

Project Description

UPCD Tier II Project Number: S61268-570/I

Water Management in Honduras and El Salvador

December 2005

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1. PROJECT BACKGROUND AND RATIONALE

Relevance to Developmental Priorities of Honduras and El Salvador

Central America is a region about the size of Alberta; however, its population of almost 40 million is greater than that of Canada. The populations of Central American countries are predicted to double in the next 20 to 30 years. The Central American republics have small economies with limited economic

Indicator Data	Honduras	El Salvador
Population	6.8	6.4
Surface Area (km ²)	112,100	21,040
Population per (km ²)	60.6	304
Population Growth (%)	2.5	1.7
Life Expectancy (years)	66.1	70.1
Gross National Income per capita (US\$ Atlas method)	930	2,110
(Gross Domestic Product US\$)	6.6 billion	14.3 billion
Access to Improved Water Source (% population)	80 (rural 66, urban 83)	64 (rural 30, urban 96)
Access to Improved Sanitation (% population)	77 (rural 57, urban 94)	71 (rural 51, urban 90)

competitiveness due to inadequate infrastructure, the depletion of natural resources and insufficient institutional capacity. There is both extreme poverty and great income disparity in the region, with Nicaragua having the lowest Gross National Income (GNI) per capita of only US\$449, whereas Panama's has the highest at US\$2,580. The percentage of persons served by potable water supplies varies between 45% and 96% depending on the country. The region is also characterized by the fragility of its democracies and human rights violations. Peace is still brittle in the three countries that went through civil wars in the 1980s (Nicaragua, El Salvador and Guatemala). Yet, there has been progress toward the creation of a stable and more inclusive political

environment and the region's governments appear committed to that objective.

Precipitation is high on the humid Atlantic side of Honduras, whereas, in El Salvador, on the Pacific side, there is distinct four-month dry season. This is exacerbated by the high population density of El Salvador (304 people per km²) leading to a very low amount of available water (2.9 m³ per capita per yr). Urban and agricultural areas are growing rapidly onto important watersheds. The region's water resources are subject to increasing stress and in recent decades many surface waters have become highly polluted with domestic waste, urban runoff, industrial waste and agricultural runoff. Most land is either under cultivation/grazing or being rapidly urbanized. Intensive agriculture has depleted soils and polluted water resources. Sanitation remains a huge problem especially in rural areas. Many of the new sanitation systems reduce direct human contact with waste but none-the-less pollute the local water table and surface waters. Most new "improved" (or safe) water systems only test for sewage pathogens and treat with chlorine (at best) but do not treat the remaining multitude of water contaminants found in source waters. In most rural areas, water supply is not treated thus it essential that the source water remains unpolluted.

Exponential population growth has led to several urban populations now nearing or exceeding a million. Industry is poorly regulated. Urban pollution in all its forms, the contamination of streams/aquifers and deforestation are dangers to which the entire region is exposed, and the effects of these phenomena are being

felt by increasing numbers of people. Natural areas are disappearing at alarming rates with only a small percentage under national protection. Water quality monitoring is almost non-existent so there is little understanding of how polluted water resources really are. The few water policies and laws that exist are poorly enforced and government agencies lack the funding and water sector expertise to address these issues. However, because of increasing environmental awareness and requirements related to the export sector and potential inclusion in the *North American Free Trade Agreement*, private sector and government perceptions are beginning to change. Increasingly, civil society is demanding protection of the natural environment, but has neither the tools, the resources nor the political access required to have an impact on policy development at the national level.

The Alliance for Sustainable Development (ALIDES; 1994) commits to the *elaboration of policies and laws concerning water resources management and preservation that include . . . institutional and legal ordinance, co-ordination mechanisms among those authorities in charge of the management and administration of the resource. . . training our pertinent authorities on the implementation of this commitment.*

Country	Water Resources (m ³ per capita)
El Salvador	2.9
Honduras	15.2
Belize	64.8
Guatemala	12.1
Nicaragua	38.7
Costa Rica	31.3
Panama	52.4
Central America	31.1
Canada	91.1
Mexico	4.7
U.S.	8.9
Brazil	32.3
U.K.	2.4
Switzerland	7.4
Holland	5.8
South Africa	1.2
Israel	0.36

In 1998, Hurricane Mitch caused the deaths of 5,600 people in Honduras and devastated the countries infrastructure. El Salvador was also hit hard by the storm and, in both countries, the resultant flooding was exacerbated by deforestation due to harvesting, clearing of agricultural land and urbanization. In response to this terrible tragedy the Central American presidents met in Stockholm in 1999 and produced the *Stockholm Declaration* which pledged, among other things, to “reduce the social and ecological vulnerability of the region as the over-riding goal and agreed to a set of goals and principles to guide reconstruction efforts and the transformation of the region.”

HONDURAS

Honduras is diverse, both culturally and biophysically, with more than 70 different ecosystems and nine indigenous groups. It is one of the poorest countries of Latin America, with a GNI per capita (Atlas Method) of only US\$ 930.

Agriculture continues to be the economic activity with the largest relevance for the Honduran population and a subsistence mainstay, along with forest activities and fisheries. After Hurricane Mitch in 1998, the Government of Honduras created the National Program for Sustainable Rural Development (PRONADERS) to promote, coordinate, facilitate and execute policies and participatory sustainable rural development initiatives directed to the poorest sectors of the rural population.

The 2001 Honduras *Poverty Reduction Strategy* (PRS) has five guiding principals:

Prioritize actions that tend to sustainably reduce poverty;

- Prioritize actions favouring the least-advantaged groups and regions of the country;
- Strengthen civil society participation and decentralization;
- Strengthen governance and participatory democracy;
- Reduce environmental vulnerability and its impact on poverty.

