

Cal State LA Initiatives in Urban Agriculture and Urban Natural Resources Management



Barry J. Hibbs, Department of Geosciences



Food, Agriculture, & Natural Resources Community Needs

- Inner city communities need access to better nutrition, better food.
- Urban farms and gardens will do better when technical assistance is provided (e.g., practice and methodology).
- Underrepresented populations are still underrepresented in key decision-making positions in their communities, hindering effective resource management and food security for these groups.



Major Project Objectives & Audience Served

Immediate Objectives and Goals

- Enhance understanding of urban agriculture and related urban natural resources management at multiple educational levels through a multi-faceted training and research program.
- Expand the number of underrepresented students involved in training in urban agriculture, urban food production, and urban natural resource management.
- Develop “pipelines” for students to participate in the program, starting at the lower division undergraduate level, and continuing through graduate degrees and careers in urban agriculture.

External Catalyst Funding



California State University, Los Angeles



Campus Urban Garden

Established January 2021 Through a Partnership Between

United States Department of Agriculture

National Institute of Food and Agriculture

California State University, Los Angeles

Rongxiang Xu College of Health and Human Services

College of Natural and Social Sciences

Facilities Services

Housing and Residence Life

Associated Students Incorporated

Office of the President

Work supported by USDA-NIFA Hispanic Serving Institutions Education Grants Program under grant no. 2020-38422-32236 from the USDA National Institute of Food and Agriculture Award Number: 2020-38422-32236 (\$275,000)

USDA-NIFA Grant Activities

Tier 1 - GE Courses

NSS 1001
Introduction Higher
Education (modified)

Tier 2 – Lower Division Specialized Course

BIOL 1200
Course Based Under-
Graduate Research (new)

Tier 3 – Upper Division Specialized Courses

GEOL 4840 - Watershed
Analysis (modified)
GEOL 490 – Methods and
Practice in Hydrology (new)

BIOL 4620
Plant Ecology
(modified)

FNTRS 4200
Community Gardening and
Food Access (new)

HIST 4900
History of Agriculture and
Food Justice (modified)

Tier 4 – Research Themes

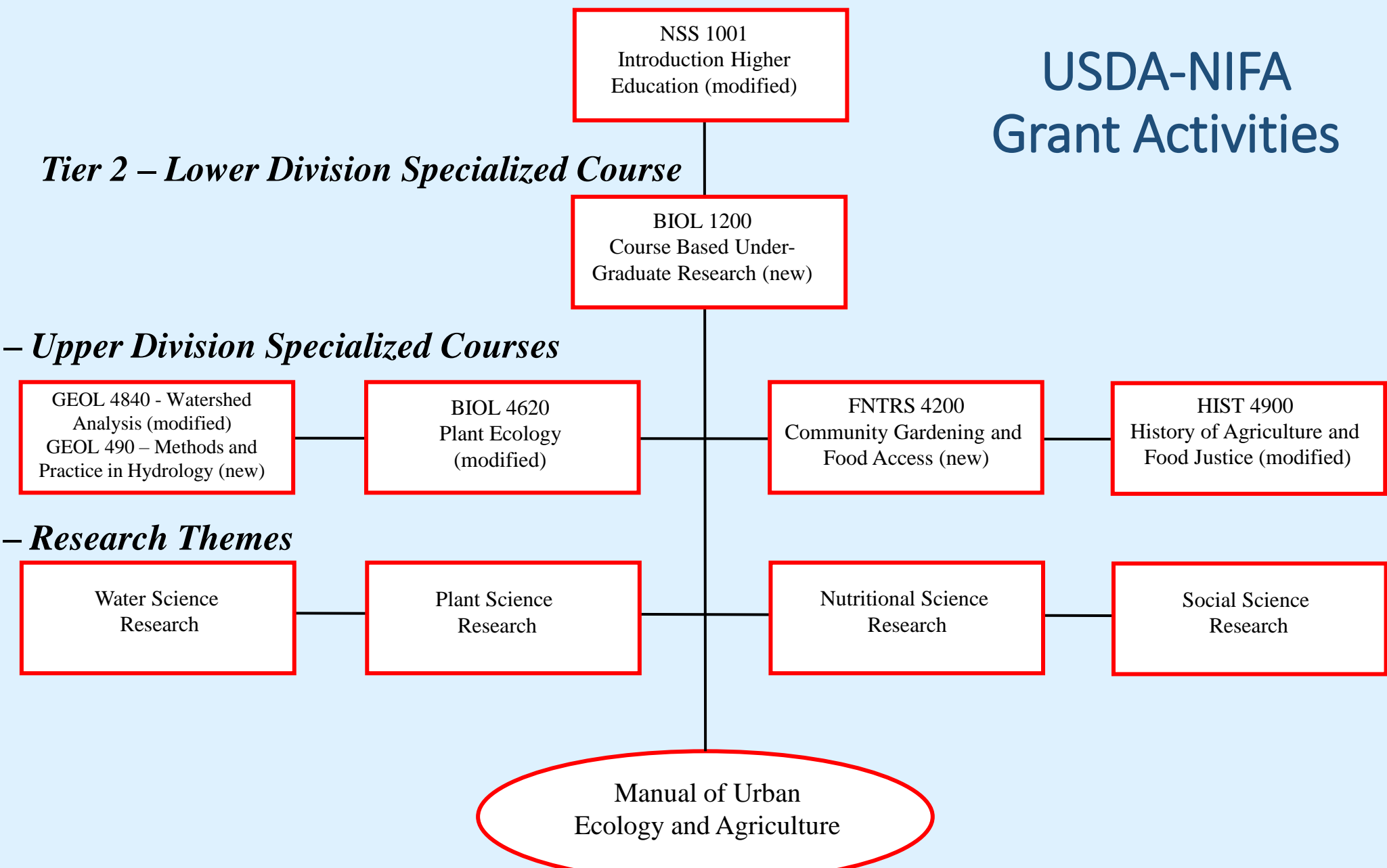
Water Science
Research

Plant Science
Research

Nutritional Science
Research

Social Science
Research

Manual of Urban
Ecology and Agriculture

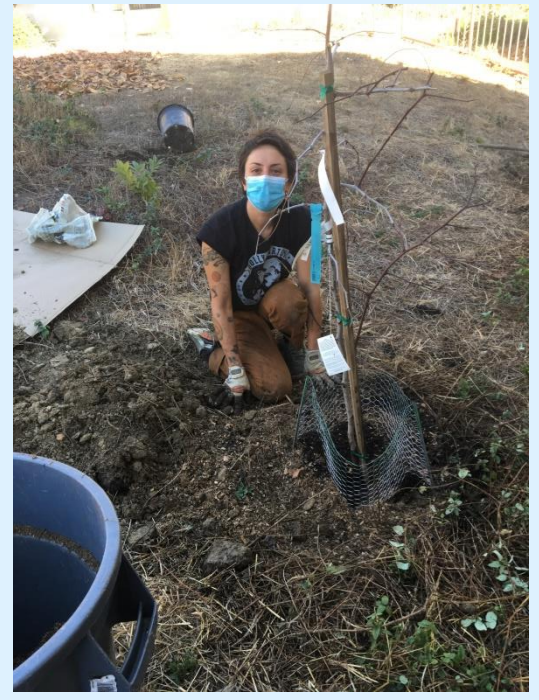


Cal State LA Garden Site

Land Parcel

ADA Compliant Pathway

Needed for grant
coursework and research



The Urban Garden

Raised Beds

Rain Garden

Pollinator Garden

Supply Storage Areas

Native Garden

Fruit Trees

Compost System

Student Work Areas



Non-Land-Grant College of Agriculture

certification by

U.S. Department of Agriculture
National Institute of Food
and Agriculture



National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

To: Barry J. Hibbs
Department of Geosciences and Environment
California State University, Los Angeles
Los Angeles, California

