

High School Students Utilizing GPS/GIS Technology



Teenage Environmental Geospatial Action Program (TEGAP)

Purpose and Brief History of TEGAP

- Created in December 2007
- Norcal Environmental Student Network
- Community Colleges Environmental Training Center
- California State Parks
- U.S. Army Corps. Of Engineers
- Training high school students
- Geospatial technology
- Preserving and managing parks and open space



Training Program

- Introduction to GPS - .5 units
- Introduction to GIS – 1 unit
- Introduction to Imagery – 1 unit
- Project work – 2 units
- Geography field studies – 1 unit
- Introduction to Physical Geography – 3 units
- TOTAL – 8.5 units



GPS Training

- Collection methods
- Recoding waypoints
- Time averaging
- Frequency of collecting waypoints
- Curvature of path
- Variables of structures and objects
- Spread sheets

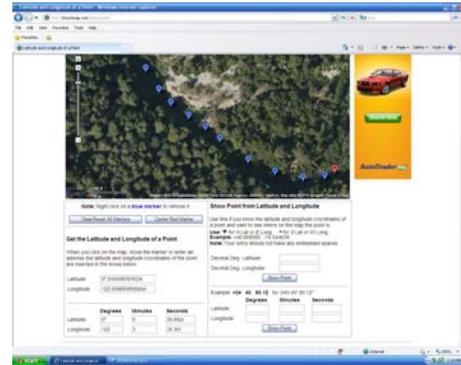


GPS Units

- Garmin™ GPS 60
- Units- Degree Decimal



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GIS Class



- Intensive Residential
- ArcView™ 3.3
- Screen and legend functions
- Tables-Editing existing and creating new
- Creating new themes
- Spatial analyst interpolation functions



Data Inputting and Processing Methods

- Create new tables
- Inputting Latitude and Longitude waypoints
- Review Work Using Event Theme
- Make Corrections



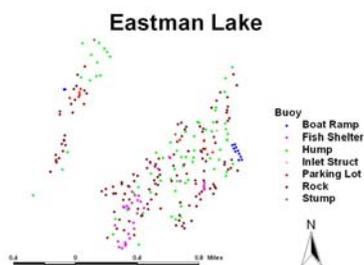
Examples of Data Collected

- Water Facets
- Campsites
- Restrooms
- Trails/Roads
- Boundaries
- Creeks/Rivers
- Cultural Features
- Signs



