

I ka nānā no a 'ike - Stream Channel Restoration



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Ecology, Restoration, and Management of Hawaiian Streams

May 22, 2008



<http://memory.loc.gov/ammem/index.html>



<http://www.danshawaii.com/>



<http://www.poh.usace.army.mil/CW/CWPhotos-HIOa.htm>



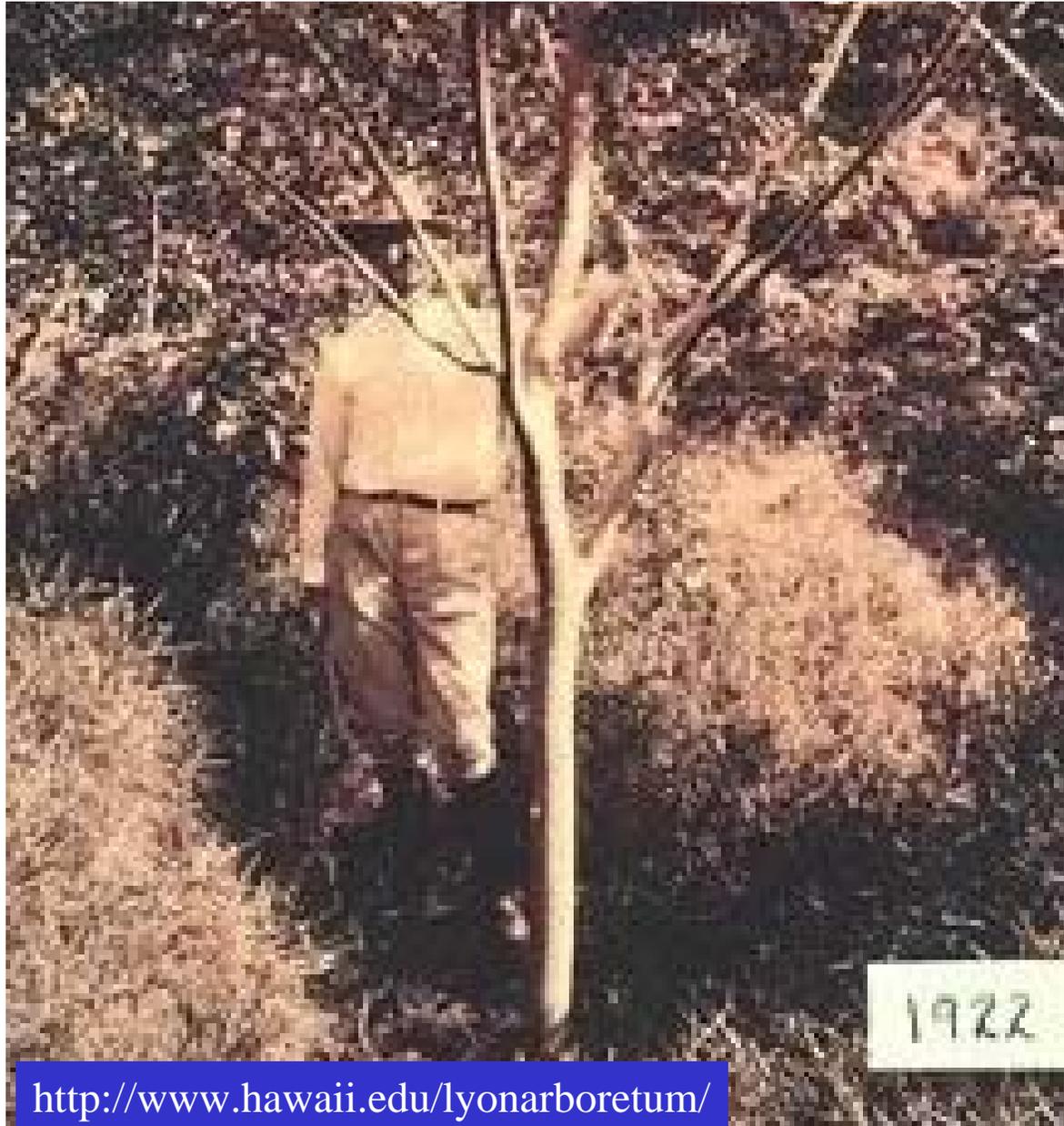
<http://www.flickr.com/photos/7638798@N02/1307419982/>