The Honduras PRS includes various objectives related to water resource management including: a) increasing water supply coverage to at least 95% by 2015, b) promote the process of municipal control over water and sanitation systems by approving and applying the new Water and Sanitation Law, c) setting the conditions whereby females have equal opportunity especially those living in poverty and d) a reduction in ecologic risk/vulnerability (especially flooding and landslides) through improved environmental and risk management. The PRS notes that the increase in coverage of potable water supply has not been accompanied by an adequate legal or institutional support framework necessary to improve coverage and ensure efficiency and quality. The PRS identifies “Improvement in Environmental Protection and Risk Management” as key to PRS sustainability through six programming areas: a) Rehabilitation of Upper Watersheds (Ulúa, Aguan and Choluteca watersheds), b) Management of Priority Watersheds (Ulúa, Chamelecon and Nacaome watersheds), c) Mitigation of Natural Disasters, d) Forest Management, e) Rehabilitation to Lower Watersheds (flood impacts in Aguan and Choluteca watersheds) and f) Generation and Application of Geologic and Hydrologic Information. The *Honduras Environmental Profile 1990-97* states that water resources are a major receptor of contamination resulting from a lack of sanitary infrastructure and high amounts sediment due to the degradation (deforestation) of upper watersheds. This had led to an increase in various water contaminants derived from fertilizers, pesticides, sewage and solid waste.

The flooding caused by Hurricane Mitch, and many lesser storms typical in the rainy season, is exacerbated by deforestation due to harvesting, clearing of agricultural land and urbanization. In both countries, deforestation has led to a significantly higher vulnerability to flooding and reduced groundwater recharge. Much of the unprotected forests are in the higher mountain aquifer recharge areas and perform a very important hydrologic function (maintaining aquifer recharge while minimizing surface runoff and soil erosion). This ensures the aquifers are replenished (and not gradually depleted) and continue to provide a long-term water supply, as well as, supply clean water to other components of the aquatic system (rivers, lakes and wetlands).

The *Grupo Colaborativo de Agua y Saneamiento* (Collaborative Water and Sanitation Group) is an important water policy forum bringing together a diversity of actors working on issues of water management in Honduras. The forum brings together key actors from civil society, the international donor community, and government. To date, the Water Group has proven itself to be one of the few forums functioning relatively effectively in Honduras as a space for significant multi-stakeholder dialogue about issues of water governance.

EL SALVADOR

With a GNI per capita (Atlas Method) estimated at USD\$ 2,110, El Salvador is slightly ahead of Guatemala, Honduras and Nicaragua in Central America. In 1999, 41% of households lived below the poverty line, with a higher percentage of these (55%) in rural areas. Due to the decline of rural agriculture mentioned above, and to various natural disasters, poverty is increasingly becoming an urban phenomenon. In 1992, urban areas housed 40% of the country's poor. In 1998 this had increased to 46% - approximately 1.4 million people. The number of new urban poor was more than three times the number of rural poor. Poverty has become more severe in the coffee belt which is suffering due to continued low international prices for coffee. This, in turn, has contributed to more rural-urban migration. El Salvador faces severe environmental degradation due to its small land area, high population density and poverty. It is the most deforested country in the region after Haiti, with just 2 percent of the original forest cover remaining and only about 12 percent of the territory having any forest cover. One serious consequence of deforestation has been increased vulnerability to natural disasters and a diminished water supply as aquifer recharge is reduced. Water quality has also deteriorated as rivers become polluted with sewage, farm chemicals and industrial waste. Reducing the contamination of El Salvador's water supply is a regional problem, as 3 of the country's 10 watersheds, including the biggest one, the Rio Lempa, cross boundaries from Guatemala and Honduras. Access to water and sanitation services has improved significantly in recent years in urban areas (water: 96%, sanitation: 90%) but remains inadequate in rural areas (water: 30%,

sanitation: 51%). These deficits in basic services contribute to the very high rates of morbidity in all age groups from communicable disease. Other issues are soil erosion, increasing pollution from air contaminants and solid waste and loss of bio-diversity.

The Government of El Salvador does not yet have a poverty reduction strategy, however, its official plan for the period 1999 to 2004 (*The New Alliance*) sets out the expected results as: a) increased opportunities for employment and income at the local level, b) more accessible and better quality basic services, c) a strengthened civil society and d) increased possibility for personal development in a secure and just society that lives in harmony with the environment. It has six strategic areas, four of which relate to water resource management:

- Solidarity: promoting participation and decentralization; improving the education system; and improving infrastructure and access to basic services including water, sanitation, health and housing;
- Security . . . improving natural disaster preparedness;
- Future: protecting the environment, improving the quality of urban life and integrating the country with Central America and the rest of the world and;
- Effective and participatory governance: promoting decentralization, transparency and coordinated public policy and effective control and administration.

Importance of Groundwater in Honduras and El Salvador

Central America is one of the most groundwater-dependant regions in the world. Groundwater supplies between 60-90% of the region's domestic, irrigation and industrial water. Rural residents are almost entirely dependent on groundwater for their potable water supply, as it is easily accessible and surface waters are too polluted or not dependable during the dry season. Many of these shallow wells are also polluted due to their poor construction and/or because of shallow aquifer pollution. Groundwater is either the sole or main source of potable water for most large urban areas (*e.g.*, Guatemala City, San Salvador, San Pedro Sula, Managua and San Jose; Anton, 1993), small urban areas, and for almost all rural areas. Most of the drier western agricultural regions of Central America depend on groundwater for irrigation. The high dependence on groundwater will increase even further in the next decade due to: a) severe limitations on the availability of reliable quantities of surface water and b) the continuous degradation of surface water quality. For most of Central America's potable water and irrigation needs, groundwater is the only viable option for the future. Any sustainable development strategies or policies must address this growing groundwater dependence if they are to succeed. The growing groundwater dependence in Honduras and El Salvador and severe need for proactive protection strategies is exacerbated by a lack of qualified groundwater personnel (hydrogeologists) and national training opportunities. Large donor-funded projects continue to depend on outside groundwater expertise instead of seriously building capacity and the ability to provide that capacity building nationally on an ongoing basis.

Groundwater is naturally protected from pollution by thick zones of soil and rock and, in general, is much less vulnerable to pollution than surface water. Indeed, relative to surface water, groundwater is a much more pristine resource, but once contaminated, almost impossible to clean up due to its inaccessibility and slow movement. Nevertheless, it is now recognized that groundwater contamination is a major environmental issue in most populated areas of the world. Urbanization, deforestation and poor agricultural and industrial practices increasingly threaten groundwater quality. Experience in the developed world suggests significant groundwater contamination is likely if protective actions are not taken today. However, most of the groundwater contamination cases have been documented only in the developed countries. In Central America, only a handful of groundwater contamination cases have been documented in recent years. Groundwater quality degradation may already be occurring throughout much of Central America but is unnoticed since water quality testing programs at best only measure a small percentage of the contaminants routinely tested for in developed countries.

