



The Northwest Environmental Training Center presents:

Soil Science for Site Assessment and Remediation

An overview of chemical, physical, and biological characteristics of soil, and how they collectively affect contaminant behavior and remediation

Course ID: CHEM-406 (2 days)
October 28-29, 2008, 8:30 A.M. to 5 P.M.
Courtyard Marriott - Old Pasadena
180 North Fair Oaks Avenue
Pasadena, California

Instructor: Dr. Hassan Boroon

Description: This course provides participants with an overview of key concepts essential to understanding of the physical and chemical characteristics of soil, and provides a fundamental understanding of the contaminant transport in soil. This material is intended for environmental professionals who are not agronomist or soil specialists, but who require a fundamental understanding of contaminant behavior in soil and its various environmental setting. This course is recommended for all environmental professionals working with contaminated soil and water with minimal formal training in this subject. The course material will greatly enhance on-the-job training. It is also recommended for project managers seeking a review of the subject.

Course Topics:

Physical and Chemical Properties of Soil

- Soil moisture, irrigation, drainage, erosion, and conservation
- Soil organisms and organic matter
- Soil classification and survey
- Soil as a porous medium
- Soil colloids and the Electrostatic Double Layer in colloids
- Salinity effect on hydraulic conductivity of soil
- Flow of water in soil including soil-water potential
- Soil-water characteristic curve including soil water retention curve

Environmental Analysis of Selected Contaminants in Soil

- Soil pollution, soil and water quality, contamination, and remediation
- Persistent organic pollutants in soil
- Agricultural and pharmaceutical chemicals, soaps and detergents, heavy metals, and organo-metallic compounds in soil
- pH and mobility of contaminants
- Cation exchange
- Overview of natural attenuation processes in soil including biodegradation pathways for common contaminants in soil
- Soil remediation and cleanup including petroleum and solvent organics, nitrates, arsenic, and mercury

After completing this course, participants will be able to:

- Understand the physical and chemical properties of soil
- Know soil chemistry principles and application for soil investigation
- Know geochemical analyses of soil to assess sources of contamination
- Understand the chemical and biological aspects of natural attenuation in soil
- Understand the environmental condition of soil and the movement of contaminants in soil
- Understand the contaminant transport in soil and its controlling factors
- Understand the updated remediation strategies for soil cleanup

About the Instructor: Dr. Hassan R. Boroon received his Doctorate in Geology and Hydro/Geochemistry from the University of Erlangen-Nuremberg, Germany in 1998. As a lecturer, he joined the Department of Geological Sciences at

CSULA in 2001. His research interests include contaminant transport in sediments, soils, and water, in particular contamination of coastal sediment and harbor mud, bioavailability of trace elements in sediments, especially coastal sediments, the hydrogeology and environmental geochemistry of urbanized regions, and remediation and cleanup methods for various contaminants. His recent research activities as a Fulbright scholar in West Africa concentrated on the contamination of coastal sediments, qualitative and quantitative reconnaissance of heavy metal and organic pollutant impacts of coastal sediments and biota, including bio-availability of trace metals in coastal sediments and water due to anthropogenic pollution sources such as mining activities and polluted runoff caused by the dumping of trace metal rich phosphate tailings into the coastal waters.

Intended Audience: This course is designed for practitioners and agency personnel including environmental scientists, biologists, ecologists, hydrologists, planners, and regulators, who deal with soil contaminant assessment and remediation.

Prerequisites: Completion of some college-level chemistry or geochemistry or completion of NWETC's Contaminant Chemistry and Transport Training Series ([CHEM-403A](#) & [CHEM-403B](#)).

Education Level: Intermediate

Course Materials: Participants will receive course proceedings, tutorials, and reference materials.

Continuing Education Units: 1.3

What to Bring: Calculator, pen or pencil, coffee mug, and a water bottle (to reduce waste). Please wear comfortable clothes appropriate for the prevailing weather. Lunch will be on your own. There are numerous restaurants within walking distance. Drinks and snacks will be provided each day.

