OKLAHOMA COMPOST CONFERENCE

Sustainable Landscape Programs:
Healthy Soil with Compost is Key

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Bioproduct Market Development

Executive Director

ASSOCIATION OF COMPOST PRODUCERS

"We Build Healthy Soil"

www.healthysoil.org

Topic Outline

- **Association of Compost Producers**
- **Recycled Organics → Compost**
  - Economic Transformation
  - Organics Value Cycle
  - Compost Production – Scalable Biotechnology
- **Sustainable Landscape Markets**
  - Compost Benefits all Soil Markets
  - What are Sustainable Landscapes
  - Specifications Development
  - Developing the Market - a cultural shift!

Association of Compost Producers

A Public/Private Association - 501(C)6 – Calif. State Chapter of US Composting Council

- Public and Private Organics Residual Generators
  - Green Waste, Manure *(into and out of animals)*
  - Food Waste, Biosolids *(into and out of people)*
- Public and Private Compost Producers
- Public and Private Compost Marketer/Distributors

Our Vision:

- ***Support beneficial reuse of organics in California, compost playing a central role to***
- ***Build and maintain sustainable healthy soils,***
- ***Keeping our state's lands productive, green and biologically diverse for generations to come.***

Our Mission:

Increase the quality, value and amount of compost being used in California.

- **Burrtec**
- **CalPoly SLO**
- **CR&R**
- **Engel and Gray**
- **Filtrexx**
- **Inland Empire Utilities Agency**
- **Kellogg Garden Products**
- **Liberty Compost**
- **Los Angeles County Sanitation Districts**
- **P.F. Ryan and Associates**
- **Serrano Creek Soil Amendments**
- **Scott Brothers Dairy**
- **Soiland**
- **Synagro**
- **University of California, Cooperative Extension**
- **Vision Recycling**

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COMPOST: Economic Transition, Development of a Circular Economy

Linear Economy*

Natural Resources & Resource Industries → **Industrial Processes, Distribution & Product Use** → **Waste & Pollution**

- Air
- Water
- Land & Minerals
- Energy
- Biological

From Eugene Odum, Ecology, 1963 and www.Ecocycle.org, 2008

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Journey to Sustainability: Development of a Circular Economy

Circular, Zero Waste, Economy*

Natural Resources & Resource Industries

- Air
- Water
- Land & Minerals
- Energy
- Biological

Industrial Processes, Distribution & Product Use

Waste & Pollution

Environmental Industry

From Eugene Odum, Ecology, 1963 and www.Ecocycle.org, 2008

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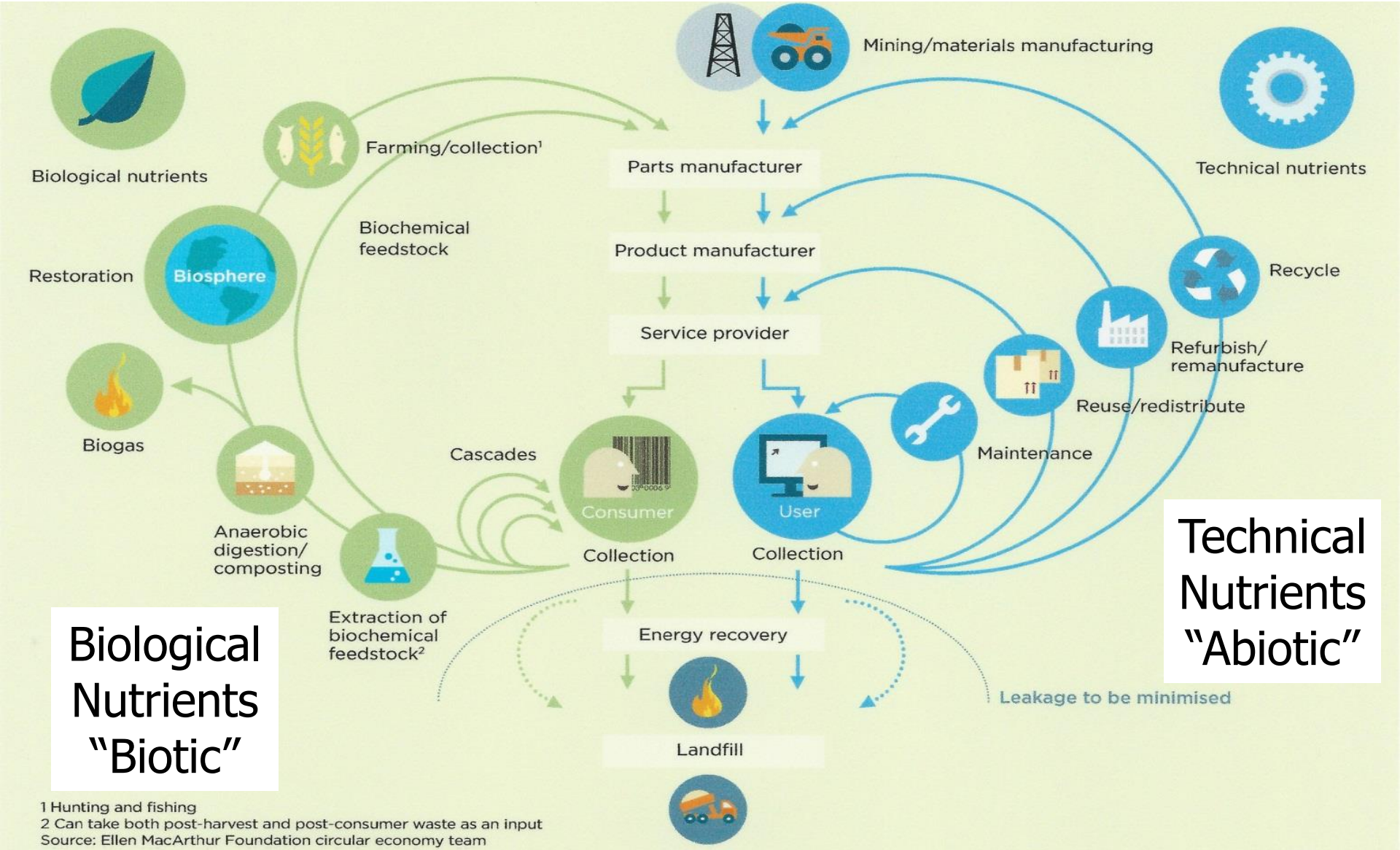
Efficiency of "Closing the Loop:"