The terrible flooding caused by Hurricane Mitch was exacerbated significantly by deforestation due to harvesting, clearing of agricultural land and urbanization. In poor rural areas, people gradually harvest local forests for firewood needed for cooking. Deforestation always leads to a significantly higher vulnerability to flooding and reduced groundwater recharge. Much of the unprotected forests are in the higher mountain aquifer recharge areas and perform a very important hydrologic function (maintaining aquifer recharge while minimizing surface runoff and soil erosion). This ensures the aquifers are replenished (and not gradually depleted) and continue to provide a long-term water supply, as well as, supply clean water to other components of the aquatic system (rivers, lakes and wetlands).

Importance of Integrated Water Resource Management

Despite Central America's high dependence on groundwater, effective water resource management involves consideration of the interconnectivity of all water resources. This requires multi-disciplinary collaboration among scientists/engineers, health officials, land-use planners, legal and policy experts, sociologists and economists. Hydrogeology is thus an important post-graduate program for the Central America region but must be taught within the broader framework of the other water disciplines such as engineering, economics, law, social work/science and health. The CARA Network, the Latin American Water Network (LAWETNet), the Central American Engineering Network (REDICA) and Autonomous University of the State of Mexico (UAEM, Toluca) have already collaborated in the delivery of a Spanish-language short courses in IWRM (2004 in Toluca, Mexico) and are currently planning another course to be given in Guatemala (at the University of San Carlos; USAC) in 2005. At least one such course will be delivered in each of El Salvador and Honduras during the project and UNAH/UES faculty will be trained to deliver this material on their own by project-end.

Relevance to UNAH and UES

UNAH and UES are mainly challenged by lack of faculty expertise, inadequate curriculum, infrastructure and research funding in the water sector. The following summarizes the needs and priorities expressed by UNAH and UES: (1) increasing faculty expertise in hydrogeology and water resource management; (2) hiring additional faculty with expertise in these fields; (3) hiring additional women faculty; (4) developing and strengthening graduate programs in hydrogeology and water resource management; (5) increasing the number of candidates for graduate programs; (6) strengthening regional academic cooperation on water issues since the CA countries have similar water problems, climatic and geological conditions; (7) developing and strengthening partnerships with public sector water institutions, municipalities, non-governmental organizations and the private sector; and (8) developing and strengthening research projects that directly involve and benefit local communities.

2. PROJECT ACTIVITIES

Pre-Project Activities

- *Stakeholder Consultation:* UNAH and UES will invite all key stakeholder organizations to a half-day workshop in the first quarter of the project in which UNAH and UES will present preliminary/draft designs for the MSc. programs and Continuing Education) and request feedback from these organizations.
- *Capacity Needs Assessment:* This activity will formally identify the capacity needs at UNAH and UES to be addressed by the project. UNAH and UES will conduct an internal appraisal of their current capacity and the required new capacity to properly deliver the MSc. programs, continuing education and policy strengthening. The project will then be designed to develop the required new capacity. The appraisals will involve a full review of existing faculty and support personnel, administrative facilities, curricula, research programs, teaching facilities, laboratory facilities, computer facilities, internet services, field equipment and vehicles. The results of the Capacity Needs Assessment will be presented to the Steering Committee (see Management and Administration).

The project is divided into six components:

- I. MSc. Programs
- II. Continuing Education
- III. Policy Strengthening
- IV. Development Education
- V. Management and Administration
- VI. Monitoring and Evaluation

The primary activities are described below and the timing of their implementation is shown in Annex A: UPCD Tier 2 Project Work Plan.

I. MSc. Programs

- *Curricula Design and Approval:* The programs will be directed toward water sector professionals working in government agencies, NGOs and private companies. The programs will be designed to be gender-sensitive and accommodate females. Both new MSc. programs will be based in the Faculty of Engineering and include a core natural (water) science curricula (emphasizing groundwater) complimented by a holistic yet applied “water management” curricula covering the socio-economic, gender, development, legal and policy aspects of integrated water resource management. The programs will be sustained according to the CARA Network model of building strong national and international reputations leading to a broad base of regional resource sharing, financial and other support. The two MSc. programs will be registered at the Central American Academic Advisory Council (CSUCA) by project-end.
- *Recruitment and Training of Professors:* This activity will be carried out following the recommendations of the Capacity Needs Assessments. UNAH and UES faculty will be trained at UC, UW and CARA Network universities (University of Costa Rica, UCR; National Autonomous University of Nicaragua, UNAN; and the University of San Carlos, Guatemala, USAC). UNAH and UES will each send one faculty-in-training to UC and UW to be trained in their hydrogeology MSc. programs. UNAH and UES will also each send one faculty-in-training to one of the CARA MSc. programs (UCR, UNAN or USAC). “Training of trainers” type courses on themes such as gender sensitivity (see below), integrated water resource management (IWRM), public administration of water resources and legal reform in the water sector will be

delivered in partnership with other key regional organizations such as the United National Network for Capacity Building in IWRM (CAPNet), the Latin American Water Network (LAWETNet), the Central American Engineering Network (REDICA) and the Gender Water Alliance (GWA). UNAH and UES professors will also have opportunities for training through the Continuing Education short courses and MSc.

