Dave Phelps, ASLA, ISA
Dave.Phelps@Cagwin.com
(415) 215-5785

Part of the Solution
Making $ense through Education
COMPLEXITY & EDUCATION

- Crew Leader as Educator & Ambassador
  - Technology
  - Ecology
  - Legislation

- Building VALUE through Greater Understanding
  - Holistic Landscape Assessments
  - Case Studies and ROI
  - Conservation & Pollution Prevention

- Land Stewardship, Job Satisfaction, & Collaboration
Complex Systems Management

- Ecology
- Geography
- Geology
- Succession
- Climatology
- Entomology
- Sociology
- Mechanical
  - Irrigation
  - Lighting
  - Sound
  - Pools/Spas
  - Outdoor Cooking
- Structural
  - Decks
- Retaining Walls
- Arbors
- Steps & Paths
- Architecture
- Engineering
- Political & Regulatory
  - Accessibility
  - Building Codes
  - WELO / CalGreen

-Education & Understanding in each discipline
-Holistic & Synergistic Application
Becoming a Part of the Solution

- Sustainability Managers
- Sustainability Newsletters
- Testing of Materials and Best Management Practices
- Collaboration & Leadership
- Training & Outreach

Building Ecoliteracy builds Customer Value
A Holistic View to Landscape Management:
Land Stewardship
Commercial Sites
Rating System;
A Quantitative and Applicable Approach

Tests & Analysis
Gateway

Controls, Organics, Synthetics, and Bridge Products...
All on one site with similar soil, irrigation, and turf
Sustainable Solutions

- Health & Fertility
- Design Elements
- Pest Management
- Education & Legislation
Health & Fertility

1. Compost Top-Dressing
2. Aeration
3. Organic Mulch
4. Organic or “Bridge” Fertilizer Programs
5. Natural Pruning Techniques
6. On-Site Composting
7. Grass cycling
8. Compost Tea and Extracts
9. Mycorrhizae, Humates, Kelp, and other additives
10. Organic Fertigation Systems
Design Elements

1. Native or Climate Appropriate Planting
2. Turf Transition to Mulched Plants on Drip
3. Native Grass and other Lawn Alternatives
4. Edible Landscaping
5. Habitat Plantings
6. Revegetation Projects
7. Permeable Paving
8. Rainwater Harvesting
9. LED Lighting Solutions
10. Bio-swales
11. Right Plant-Right Place
12. Distribution Uniformity
Pest Management

1. Sheet Mulching
2. Biological Control
3. Organic or Less Toxic Pesticides
4. Cultural Controls
5. Minimize Resistance
6. IPM Programs

   1. Host, Pest, & **Cause** ID
   2. Monitoring
   3. Analysis & Threshold Discussion
   4. Education & Informed Decisions
   5. Strategic, synergistic, & Less toxic actions/practices
   6. Follow-up Monitoring
Education & Legislation

1. Bay-Friendly Commercial Sites Rating and Advising
2. LEED, Sustainable Sites, and Green Point Rating
3. WELO and CAL Green compliance
4. Presentations, Outreach, and Lunch & Learns
5. Sustainable References & Information Sources
6. Pollution Prevention Measures
7. Conservation Advice
8. Case Studies
Ecology

Migratory Patterns
Urban Interface
Green Corridors
Habitat Fragmentation
Ecotones
Diversity/Stability
Plant Communities
Right Plant ~ Right Place
Invasive Organisms
Soil Ecology
Rhizosphere & Phyllosphere

The Soil Food Web
Saprophytes
Nutrient Cycling
Carbon Sequestration
Plant Root Exudates
Niche Management
Geography

Grading
Erosion
Bioswales
Infiltration Systems
Mounds
Riparian Corridors
Storm Water
Ground Water
Geology & Soil Science

Parent Material
Weathering
Pedogenesis
Compaction
Pore Space
Water Holding Capacity
Succession
Plants & Soils

Organic Matter
Humic Acids
pH
Trophic Levels
Pioneer Species
Climax Species

“Trophic Levels”

The Soil Foodweb in Lawns, Vegetable and Row Crop Systems – by Soil Foodweb Inc.
Climatology

Microclimate
Wind Tunnel Effect
Heat Islands
Humidity
Eto
Hydrozones
Entomology

Habitat
Food
Life Cycles
Predators
Biological Controls
Pesticides
Collateral Damage
Thresholds
Alternate Hosts
Overwintering Sites

- Nematodes
- Bacteria
- Parasitic Wasps
- Predacious Insects
- Hawks, Owls, & OMRI listed Deterrents
Hawk Perches and Owl Boxes

$154.99
Sociology & Health

Negative Ions
Clean Air
Beneficial Microbes

Therapeutic Gardens
Beauty
Nature
Play
Social Gathering
& Interaction
Education
Nutrition
Mechanical

Irrigation
Lighting
Sound
Pools/Spas
Water Features
Outdoor Kitchens
Structural

Decks
Retaining Walls
Arbors
Steps and Paths

Architecture
Engineering
Building Codes
Accessibility
Safety
Fast, Lush Growth

Fertilizer: Too Much N!