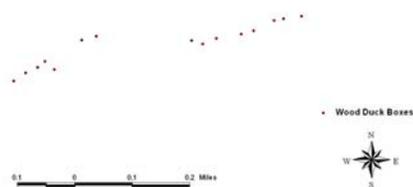
Eastman Lake

- 2004 Safety Buoys

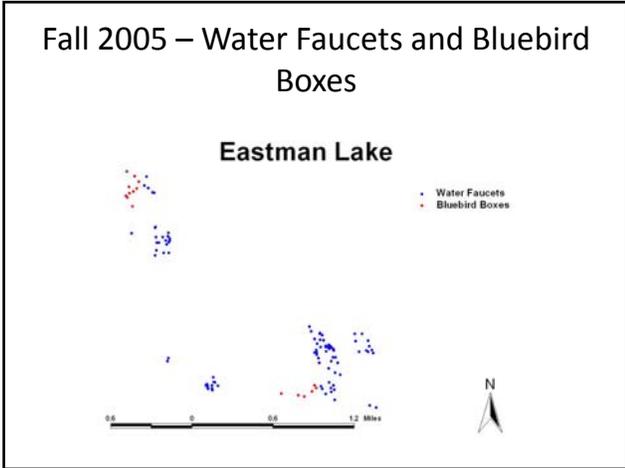


Spring 2005 – Wood Duck Boxes

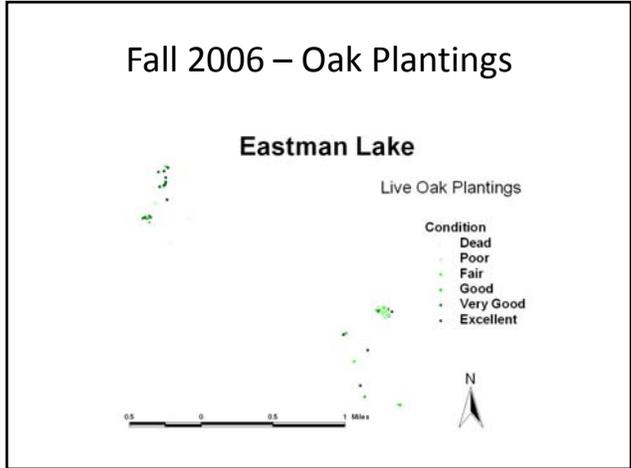
Eastman Lake



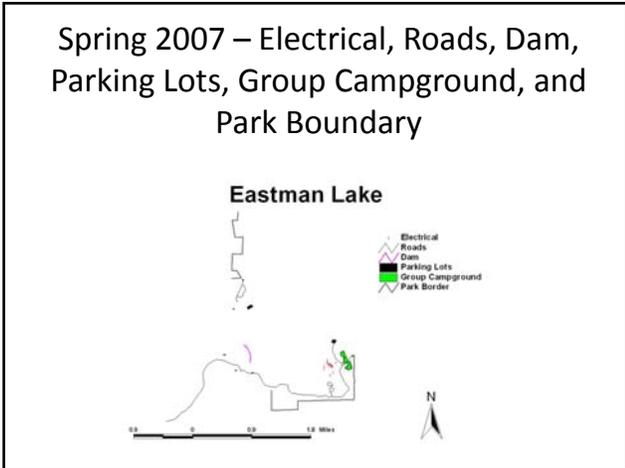
Fall 2005 – Water Faucets and Bluebird Boxes



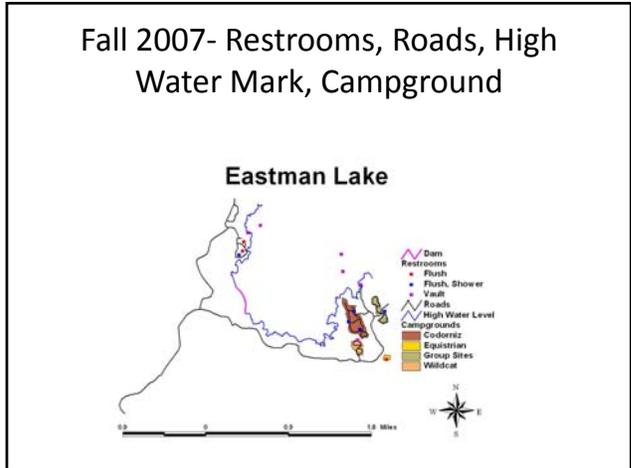
Fall 2006 – Oak Plantings



Spring 2007 – Electrical, Roads, Dam, Parking Lots, Group Campground, and Park Boundary