The roots of river restoration in Hawaii



**Public
Awareness**

Harold L. Lyon



<http://www.hawaii.edu/lyonarboetum/>



Kailua Bay Advisory Council

*Kaneohe
Kailua
Waimanalo*



NRCS

Natural Resources
Conservation Service



BISHOP MUSEUM



<http://www.cleanwaterhonolulu.com/>



<http://www.prh.noaa.gov/hnl/>



<http://www.poh.usace.army.mil/CW/CWPhotos-HIOa.htm>



MORE REALISTIC FEMA GUIDELINES FOR REBUILDING IN NEW ORLEANS

Policy

National Environmental Policy Act

Clean Water Act - section 404

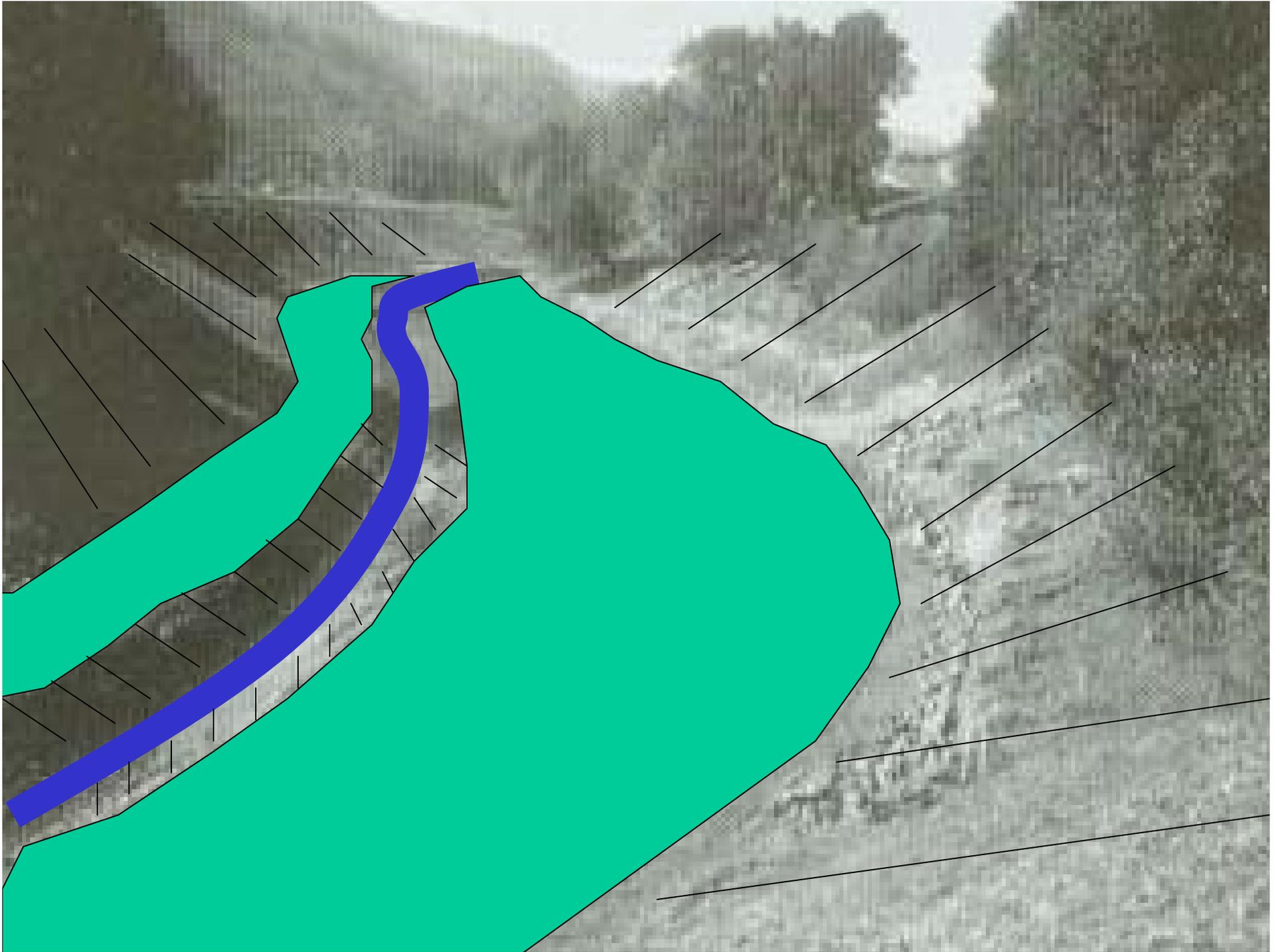
Endangered Species Act

National River Restoration Science and Synthesis

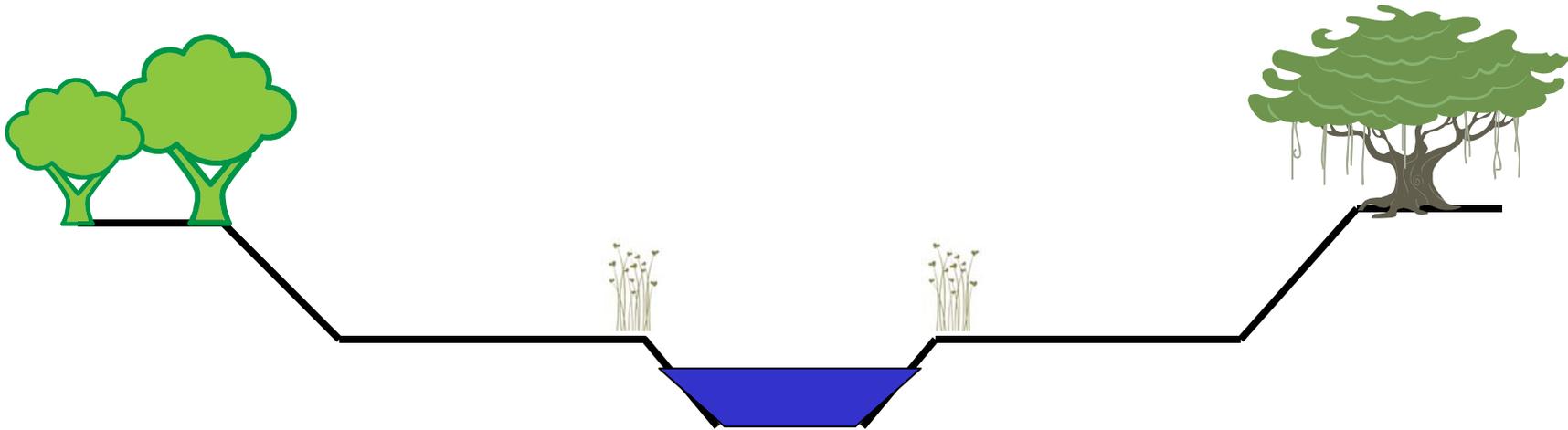
1. Measurable criteria
2. Comprehensive watershed plans
3. Track restoration projects

