**Goulden Equipment and Facilities**

Lab: 1400 $ft^2$ lab with bench, desk, and storage space. 600 $ft^2$ of high bay space adjacent to loading dock, for storing large items and crates.

Tools: extensive collection of hand, power and electronic tools for fabricating, testing, and repairing equipment and infrastructure.

Computers: Approx (10) Windows and LINUX computers of various ages and speeds (mostly 2-4 year old Dell Precision workstations). Misc color and black and white printers. Approx 10 TB total disk storage. High resolution Microtek scanner for tree core analysis. Software licensees include Office, Matlab, ArcGIS, IDL, ENVI, Lignovision (for tree core measurement).

Micrometeorological equipment: (12) Full eddy covariance systems, including (13) Campbell CSAT sonic anemometers, (2) Licor 7500 open path IRGAs, (13) LiCor 7000 closed path IRGAS, (2) LiCor 6262 closed path IRGAS, (12) aluminum or steel towers ranging in height from 10' to 160', (100) 90 to 120 W solar panels.

General meteorology and data acquisition equipment: Approx (50) data loggers (Campbell Science CR23x, CR5000, CR10x, CR1000, CR3000). Approx (100) radiation and energy balance sensors (mostly Kipp & Zonen CM3, CM6, NRLite; REBS Q*7; LiCor, Apogee). Approx (200) soil moisture probes (mostly CS616 and CS615). Most

Instruments for lab and field measurements of plant physiology: (2) Licor 6400 leaf gas exchange systems, each with LED source and $CO_2$ mixing system. Licor 6200 gas exchange system with soil and leaf chambers. Licor LAI2000 plant canopy analyzer. (3) PMS or Soil Moisture pressure chambers. Equipment for hydraulic conductivity and vulnerability (Sorval RC 5C, etc).

Instruments for in-situ remote sensing: (2) FLIR thermal cameras, (2) JAI VIS/NIR cameras, (1) Xenics SWIR camera, (1) 4-channel Ocean Optics spectrometer for PRI and Fraunhofer line fluorescence, (1) Ocular Robotics scanning LIDAR, misc pan-tilt mounts (FLIR D100 and D48), computers, software (Labview) for continuous field operation. Tetracam Agricultural MultiSpectral Camera (green, red, nir). ASD FieldSpec HandHeld spectrometer.

General field equipment: Tape measures, DBH tape, increment borers, laser range finders, soil corers, GPSs.

Field research vehicles: 2003 4wd Dodge Dakota crew cab with contactor's rack. 2006 4wd Chevy Silverado extended cab with contactor's rack. 2009 Jeep Patriot.