- Recruitment of Female Faculty and Students: Female faculty at UES/UNAH will be trained early in the project and put in place as mentors/advisors to female students. Female applicants will be strongly encouraged to apply to the MSc. programs. One of the two professors to be trained in the MSc. programs in hydrogeology at UC, UW or CARA Network (see above activity) will be female and upon graduation these people will return to UNAH/UES as a professor in the new MSc. program.
- Procurement of Books and Equipment: UNAH/UES will procure academic books (e.g. hydrogeology textbooks), documents, computer software, laboratory equipment and field equipment (e.g. water samplers, field chemistry kits, rain gauges) as necessary for their MSc. programs. Procurement will take place mostly in Year 1 and 2 to ensure the equipment is in place for the MSc. programs.
- Set-up of Administrative Support: UNAH/UES will set-up administrative support for the new MSc. programs in Year 1. MSc. programs are typically administered by the host faculty but often the Faculty of Graduate Studies will play a key role in administration.
- Student Recruitment and Selection: This is a very key activity as students must be academically qualified and highly committed. UNAH/UES will begin student recruitment immediately in Year 1 and ensure students are selected well in advance of the beginning of the first MSc. program cycle (by Year 3). Some students may require a course or two of academic preparation for the MSc. programs.
- Gender-sensitivity training: Students and faculty will be trained in gender issues through short courses delivered in component II Continuing Education.
- Community-development training: Students and faculty will be trained in community development issues through short courses delivered in component II. Continuing Education.
- Community-based research projects: Each M.Sc. student will be required to defend a thesis which is an independent research project on a priority theme within their home countries. Particular emphasis is placed on projects conducted at the municipal and community level. Students receive funding for expenses such as transportation, per diems/accommodation in the field, field equipment (stays with partner universities), laboratory analyses, software, etc..
- MSc. Program Delivery: UNAH and UES will each initiate Cycle I of their two-year MSc. programs by Year 3 of the project and have a minimum of 8 students (30% female) at a time. CARA Network MSc. programs are all synchronized to begin in February of year 1 and end in December of year 2 for a total of 23 months. UNAH/UES will time their programs according to this schedule to optimize collaboration/resource sharing with the CARA Network. All students will be required to dedicate themselves full-time to the program; however, exceptions will be made for students with families to complete the programs over two cycles (a four-year period) instead of one. UNAH and UES will become full members of the CARA Network and thus receive significant project support (especially faculty training) from the Network, as well as, ongoing support after the project is completed.

- *Gender-Sensitivity Training:* Gender-sensitivity training will be for all professors and students involved in the UNAH/UES MSc. programs. Gender-sensitivity training will be conducted in collaboration with the Gender Water Alliance (GWA), which has already delivered Spanish-language gender/water courses in the region. GWA instructors will team up with UNAH and UES professors to ensure UNAH and UES both receive course training but also are able to deliver the courses on an ongoing basis within their MSc. and Continuing Education programs.
- *Community-Development Training:* All MSc. students will be trained in participatory field methodologies and required to conduct fieldwork in a rural or urban community or municipality, collect good field data, and work directly with key stakeholders applying a participatory approach.
- *Community-Based Research Projects:* All MSc. students will be required to do theses, which are very important hands-on learning experiences for the students. The thesis will be designed to be community-based field projects to ensure the students are working very closely with key stakeholders. Prior to the fieldwork phase of the projects (end of year 1 of MSc. program) the students will be given courses in technical field methods as well as the social (gender-sensitivity and community development) research skills.

II. Continuing Education

- *Stakeholder Consultation:* As described above for the MSc. programs, UNAH and UES will invite all key stakeholder organizations to a half-day workshop in which UNAH and UES will present preliminary/draft designs for the Continuing Education and request feedback from these organizations.
- *Curricula Design and Approval:* The programs will be directed toward municipal-level water technicians and district/national government water sector professionals. The programs will be designed and approved in Year 1 and delivery will begin in Year 2. The curricula will include short courses, workshops, conferences and distance education covering topics including *integrated water resource management, water treatment systems, rural water supply and sanitation, municipal wellhead protection, irrigation methods* and *water well construction*.
- *Set-up of Administrative Support:* UNAH/UES will set-up administrative support in the first quarter of the project for the continuing education programs within the administrative structure of the MSc. programs.
- *Instructor Recruitment and Training:* Instructors will be recruited from UNAH/UES, UC, UW, the CARA Network or any other organization pending teaching needs. All instructor expenses will be covered, however, honorariums will not be paid to any instructors. UNAH/UES instructors will be gradually trained during the project to deliver the continuing education program independently on an ongoing basis after the project.
- *Program Delivery:* The Continuing Education program will begin in Year 2 of the project. MSc. students will attend all continuing education courses as part of their MSc. programs (i.e. for academic credit) while technicians/ professionals will receive a certificate for attendance. In addition to the MSc. students, at least 60 professionals and technicians (female and male) each year per country will benefit from this program.

III. Policy Strengthening

- *National Policy Forums:* UNAH and UES will each deliver a national policy forum near the end of Year 1 of the project. The purpose of the forum will be to identify critical policy needs for water resource management in each country. All key stakeholders (public and private sector) will be invited to participate. The forums will produce clear action plans defining a clear supportive role for UNAH and UES and research priorities. In Honduras, the project will work closely with *La Plataforma del Agua en Honduras* (Honduran Water Platform; www.plataformadelagua.un.hn) which is a voluntary professional organization whose mission is to improve the dialogue and understanding of key water resource management issues. The UNAH Team Leader (Ing. Nabil Kawas) is the UNAH representative on the Water Platform national committee. In El Salvador, the project will partner with Salvadorian Development and Environment Research Program (PRISMA) which is a NGO specializing in water policy issues.
- *Policy Research:* Following the results of their national forums, UNAH and UES faculty and students will conduct water policy related research (mostly through the MSc. theses thus funding for this activity is budgeted under “I. Community-Based Research Projects”) in close collaboration with key national (e.g. water, environment, agriculture, etc) and regional water organizations such as the Central American Environment and Development Committee (CCAD), the Regional Committee for Water Resources (CRRH), the Central American Association of Water Supply/Sanitation Agencies (CAPRE), REDICA, the Water Centre of the Tropical Humid Region for Latin American and the Caribbean (CATHALAC), and the Global Water Partnership-Central America (GWP-CA).
- *Public Education and Awareness Building:* Universities are in a special position as leaders and educators of the broader community and they commonly provide public education in the area of water resource management. UNAH and UES will each develop their own unique public education strategies following their national policy fora. The education may target children or the general public and could include outputs such as a film, book, school teaching module or participation in public events (e.g. World Water Day). The Water Platform also plays an important role in public education and awareness in Honduras and synergies will be explored.