Cal Fed Ecosystem Restoration

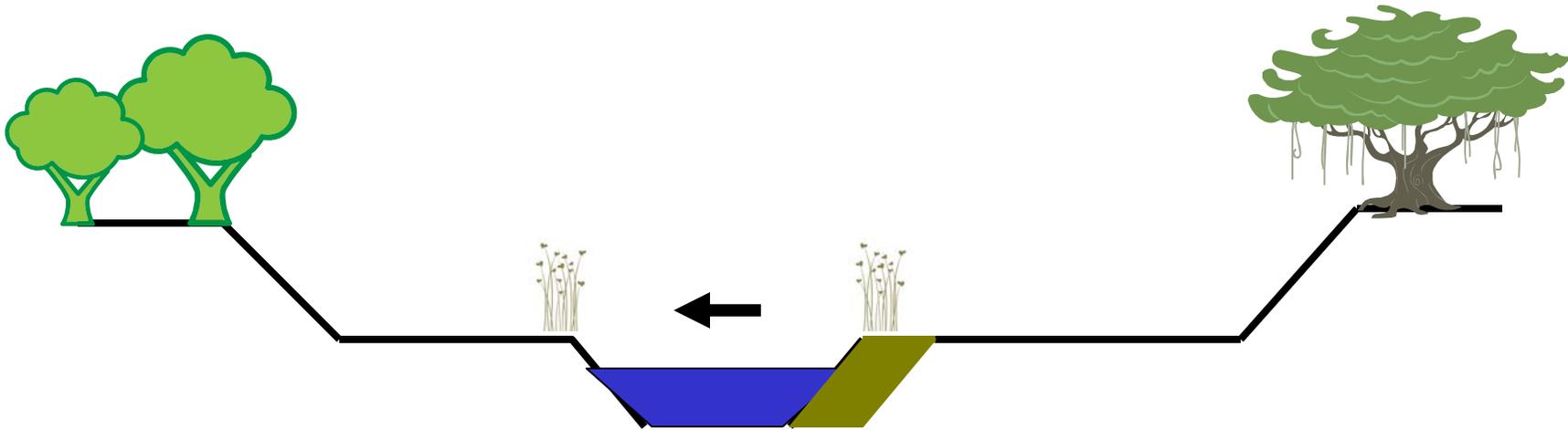
- Many projects
- Best management framework
- Response curves?