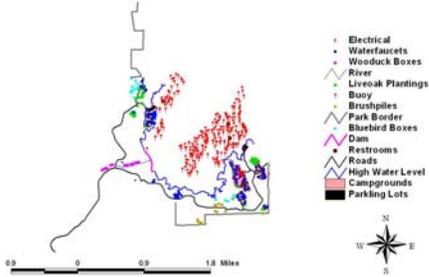


Fall 2007- Restrooms, Roads, High Water Mark, Campground



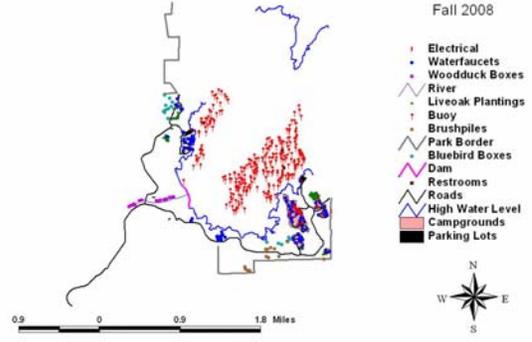
Composite Fall 2007

Eastman Lake



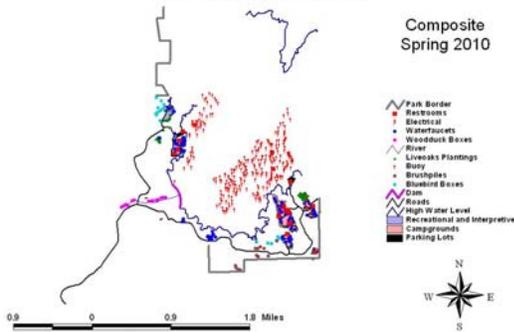
Eastman Lake

Fall 2008



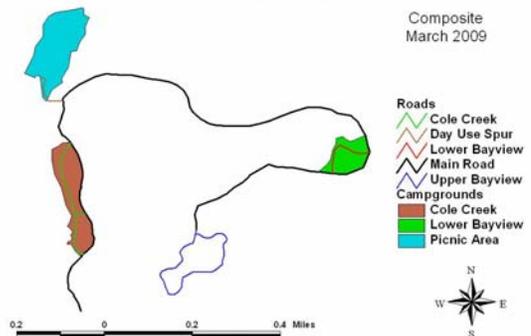
Eastman Lake

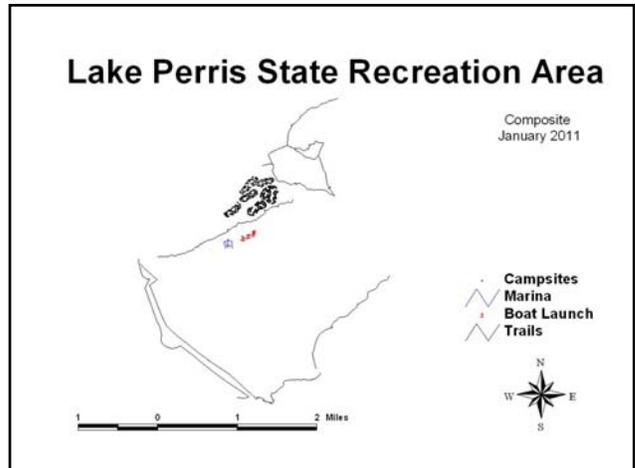
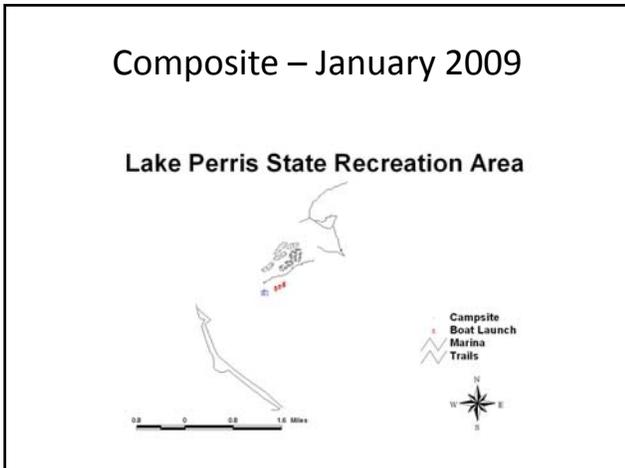
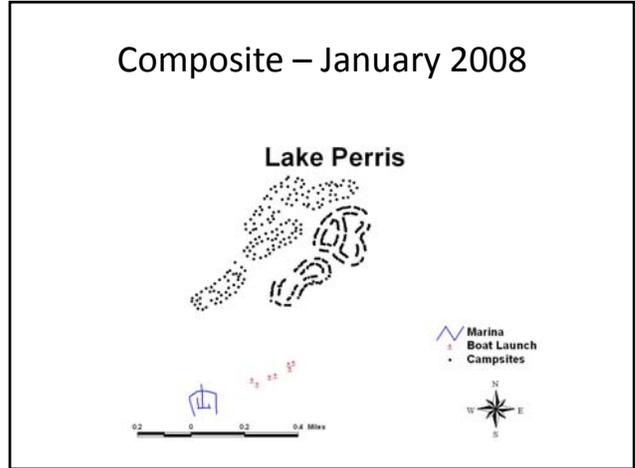
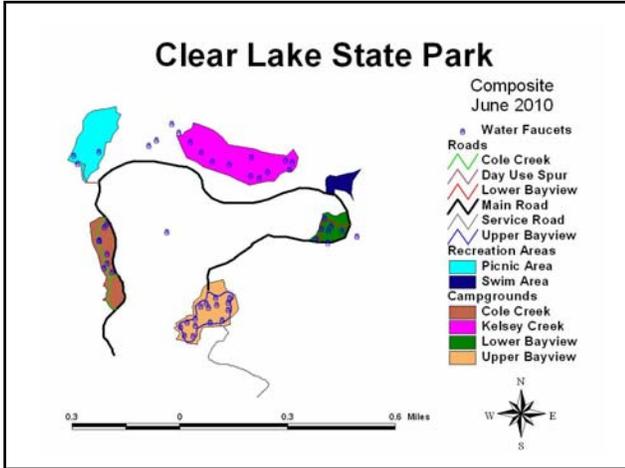
Composite Spring 2010