Registration: **\$495** (***\$395** reduced tuition is available for Native American tribes; government employees; nonprofits; students; and NAEP, NEBC, NWAEP members). You may register via the link below or by calling the Northwest Environmental Training Center at 206-762-1976.

Cancellation Policy: Registration fees are fully refundable up to 30 days prior to the event and 50 percent refundable (or 100% credit) thereafter up to the day prior to the event. Registration may occur up to the day prior to the event provided that space is available.

Northwest Environmental Training Center

A nonprofit 501(c)(3) program of the Northwest Environmental Education Council
650 S. Orcas Street, Suite 220, Seattle, Washington 98108
Phone: (206)762-1976, Fax: (206)762-1979

www.nwetc.org



Pasadena, CA | ACCOMMODATIONS near the Courtyard Marriott - Old Pasadena

Courtyard Marriott - Old Pasadena

(Workshop Location)

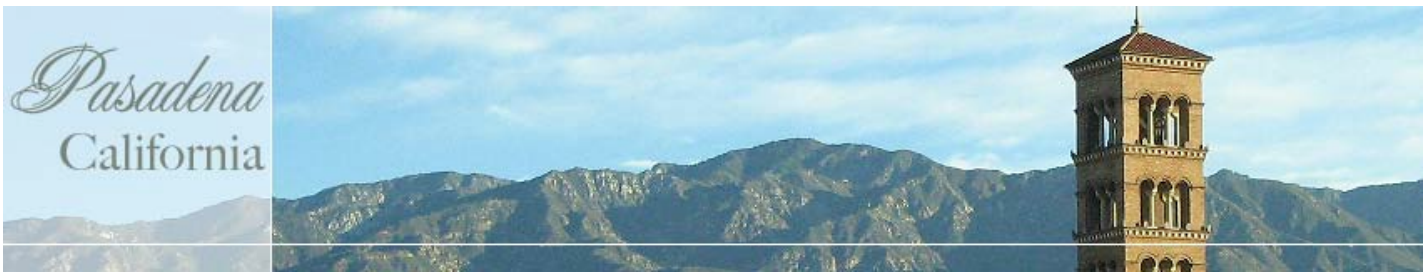
180 North Fair Oaks Avenue
Pasadena, California 91103
(626) 403-7600

www.marriott.com/laxot

<p>Pasadena Inn 400 South Arroyo Parkway Pasadena, CA</p> <p>www.pasadenainn.net</p>	(626) 795-8401	<p>Vagabond Inn Pasadena West 1203 East Colorado Boulevard Pasadena, CA</p> <p>www.vagabondinn.com</p>	(626) 449-3170
<p>Westin Pasadena 191 North Los Robles Pasadena, CA</p> <p>www.westin.com</p>	(626) 792-2727	<p>Travelodge Pasadena Central 2131 East Colorado Boulevard Pasadena, CA</p> <p>www.travelodge.com</p>	(626) 796-3121
<p>Sheraton Pasadena Hotel 303 East Cordova Street Pasadena, CA</p> <p>www.sheraton.com</p>	(626) 449-4000	<p>Best Western Colorado Inn 2156 East Colorado Boulevard Pasadena, CA</p> <p>www.bestwestern.com</p>	(626) 793-9339
<p>Hilton Pasadena 168 South Los Robles Avenue Pasadena, CA</p> <p>www.hilton.com</p>	(626) 577-1000	<p>Comfort Inn Pasadena 2462 East Colorado Boulevard Pasadena, CA</p> <p>www.comfortinn.com</p>	(626) 405-0811

Northwest Environmental Training Center

A nonprofit 501(c)(3) program of the Northwest Environmental Education Council
650 S. Orcas Street, Suite 220, Seattle, Washington 98108
Phone: (206)762-1976, Fax: (206)762-1979
www.nwetc.org



Directions to:

Courtyard Marriott - Old Pasadena

180 North Fair Oaks Avenue
Pasadena, CA 91103
(626) 403-7600
www.marriott.com/laxot

Pasadena Area Rapid Transit System: www.ci.pasadena.ca.us/trans/transit/trans_arts.asp

FROM BURBANK AIRPORT

1. Start out going EAST on W EMPIRE AVE toward N AVON ST.
2. Turn LEFT onto N LINCOLN ST.
3. Turn SLIGHT RIGHT onto N SAN FERNANDO BLVD.
4. Merge onto I-5 S toward LOS ANGELES.
5. Merge onto CA-134 E toward GLENDALE / PASADENA.
6. Take the exit toward FAIR OAKS AVE / MARENGO AVE.
7. Turn SLIGHT LEFT onto CORSON ST.
8. Turn RIGHT onto N FAIR OAKS AVE.

FROM LOS ANGELES INTERNATIONAL AIRPORT (LAX)

1. Start out going EAST on WORLD WAY / CENTER WAY.
2. Merge onto S SEPULVEDA BLVD / CA-1 S toward I-105.
3. Take the IMPERIAL HWY WEST / I-105 E ramp toward IMPERIAL TERMINAL
4. Merge onto I-105 E toward NORWALK.
5. Merge onto I-110 N toward LOS ANGELES.
6. I-110 N becomes CA-110 N.
7. Turn LEFT onto E COLORADO BLVD.
8. Turn RIGHT onto N FAIR OAKS AVE.

FROM POINTS WEST (via Hwy 101 S)

1. From Hwy 101 S, keep LEFT to take CA-134 E toward BURBANK / GLENDALE.
2. Take the exit toward FAIR OAKS AVE / MARENGO AVE.
3. Turn SLIGHT LEFT onto CORSON ST.
4. Turn RIGHT onto N FAIR OAKS AVE.

FROM POINTS EAST (via CA-210 W)

1. CA-210 W becomes I-210 W.
2. Take the FAIR OAKS AVE SOUTH exit - EXIT 25A
3. Turn SLIGHT LEFT onto E MAPLE ST.
4. Turn LEFT onto N FAIR OAKS AVE.

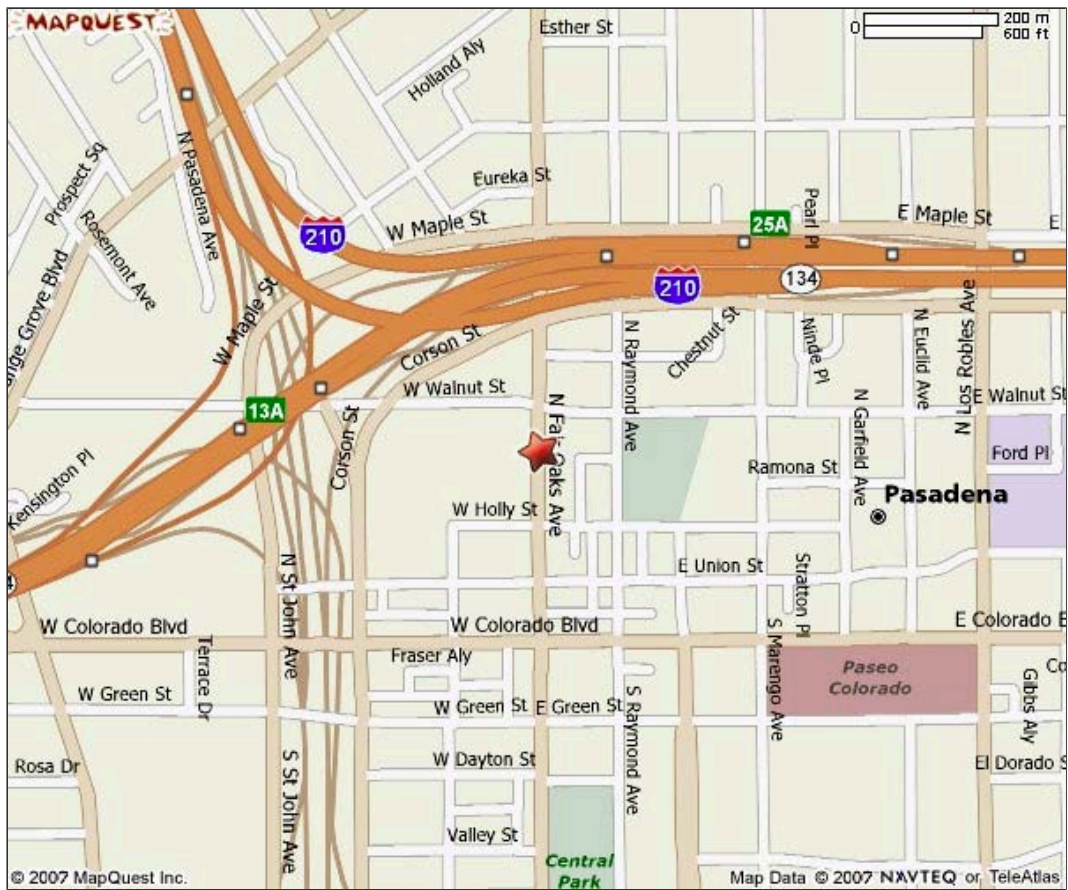
FROM POINTS NORTH (via I-210 E)