More Water

Vigor Decline

Habitat Collapse!

Fungal Diseases

Collateral Damage!

Collateral Damage!

Pollution

Fossil Fuels

Homoptera Insects

Treatment

More Pruning

Waste!

Resources!
Fertilizer: Too Much N!

More Water

More Pruning

Waste!

Vigor Decline

Collateral Damage!

Collateral Damage!

Habitat Collapse!

Fungal Diseases

Treatment

Pollution

Fossil Fuels

Fast, Lush Growth

Homoptera Insects

Treatment

Ants

Pollution

Treatment
Feed the Soil
Work with the Natural System
- Compost
- Mulch
- Organic Fertilizers
- Biological and/or Less Toxic Materials
The Salt Circle

Sodic Soils

Pollution

Phytotoxicity

Impaired Soil Ecology

Salty Fertilizers

Poor Plant Selection

Poor Soil Preparation

Compacted Site

Removal of OM

More Fertilizer!?
The Easy Way…
Tools

- WELO and CAL Green (20/20)
- Endangered Species Regulation
- Case Studies
- Education, Education, Education!
- Rebate Programs
- CLCA Water Management Program

We ARE the Ambassadors and Emissaries of the Landscape.
SHOW THEM THE $  
SHOW THEM THE LAW  
SHOW THEM THE OPTIONS

PROMOTE INFORMED DECISIONS

Case Study
Blackhawk Home Owners Association

Results Achieved in the First Phase of the Project:
- Watering cost reduced by $51,000
- Rebates of $50,000 in credits found
- In first 12 months, irrigation water use reduced by 27%
- Savings based on the first 4 of 40 water meters to be upgraded

Customer Goals:
- Reduce annual water expenditures
- Improve irrigation efficiency
- Complete irrigation improvements within fiscal budget
- Improve aesthetics of the landscape
- Reduce synthetic pesticide and fertilizer use

Challenges Faced by Customer:
- Increasing water costs
- 25 year old irrigation system
- And climate with an average of 1/4" of rain between May and September
- Compacted clay soil throughout the site

Project Site Details:
- Home Owners Association
- Danville, California
- Age of site: 25 years
- 900 acres
- 16 acres of turf
- 14 acres of shrubs
- 4 parks
- 4 sports fields
- 12 miles of parkway strips and medians

Solutions:
- Organic products and services used to improve soil health
- Installed CalSense "smart" controllers
- Installed master valves and flow meters at backflows and wired to controller
- Installed weather station
- Installed rain gauge irrigation interrupt system
- Renovated existing sprinkler layout
- Reduced turf in selected areas

Water Use

<table>
<thead>
<tr>
<th>Gallons</th>
<th>Date</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,000,000</td>
<td>Ave 2006-07</td>
<td>18,000,000</td>
</tr>
<tr>
<td>10,000,000</td>
<td></td>
<td>15,000,000</td>
</tr>
<tr>
<td>12,000,000</td>
<td></td>
<td>14,000,000</td>
</tr>
<tr>
<td>14,000,000</td>
<td></td>
<td>13,000,000</td>
</tr>
<tr>
<td>16,000,000</td>
<td></td>
<td>12,000,000</td>
</tr>
<tr>
<td>18,000,000</td>
<td></td>
<td>11,000,000</td>
</tr>
<tr>
<td>20,000,000</td>
<td></td>
<td>10,000,000</td>
</tr>
<tr>
<td>22,000,000</td>
<td></td>
<td>9,000,000</td>
</tr>
<tr>
<td>24,000,000</td>
<td></td>
<td>8,000,000</td>
</tr>
</tbody>
</table>

References for this case study and others like it are available upon request.

Blackhawk HOA
Blackhawk Road
Danville, CA 94506
Collaboration
~Relationships are Everything~
Project Goals

- Conserve Water
- Protect Water and Air Quality
- Create Habitat for Pollinators, Beneficial Insects
- Increase Native Plant Population
- Education: Encourage Sustainable Practices
- Buy Local Materials
- Use Organic Methods
Serious Water Savings!!!

WATER COSTS

- Landscape watering costs reduced by $14,000
- Irrigation water reduced by 5 million gallons
- Water consumption reduction of 26%
- Return on Investment Less than 2 years
Compost

Vermicompost

Beneficial Insect Educational Display
“ET” Weather-Based Irrigation Controllers (7)
MP Rotators..
Low Volume, Efficient Irrigation
Habitat and Bio-Swales!

“No-Mow” turf!
Beneficial Insect Releases
Educational Events

Think Globally, Plant Locally!

Think Globally, Plant Locally!

One of a Kind Shopping Center Garden! Special Opening How-To’s, Plant Sale, Treasure Hunt, & Raffle!

This event is free and open to the public.

Saturday, September 25, 2010, 11am – 2pm
The Willows Shopping Center – 1975 Diamond Blvd, (at Willow Pass Road), Concord, California 94520

The Willows Shopping Center and partners are pleased to introduce its new Eco Gardens, Composting System, and Critter Farm of beneficial insects!