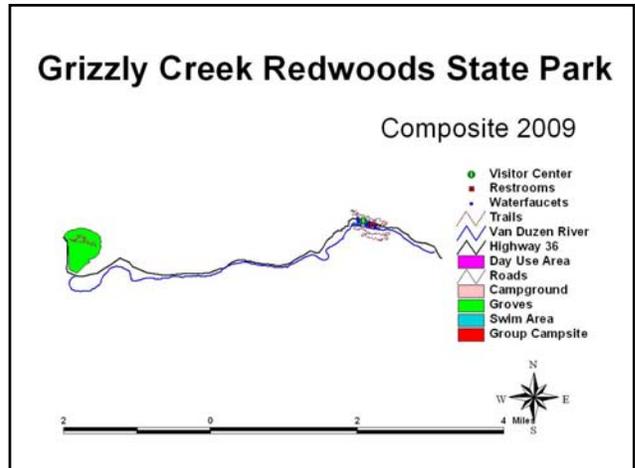
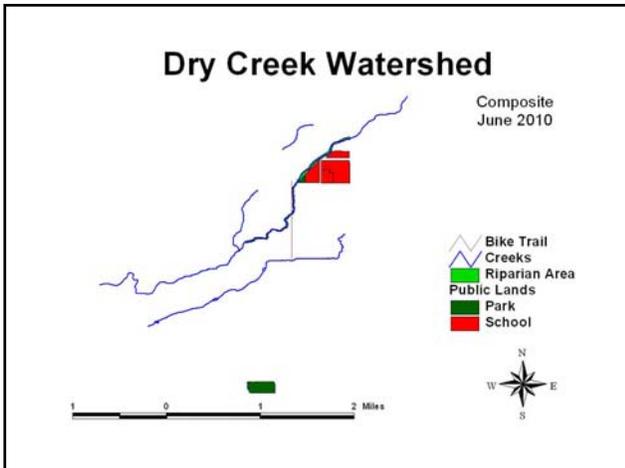
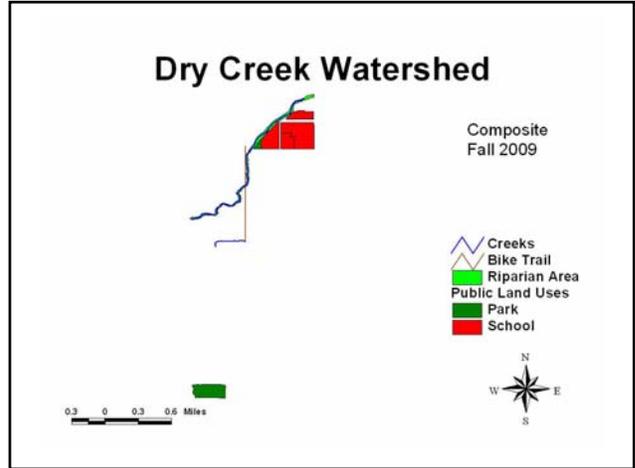
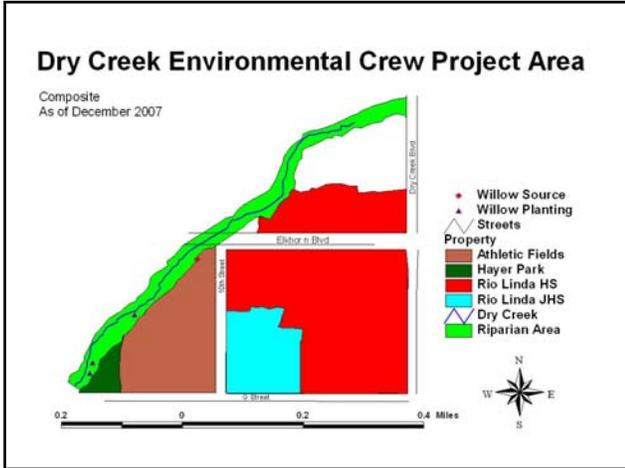