From: Matthew Faulkner
Deputy Director, NIFA
Office of Grants and Financial Management (OGFM)

Subject: **Non-Land Grant College of Agriculture Certification**

Thank you for submitting your request to be designated a Non-Land Grant College of Agriculture (NLGCA). NIFA provides this letter as certification that you meet the requirements in 7 U.S.C. §3103 (1977), as amended by §7102 of the Agriculture Improvement Act of 2018 (Pub. L. 115-334) as indicated below.

NLGCA designation satisfies the eligibility requirement for the Capacity Building Grants for Non-Land Grant Colleges of Agriculture program, which is authorized under 7 USC 3319i.

If you have questions about this certification, please contact Robert Nicholas of NIFA's Office of Grants and Financial Management at nlgca.status@usda.gov.

Sincerely,

MATTHEW FAULKNER Digitally signed by MATTHEW
FAULKNER
Date: 2022.10.18 08:24:11 -05'00'

Matthew Faulkner
Deputy Director, Office of Grants and Financial Management
National Institute of Food and Agriculture (NIFA)

In addition to urban agriculture – a vast urban retrofit has been proposed in Southern California to create much more urban green space

(includes urban agriculture, and other newly vegetated areas)



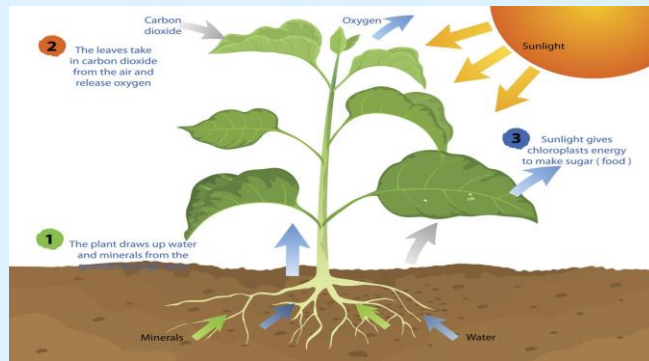
Interdisciplinary Linkages/Student Opportunities

In addition to urban food gardens & urban agriculture, the retrofit of Los Angeles with more urban green space can create enormous research/job potential for CSULA students and faculty

Urban heat island mitigation



Carbon sequestration by plants, soils



River restoration and water supply/quality issues



Soil regenerative projects



Pollinators

Water Quality Improvement

Space for People and Wildlife

+++++

Activities in Urban Retrofits

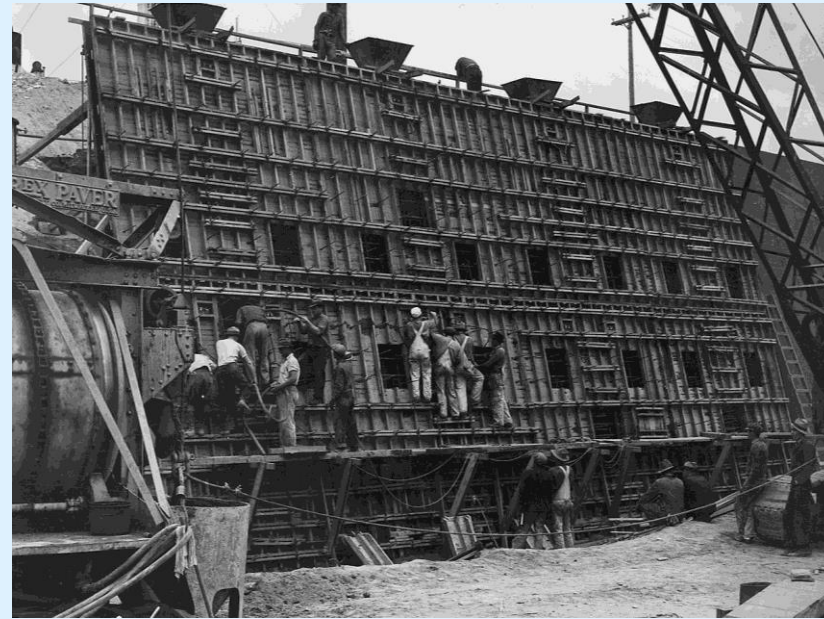
Urban retrofit projects require interdisciplinary teams

- soil scientists
- civil and environmental engineers
- hydrologists
- geologists/geomorphologists
- biologists and chemists
- urban planners
- mathematicians
- economists
- political scientists
- legal experts
- landscape architects



LA River and Other Watersheds in the Los Angeles Metropolitan Area

Issues of Stream Restoration



Source:[https://en.wikipedia.org/wiki/Los_Angeles_River#/media/File:Los_Angeles_River_at_Griffith_Park,_ca.1898-1910_\(CHS-2033\).jpg](https://en.wikipedia.org/wiki/Los_Angeles_River#/media/File:Los_Angeles_River_at_Griffith_Park,_ca.1898-1910_(CHS-2033).jpg)