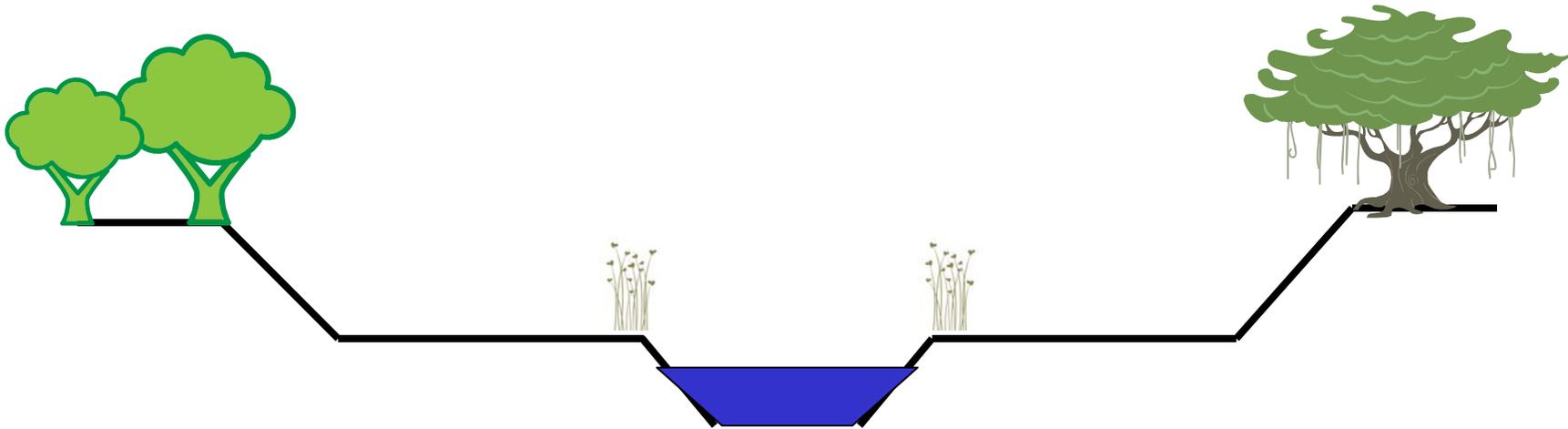
Example: Tracking



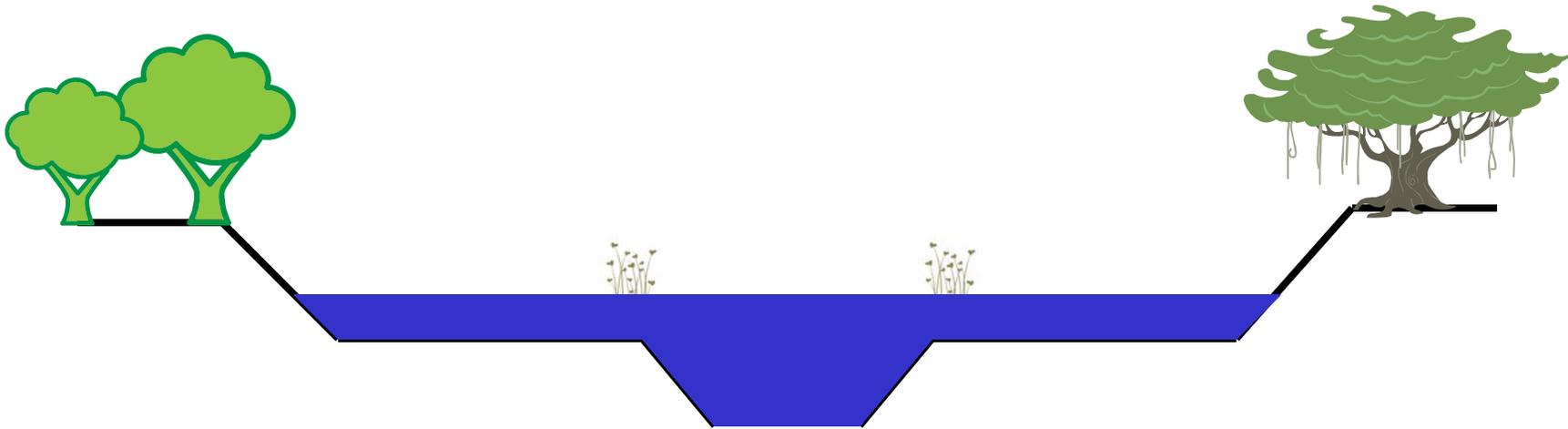
Compound channel: migration



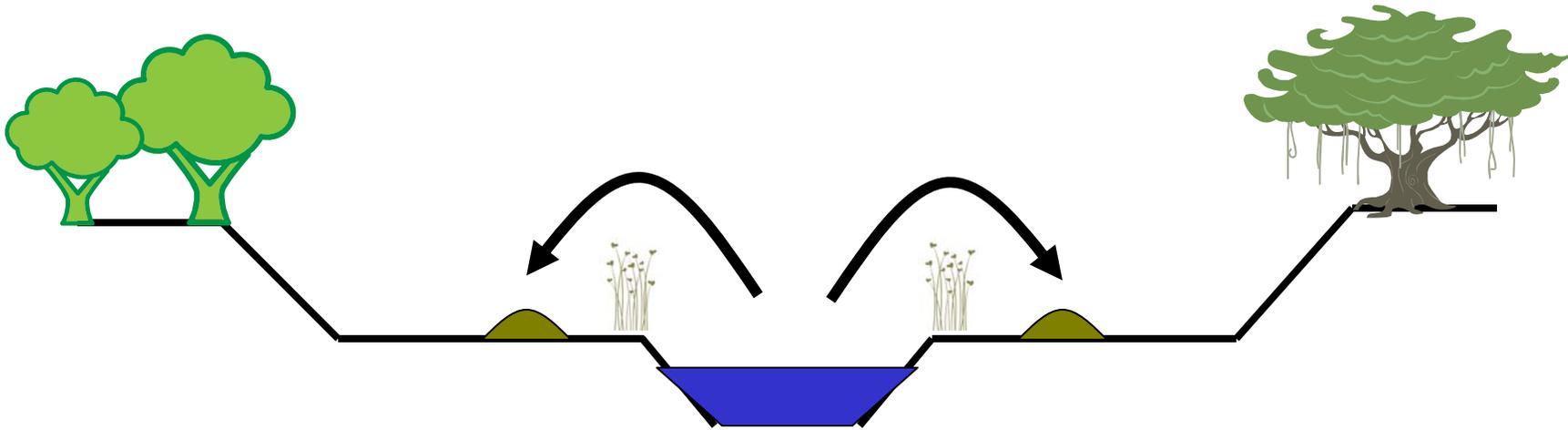
Compound channel: floodplain deposition



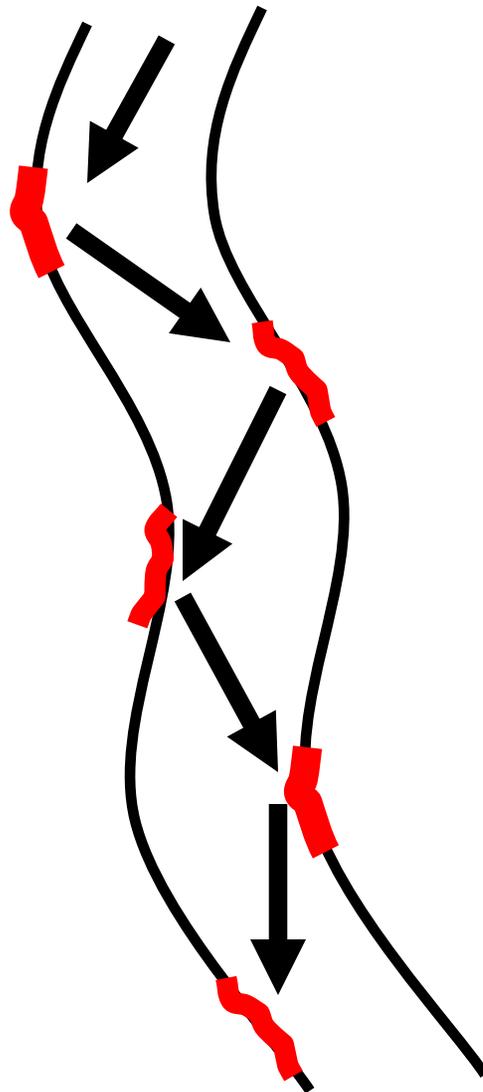
