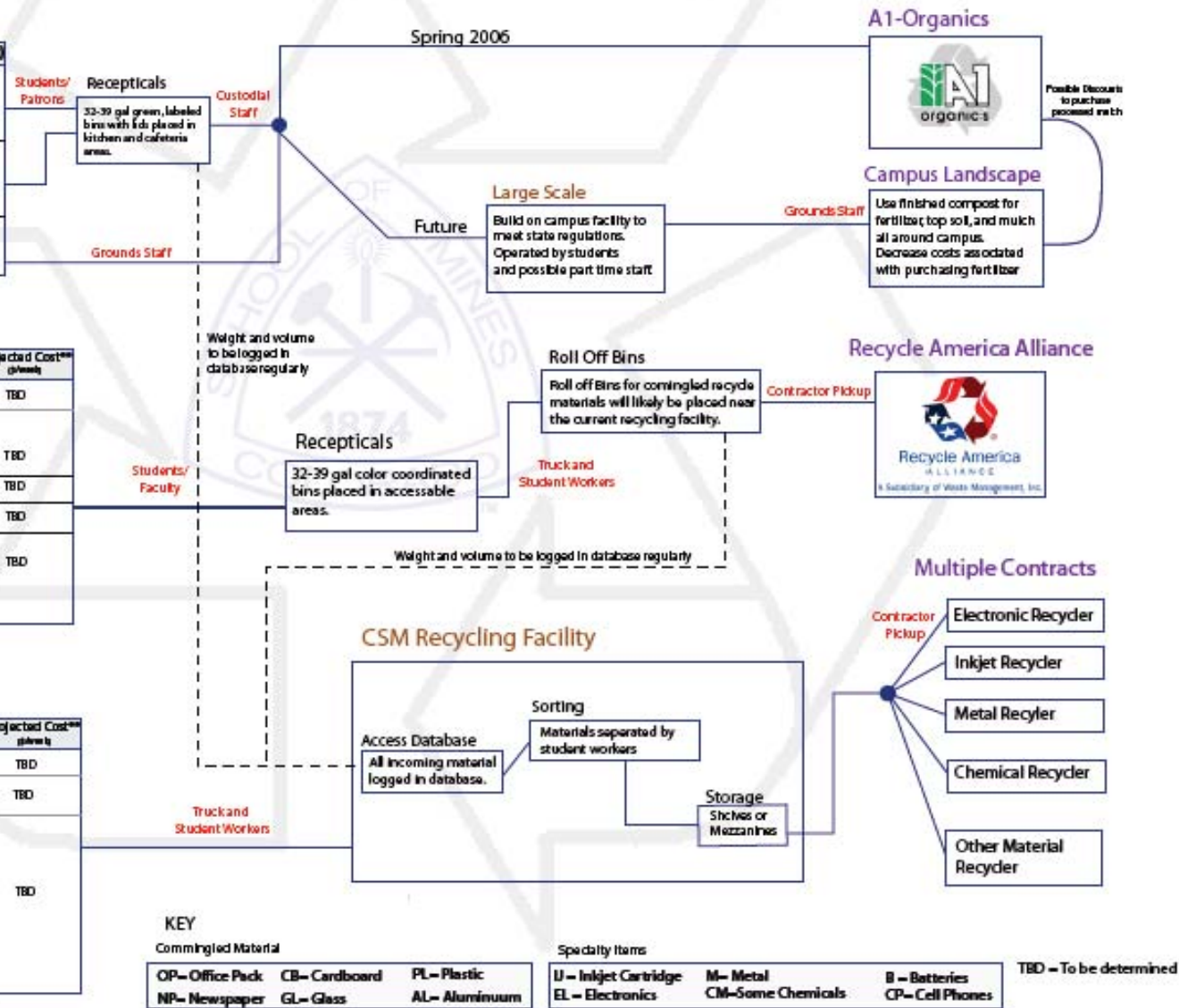
Totals = TBD

\*Current recycling cost based on estimated 2008/2009 data obtained from CSM Environmental Affairs and Engineering Departments, Director of Student Life  
\*\*Projected recycling cost when new regulations are enacted