LA River Watershed

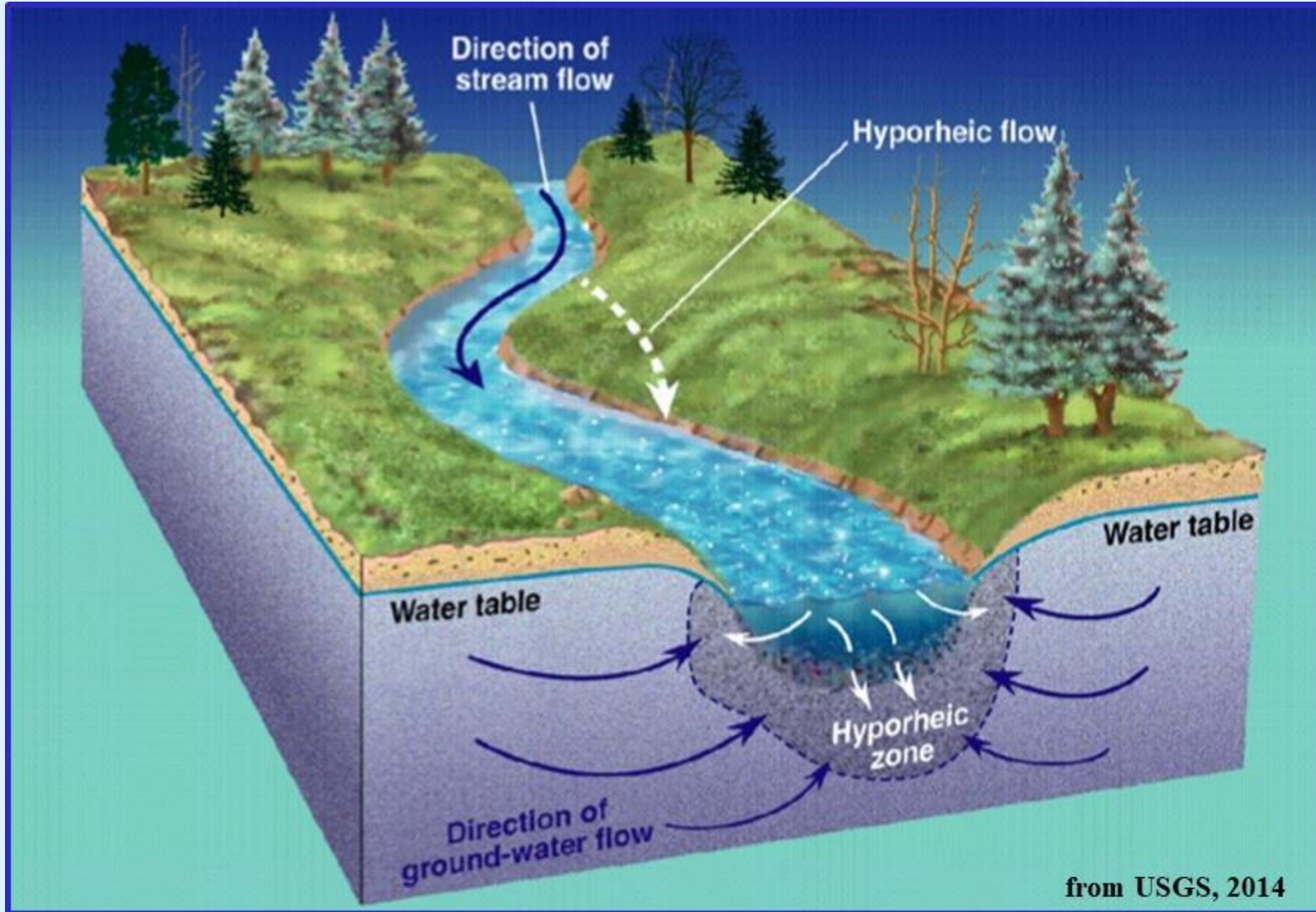




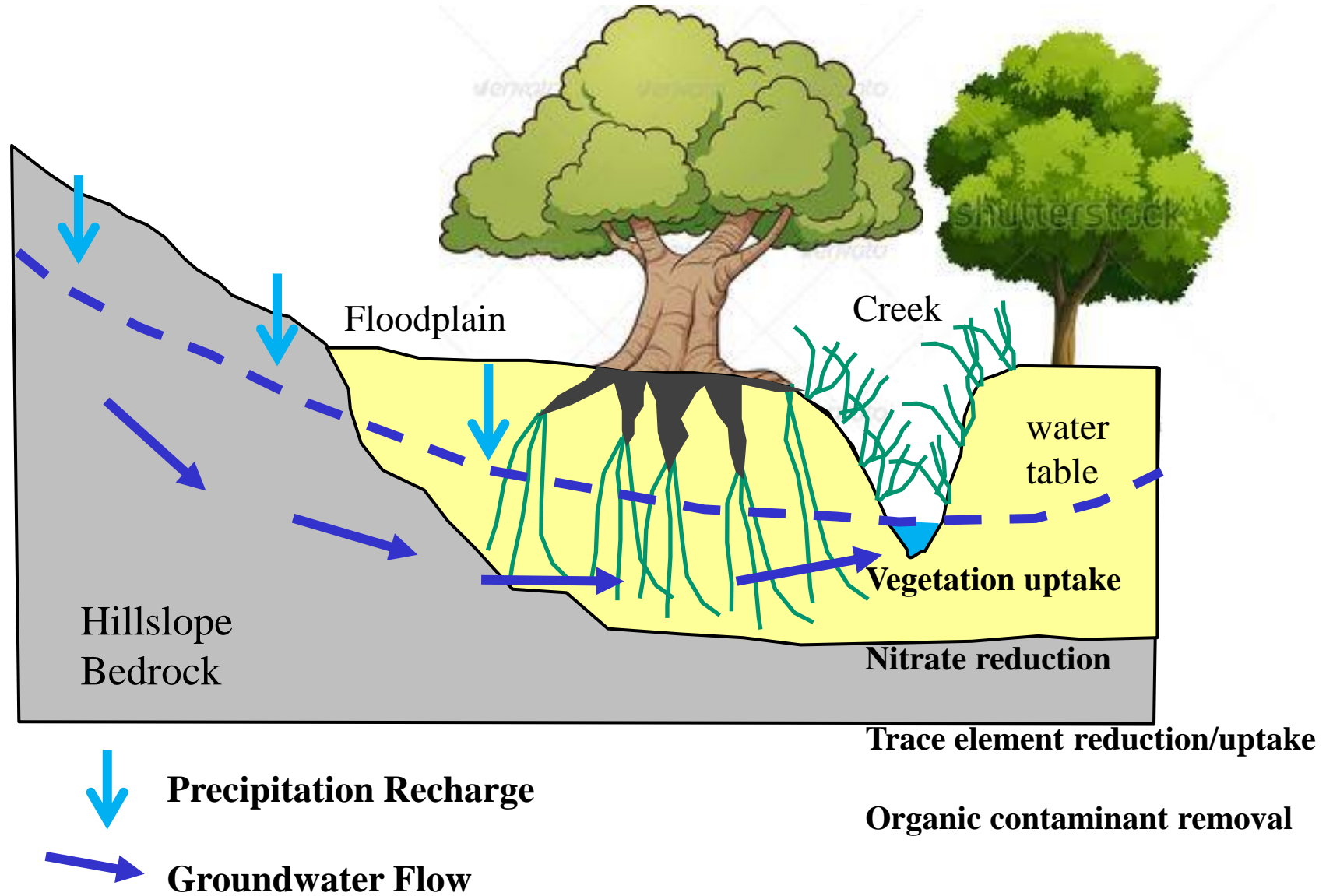
Public Image Today



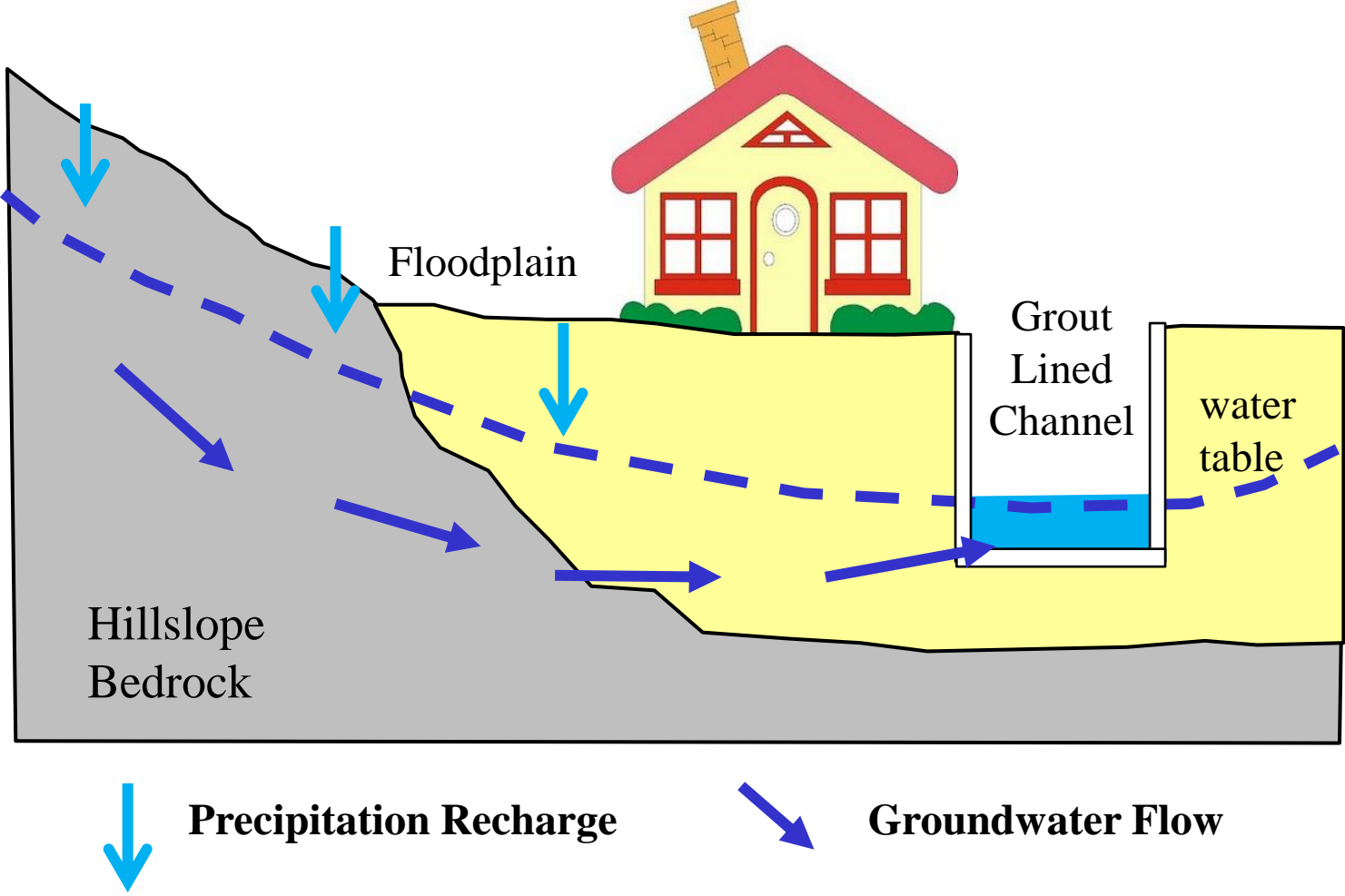
Natural Stream



Biogeochemical Processes in Unlined Channels



Lined Channels Suppress Biogeochemical Processes



Concrete-Lined and Unlined Stream Channels

- *Technical Issues of Stream Restoration*
- *Supporting Studies and Research*

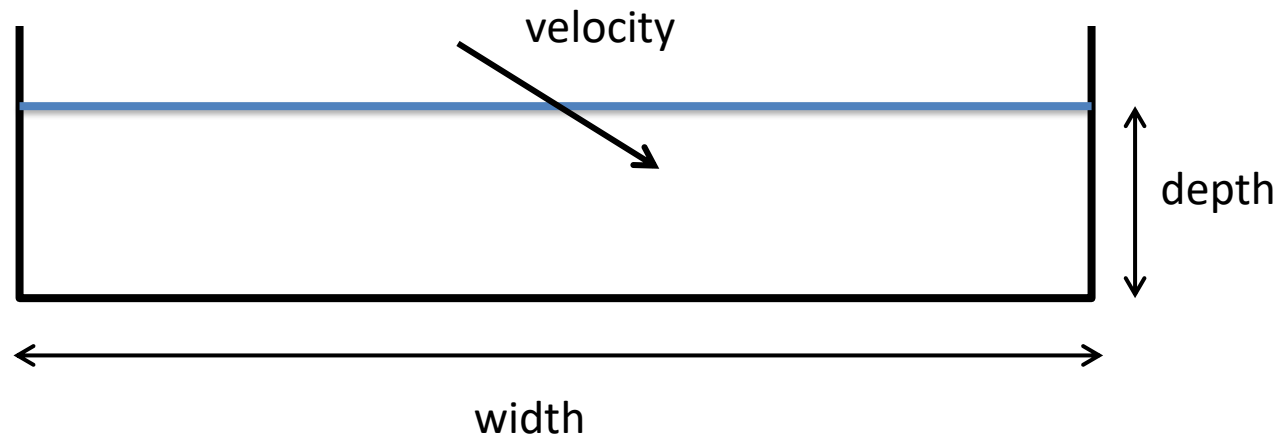


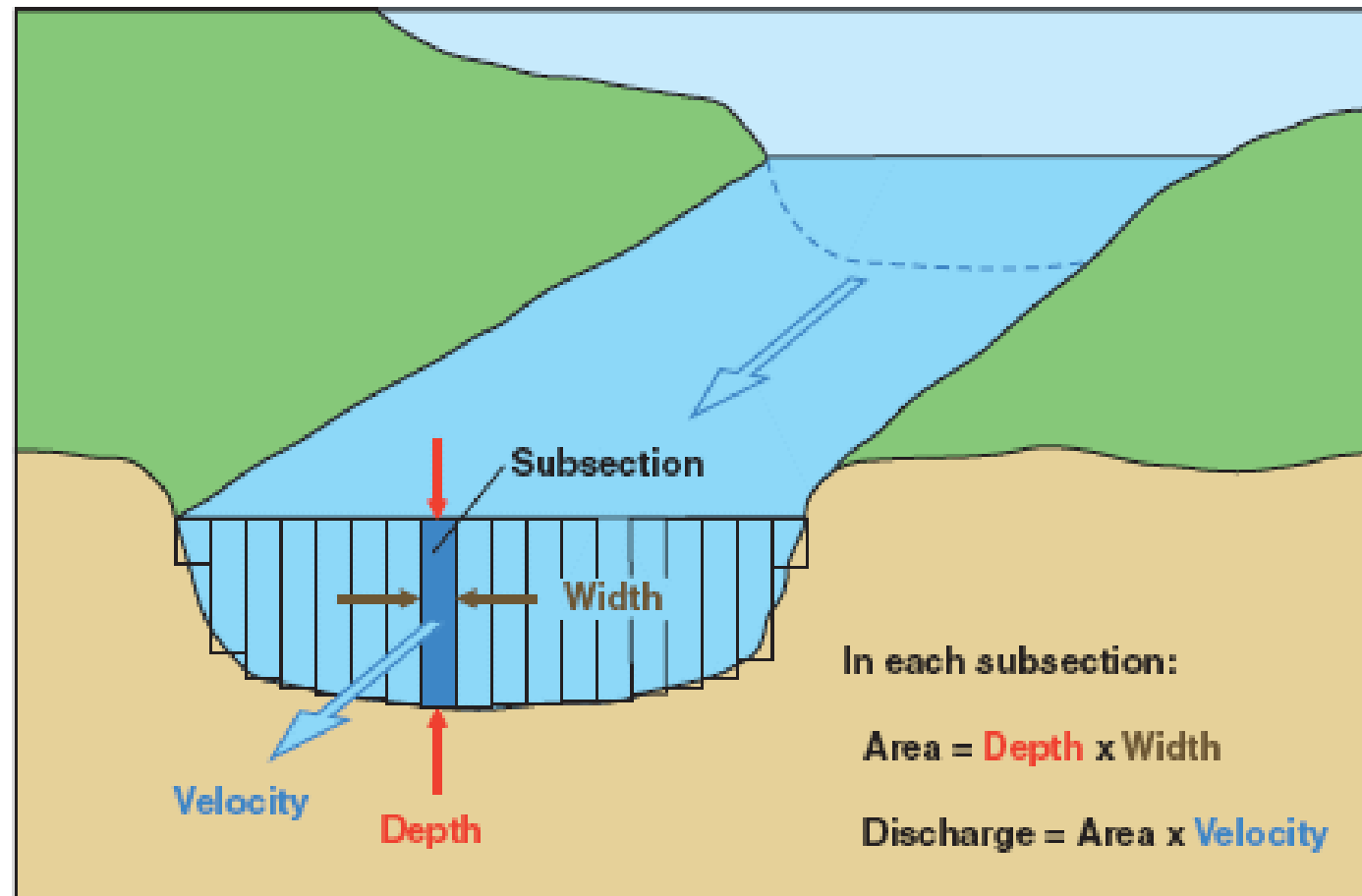
Streamflow Discharge:

To measure streamflow, need to know:

- stream width
- water surface elevation (“stream stage” or depth)
- flow velocity