1. Take the exit on the LEFT toward CA-7 S / DEL MAR BL / CALIFORNIA BL / COLORADO BLVD / PASADENA
2. Take the ramp toward COLORADO BLVD / PASADENA.
3. Turn SLIGHT RIGHT onto W MAPLE ST.
4. Turn LEFT onto W WALNUT ST.
5. Turn RIGHT onto N FAIR OAKS AVE.

FROM POINTS SOUTH (via I-5 N)

1. Merge onto CA-57 N via EXIT 107A toward POMONA.
2. CA-57 N becomes CA-60 E.
3. Keep RIGHT to take CA-57N.
4. Merge onto I-210 W via the exit on the LEFT toward PASADENA.
5. Take the FAIR OAKS AVE SOUTH exit - EXIT 25A.
6. Turn SLIGHT LEFT onto E MAPLE ST.
7. Turn LEFT onto N FAIR OAKS AVE.

STREET MAP:



Northwest Environmental Training Center

A nonprofit 501(c)(3) program of the Northwest Environmental Education Council
650 S. Orcas Street, Suite 220 | Seattle, Washington 98108
Phone: (206)762-1976 | Fax: (206)762-1979
www.nwetc.org



NORTHWEST ENVIRONMENTAL TRAINING CENTER

650 S Orcas Street, Suite 220, Seattle, Washington 98108
Ph: (206)762-1976, Fax: (206)762-1979
www.nwetc.org

REGISTRATION FORM

Name: _____ Today's Date: _____

Agency/Organization: _____

Street Address: _____ Mail Code: _____

Street Address (cont.): _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email: _____ Title: _____

Course:

Soil Science for Site Assessment & Remediation - \$ _____
An overview of chemical, physical, and biological characteristics of soil

Course ID: CHEM-406, October 28 - 29, 2008

Courtyard Marriott - Old Pasadena

180 North Fair Oaks Avenue, Pasadena, California

Registration: \$495. \$395 reduced rates for Native American Tribes; nonprofits;
government; students; and AFS, NEBC, NAEP, and NWAEP members.

Payment Method: Check PO Credit Card (Visa or Mastercard) Total: \$ _____

Credit Card or PO #: _____ Exp: _____

Note: Please make checks payable to Northwest Environmental Training Center.

Cancellation Policy: Registration fees are fully refundable up to 30 days prior to the event and 50 percent refundable thereafter up to the day prior to the event. Registration may occur up to the day prior to the event provided that space is available.