Changing Climate in the Water Resources Consulting Industry

GRAD592
Exploring Jobs, Careers, and Leadership in Water Resources

November 30, 2015
Colorado State University, Fort Collins, CO
Water Resources Engineering and Environmental Consulting
Established in 1986

Offices in Fort Collins, Colorado, and Pine Bluffs, Wyoming

Presented by
Chris Lidstone, PG, CPG
Regional Manager for Rocky Mountain West, Principal Geologist
My Background

- Wyoming and New York
- High School St. Marks School, Massachusetts 1973
- BA Cornell University 1978
- MS Colorado State University 1981
- Mining Industry
- Water Resources Consultant since 1984
- Formed LA in 1986
- Merged with Wenck Associates in July 2015
- Local Area Employees: 18 Fort Collins, 6 Cheyenne, 2 Sheridan
35 Years Ago- 1980

Reagan elected President
Price of Gold Record High $850 per ounce (August 1980)
Oil Prices High: up to $108/barrel (August 1980)
Jobs in Mining, Oil and Gas Available
Bank Loans and mortgages were in the double digits
Prime Rate at 20%
High Rates of Inflation
Economy has been
in Recession
30 Years Ago - 1985-86

Reagan Still President (2\textsuperscript{nd} term)

Price of Gold $300 per ounce (1985-86)

Price of Oil $30 Barrel (1986)

Jobs Scarce in Mining and Oil and Gas

Environmental and Water Resources (UST, CERCLA, RCRA)

Prime Rate at 8%

Mortgages drop to single digits

Inflation down
History Repeats-2015

Reagan is no longer President

Gold prices have been record high ($1900/oz: 2011) and are now down below $1200/oz

Oil prices have been record high ($100+/bl: 2007-13) and are now down below $45

Economy has seen a recession and is recovering

Prime Rate is at 3.25%

Mortgages are in single digits

Inflation is down

Picture looks promising in Environmental and Water Resources

Responsibility to the Future- Use Science to Resolve Problems
NATURAL RESOURCES CAREER OPPORTUNITIES

- PRIVATE INDUSTRY
  - MINING
  - CONSTRUCTION
  - EHS
- GOVERNMENT
- QUASI GOVERNMENTAL
- NON PROFIT
- CONSULTANCY
  - SMALL FIRM VS LARGE FIRM
CONSULTANCY
SMALL V. LARGE

• Types of Jobs
• International vs. Domestic Opportunities
• Growth Opportunities
• Responsibilities
• Flexibility
A Little About LA
Diversity in Consulting Services

▲ Ground Water Investigations
▲ Surface Water Studies and River Restoration
▲ Mine Plan and Permitting
▲ Civil and Agricultural Engineering
▲ Geological Investigations
▲ Geochemistry Studies - Mine Drainage
▲ Due Diligence

Lidstone and Associates
- a Wenck Company
Other States including Minnesota, Texas, California, Indiana, Iowa, Idaho, Florida, South Dakota, Hawaii, Nevada, Utah, New Mexico, Virginia, Mississippi, Montana, North Dakota, West Virginia (5%)

Overseas: Indonesia, Papua New Guinea, Chile
Our Staff

Total of 18 Employees

▲ Civil Engineers (6)
▲ Geologists (2)
▲ Hydrogeologists (2)
▲ Hydrologists (1)
▲ Certified Floodplain Manager (1)
▲ Draftsman (2)
▲ Construction Management (1)
▲ Administrative (3)
Groundwater Investigations

- Municipal/Industrial Water Supply & Rights
- Community (Subdivision) Water Supply
- Monitor Wells and Hydrogeologic Investigations
- Groundwater Modeling and Contamination
Geologic Mapping Leading to Water Supply Well Siting Efforts

Casper Outcrop
Looking North Toward Goose Creek Water Gap
Hydrogeologic Characterization Contaminant Transport

Project: ANC Tailings Ponds
Gas Hills, WY

2015-2020 Fees $1.4M
Water Supply Development

Big Horn Regional Water Supply

Indian Paintbrush Water Supply
Surface Water Studies

- Erosion & Sedimentation
- Floodplain Permitting
- Flood Control
- Water Storage Alternatives
- Water Quality

- River Mechanics & Geomorphology
- River Restoration
- Hydraulic Design
- Hydrologic Analysis
Floodplain Permitting, Holton Lakes Sand and Gravel
Weld County, Colorado