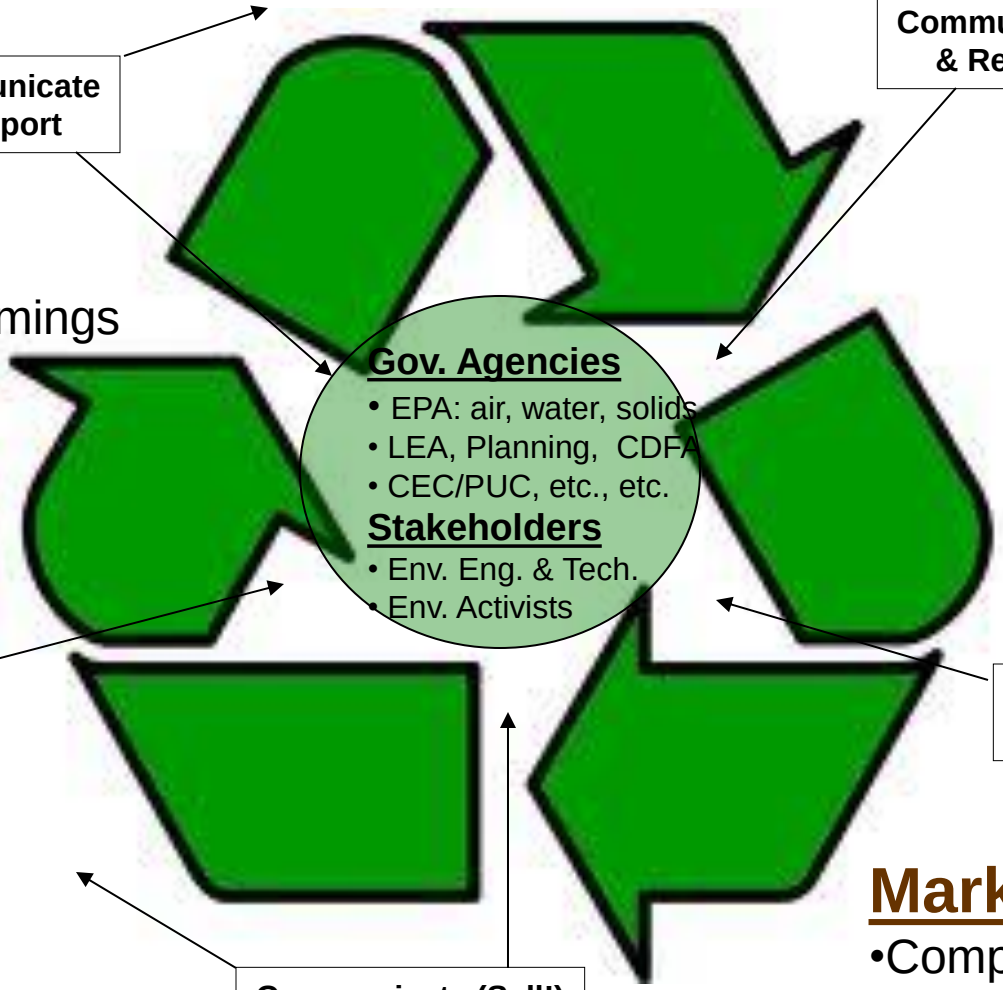
Emerging Circular Economy:

an industrial system that is restorative by design



1 Hunting and fishing
2 Can take both post-harvest and post-consumer waste as an input
Source: Ellen MacArthur Foundation circular economy team

The Organics Value Cycle



Haul, Pre-process:

Communicate & Report

Communicate & Report

Generate:

- Landscape trimmings
- Food/Ag waste
- Biosolids
- Manure

Gov. Agencies
- EPA: air, water, solids
- LEA, Planning, CDFA
- CEC/PUC, etc., etc.

Stakeholders
- Env. Eng. & Tech.
- Env. Activists

Process:

- Compost
- Chip and Grind
- Anaerobic Digestion
- Biofertilizer
- Energy (biofuel, electricity)

Communicate & Report

Communicate & Report

Use:

- Landscape
- Agriculture
- Environmental
- Bioenergy

Communicate (Sell!) & Report

Market:

- Compost
- Fertilizer
- Energy

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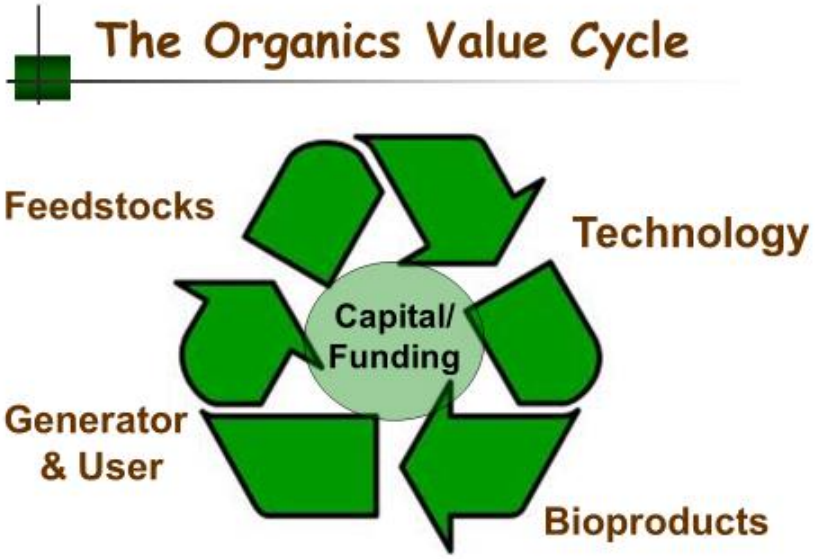
The Organics Value Cycle

- **Organics Residuals** = carbon (C) & nitrogen (N) compounds
- **Organics Recycling** = renewable carbon (& nitrogen) management



Organics = Biological Nutrients

Carbon's "6 F's"

Food

Fuel

Fiber

Flowers

Feed

Fertilizer

Organic Residuals are…

From Agricultural Product to Organics Residual

Food → *Disposer & Sewage* → ***Biosolids***

Fiber → *Solid Waste* → ***Food scraps***

Fiber → ***Green material***

Flowers → *Landscape Maintenance* → ***Woody material***

Feed → *Livestock Waste* → ***Manure***

Fuel → ***No Residual (except pollution!)***

Fertilizer → ***No Residual (except pollution!)***

Bioproduct Portfolio, or Categories

aka "*Categories of Value*"

- **Mulch**

- **Compost**

- **Biofertilizer**

- **Biochar**

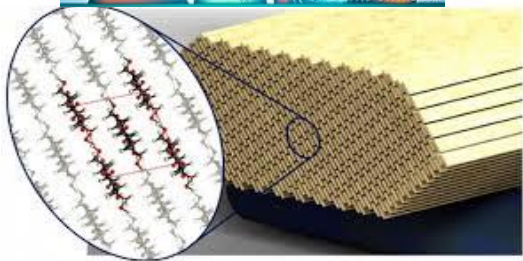
- **Animal Feed**

- **Electricity**

- **Biofuels**

- **Chemicals**

- **Product Materials**



Mesophilic, Back Yard Composting

Thermophilic, Industrial Composting

In-vessel

- **Lifetime** – Manual

- **ForSolutions** – Fully automated

- **HotRot** – with bin feeder

Windrow vs. extended Aerated Static Pile

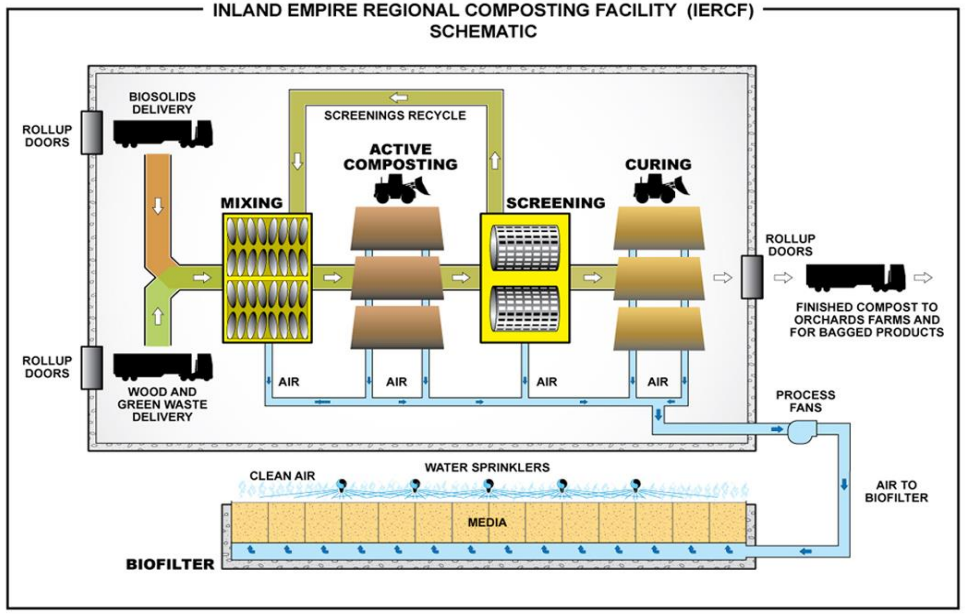
Current Windrow Technology

Solar Powered, Control Irrigated Aerated Static Pile

Largest Indoor Compost Facility in North America, IERCA.org

INLAND EMPIRE REGIONAL COMPOSTING AUTHORITY

SOILPRO™ Products
Quality Products for Healthy Soil



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- **Sustainable Landscape Markets**
  - Compost Benefits all Soil Markets
  - What are Sustainable Landscapes
  - Specifications Development
  - Developing the Market - a cultural shift!