$$\text{Streamflow} = \text{width} \times \text{depth} \times \text{velocity}$$
$$L \times L \times L/T = L^3/T = \text{cfs}$$





Current-meter discharge measurements are made by determining the discharge in each subsection of a channel cross section and summing the subsection discharges to obtain a total discharge.

Stream Gaging by Wading



WATER MEASUREMENT MANUAL

7-275 C
(4/61)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Meas. No. 480

Comp. by OFS

DISCHARGE MEASUREMENT NOTES

Checked by WF

Snake River near Moran, Wyoming

Date July 6 1964 Party O. F. Sifolar
 Width 214 Area 1,140 Vel. 3.70 G. H. 6.70 Disch. 4,220
 Method 6.2.8 No. secs. 23 G. H. change 0 in hrs. Susp. 30 C
 Method coef. 1.0 Hor. angle coef. 1.0 Susp. coef. 1.005 Meter No. 217050

GAGE READINGS

Time	Recorder	Inside	Outside
<u>1700</u>	<u>6.72</u>	<u>6.70</u>	<u>6.70</u>
<u>1705</u>	<u>6.72</u>	<u>6.70</u>	<u>6.70</u>
<u>1810</u>	<u>6.72</u>	<u>6.70</u>	<u>6.70</u>
Weighted M. G. H.	<u>6.70</u>		
G. H. correction			
Correct M. G. H.			

Date rated 5-31-62 Used rating
 for rod susp. Meter 5 ft.
 above bottom of wt. Tags checked
 Spin before meas. OK after OK
 Meas. plots % diff. from rating
 Wading, cable, ice, boat, upstr., downstr., side
 bridge feet, mile, above, below
 gage, and
 Check-bar, chain found
 changed to at
 Correct
 Levels obtained