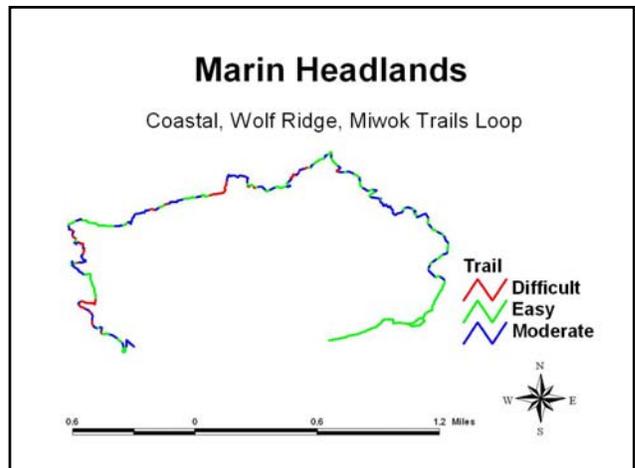
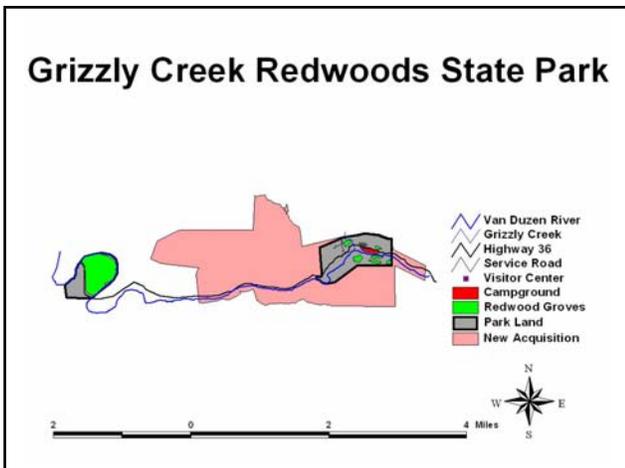
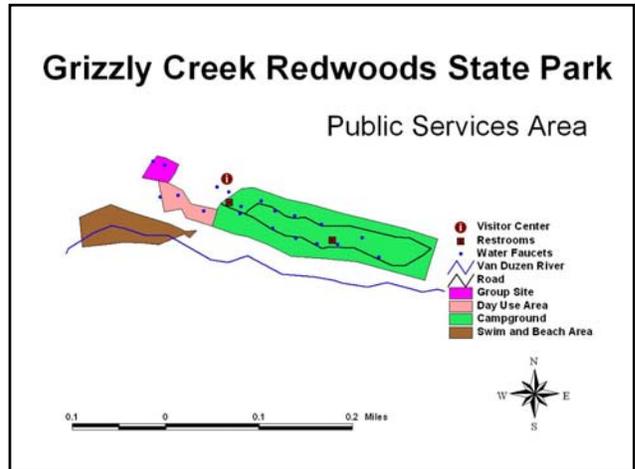
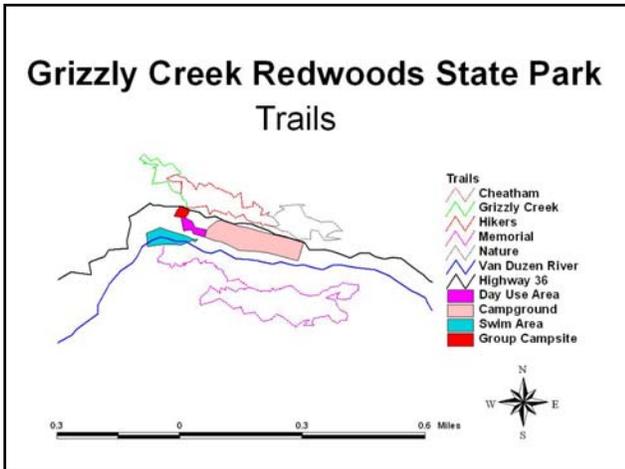
Clear Lake State Park