Compost = Organic Carbon & Nitrogen, & Soil Organisms

- ***Pathogens killed, quick carbon (sugars and starches) metabolized and turned into "humus"***
- ***Compost Contains ~50% Organic Matter by Weight***
- ***Organic Matter is made of Carbon Compounds so it:***
  - **Provides food (energy) to the soil organisms**
  - **Provides tilth for water infiltration, holding and oxygen penetration**
  - **Sequesters carbon**
- ***Must keep adding to the soil as it is eaten (degraded) by the soil organisms***
- ***Also it provides Organic Nutrients ("NPK", i.e. nitrogen, phosphorous and potassium)***

Compost: Landscape Use

COMPOST Turns *Dead Dirt…* *to Living Soil*

Main Applications

- Landscape
- Erosion Control and Restoration
- Agriculture & Working Lands

Specifications are Key

- User Driven Specifications
- Landscape Specifications (Manual)
- Compost Use Index

Compost: Environmental Uses

- ***"Ecological Engineering" - transcends but includes biological, chemical and civil (physical) engineering***
- ***Build soil, enhance both soil protection and infiltration, grow plants, control run off , if any! → →***

Eliminate runoff, stop erosion before it starts!

- ***Specific tools:***
  - Compost blankets
  - Filter socks
  - Ditch checks
  - Living walls

Compost Blankets (mulch!) ***Designed to:***

- *Dissipate* energy of rain impact
- Hold, infiltrate & evaporate water
- Slow down/disperse energy of sheet flow
- Provide for optimum vegetation growth

Erosion Control - 'Prevention'

vs

Sediment Control - 'Treatment'

Filter Media = Sediment Control

Designed for Optimum Filtration & Hydraulic-flow

Growing Media = Erosion Control

Designed for Optimum Water Absorption & Plant Growth

Blowing on Compost with Blower Truck

EC/Slope Stabilization

Compost *Erosion Control Blanket*

Designed to:

1) Dissipate energy of rain impact;
2) Hold, infiltrate & evaporate water;
3) Slow down/disperse energy of sheet flow;
4) Provide for optimum vegetation growth

Compost EC BMP Examples

EcoBlanket® – Hydroseeding

EcoBerm® – Silt Fence Alternative

Rolled Erosion Control Blanket

Compost Blanket

CECBs Fill Low Points in Soil Surface

Main Street Materials – 1:1 slope, 4” compost
Project near Lompoc

Agricultural Markets

"High volume, lower value"

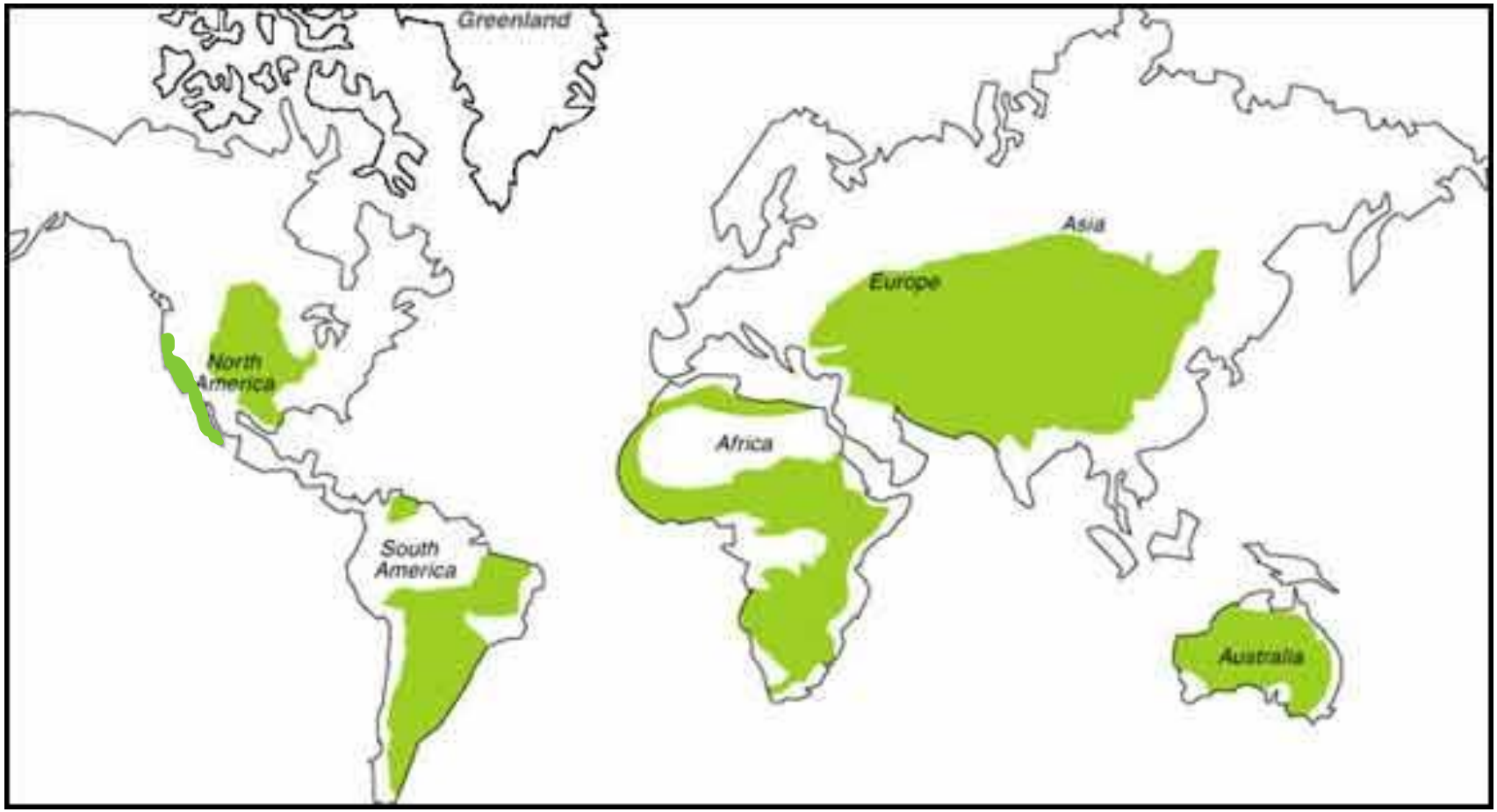
- ***Monoculture growers:***
  - Orchards
  - Feed
  - Fiber
  - Carbon Ranching!

- ***Organic Growers***
  - Grapes
  - Tomatoes
  - Strawberries
  - Etc., etc.