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section cobbles

Flow even Weather fair

Other Air °F@

Gage OK Water 58 °F@

Record removed Intake flushed No

Observer

Control clear

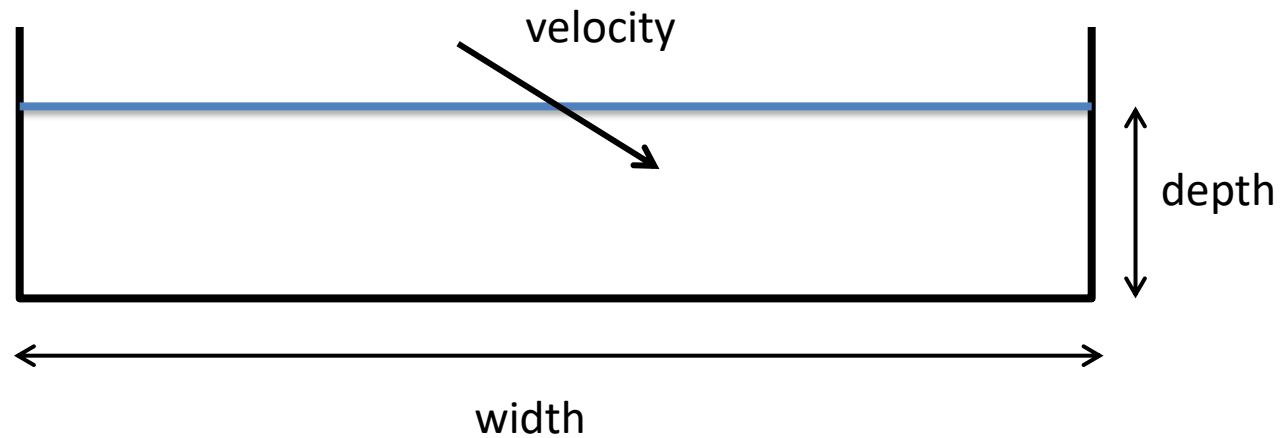
Remarks

G. H. of zero flow ft.

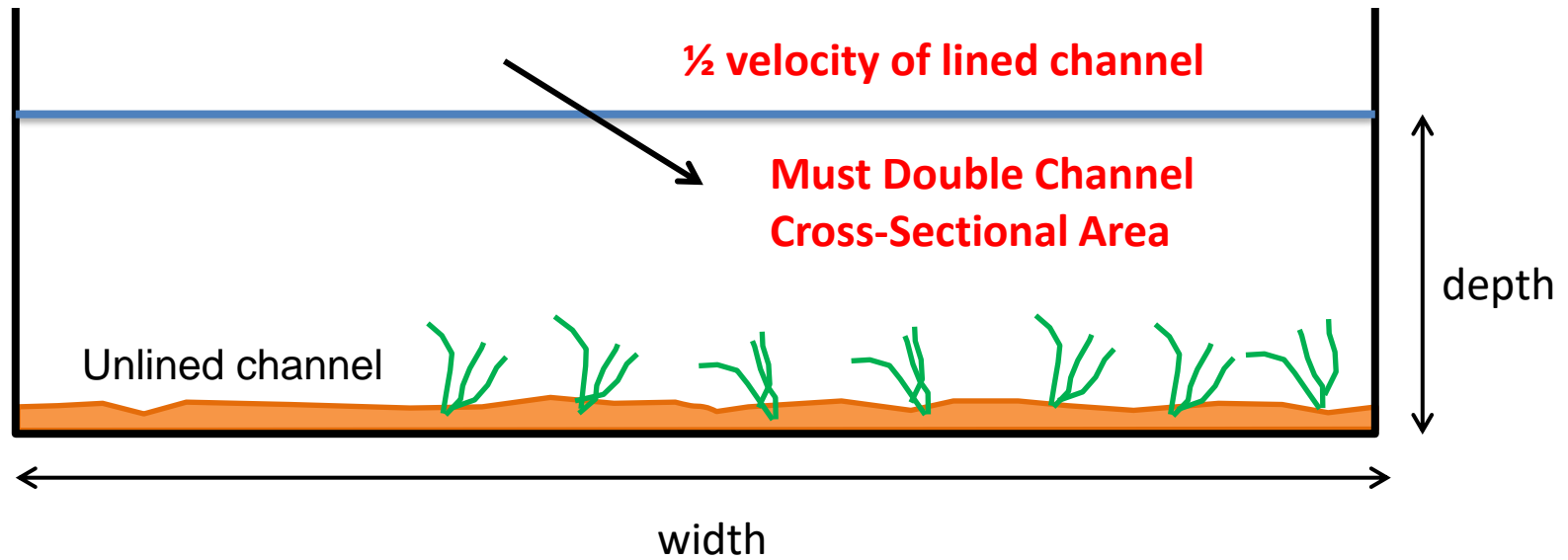
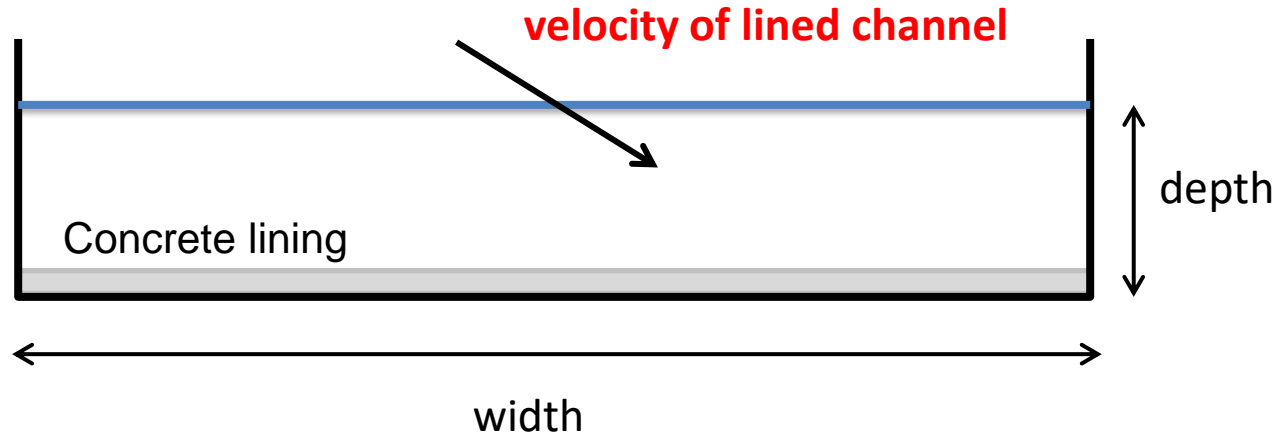
Figure 60.—Typical current-meter notes and computations for the midsection method, using formula (27). (Sheet 1 of 3.) 103-D-955.

Slow down of velocity due to replacement of concrete with earth channel and vegetation is commonly a 50% reduction of velocity

$$\text{Streamflow} = \text{width} \times \text{depth} \times \text{velocity}$$
$$L \times L \times L/T = L^3/T = \text{cfs}$$



Streamflow = width x depth x velocity



LA River Watershed



Partial Stream Restoration Alternatives



Arroyo Seco BFI Mitigation

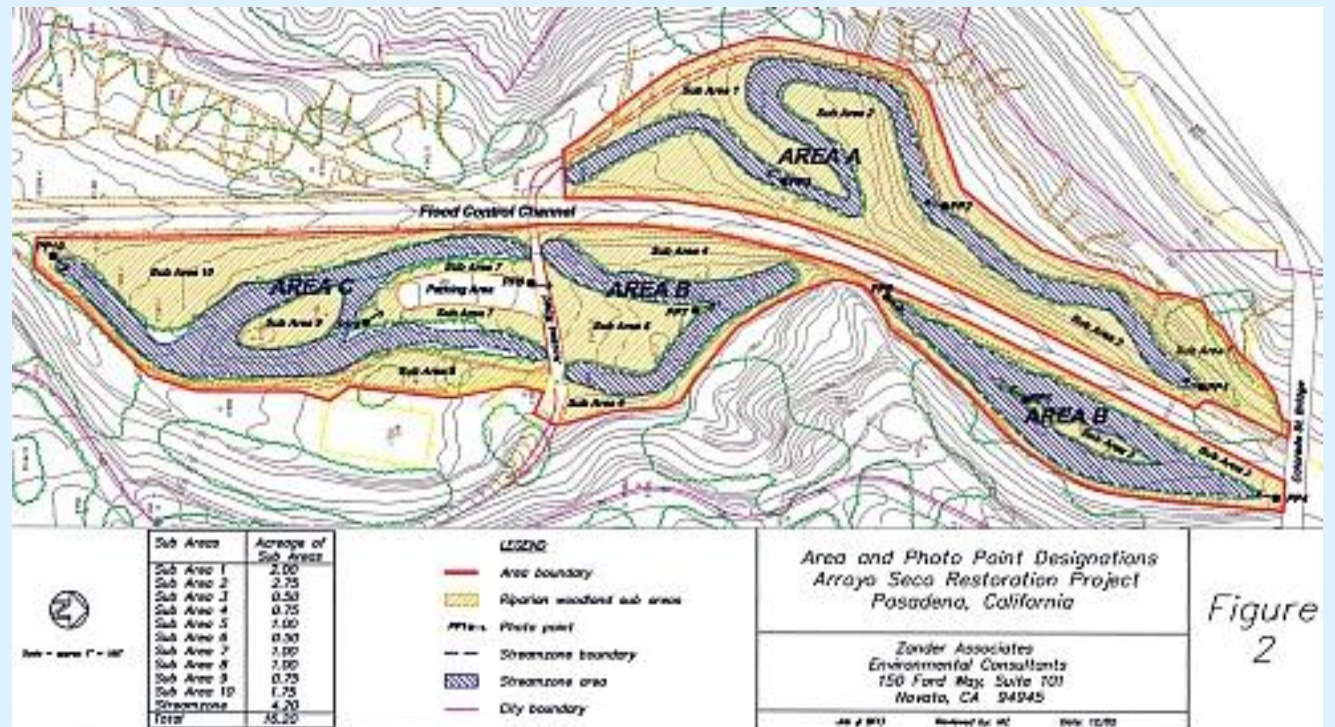


Figure 2



*Medea Creek Sectional
Stream Restoration*



Scientific and Technical Support

Urban Hydrology Publications

Environmental & Engineering Geoscience

FEBRUARY 2012 VOLUME XVIII, NUMBER 1



THE JOINT PUBLICATION OF THE
ASSOCIATION OF ENVIRONMENTAL AND ENGINEERING GEOLOGISTS
AND THE GEOLOGICAL SOCIETY OF AMERICA