VI. Canadian Public Engagement

The project will continue the public engagement activities initiated by the CARA project, in particular, the secondary school teaching module and video on Central American water issues and their relation to development. The module can be found at <http://www.caragua.org/HTML/HighSchoolCurriculaEnglish.htm>.

The module includes a one-hour video that was developed in collaboration with the Calgary Board of Education and will be introduced to schools in 2005. In the Tier II project this teaching module will be marketed in additional school boards in Alberta and Ontario. UC and UW will also continue to participate in on-campus and community events to educate Canadians about Central American water issues within their developmental contexts.

V. Project Management

Roles and Responsibilities of UC

The Canadian lead university, the University of Calgary, will be responsible to AUCC for: (1) the achievement of the program’s outcomes and for the production of specified reports, according to the terms of the grant agreement; (2) the adoption and implementation of policies, procedures and controls to assure the efficient utilization of AUCC funds; and (3) the establishment and implementation of adequate evaluation and

auditing procedures in order to determine the extent to which the desired outcomes of the program have been achieved and to assess the efficiency and effectiveness of execution of the program. The International Centre, UC, will provide administrative and financial management services. The International Centre will provide *financial and administrative training* to UNAH/UES personnel at project start-up. Each partner will receive a project financial “Administrative Manual” which provides all information and templates in electronic format. The Manager of Financial and Administrative Services, at the International Centre, will be supported by a team of professional accountants assigned to maintain effective mechanisms for financial record-keeping and reporting. The substantial resources of the UC’s Department of Financial Services support all of UC’s personnel and administrative and financial control systems. At project mid-term a financial management review will be conducted to evaluate the effectiveness of financial systems and provide recommendations for improvement. In addition, a formal financial close-out will take place at project end.

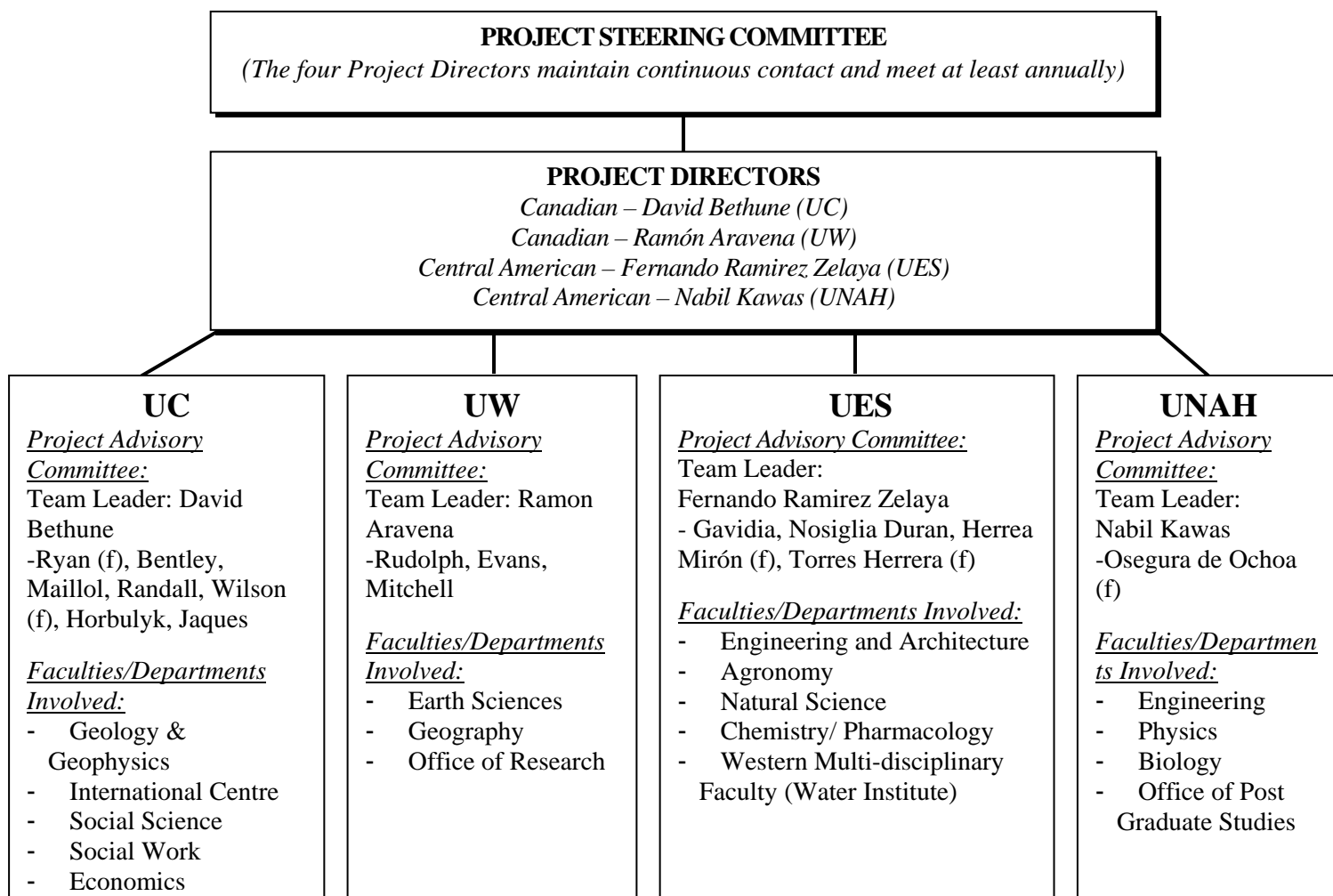
Management Structure

The Project management structure will be democratic and inclusive. The structure is comprised of the following elements:

- The ***Project Steering Committee***, which will follow a consensus model of decision-making will coordinate and monitored the different activities. The Committee will meet once per year and be co-chaired by one Canadian and one Central American Director. The Committee will be comprised of the four Project Directors and a financial representative from each institution. Each year, the Committee will meet in a different location and conduct a project review including a revision of all performance measurement information gathered through the internal monitoring system. The Committee will make project modifications as necessary and produce an annual workplan.
- ***Project Advisory Committees at each Institution*** will be made up of a team of faculty members at each institution. The Committees will be responsible for the management of the Tier II Implementation and Delivery components at the particular institution. It is expected that the Advisory Committees will meet at least once every few months and more often during certain periods.
- The ***Canadian Project Director*** (at UC) will manage the day-to-day Project activities and be responsible for all reporting to, and communication with, AUCC. He will maintain close contact with the Project Directors at UNAH, UES and UW to ensure all activities are executed properly and on-time, reports are prepared and monitoring information is collected. The Canadian Director will be supervised by (and assisted by) the UC Advisory Committee.
- ***Project Directors at each Institution*** will chair their respective Advisory Committees and be responsible for liaison between their respective institutions and UC and the other project institutions. They will also have good contact with key stakeholders nationally and internationally. They will be responsible for the production of semi-annual financial and narrative reports (in Spanish), work plans and budgets for UC and the Steering Committee.