Carbon Ranching… rangeland mgmt

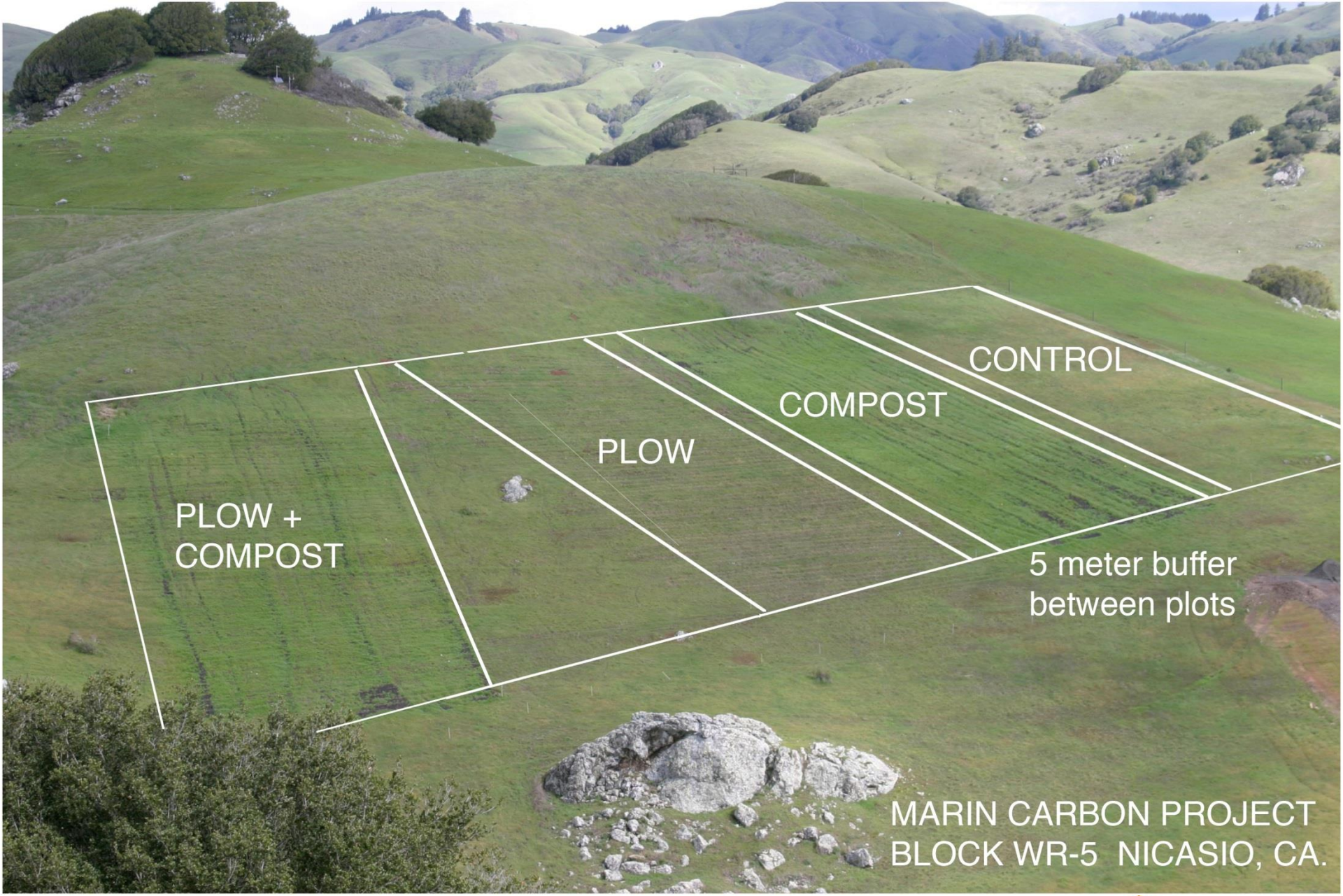
Apply about ¼" → state change, carbon sequestration!

THERE ARE 3.5 BILLION HECTARES OF GRAZED RANGELAND ON EARTH



*30% of global land surface
*33% of the US land area

*Over half of the global land use
*56% of California land area



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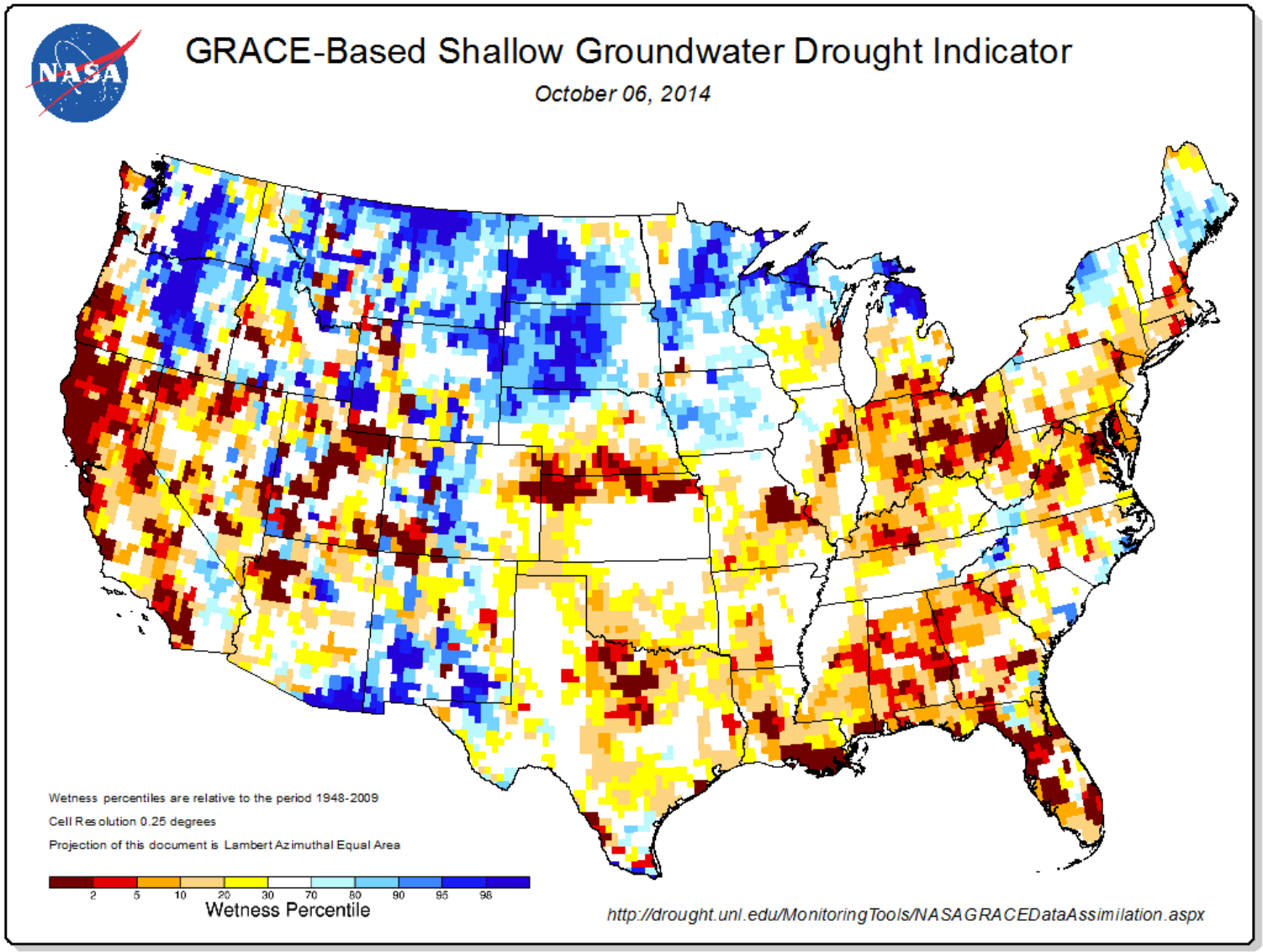
Why Sustainable Landscapes?