SERVING PROFESSIONALS IN
ENGINEERING GEOLOGY, ENVIRONMENTAL GEOLOGY, AND HYDROGEOLOGY

Journal of Contemporary Water Research & Education

Issue 159
December 2016



Groundwater in Urban Areas



A publication of the Universities Council on Water Resources
with support from Southern Illinois University Carbondale

Urban Natural Resources Research

\$390,000

NSF REU Grant USDA REEU Grant

**Summer 2023
Application Deadline:
February 15, 2022**

REU SITE THEME AREAS

- 1) SURFACE HYDROLOGY OF URBAN AREAS
- (2) CLIMATE DRIVEN CHANGES IN URBAN GROUNDWATER
- (3) METEOROLOGY AND PRECIPITATION ALONG URBAN CORRIDORS
- (4) HYDROCHEMICAL CHANGE IN URBAN WATERSHEDS
- (5) MICROPLASTICS IN THE ENVIRONMENT

STUDENTS WILL BE PROVIDED WITH:

- \$600 PER WEEK FOR 10 WEEKS
- TRAVEL FUNDS TO LOS ANGELES
- HOUSING IN UNIVERSITY DORMS
- SUPPLIES & MATERIALS FOR RESEARCH
- PARTIAL MEAL AND POST-REU CONFERENCE SUPPORT

CSULA - NSF REU SITE HYDROLOGICAL SYSTEMS IN URBAN AREAS

REU Site Objectives:

- Our REU site at California State University, Los Angeles aims to attract motivated, diverse students to investigate urban hydrological problems in Southern California through a nested series of events during a 10-week summer REU experience. Component activities include research activities, training activities, mentoring activities, social activities, and post-REU activities. A four-day field activity at various hydrological sites is included in the summer program.

Web Site for more details and application procedure:
http://www.calstatela.edu/centers/URBAN_HYDROLOGY_REU

REQUEST FOR APPLICATIONS Agriculture and Food Research Initiative Competitive Grants Program Education and Workforce Development Program

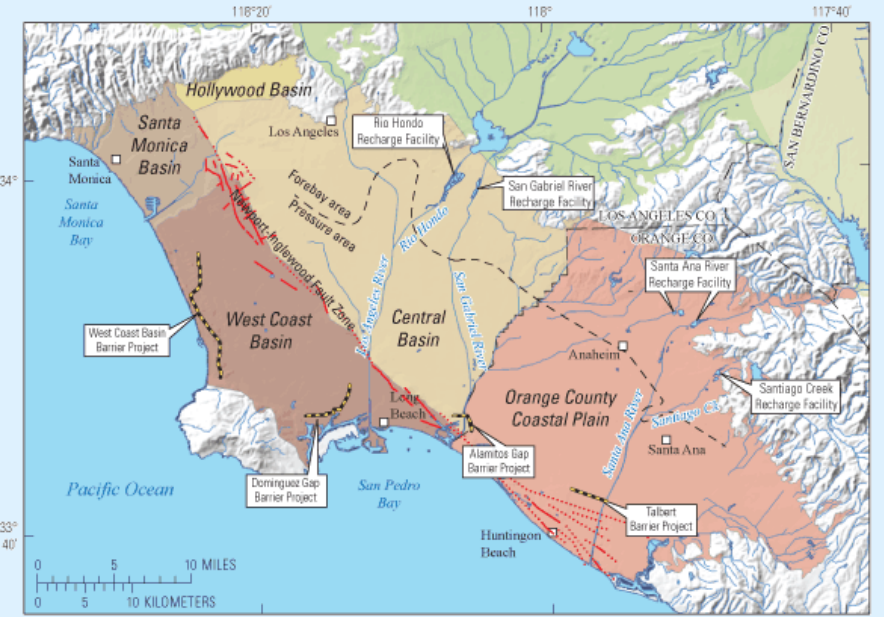
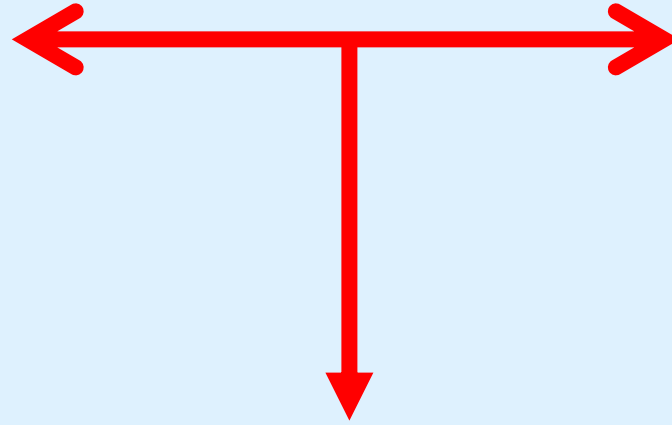
Modifications: pages 4, 10, 14, 15, 16, 18, 22, 24, 28, 29, 31, 32, 33, and 37

FUNDING YEAR: Fiscal Year 2022
APPLICATION DEADLINE: Varies by Program Area (see [Part I & C](#))
FUNDING OPPORTUNITY NUMBER: USDA-NIFA-AFRI-009041
ASSISTANCE LISTING NUMBER: 10.310
LETTER OF INTENT DEADLINE: Not Required

\$750,000

TRAINING DIVERSE STUDENTS IN EXPERIENTIAL RESEARCH:

**THE NEXUS BETWEEN URBAN NATURAL RESOURCES
MANAGEMENT AND URBAN AGRICULTURE**



SLAC NATIONAL ACCELERATOR LABORATORY
STANFORD SYNCHROTRON RADIATION LIGHTSOURCE



Kristin Boyle, PhD
Staff Scientist
PI of SLAC Floodplain Hydro-Biogeochemistry SFA
Stanford Synchrotron Radiation Lightsource
SLAC National Accelerator Laboratory
2575 Sand Hill Rd., Bldg 137, MS 69
Menlo Park, CA 94025

February 16, 2023

Dear Dr. Hibbs,
If your proposal entitled "Catalyzing STEM Training and Partnerships through Comparative Analysis of Transferable Watershed Function in East River and Southern California Watersheds" is selected for funding under the DOE Funding Opportunity Announcement DE-FOA-0002929, it is my intent to collaborate in this research as an unfunded collaborator by facilitating access to our field sites in the greater East River (CO) watershed, providing guidance on sampling and experimental approaches, sharing of ancillary data to support this project, and introducing students to SLAC capabilities and science.