Compound channel: floodplain deposition



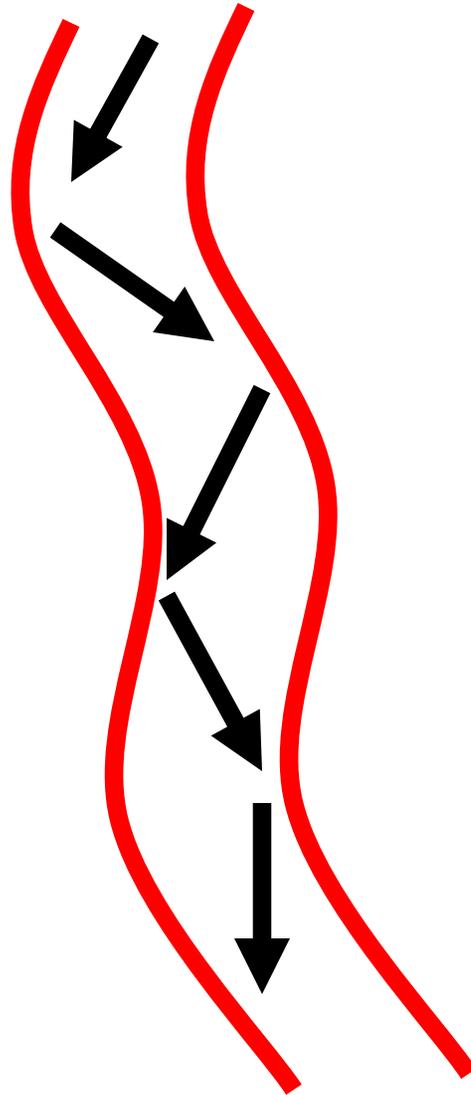
Compound channel: floodplain deposition



Example: “Context”



Complete chanelization



Example: “Context”

- System vs. Symptoms
- Classification?