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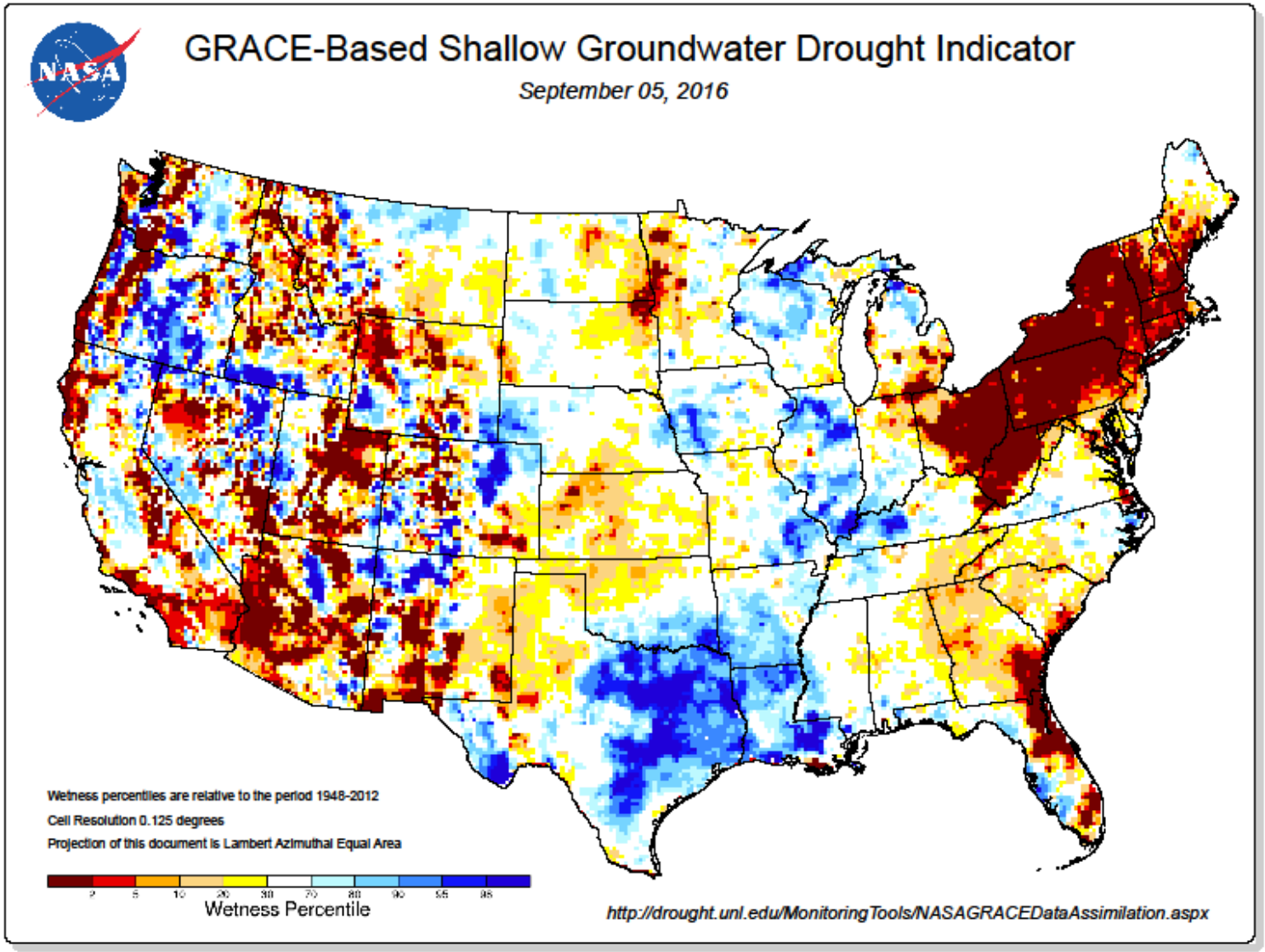

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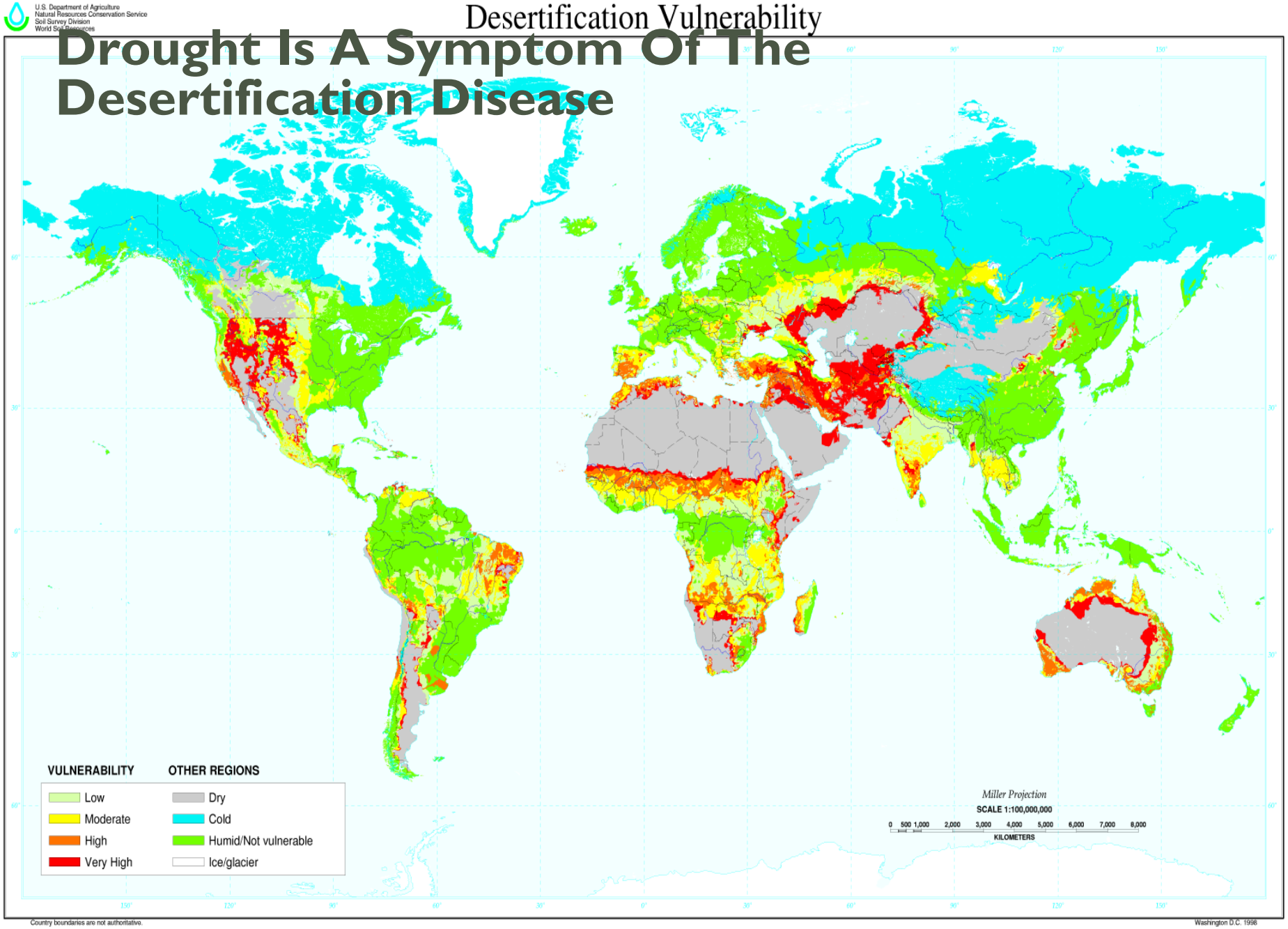
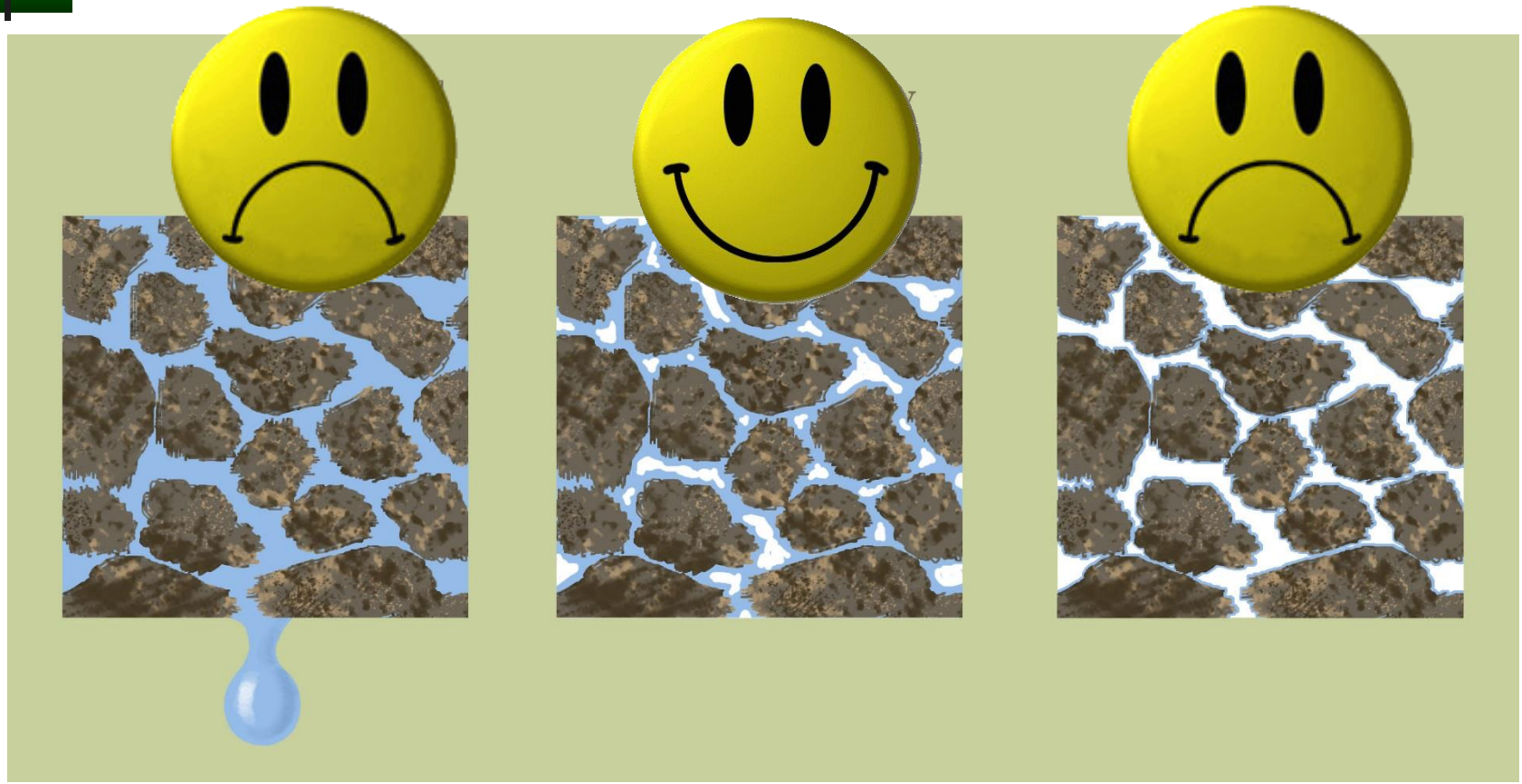
Drought Is A Symptom Of The Desertification Disease



