

CURRICULUM VITAE (CV) FOR PROPOSED PROFESSIONAL STAFF

1. **Proposed Position:** Irrigation Engineer (I-7)

2. **Name of Firm:** Hydrau-Tech, Inc.

3. **Name of Staff :** Dr. Wayne Clyma

4. **Nationality:** U.S.A

5. **Education**

Ph.D., Hydrology, University of Arizona

M.S., Agricultural Engineering, Oklahoma State University

B.S., Agricultural Engineering, Oklahoma State University

6. **Membership of Professional Associations:** _____

7. **Other Training** [*Indicate significant training since degrees under 5 - Education were obtained*]: _____

8. **Countries of Work Experience:** _____
Pakistan, India, Sri Lanka, Egypt, Ethiopia, Thailand, Nepal, Somalia, Iraq

9. **Languages** [*For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing*]: _____
English, Limited Urdu and Amharic

10. **Employment Record** [*Starting with present position, list in reverse order every employment held by staff member since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held.*]:

Dr. Clyma is a global authority on diagnosing water management constraints on irrigation systems, and then developing and implementing practical solutions to those problems. He has led and trained interdisciplinary teams analyzing irrigation systems throughout the world and has developed numerous improved irrigation management techniques that are presently used by irrigation authorities throughout the world. His work has focused on improving irrigated agriculture, while simultaneously encouraging other countries to start a process of performance improvement. He started irrigation studies and improvement programs in 1972 in Pakistan at the farm level, which ultimately led to major changes in Pakistan's irrigation priorities and evolved into a national farm water management program that continues today. (As a result of this work, the Government of Pakistan awarded Dr. Clyma their prestigious Gold Medal for "Meritorious Service in Water Management" in 1996.) Dr. Clyma then helped design a large USAID water management project in Egypt, which created major changes and improvements in irrigation water management in Egypt, and continues to this day. The Government of Egypt, National Water Research Center, presented a 25th Anniversary Appreciation Award for Dr. Clyma's support designing

and carrying out the National Irrigation Improvement Program. Based upon these experiences, Dr. Clyma helped design, lead, and implement a worldwide USAID water management improvement program (Water Management Synthesis I and II Projects). Under these projects, he developed, led, and conducted interdisciplinary field assessments of irrigated agriculture in many countries, including developing water management improvement technologies defined from field evaluations that could be transferred to many countries. Dr. Clyma then developed a Management Improvement Program (MIP) that was implemented in several countries, and in the state of Arizona. The Arizona MIP program created major changes in local, state, and federal agencies, and improved irrigated agriculture in a large Arizona water district. The MIP in Arizona was selected as one of the four projects in the U.S. that best served their clients (farmers). Dr. Clyma presently holds the title of Professor Emeritus in the Civil and Environmental Engineering Department of Colorado State University.

Water Management Consultant (1999 - 2008)

Professor Emeritus, Civil and Environmental Engineering Department, Colorado State University (1999 – present)

Professor, Chemical and Bioresource Engineering Department, Colorado State University (1982 - 1999)

MIP Specialist, Consultant to the U.S. Water Conservation Laboratory, USDA-ARS, Phoenix, AZ (1991 - 1995)

Provided leadership through the U.S. Water Conservation Laboratory Director to complete an Interagency Management Improvement Program (MIP) within a water district in Arizona. The organizations participating with farmers and an irrigation district are as follows: Soil Conservation Service, U.S. Bureau of Reclamation, University of Arizona including research, teaching, and extension, and the Department of Environmental Quality, all Arizona agencies. The MIP included diagnostic analysis, management planning, and performance improvement. Impacts include changes by growers and agencies including interagency programs supporting farmers, increased collaboration and coordination between agencies and the establishment of a farmer led interagency management unit.

Visiting Professor, U.S. Water Conservation Laboratory, USDA-ARS, Phoenix, AZ (1988 - 1989)

Management Improvement Program (MIP) concepts and procedures transferred and a program planned for initiation in Arizona with a number of local, state, and federal agencies. Under the leadership of the Lab, they carried out an Interagency MIP.

Associate Professor, Agricultural Engineering Department, Colorado State University, Water Management Research Contract, Pakistan (1972 - 1976)

Conducted initial studies and identified program of on-farm water management in Pakistan contradicting the published reports and policies of Pakistan, numerous donor agencies, and international consulting firms. The programs initiated by the project have resulted in several billion dollars of investment by the Government of Pakistan and international donors. Presently an organization of over 1,100 people carry out an on-going program in on-farm water management in all four provinces of Pakistan. No program existed when the project started.