## Specialty Items

Source	Type	Quantity* (m <sup>3</sup> /week)	Current Cost* (\$/week)	Projected Cost** (\$/week)
Student Center	CB	≤ 24	TBD	TBD
	U, EL, M, CM, B, CP	TBD	TBD	TBD
Departmental Buildings				
Administrative Buildings	U, EL, M, CM, B, CP, CB	TBD	TBD	TBD
Greek Housing				
Residence Halls				

Totals = TBD



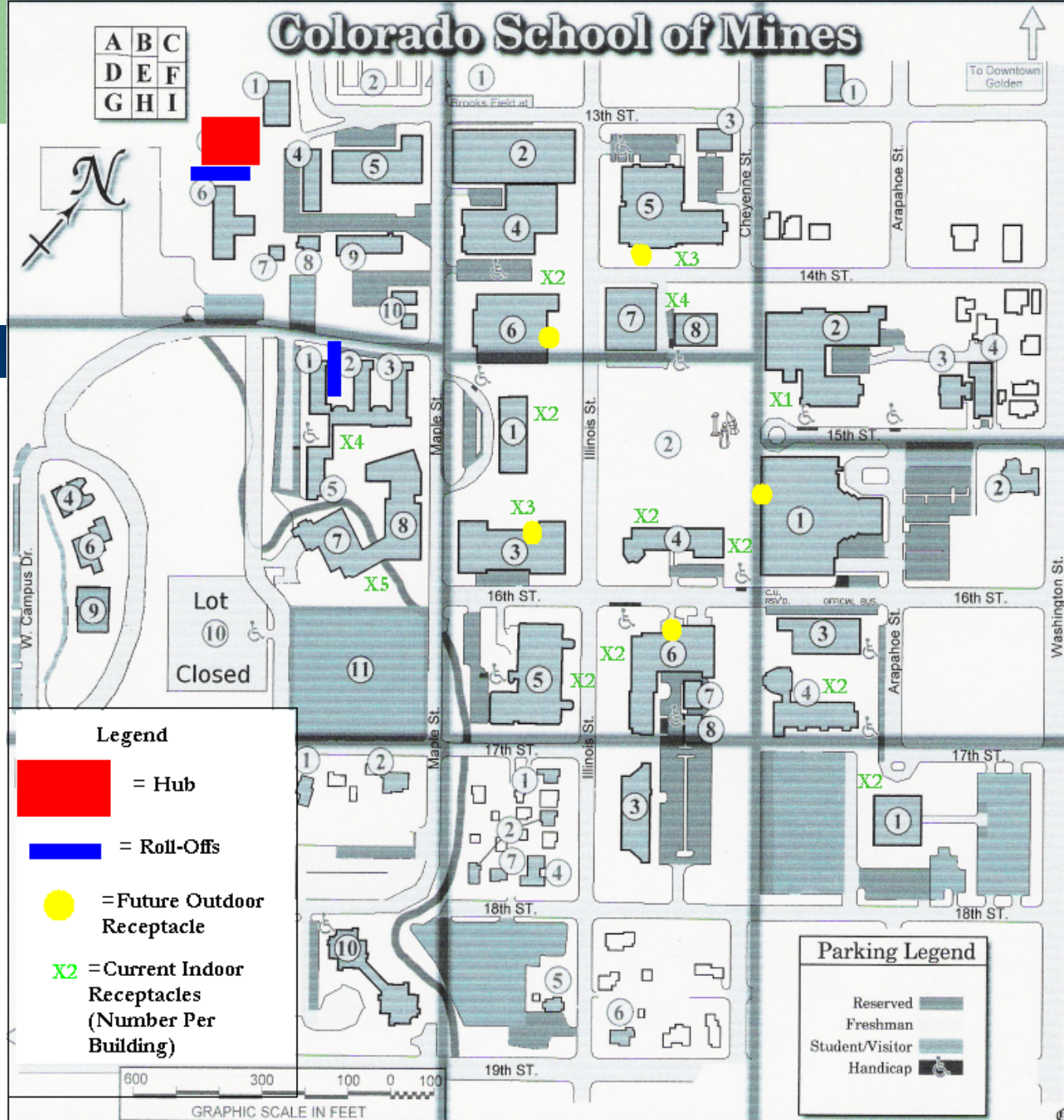


# Receptacles

- Description
  - Matching Vertical Facing Signage
  - Color coded
  - Each set up includes waste and commingled
- Locations
  - Indoors and Outdoors
  - At least one in each building
  - See map