Cause: Destruction Of Soil Structure

Cause: Chemical Herbicides And Fertilizers

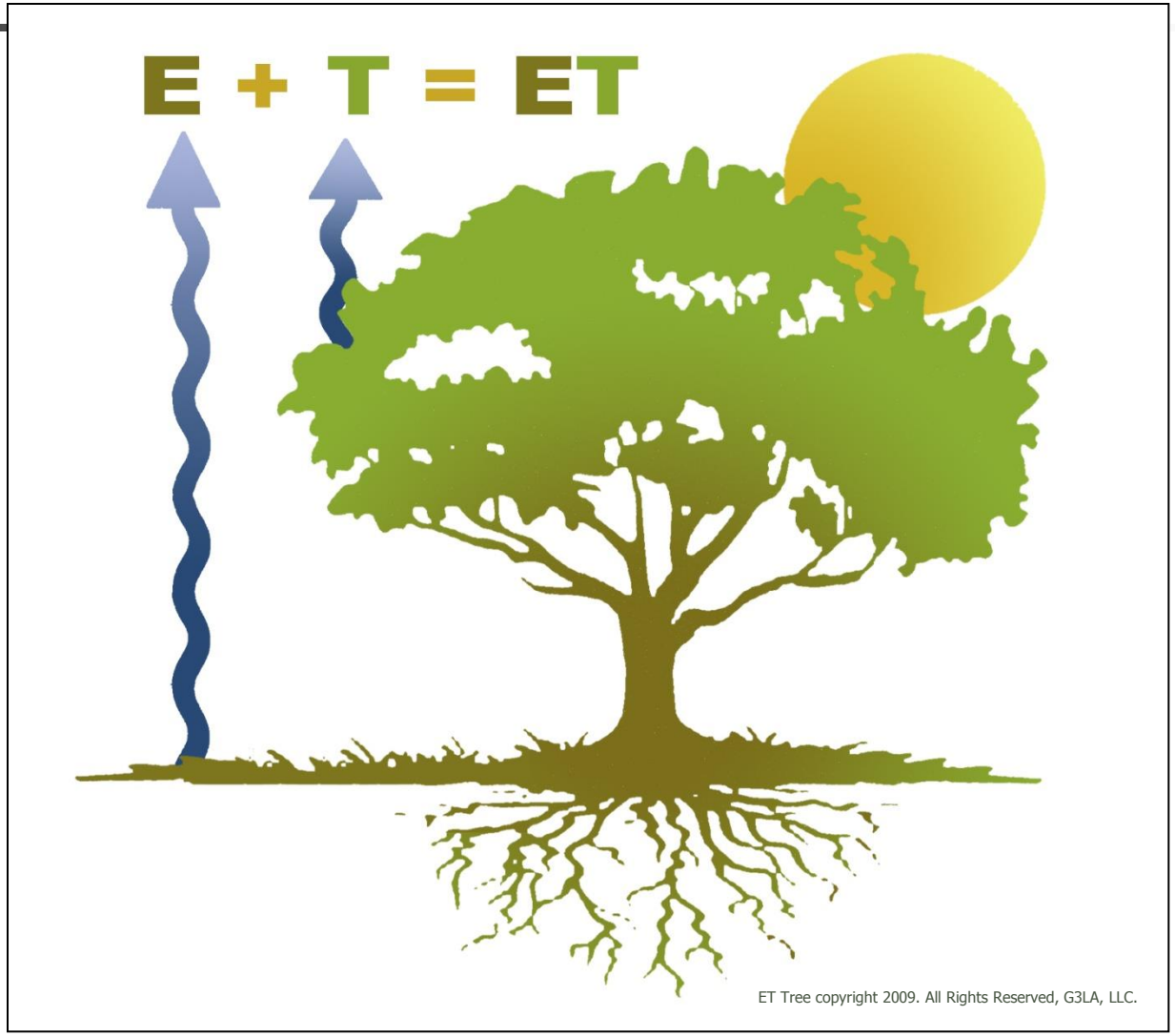
Cause: Poor Irrigation Practices



Too Much Water | Balanced Water | Too Little Water

Result: Compaction Affects Plant Root Growth

No Roots: No Plants: No Evapotranspiration

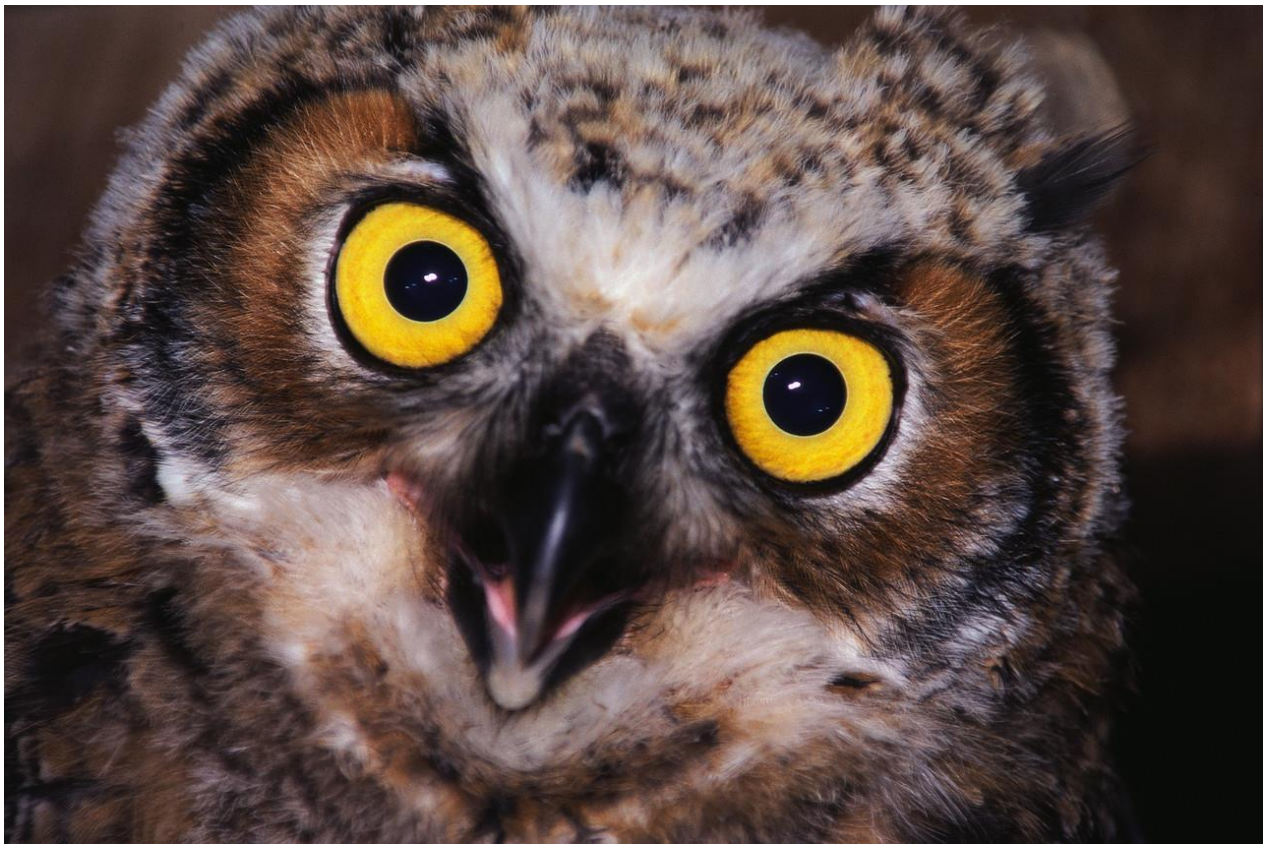


Evapotranspiration Drives The Water Cycle

We Can Change Soil From Brick To Sponge


By Creating
Living Soil “Sponge”

Oxygen + Water + Life
Are The Key Elements of Living Soil



OWL

Build A Sponge: Host A Soil Party!

A teaspoon of good garden soil contains billions of microbes that were only recently discovered. The microbes make the soil a sponge and also cycle nutrients so plants can thrive.

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Cater The Party With Good Food (Pizza!)

Actually...Compost!


And Serve Rain (Carbonic Acid)
Drinking Every Drop Of It!

And Lasagna Too: Mulch

Lawn Be Gone!

LADWP Turf Removal Grant

Los Angeles Department of Water & Power

green gardens group

www.greengardensgroup.com

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San Diego County Water Authority

THE CITY OF SAN DIEGO

water smart LANDSCAPE

SURFRIDER FOUNDATION
SAN DIEGO COUNTY CHAPTER

G3 green gardens group
www.greengardensgroup.com

CALIFORNIA AMERICAN WATER

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“soil lasagna” recipe

(aka Sheet Mulching to Remove Turf)

- SHOVELS & RAKES
- BINS FOR REMOVED GRASS AND SOIL (WARM SEASON TURF GRASS ONLY)
- LANDSCAPE FLAGS
- COMPOST OR WORM CASTINGS