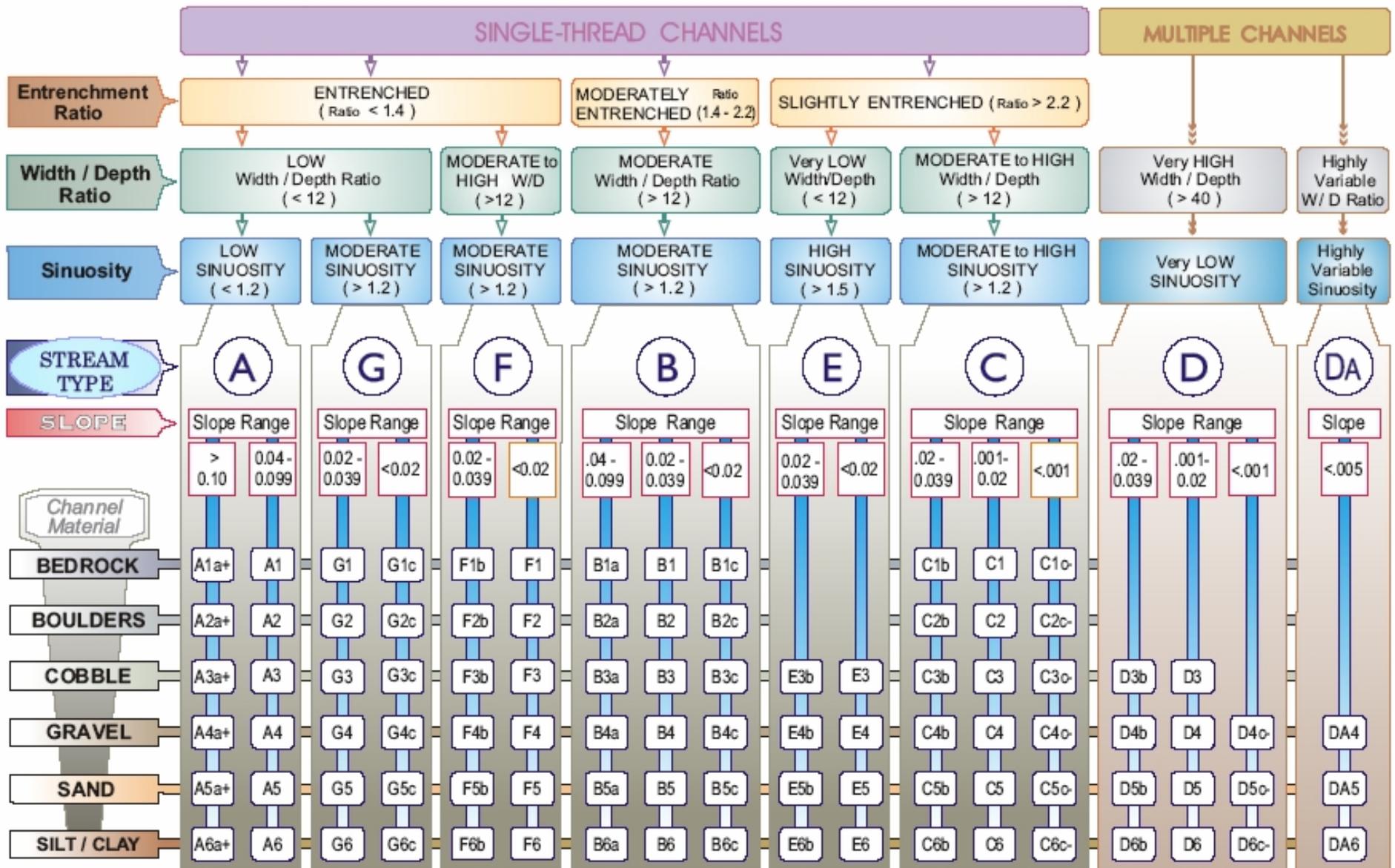


Mathais Kondolf



Mathais Kondolf

The Key to the Rosgen Classification of Natural Rivers



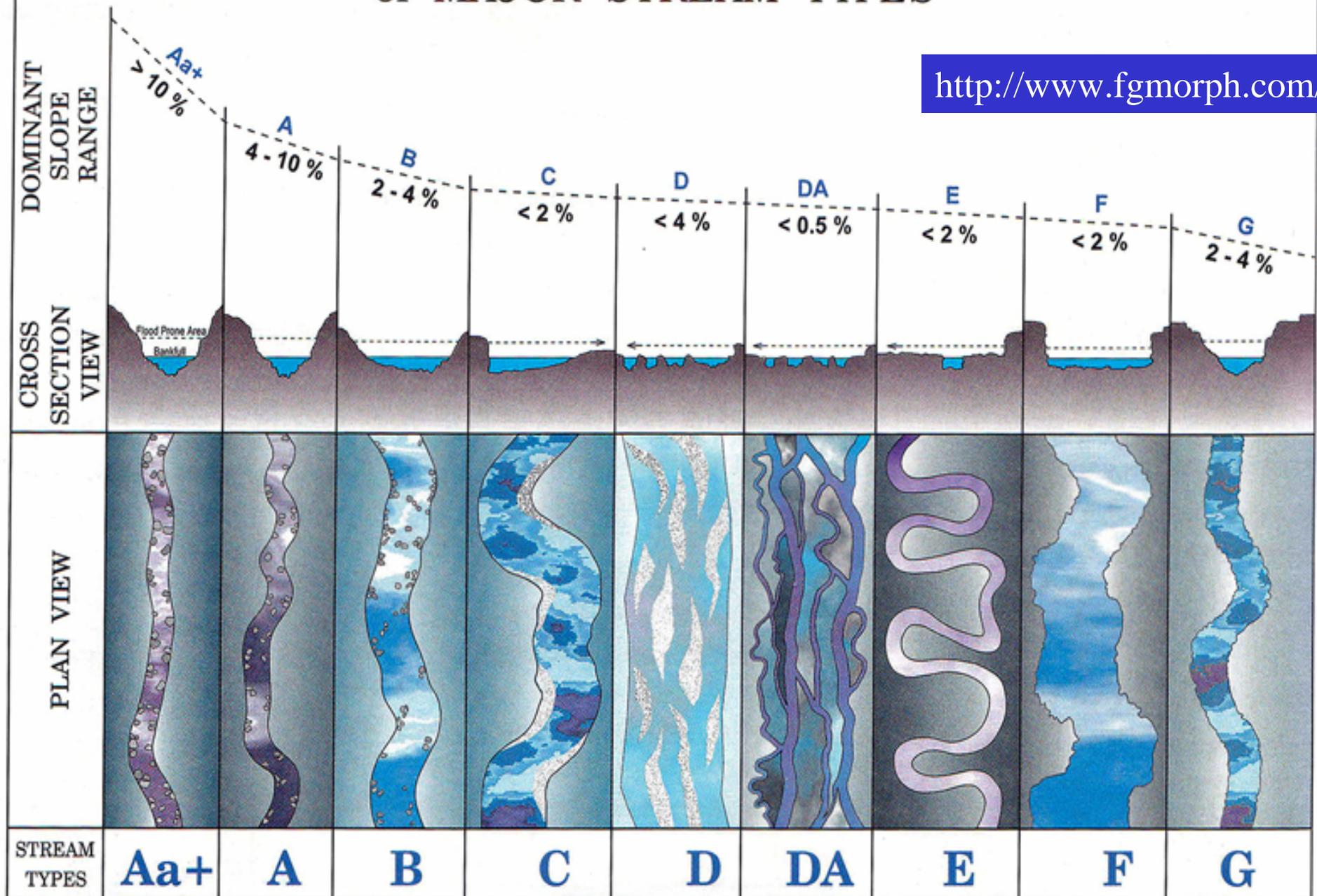
KEY to the **ROSGEN** CLASSIFICATION of NATURAL RIVERS.

As a function of the "continuum of physical variables" within stream reaches, values of **Entrenchment** and **Sinuosity** ratios can vary by +/- 0.2 units; while values for **Width / Depth** ratios can vary by +/- 2.0 units.

<http://www.fgmorph.com/>

LONGITUDINAL, CROSS-SECTIONAL and PLAN VIEWS of MAJOR STREAM TYPES

<http://www.fgmorph.com/>



Toward a watershed perspective

- A combination of watershed approaches and riparian buffers.

Roy, A.H. et al. 2005, 2006, and 2007

Toward a watershed perspective



- Treat storm water runoff before discharge from site.
- Runoff not to exceed pre-project rates and durations.
- Cover or control stormwater pollutant sources.
- Maintain in perpetuity.

Mahalo

A photograph of a blue hard hat and two green leaves resting on a large, flat, grey rock. The rock is surrounded by smaller, rounded stones and pebbles of various sizes and colors, including grey, brown, and tan. The background is a soft-focus natural setting.