What you can learn about the Eco Gardens on Sept 25th:
• Water Conservation Techniques
• Organic Soil Management
• Using Native Plant Varieties
• How to Compost
• How to Raise Earthworms
• Bay Friendly Landscaping Techniques
• How to Create Habitat for Beneficial Insects
• How to Introduce Nature Predators

We can also design special events and classes to meet your groups’ needs:
• Pollinator Plants & Beneficial Insect Class
• School Field Trips
• Homeowner How-To
• All-Stars Design
• Landscape Professional How-To
• Composting, Soil and Worm


Contact: Jacob Vot, Sustainability Manager 800-891-7710 jacob.vot@cagwin.com
Aerobic Compost Tea!!!
Educational Signage

Marino Avila- Willows Acct. Mgr.
Harbor Bay Business Park – Bay-Friendly Landscape Beautification

Groundbreaking Community Event

**When:** Wednesday October 27, 11:00 am

**Where:** Harbor Bay Shoreline Park, on Harbor Bay Pkwy, north of Alcatraz Loop Pk

**What:** A groundbreaking ceremony for the largest Bay-Friendly project in the Bay Area
- Learn about Bay-Friendly landscaping
- Watch a street planting demonstration
- Enjoy refreshments with community members and city officials

**Event Partners:**

For more information, please visit www.harborbay.com or www.cagwin.com/harborbay
Sheet Mulching Process
Irrigation System

- Toro DL2000 on plants & no-mow Fescue
- Toro Intellisense with Weathertrak
- EZ-Flo Fertigation
Value Engineering & ROI

- Reduced project cost by 20% or $100K
- ROI - Analysis comparing historical & current costs
Less Toxic Materials

- Organic Fertigation
- Burndown, Oil-based Herbicides
- Bacterial and OMRI Fungicides
- OMRI Pest Deterrents
Case Study
Centre Pointe Office Park

Results Achieved Over 5 Years:
- Water consumption reduced by 47%
- Irrigation water reduced by 23 million gallons
- Reduced water costs by 50%

Customer Goals:
- Reduce annual water expenditures
- Reduce water use without upgrading existing irrigation system
- Maintain aesthetics of the landscape while reducing water use

Challenges Faced by Customer:
- Excessive water pressure throughout site
- Aging irrigation system
- Frequent pipe breaks and leaks

Solutions:
- Identified shade areas such as turf under trees and around buildings that require less water
- Created separate irrigation programs for shrubs, turf, shady areas and trees
- Removed high water use plants, capped unnecessary irrigation heads, and spread mulch in planter beds
- Worked with the Property Manager to identify, flag, and repair all irrigation leaks and pipe breaks quickly.
- Installed pressure regulators to reduce flow
- Adjust controller programming frequently to maximize efficiency.

References for this case study and others like it are available upon request

Centre Pointe
Althouse Deaton Management
Lennon Lane
Walnut Creek, CA 94598
Case Study
Oakmont East Village
Homeowners’ Association

Becoming part of the solution by committing to preserve the beauty that surrounds us and to heal our planet for future generations

Results Achieved:
- No commercial fertilizer or pesticides used since March 2008
- Irrigation water reduced by 1.2 million gallons
- Water consumption reduced by 50%

Customer Goals:
- Save water by reducing turf areas and increasing the efficiency of the existing irrigation system
- Maintain a beautiful landscape without applying chemicals

Challenges Faced by Customer:
- Average irrigation annual rate increase = 9%
- Recreational center that has high exposure to community needed to be aesthetically pleasing.

Customer Profile:
- Home Owners Association
- Santa Rosa, CA
- 67,000 sq ft of landscape
- Age of site: 25 yrs.
- Retirement community at Oakmont Golf Course

Solutions:
- Water budget developed
- Selected areas of turf were sheet mulched and low water use, native plant material was installed.
- Existing irrigation was renovated to low water use nozzles and drip irrigation.
- Weekly meters read and water-budget reports compared
- Annual plant health program was developed

Here’s what the customer had to say:
“Our landscape appearance has improved significantly with the use of native plants and eliminating turf. Our residents are excited about the changes we have made. They feel safe using the recreational center knowing that we are not using chemicals.” Landscape Improvement Committee Chair

References for this case study and others like it are available

Oakmont Village Association
6637 Oakmont Dr
Santa Rosa, CA 95409

NO fertilizer or pesticides since March ‘08!
Water Reduced 50%!
Are you a part of The Solution?

Are your crews informed, excited, and enthusiastic to be Good Land Stewards?
Review / Take-Aways

• Work Smarter, not harder
• We are Knowledge Workers
• Raise the Bar of The Industry
• Land Stewardship: a higher calling on behalf of our customers
• Ambassadors of the Land
• A part of the Solution
Thank You!

Dave Phelps
Dave.Phelps@cagwin.com
(415) 215-5785

Becoming Part of the Solution…

www.cagwin.com