Project Management Structure

(Females indicated by (f))



Project Directors:

- **Mr. David Bethune** (MSc.) Canadian Project Director at UC. Faculty of Science, University of Calgary. Tel 403-220-8029 Fax 403-282-9154 Email: bethuned@ucalgary.ca. Mr. Bethune is a hydrogeologist who has worked in Central America on various projects since 1988. In 1994-95, Mr. Bethune spent 18 months as a visiting (from UW) professor at the UCR and co-coordinator of the MSc. program in Water Resource Management and Hydrogeology. Since that time Mr. Bethune has continued his support to the UCR MSc. program and the region through various projects funded by IDRC and other organizations such as the International Atomic Energy Agency. Mr. Bethune was Project Manager for the CARA Project (funded by the CIDA UPCD Tier 1 program) during the period 1999-2005.
- **Dr. Ramon Aravena**, UW Project Director. Research Professor, Department of Earth Sciences, University of Waterloo. Tel 519-888-4567 ext. 5652 Email: roaraven@sciborg.uwaterloo.ca. Dr. Aravena, a native Chilean who has lived in Canada for over 20 years, maintains an active research program in Latin America in the area of isotope hydrology and groundwater geochemistry. Dr. Aravena has provided assistance to Central America for over ten years through support to the UCR MSc. program and later the UNAN and USAC MSc. programs. Dr. Aravena has been very active in the region teaching several short courses and supervising various Central American and Canadian graduate students. He is also part of the

expert's pool of the International Atomic Energy Agency for their projects and education initiatives in Latin America. Dr. Aravena is currently the Project Director at UW for the CARA Project and will continue in this role for the new Tier II project.

- **Mr. Fernando Ramirez Zelaya** (MSc.) UES Project Director. Professor, University of El Salvador Phone number: 011-503-235-5035 E-mail address: framirez@ing1.ues.edu.sv or framirez@yahoo.com. Mr. Ramirez is a specialist in potable water and wastewater treatment and has been the Director of the Department of Chemical Engineering since 2003. Mr. Ramirez also has a Masters in Business Administration and is currently the Director of Professional Issues of the Salvadorian Association of Engineers and Architects.

- **Mr Nabil Kawas** (MSc.) UNAH project Director. Professor, National Autonomous University of Honduras Phone number: 011-504-232-2110 ext 230 or 233-1114 E-mail address: nkawas@fisica.unah.hn or nkawas@multivisionhn.net Mr. Kawas has been Professor Titular II in the Department of Physics since 1974. He has conducted research in the area of meteorology and water resource management since 1986. He has previously served as the Head of the Physics Department at UNAH. He was a member of the Coordinating Board, Roving Regional Postgraduate Course in Hydrology and Water Resources for the Central American Region and the Dominican Republic. He is currently a member of the coordinating board for a Master Degree course in Risk Management and Natural Disasters Prevention, Chief of the Meteorological Section of the Department of Physics and president of the UNAH Committee for the Prevention of Natural Disasters.

It is clear that while there are several female professors involved in the project (at UC, UES and UNAH), there are currently no female Project Directors. As a result, a special effort will be made to involve the female team members at UES and UNAH at the Steering Committee and gradually promote these females to leadership positions. In addition, at UC Dr. Cathryn Ryan and Dr. Maureen Wilson will have a prominent role in the project and will participate in project leadership and decision making.

VII. Monitoring and Evaluation

The project will be monitored internally according to the Performance Measurement Framework which will be fully developed during the Inception Mission. At the annual Steering Committee meeting, each university will present the results of data collection for activities at their own universities. The Steering Committee will review the information and make project adjustments if necessary. This information will also be annually reported to AUCC. The project will also be evaluated by an independent evaluator mid-way through the project.

3. GENDER-EQUALITY STRATEGY

Traditionally, Central American women have lived in subordination to men, far from the spheres of power where decisions with major repercussions on society are made. Throughout the region, women are particularly poor as they do not have income parity, their wages being much lower than men's for similar types of work. Water quality or quantity problems impact family health which women carry primary responsibility for. Women tend to be marginalized from higher education and community decision-making processes. Men occupy the vast majority of professional and academic positions in the water resource fields. Women most often occupy support positions. This partly results from a severe shortage of females trained in the traditional male-dominated fields of science and engineering. Professional women with children are most often required to work full-time, as well as take responsibility for the majority of household duties. At a community level,

strategies to target females, who typically shoulder more of the burden and responsibility for family and community water and sanitation problems, are severely lacking in Central America.

At UNAH and UES, there are currently a low percentage of female professors and students in the faculties of engineering. Currently, the UNAH Department of Civil Engineering employs 19% (6 out of 31) female faculty, the UES Faculty of Engineering employs 34% (46 out of 134) female faculty. Currently, the UNAH has 60% female students in engineering and, based on this large pool of upcoming female graduates, plans to increase the number of female professors. UES has 30% (1530 out of 3614) female students in engineering. Within the project, females will be encouraged to enter the MSc. programs and will be actively recruited for faculty positions according to targets established by each university. The project will provide gender sensitivity training to all UNAH/UES faculty and MSc. students, promote female leaders, professors and students, and gradually develop an institutional sensitivity to gender equity that will project to all their academic and community-based activities. The project will be consistent with gender equity programming in Honduras and El Salvador following the *National Policy on Women* and the *Action Plan for 2000-2004*.

4. RISKS AND MITIGATION STRATEGIES

Impact Level:

Risk: Honduran and Salvadorian government priorities remain supportive of improving water resource management (low risk level).