Thank you for the opportunity to participate.

Sincerely,

2575 Sand Hill Road • Mail Stop 69 • Menlo Park, CA 94025-7015
kboyle@slac.stanford.edu • 650-889-8075 • Fax 650-926-4100
SLAC is operated by Stanford University for the U.S. Department of Energy

DEPARTMENT OF ENERGY (DOE)
OFFICE OF SCIENCE (SC)
BIOLOGICAL AND ENVIRONMENTAL RESEARCH (BER)



\$800,000

**BER – REACHING A NEW ENERGY SCIENCES WORKFORCE
(BER-RENEW)**

FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) NUMBER:
DE-FOA-0002929

FOA TYPE: INITIAL
CFDA NUMBER: 81.049



Lawrence Berkeley National Laboratory
Earth & Environmental Sciences Area



February 16, 2023

Barry J. Hibbs
Professor of Hydrogeology
Department of Geosciences and Environment
California State University, Los Angeles
Los Angeles, CA 90032

Subject: Letter of collaboration for your proposal "Catalyzing STEM Training and Partnerships through Comparative Analysis of Transferable Watershed Function in East River and Southern California Watersheds", responding to DE-FOA-0002929.

Dear Dr. Hibbs,

As leads of the Berkeley Lab Watershed Function SFA, we are pleased to offer this letter of collaboration for your proposal, "Catalyzing STEM Training and Partnerships through Comparative Analysis of Transferable Watershed Function in East River and Southern California Watersheds" to be submitted to the DOE's Environmental System Science program. We acknowledge all responsibilities identified for Berkeley Lab in this proposal. We will provide coordination of site access to relevant Berkeley Lab facilities, access to relevant datasets, adherence to safety plans, and integration of proposed research activities into the ongoing investigations associated with the Watershed Function SFA project.

Sincerely,

Eoin L. Brodie, PhD
Deputy Director, Climate & Ecosystem Sciences Division
Lead, Watershed Function Scientific Focus Area

Kenneth H. Williams, PhD
Chief Scientist, Watershed Function Scientific Focus Area

Michelle Newcomer, PhD
Deputy for Integration, Watershed Function Scientific Focus Area

Lawrence Berkeley National Laboratory

One Cyclotron Road / MS: 70A3317 / Berkeley, California 94720 / phone 510-486-6584 / fax 510-486-7152

Doc ID: c04dd8bf18ee7a6cf8e751f0b124798f0be37bee

Urban Agriculture and Natural Resources

USDA NEXTGEN Grant



CALIFORNIA STATE UNIVERSITY, LOS ANGELES
OFFICE OF THE PRESIDENT

November 9, 2022

National Institute of Food and Agriculture (NIFA)
United States Department of Agriculture
NEXTGEN Program

Dear NEXTGEN Program Director:

Over the last several years Cal State LA has developed a dedicated mission to provide services that support and enrich our surrounding communities, our city, and our state, through educational and outreach programs, community engagement initiatives, and volunteer work. Cal State LA's commitment to uplifting and transforming the economies and social well-being of communities across the region has led to an anchor institution designation by the Coalition of Urban and Metropolitan Universities. Our University is a federally designated Hispanic-Serving Institution, Minority-Serving Institution, and Asian American and Native American Pacific Islander-Serving Institution. We have reached several milestones as a result of our transformative initiatives, including #1 ranking in the Nation for upward mobility, and top 10 ranking for overall service, research, and social mobility.

The USDA-NIFA NEXTGEN grant submitted by members of our campus community, entitled *Next-Generation Urban Agriculture: Building Soil, Biodiversity, Community, Food Production Networks, and Workforce in Los Angeles* is entirely confluent with our campus aims in community service and engagement. The grant will diversify our programs in natural resources management and urban agriculture. We are moving forward with integrative approaches to urban sustainability, water and food security, and environmental and social equity. I heartily support and endorse this grant as a unique transformative effort that will create synergy across our campus in these areas. This grant will help to energize and perpetuate cross-disciplinary approaches to natural resources management and urban agriculture across several departments and colleges at Cal State LA, including Geoscience and Environment; Biology, Chemistry, Social Sciences, and History, all within the College and Natural and Social Sciences; and Food Science, Nutrition, and Public Health within the RongXiang Xu College of Health and Human Services. This grant will also build direct ties with the Montebello Unified School District, a local K12 system from which we recruit a significant number of our new undergraduate students.

Ultimately this grant will enable training of diverse students for careers and opportunities in urban natural resources management and urban agriculture by offering new skill sets and capabilities in our course offerings, internship opportunities, and experiential learning programs. The grant will also develop transformative student experiences that are effective in preparing our diverse student participants for graduate school experiences leading to doctoral degrees in urban natural resources management and urban agriculture. In short, we are very excited about this grant proposal and the university is fully supportive of this effort.

Sincerely,

William A. Covino
President

5151 State University Drive, Los Angeles, CA 90032-8580 (323) 343-3030 FAX: (323) 343-3039 www.calstatela.edu
The California State University: Bakersfield, Col Maritime, Channel Islands, Chico, Dominguez Hills, East Bay, Fresno, Fullerton, Humboldt, Long Beach, Los Angeles, Monterey Bay, Northridge, Pomona, Sacramento, San Bernardino, San Diego, San Francisco, San Jose, San Luis Obispo, San Marcos, Sonoma, Stanislaus



United States
Department
of Agriculture
National Institute
of Food
and Agriculture
www.nifa.usda.gov
@USDA_NIFA

NIFA

REQUEST FOR APPLICATIONS From Learning to Leading: Cultivating the Next Generation of Diverse Food and Agriculture Professionals

MODIFICATIONS: 11/07/2022 – This RFA has been modified from the original announcement. Edits are indicated using track changes and red font so the public/potential applicants can identify the changes within the solicitation.

Edits appear on pages: 1, 2, 3, 6, 10, 11, 12, 13, 14, 15, 22, and 23

FUNDING YEAR: Fiscal Year 2022

APPLICATION DEADLINE: December 14, 2022

ANTICIPATED FUNDING: \$250,000,000

AVERAGE AWARD RANGE: \$500,000 - \$20,000,000

FUNDING OPPORTUNITY NUMBER: USDA-NIFA-ARPAED-009362

ASSISTANCE LISTING NUMBER: 10.237

NOTICE OF INTENT DEADLINE: September 16, 2022 (Optional)

\$5,000,000

Key Points

- New integrative direction
- Cross fertilizes faculty and departments/colleges
- Community engagement
- Better health and nutrition
- Funding is available, but go for it now
- Careers for students

Concluding Remarks