- MULCH (FRESHLY SHREDDED TREE TRIMMINGS WITH LEAVES ARE BEST)
- PAINTERS PAPER OR BIG SHEETS OF CARDBOARD (IT SHOULD BE CLEAN)
- HOSE WITH SPRAY NOZZLE
- WATER (LOTS!)

① Deal with the turf grass you have. If it's cool season turf grass (stays green all year), say goodbye, give it a good soaking of water and go to Step 3.

② If it's the other kind of turfgrass (any mixture that turns brownish in the winter) remove and dispose of soil at least 8” deep, but preferably 10” or more to be sure it’s all gone. If you can’t hand remove, rent a sod cutter.

③ Dig back 12” - 24” from any hard surfaces and building foundations to a depth of 8” - 10.”

④ Flag all your sprinkler heads so you can find and adjust or remove them later.

⑤ Add LIFE! Spread out a 1” deep blanket of compost or worm castings.

⑥ Water the soil so the paper will stick to it.

⑦ Roll out paper or cardboard. Be sure to overlap all edges by at least 6” - don't leave any bare soil! If necessary, to prevent tearing and gaps, use two layers of paper.

⑧ Water well - really soak the paper/cardboard.

⑨ While the paper/cardboard is wet, gently rake out a thick blanket of mulch (4” to 6”) over everything. Keep watering while you do this - you want the mulch to be really wet at first.

⑩ Admire your work.

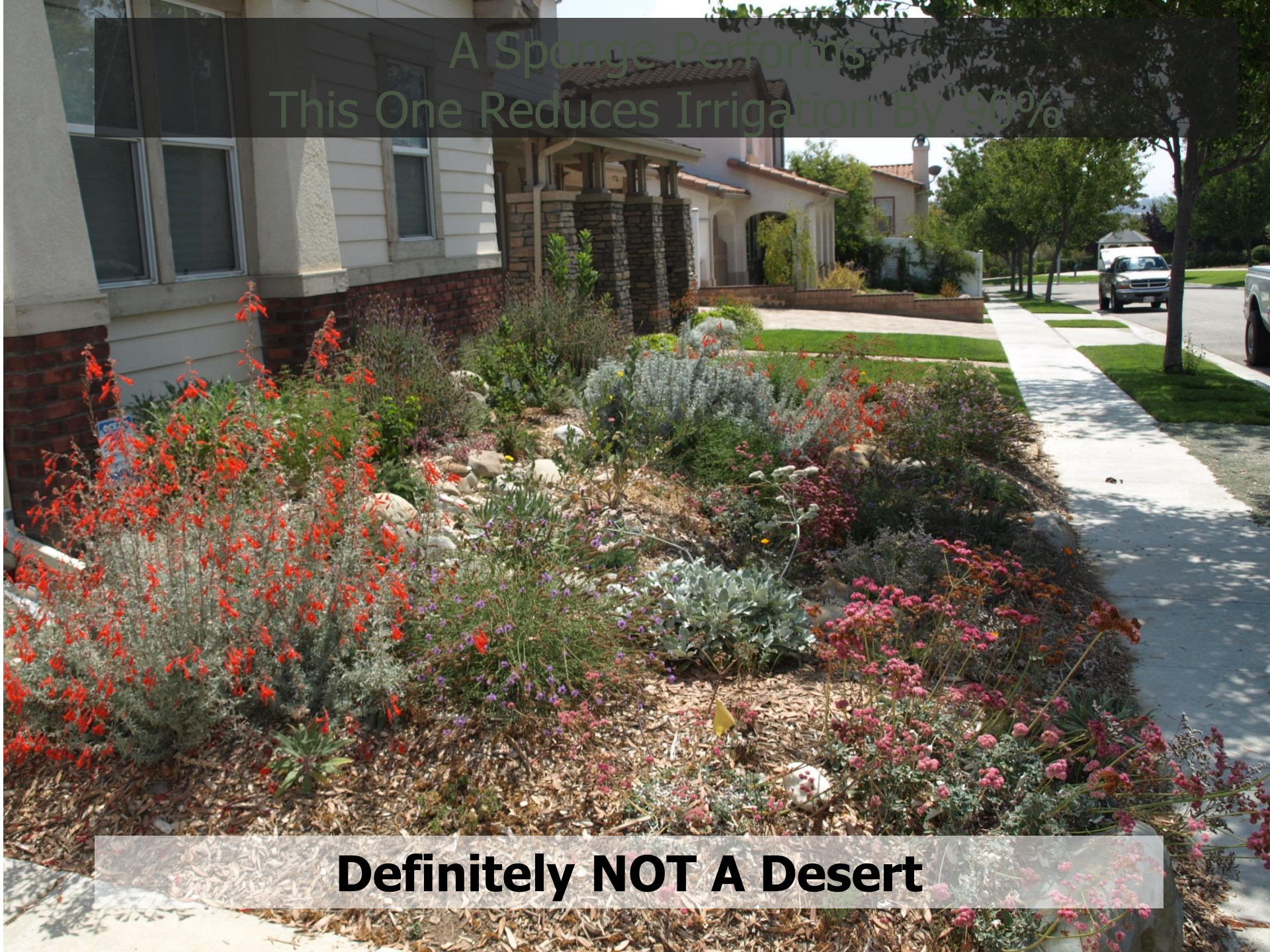
That's it! Now the LIFE you added will get to work, turning it all into delicious, healthy living soil. When you're ready to plant, just dig a hole right into it, cutting through the paper/cardboard (if it's still there) and plant right into the yummy soil.