Mitigation Strategy: Involve government agencies (national and municipal) in the project and include education/awareness building activities.

Economic conditions in Honduras and El Salvador enable continued investment by government in water resource management (medium risk level).

Mitigation Strategy: Pray.

Outcome and Output Level:

Effective communication between Canada and DCETO's maintained despite disparities in technology and distance (low risk level).

Mitigation Strategy: Develop strong e-mail/www project infrastructure; meet when possible, establish regular communication schedule.

Project personnel in both countries are motivated, hard-working and resourceful and will see the project to completion (low risk level).

Mitigation strategy: Obtain high-level institutional support and establish strong leadership prior to project implementation.

Honduran and Salvadorian project trainees (faculty and MSc. students) are high caliber and committed to applying their training to careers in their home countries (medium risk).

Mitigation strategy: Promote MSc. programs, conduct extensive recruitment, accept only top candidates and ensure students graduate.

UNAH/UES are committed to gender equity and have no difficulty in recruiting qualified female students and professors (medium risk).

Mitigation strategy: Ensure gender equity targets are met and that UNAH/UES specifically promote female involvement in the project.

UNAH/UES attract sufficient numbers of participants to short courses (low risk).

Mitigation strategy: Choose topical course themes, arrange highly qualified instructors and promote/advertise the courses widely.

UNAH/UES able to mobilize faculty and students to participate in policy review, research and national fora (low risk).

Mitigation strategy: Build policy activities into project design and monitor activity.

CI and DCETO personnel able to deliver short courses and research projects in remote rural areas despite difficult weather and geographic conditions (medium risk).

Mitigation Strategy: Deliver short courses/conduct field work in dry season (Dec-May) when possible.

5. ENVIRONMENTAL IMPACT

The project is environmental by nature and *Environmental Impact Assessment* (EIA) will be a fundamental part of UNAH/UES's new MSc. programs and continuing education. The project will build upon Spanish-language EIA materials already prepared under the Central American Water Resource Management Network (CARA) project. CIDA's EIA policy and the Canadian Environmental Assessment Act (CEAA) will be fully respected regarding any project activities or approaches that could impact the environment.

6. SUSTAINABILITY

The successful partnership model and lessons learned in sustainability planning that UC/UW developed with the partner institutions in Costa Rica, Nicaragua and Guatemala will be applied at UNAH and UES. During the initial years of the project UC/UW will assist UNAH and UES with the development of the MSc. curricula and the delivery of some of the courses. Gradually UNAH and UES will form their team of professors and reduce their dependency from UC/UW. Strategic partnerships are in place with the regional networks of CARA, REDICA and LA-WETnet. Each of the networks will provide support and regional expertise to UNAH and UES. CARA Universities will give priority to UNAH and UES professors that apply to their Master programs and short courses. In addition, professors from CARA universities together with UNAH and UES faculty members will deliver short courses in Honduras and El Salvador. CARA universities will also provide administrative guidance during the initial phases of the project. It is expected that being able to draw upon the lessons learned from CARA partner institutions on how to administer, set up and obtain Central American certification for a new MSc. program will be of benefit to UNAH and UES. REDICA and LA-WETnet will give priority to professors from UNAH and UES to participate in their Trainers of Trainers workshops and courses in *Integrated Water Resource Management*. The Faculty of Engineering at UES is a member of REDICA and therefore is already actively collaborating and benefiting from the network. These partnerships with Central American networks and Universities are considered fundamental for the sustainability of the new Master programs and for the capacity building of the region. It is expected that over the years these partnerships based mainly in the understanding of mutual collaboration and contribution will reduce dependency on Canadian and international aid and expertise.

PROJECT INFORMATION

UPCD Tier II S61268-570/I

Water Management in Honduras and El Salvador

April 1/2005-March 14/2011

Canadian lead institution: The University of Calgary

CIDA Contribution: \$1,000,000

All Partners Contributions: \$2,001,000

LOGICAL FRAMEWORK ANALYSIS

Narrative Summary	Expected Results	Performance Measurement	Assumptions /Level of Risk
<p>Goal</p> <p>To increase the capacity of Honduras and El Salvador to manage, protect and conserve their water resources.</p>	<p>Impacts</p> <p>Improved management of water resources in Honduras and El Salvador through increased institutional and human resource capacity and stakeholder partnerships within a supportive policy framework.</p>	<p>Impact Indicators</p> <ol style="list-style-type: none"> 1. Extent to which water quality improved (testing results). 2. Number and type of mechanisms put in place in Honduras and El Salvador to increase access to water quantity information for stakeholders. 3. Strengthened water policy framework. 4. Number and type of policies created or improved in each country to support good management, protection and conservation of water resources. 5. Number of type of partnerships created with stakeholders to improve water resource management. 	<p>Honduran and Salvadorian government priorities remain supportive of improving water resource management (low risk level).</p> <p>Economic conditions in Honduras and El Salvador enable continued investment by government in water resource management (medium risk level).</p>