# Colorado School of Mines







## Receptacles (cont.)

- Testing
  - Small Scale Recycling Assessment





# Labor

- Past usage

- Hand sorting materials
- Delivering materials to contractors
- Collect materials from campus buildings

- Future usage

- Collect materials from campus buildings
- Weigh material and enter into data base

\*\*\*NO ADDITIONAL LABOR  
REQUIRED\*\*\*



# Non-Compostable Waste Processing: Current State

- EHS
  - Eight vendors
  - Recycles aluminum, paper, cardboard, and HTRI
- Student Life
  - Plastic, aluminum, newspaper, some glass
  - Uses Waste Management

# Non-Compostable Waste Processing: Proposed Solution



- Constraints:
  - Cost -> Minimize on-campus processing
- Criteria:
  - Maximize quantity and types of waste recycled
- Solution:
  - Use a single-stream waste processing contractor
  - Send all HTRI to Rooney Road



# Non-Compostable Waste Processing: Proposed Solution

Contractor	Items in Commingled Stream	Processing Required at Hub	Serves Golden?	Commercial Contracts?
Allied Waste (BFI)	Pl, Al, G, C	Very Much	Yes	Yes
Ecocycle	OP, Pl, G, Al, C, P	None	No	Yes
EDS	OP, Al, Pl, P	None	Yes	No
<i>Recycle America (Waste Management)</i>	<i>OP, Al, Pl, C, G, P</i>	<i>None</i>	<i>Yes</i>	<i>Yes</i>
Key: OP-Office Pack    Al-Aluminum Pl-Plastic        C-Cardboard G-Glass           P-Newspaper and other paper				



# Non-Compostable Waste Processing: Proposed Solution

- Combining the two existing programs under a single Recycle America contract would probably reduced fixed costs
- EHS will need one or two additional commingled roll-offs
- Call for a pick up when roll-offs are full, instead of using a set schedule
- Quarterly weighing to calculate diversion