Lawn Be Gone: A Case Study

Making Soil Lasagna aka Sponge Garden


A Sponge Garden Ready To Grow

This Is A Sponge Garden In Action


A Sponge Performs
This One Reduces Irrigation By 90%
Definitely NOT A Desert

Water Agencies Need To Adopt Turf Removal Standards

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Same Turf Removal Incentive Program – Different Outcomes

Saves Water, Builds Soil, NOT A Desert

Why Settle For Gardens That Contribute To Climate Change….

Or Take More Steps Toward Desertification…

When We Could Build Sponge Gardens…

And Change Our Climate.

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SAN DIEGO

SUSTAINABLE LANDSCAPES PROGRAM

www.sustainablelandscapessd.org

- **Guidelines**
- **Education & Training**
- **Technical Assistance**
- **Landscape Materials**
- **Incentives**
- **Resources**

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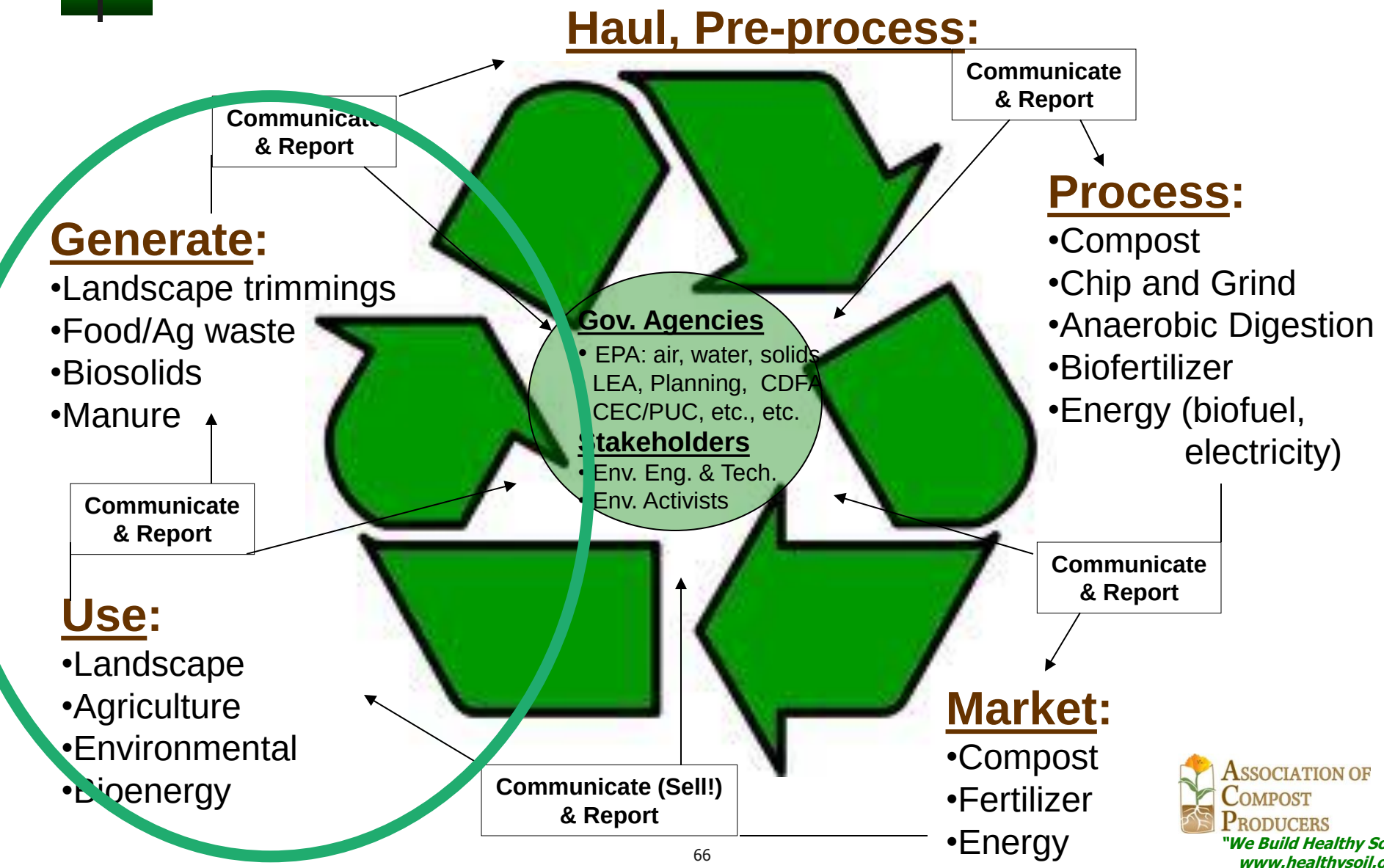
The Organics Value Cycle



Product Market Levels

Commodity

lowest price

Buyer beware, or knowledgeable!

or

Branded

the best product qualities

Buy specific product values

Selling the Cycle

e.g. LOOP

LOOPforYourSoil.org

Buy ecosystem values

Trashy

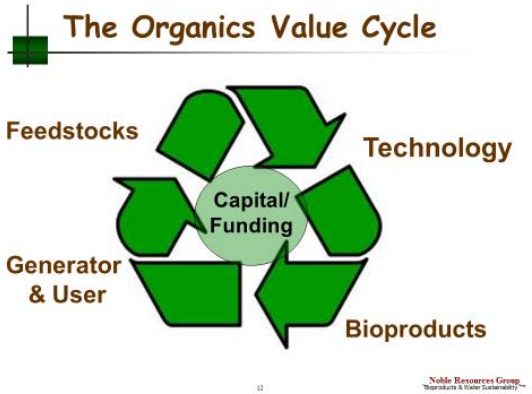
vs.

Premium

GARDEN KELLOGG PRODUCTS

Proven Organic.

loop



Questions?
Comments?
Discussion…

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