Matt Kondolf
Jeff Haltiner
US Forest Service
The Resh Lab
My friends and family

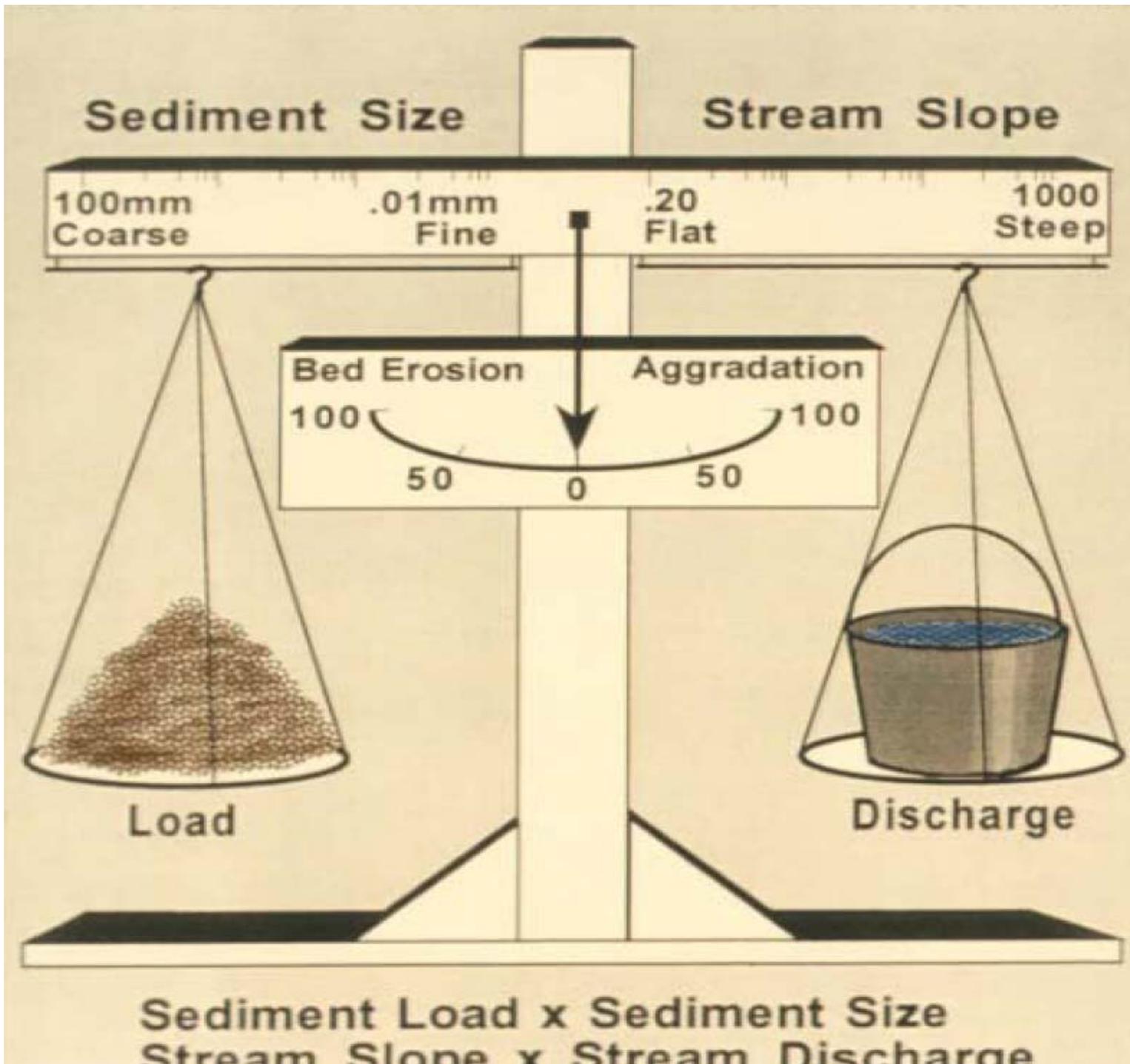
“Softer” stabilization techniques



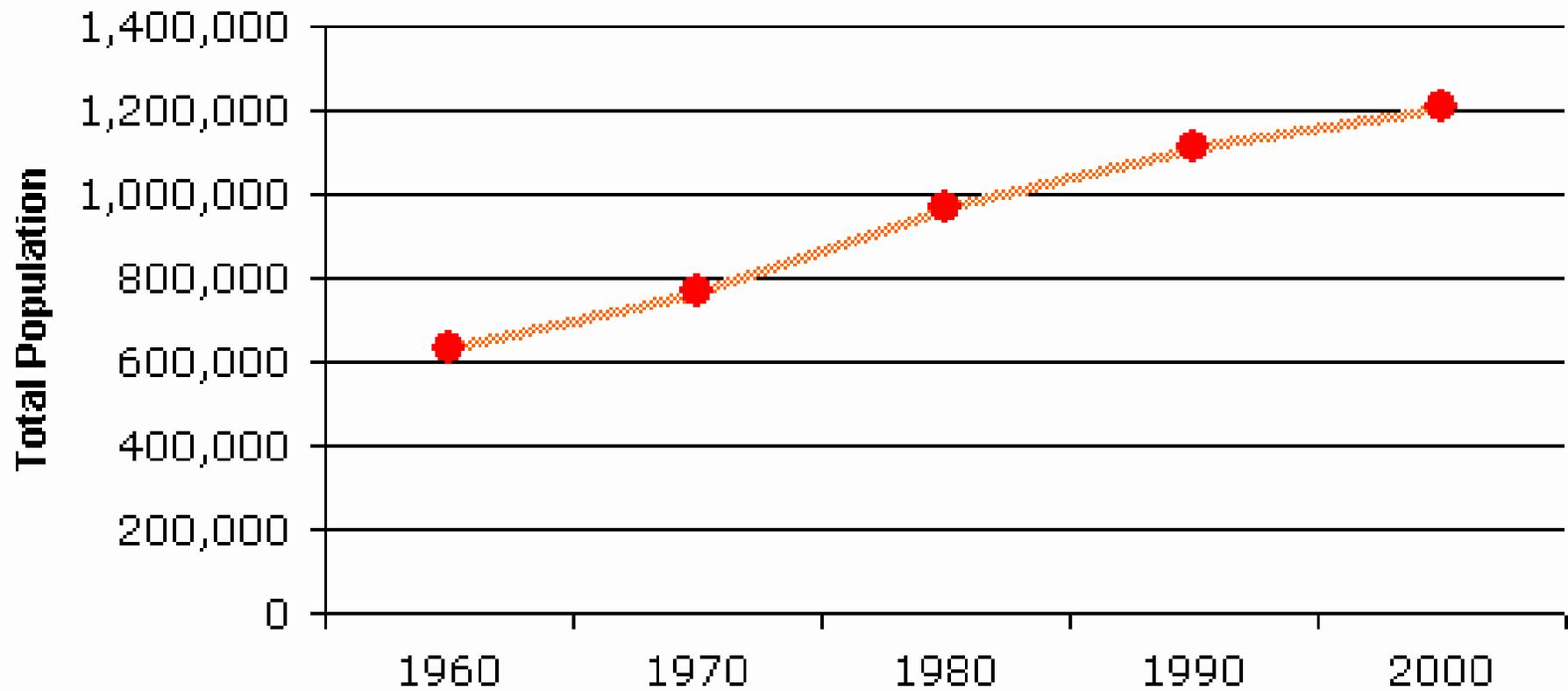
http://www.dakotacountyswcd.org/shore_fs.htm