- 2007-2008
- Client: RMCC (Boral)
- H&H
- HEC-RAS Modeling
- FW & FP Development
- DRMS Reclamation Design
River Restoration

Select Channel Restoration Planning and Construction

- Rio Grande River (CO)
- Alamosa River (CO)
- Blue River (CO)
- Little Medicine Bow River (WY)
- Deep Creek (OR)
- Beaver Creek (OR)
- Rogue River (OR)
- Bear Creek (OR)
- Little Thumb Creek (YNP)
- Provo River (UT)
- James River (ND)

11/30/2015
Project Experience Highlight

- Yampa River near Steamboat Springs, CO
- Client: Lafarge West, Inc.

CDRMS Reclamation Project of the Year
Immediately Following Construction (2004)
Site Monitoring in 2008
Historical Perspective-2001
Rogue River Pit Capture

Gebhart Pit- 60 feet
bank loss in one year
Construction of Stream Barbs, Rogue River
Effectiveness of Stream Barbs at 55,000 cfs

Oregon Watershed Project of the Year
2006
LA Mine Planning and Permitting
Reclamation Design, AML Hazard Mitigation

▲ Inventory, Investigation and Design of Abandoned Mine Closures and Environmental Cleanups
▲ US NRC Licensing (uranium mining)
▲ Environmental Permitting (State, County and Federal)
▲ Resource Evaluation
▲ Mine and Reclamation Planning
▲ Mining Hydrology and Stormwater
▲ Construction Administration
Cameco In Situ Uranium
US NRC License Renewal

Location: Powder River Basin, Wyoming
Technical Report and Environmental Report
Application Submitted February 2012
Abandoned Uranium Mine
tVA Sagebrush Tablestakes

Natural Regrade Design- Surface Water Reclamation
Six Construction Phases
Geological and Geochemical Investigations and Due Diligence

▲ Due Diligence and Resource Evaluation-Specialty Market (MDU Resources, Lafarge)
▲ Exploration and Mine Permitting Projects:
  ▲ Rio Tinto
  ▲ Cameco
  ▲ Energy Fuels
  ▲ Knife River
  ▲ Baker Rock
  ▲ Lafarge
  ▲ Bonanza Gold
  ▲ Cloud Peak Coal
  ▲ Union Carbide
▲ Miscellaneous Studies:
  ▲ Hot Springs State Park
  ▲ Haggarty Creek
  ▲ Minnie Lynch
Acid Mine Drainage

Kerber Creek Drainage Basin
2013-2017

Acid Mine Drainage, Minnie Lynch Gulch
Collegiate Range Saguache Co. Colorado
Ferris Haggarty Mine, WY
Osceola Tunnel Area
Mine Water Treatment

2006- Ongoing
Civil, Municipal and Agricultural Engineering

▲ Agricultural Diversions
▲ Water Rights
▲ Water Supply
▲ Water and Sewer Treatment
▲ Water Storage
▲ Water and Sewer Distribution

Town Engineer: Baggs, Dixon, Ten Sleep, Pine Bluffs and Burns, Wyoming

Community Engineer: Meadow Mountain, Allenspark, Colorado
Summary by Discipline
Trends over recent years
Flexibility in Market/Staffing and Resources

2007
▲ Mining 40%
▲ Surface Water 35%
▲ Ground Water 15%
▲ Civil Engineering 5%
▲ Other 5%
  ▲ Due Diligence
  ▲ Geochemistry

2014
▲ Mining 48%
▲ Major Player (24%- AML)
▲ Surface Water 15%
▲ Ground Water 12%
▲ Civil Engineering 21%
▲ Other 4%
  ▲ Expert Witness Services
  ▲ Due Diligence

Lidstone and Associates
– a Wenck Company
August 21, 2015
What We Look For!

**Staffing Needs**

**Geologists, Hydrologists and Engineers**
- Motivated People
- GIS and ACAD
- Modelers
- Writers, Communication
- Ability to Work in Interdisciplinary Teams
- Fit the Culture

**Educational Needs**
- MS, BA or BS
- Licensure or the ability to be licensed
- Critical Thinking (outside the box)
- Effective Communication
- Ability to access and integrate information
- Flexibility and Field Skills
- Hard Work
- Integrity and Responsibility