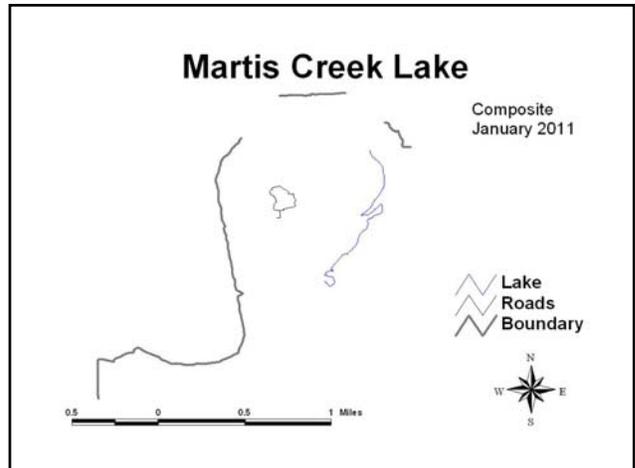
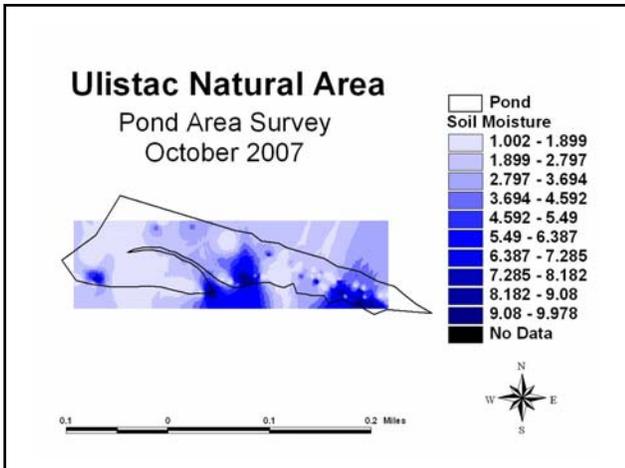
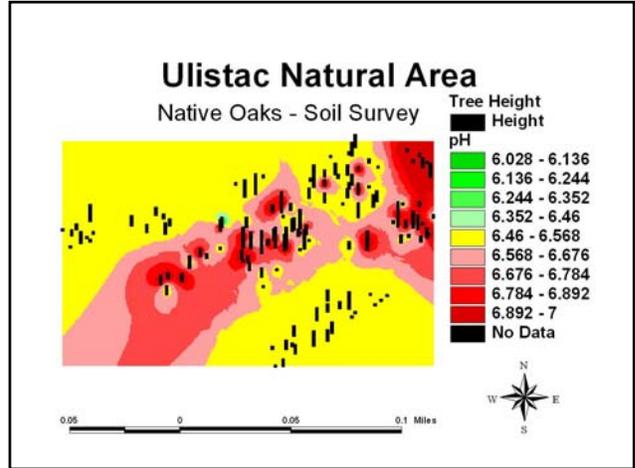
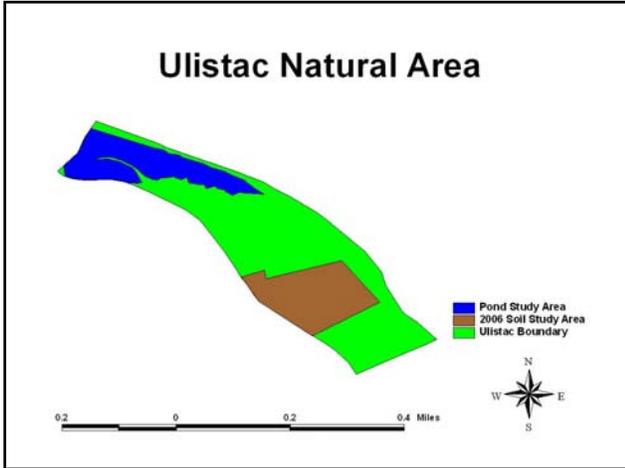
Composite March 2009