Assistant Professor, Department of Agricultural Engineering, University of Arizona (1968-1971)

Research Associate with teaching in agricultural systems and research on cotton production systems with an interdisciplinary team. Simulation models included the evapotranspiration system, cotton germination and emergence, growth and reproduction, maturation, harvesting, and insect population dynamics.

Assistant Professor, Department of Agricultural Engineering, University of Arizona, (1966-1968)

Teaching in irrigation and drainage, and research in groundwater including groundwater hydraulics, groundwater recharge and resource monitoring and evaluation.

Assistant Professor, Agricultural Engineering Department, College of Agriculture, Haile Selassie I University, Alemaya, Ethiopia (Oklahoma State University Contract) (1964 - 1966)

Teaching and research in farm machinery and soil and water conservation including farm mechanization and agricultural hydrology.

HONORS / AWARDS

Reader's Digest Superior Service Award, 1969, Ethiopia.

Colorado State University's Interdisciplinary Research Award, 1973, Pakistan.

Engineering Dean's Council Award for Outstanding Achievement and Professionalism in Education and Service, 1985.

Government of Pakistan Gold Medal Award for "Meritorious Service in Water Management", 1996.

Charles Valentine Riley Memorial Foundation, Arizona Management Improvement Program (MIP) selected as one of four best projects in agriculture in the U. S. A. for serving their clients' needs.

Government of Egypt, National Water Research Center's 25th Anniversary Appreciation Award, for 25 yrs of work with the Center developing and carrying out a National Irrigation Improvement Program, 1999.

TEACHING EXPERIENCE

Have taught repeatedly courses in surface irrigation, drainage, interdisciplinary agriculture development, management improvement of irrigated agriculture, and sprinkle and trickle irrigation.

<p>11. Detailed Tasks Assigned</p> <p>Irrigation Engineer, Farm Water Management and Irrigated Agricultural Dev.</p>	<p>12. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned</p> <p><i>[Among the assignments in which the staff has been involved, indicate the following information for those assignments that best illustrate staff capability to handle the tasks listed under point 11.]</i></p> <p>1. Water Management Synthesis II Project (WMS II), USAID, India and Pakistan (1984 - 1988) Colorado State University Project Director Initiated and carried out Diagnostic Analysis and management planning efforts in Pakistan and India to evolve <i>the irrigation management and improvement process</i>. According to the USAID project review, the project institutionalized interdisciplinary approaches to improving irrigation management in the consulting community and USAID.</p> <p>2. Water Management Synthesis II Project (WMS II), USAID, India and Pakistan (1982 - 1984) Managing Program Director Provided diagnostic analysis assistance to many countries. India presently has 11 institutes carrying out diagnostic analysis approaches to <i>improving irrigation management</i> in part because of WMS efforts. Conducted research studies in five countries and published related irrigation system management papers.</p> <p>3. Water Management Synthesis Project (WMS I), India and Pakistan (1978 - 1983) Co-Project Coordinator, Colorado State University Through WMS developed Diagnostic Analysis approach and documented the process. Provided assistance to USAID missions in developing irrigation strategies, ultimately resulting in a ten-fold expansion of project activities through WMS II.</p> <p>4. Egypt Water Use and Management Project (EWUP), USAID, Egypt (1977 - 1984) Associate Project Coordinator and Department Representative for Interdisciplinary Planning and Coordinating Team, Colorado State University Through the Egypt Water Use and Management Project, initiated interdisciplinary team management at Colorado State University. Initiated interdisciplinary teams to Egypt and combined the efforts of the Ministries of Irrigation and Agriculture. Changed management of the canal systems, changed management and water supply of farm channels, assisted in initiating land leveling, and farmer organizations. Impacted cotton yields by 40%, rice yields by 25%, and started a farm-water management program. Presently Egypt is carrying out a national irrigation improvement program of several hundred million dollars that grew out of the EWUP Project.</p>
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	<p>5. Consultant for USAID Chile to assess farm water management needs</p> <p>6. Consultant to International Research Center for farm water management assessment in Somalia</p> <p>7. Consultant to the Government of Pakistan to provide leadership and presented lectures for an inter-organizational seminar on Participatory Irrigation Management including presenting the keynote paper on participatory irrigation management strategies for Pakistan.</p> <p>8. Consultant to Euroconsult (1997) and was a participant and invited presentation at the International Seminar on Irrigation Association for Participatory Irrigation Management. <i>Conducted Workshop on Participatory Irrigation Management Punjab Farm Water Management units.</i></p> <p>9. Consultant for CADI to the Irrigation Department, Nepal (1998) Planned and developed a farm water management program for implementation in Nepal</p> <p>10. Consultant for Riverside Technology, Inc. to provide irrigation water management assessments and recommendation for improving irrigated agriculture in Iraq (2003)</p>
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