Reclamation of Fire Ravaged Land Utilizing Biosolids

Targeted Collaborative Research Project
Reclamation of Fire Ravaged Land with Biosolids

- the restoration of ecological services,
- improved water quality,
- Reduction of erosion
- Influx of organic matter
- Minimize impacts of hydrophobic soils
- aid in establishment of vegetation which can serve as a fire break
Background and Need

• There is limited research and a need to better demonstrate and quantify the benefits biosolids can offer

• 100,000+ tree mortalities in California alone after 6 years of drought

• Fire environments will continue even if drought subsides

• Encourages cooperation between multiple regulatory agencies, public utilities, and the private sector
Research Team in Place

- PI Greg Kester, Director of Renewable Resource Programs for the California Association of Sanitation Agencies (CASA).
- Co-PIs:
  - Dr. Kate Scow, UC Davis
  - Dr. Mike McFarland, Utah State
  - Robert B. Brobst, P.E., USEPA (Retired)/Colorado State University
- Collaborators:
- Dr. Sally Brown, University of Washington;
- Dr. Samantha Ying, UC Riverside;
- Dr. Tom Young, UC Davis;
- Dr. David Crohn, UC Riverside;
- Dr. Ian Pepper, University of Arizona
- Tal Robinson, California Central Valley Regional Water Quality Control Board
Fire Impacts on Forest, Rural, and Urban Environments

- Fire impacted landscapes depending on severity of fire (intensity x time) are
  - Increase in erosion
  - Resulting in soil and water quality degradation
  - Destruction of soil organic matter
  - Altered soil structure,
  - Altered soil nutrient levels
  - Significant debris flow and downstream impacts
Post-wildfire debris flows: significant losses of life and property:

Camp St Sophia, Waterman Canyon, San Bernardino, CA

Missionary Ridge Fire
Durango, CO 2002

Dec 25, 2003
• 16 deaths
• ~$2 billion for clean up and repair
Project Objectives

Use suite of biosolids to include Class B, EQ Cake, and EQ Compost as well as non-biosolids compost and control sites to evaluate:

• water quality protection,
• future wildfire risk reduction,
• improvement in soil carbon levels
• reduced erosion
• vegetative biodiversity
• soil and water concentrations of nutrients, metals, pharmaceuticals, emerging contaminants
Basics of Project Design

• Utilization of various biosolids
• Have controls at each project location
• Plot size (specifics will be dependent on site)
  – Use of field equipment (e.g. ~10m wide by various lengths)
  – Dual use plot (placed as erosion buffer strip as well a Soil quality/vegetative plot)
• Look at long term projects continued
Site Selection

• Currently considering Boggs Mountain State Forest in Lake County, CA
• Seeking one other location
• Return to Buffalo Creek, CO to evaluate long term benefits 20 years after reclamation with biosolids
How you can be involved

• Need ~ $200,000 to execute demonstration projects

• Commit funding to effort; seeking $10,000 contributions, but will gladly accept anything

• Offer in-kind services in the form of biosolids, hauling, application, analytical services, technical review