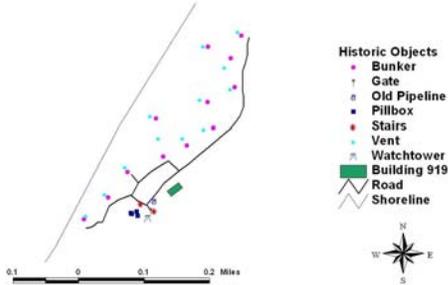






Fort Ord Dunes State Park

Bunker Area



List of Ongoing Projects

- Eastman Lake
- Ulistac Natural Area
- Grizzly Creek Redwoods State Park
- Dry Creek System
- Martis Creek Lake
- Lake Mendocino
- Lake Perris State Recreation Area
- Clear Lake State Park
- Fort Ord Dunes State Park
- Lake Merritt



Inter-School Cooperation

- Sharing equipment and capabilities
- Helping train students at other schools
- Supervising students from inexperienced schools
- Joint projects
- Need to develop social connections



Data Credibility Issues

- Making sure way-points record
- Physical obstructions
- Readability of recording data
- Averaging data
- Awareness of appearance of data
- Supplemental notes



Physical Challenges of Data Collection

- Hills/mountains
- Creeks/streams
- Bridges/dams
- Canyons
- Trees/brush
- Poison ivy
- Human barriers



Learning About the Environment and Park Management

- Visitor centers
- Ranger hikes/night hikes
- Rangers explaining how the data is used
- Ranger duties
- Camper etiquette



Interactions with Park Staff

- Clarity
- Relevant
- Guiding
- Engaging
- Real world vs. theoretical



Benefits to Park Staff

- Cost efficient
- Reduces need for staff time
- Accelerates process of conversion from paper maps to digital files
- Identifies problems of infrequently visited locations



Recreational Aspects

- Camp out cooking
- Camp fires
- Rock climbing
- Swimming
- Beach
- Climbing trees
- Roasting marshmallows



Benefits to students

- Teamwork/collaboration skills
- Project management skills
- Time management
- Outdoor experience
- Mentoring from professionals
- Productivity during school vacations



Future Goals, Challenges and Opportunities

- School acceptance of student engagement with non-school entities
- Dissemination of our experiences
- Increasing involvement from schools and students
- Funding support
- Transportation support
- Long-term engagement of students