Cal Fed Bay Delta Program

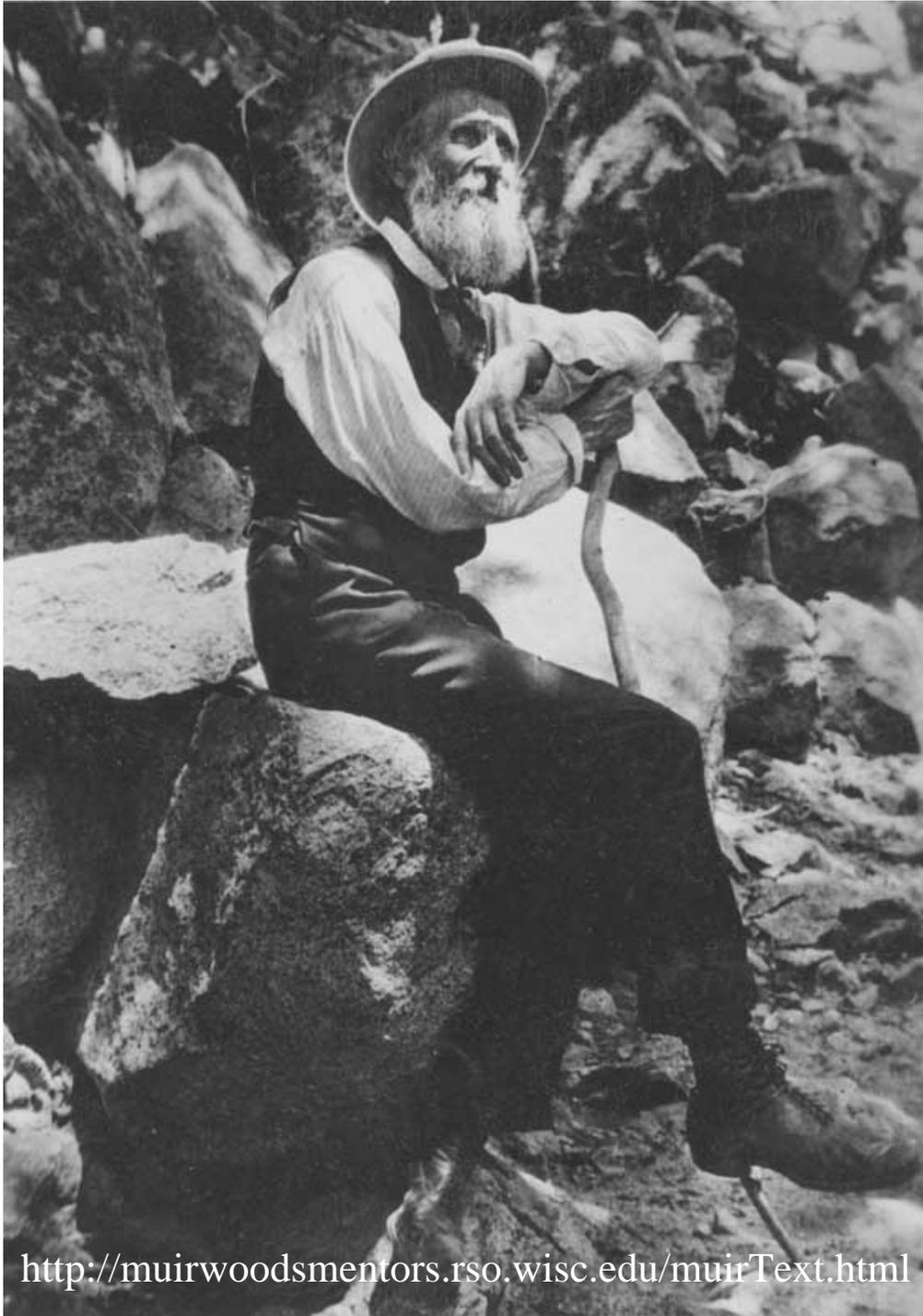
Objective	Total
Coordination and Science	\$ 283,243,500
Ecosystem Restoration	\$ 1,096,303,668
Levees	\$ 190,641,000
Water Quality	\$ 223,930,047
Water Supply Reliability	\$ 1,489,183,715
Total	\$ 3,283,301,930



Population, 1960-2000



http://www.censusscope.org/us/s15/chart_pop1.html



<http://muirwoodsmenrso.wisc.edu/muirText.html>



http://en.wikipedia.org/wiki/G._K._Gilbert



<http://www.jcu.edu/chemistry/naosmm/2007/Cuyahoga%20Revisited.htm>