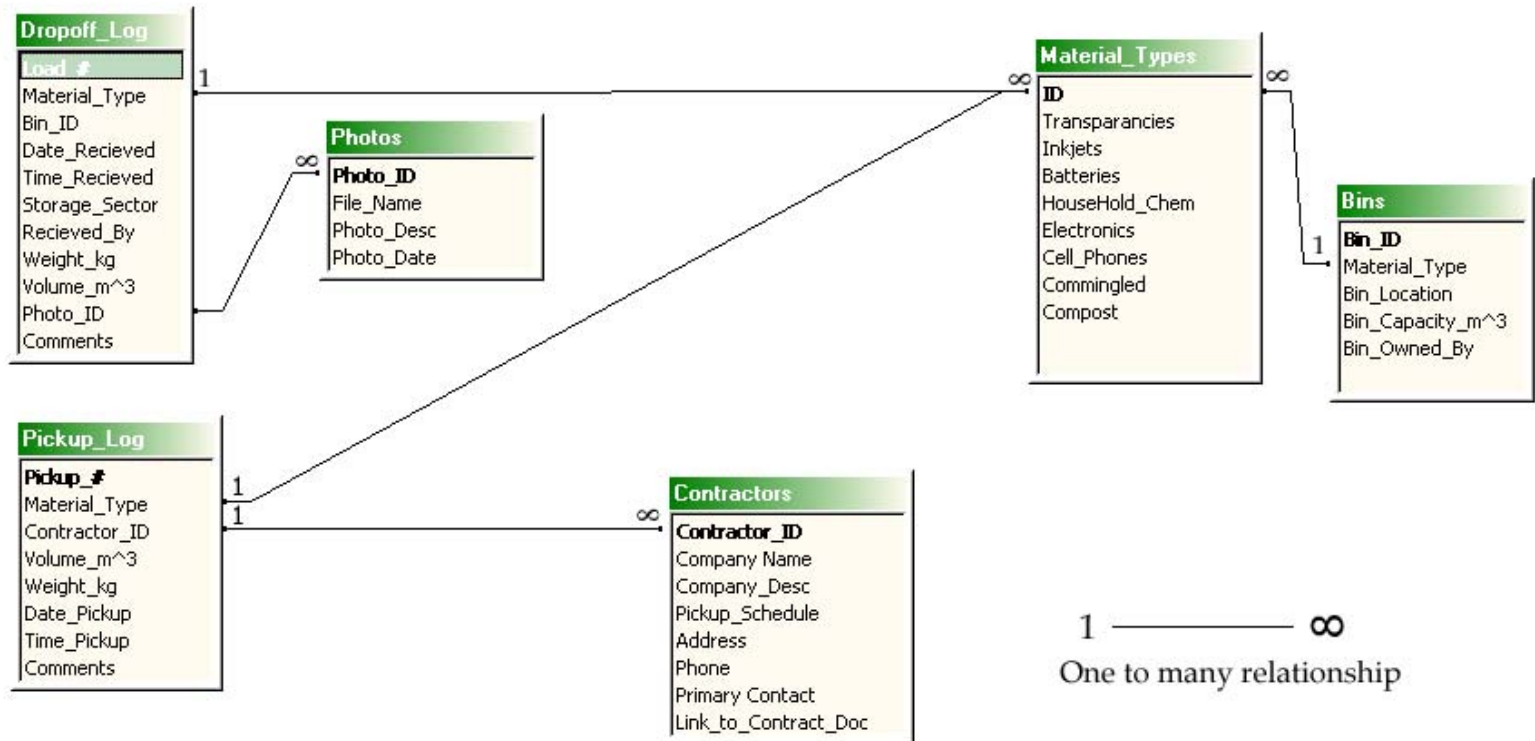


# Recycling Hub

- Space maximization
  - Install shelves
  - Move rollaways
- Self drop-off for hard-to-recycle items



# Central Hub – Data Processing





# Why Compost?

- Decreases amount of material being land filled (increases diversion)
- Cost Savings
  - Reduces number of loads CSM pays to take to landfill
  - Reduces cost of purchasing compost and fertilizer for campus landscaping
- Educational value
  - Chemistry
  - Microbiology
  - Environmental Engineering
  - Civil Engineering



# Composting Sources



- Slate Café
- I-Club
- Diggers Den
- On Campus Events
  - Sporting Events
  - Student Activities
- Students and Faculty



# Composting Assessment

- 1 Day, Slate Café Assessment
- Advertise
- Setup
- Monitor
- Educate
- Measure and weigh
- Transport
- Analysis





# Partnership

- Partnership with **A-1 Organics**
  - Return of material
- Contract with **Eco-cycle** to transport
- Advantages
  - Quick way to increase diversion
- Disadvantages
  - Expensive
  - Little or no design engineering



Lost Antlers Facility, HWY93





# Compost Action Plan

- Block diagram
- User instructions
- ARAMARK
  - Set aside compostables at on campus events
  - Suggest zero waste solutions
- CSM Earthworks Club / student workers
  - On Campus events → composting system



## Full scale on-campus compost facility

- Must meet all state regulations
- Advantages
  - Large amount of engineering design
  - Many educational opportunities
- Disadvantages
  - High initial cost investment
  - High level of maintenance required
  - May not have enough material to justify



# Budget

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- Total cost of project = \$3000
- 80% receptacle costs



# Public Relations

- Colorado Association for Recycling
- Improve Student Awareness
  - Brunton
  - Website
  - Posters
- Student Fee
- Sponsorship





Questions?