Purpose	Outcomes	Outcome Indicators	Assumptions and Level of Risk
<p>To strengthen the capacity of the UNAH (Honduras) and UES (El Salvador) in water resource management education, training, research and practice, in collaboration with communities, municipalities, government agencies, other universities, international organizations and networks.</p>	<p>1. Two unique <i>MSc. programs</i> in hydrogeology and water resource management for professionals working in the water resource sector (government, university, NGO's and private sector) created and operational by early 2007, with 5-10 students (at least 30% female) per two-year cycle. Two full cycles to be completed within project (2007-2011).</p> <p>2. Sustained <i>continuing education</i> programs in hydrogeology and water resource management for professionals working in the water resource sector (government, university, NGO's and private sector) developed and operated by UNAH and UES by 2009.</p> <p>3. Strengthened water policy in Honduras and El Salvador emphasizing integrated water resource management and groundwater in particular directed toward rural communities and municipalities. At least 4 relevant examples by project end.</p>	<p>1a) Institutional support: Number of UNAH/UES professors/staff involved. Number of new faculty positions created. Infrastructure (e.g. offices, laboratories, computers, transportation) adequate. Administrative support adequate.</p> <p>1b) External support: Extent to which UNAH/UES secure alternative sources of funding (e.g. for student scholarships, community-based research or faculty training) for the long-term sustainability of the MSc. programs.</p> <p>1c) Program recognition/reputation. Increasing # of MSc. program applicants and students (f, m) with time. Registration of MSc. programs with CSUCA.</p> <p>2a) Institutional support: Number of UNAH/UES professors instructing in courses. Number of short courses delivered per year by each of UNAH/UES.</p> <p>2b) Program recognition/reputation. Perception of importance and effectiveness of continuing education program by participants. Increasing # of short course students (female and male) with time.</p> <p>3a) Number and type of policy research projects/interventions carried out and extent to which they have contributed to local or national water policy strengthening.</p> <p>3b) Number and type of improvements made to policy as a result of the study.</p>	<p>Effective communication between Canada and UNAH/UES maintained despite disparities in technology and distance (low risk level).</p> <p>Project personnel in both countries are motivated, hard-working and resourceful and will see the project to completion (low risk level).</p> <p>Honduran and Salvadorian project trainees (faculty and MSc. students) are high caliber and committed to applying their training to careers in their home countries (medium risk).</p> <p>UNAH/UES are committed to gender equity and have no difficulty in recruiting qualified female students and professors (medium risk).</p> <p>UNAH/UES attract sufficient numbers of participants to short courses (low risk).</p> <p>UC/UW and UNAH/UES personnel able to deliver short courses and research projects in remote rural areas despite difficult weather and geographic conditions (medium risk).</p> <p>UNAH/UES able to mobilize faculty and students to participate in policy review, research and national fora (low risk).</p>

Outputs

1.1 By 2008, each of UNAH/UES has two new faculty (1 female, 1 male) trained to deliver the MSc programs and are effectively teaching in their home university.

1.2 UNAH/UES successfully recruit, train and graduate 5 to 10 high-caliber MSc. students (at least 30% female) and complete two full (two-year) MSc. program cycles in the period 2007-2011.

1.3 UNAH/UES MSc. students (10-20) and faculty (at least 5) are trained in gender-sensitivity and community-development-one course offered per MSc. program cycle (in 2007 and 2009).

1.4 UNAH/UES MSc. students conduct applied “community-based field projects” in collaboration with key stakeholders (in particular municipalities and government water agencies). This training will occur twice in the project: in 2007 and 2009.

Output Indicators

1.1 Number of new faculty trained and hired to permanent faculty positions at each of UNAH/UES.

1.2 Number of students (f,m) in each UNAH/UES MSc program (applicants, accepted, graduated). 70% of MSc. students (30% female) successfully complete all components of programs and graduate in final year of project (increase over time).

1.3.1 Number of students and faculty (M/F) trained by subject.

1.3.2 Students, professors and graduates demonstrate knowledge of gender-sensitivity and community development in their work..

1.4 Increasing # of stakeholder organizations collaborated with over time (in particular municipalities and government water agencies) and positive feedback regarding collaboration.

2.1 UNAH/UES are prepared to offer continuing education programs in hydrogeology and water resource management through a series of on-going short courses, seminars, workshops, distance education courses and professional diplomas (diplomados) directed toward municipal and national government technicians and professionals.

2.2 By 2010, UNAH and UES are each delivering a minimum of three short courses, of 1-2 week duration, per year, training 20-50 students per course (at least 30% female). One of the three annual short courses will be delivered "on-location" in rural municipalities.

3.1 A national-level review of critical policy needs focusing on groundwater and basin management in Honduras and El Salvador will be conducted by UES and UNAH and completed in 2008.

3.2 UNAH/UES professors/students have gained significant experience that has further strengthened the MSc. and continuing education programs with respect to water policy.

2.1.1 Number of short courses delivered. Number delivered in rural municipalities.

2.1.2 Increasing # of applicants and students over time (female/male).

2..1.3 Increasing independence of UNAH/UES for course delivery (less dependant on outside instructors) over time.

2.1.4 Increase in # of stakeholder organizations sending students to short courses over time.

2.2.1 Number of courses delivered and number of students (M/F) trained.

2.2.2 Student feedback indicates courses are of high quality, instructors good and course themes relevant to student priorities and they have applied new knowledge/skills in their work..

3.1 Degree of stakeholder satisfaction with their water-policy related collaboration with UNAH/UES (interview with key stakeholders).

3.2 MSc. and Continuing Education programs content includes water policy issues (curriculum review).

Annex A: UPCD Tier 2 Project Work Plan

Project Number: S61268-570/I		Canadian Lead Institution: University of Calgary										Countries: Honduras and El Salvador																						
Start and end dates: April 1/2005-March 31/2011		Project Title: Honduras-El Salvador Water Management																																
Results		Activities	FY1				FY2				FY3				FY4				FY5				FY6				FY7							
Intended Outcomes	Intended Outputs	Note: All implementation activities should be linked to results.	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
2. Sustained <i>continuing education</i> programs in hydrogeology and water resource management for professionals working in the water resource sector (government, university, NGO's and private sector) developed and operated by UNAH and UES by 2009.	2.1 UNAH/UES are prepared to offer continuing education programs in hydrogeology and water resource management through a series of on-going short courses, seminars, workshops, distance education courses and professional diplomas (diplomados) directed toward municipal and national government technicians and professionals. 2.2 By 2010, UNAH and UES are each delivering a minimum of three short courses, of 1-2 week duration, per year, training 20-50 students per course (at least 30% female). One of the three annual short courses will be delivered "on-location" in rural municipalities.	Stakeholder consultation Gender sensitivity training Curriculum design and approval Set-up of administrative support Instructor recruitment Program delivery	-	-										-																				

**UPCD Tier 2 projects
Detailed project budget**

	A	B	F	I	L	O	R	U	X
1	Project number: S61268-570		Project title: WATER MANAGEMENT IN HONDURAS / EL SALVADOR						
2	Duration : April 2005 - March 2011		Cdn. institution: University of Calgary			Developing country: HONDURAS/EL SALVADOR			
3									
4	PART A								
5	EXPENSE CATEGORIES:	Total CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	Total Canadian intitution(s) contributions all fiscal years
6	See attached budget notes.	all fiscal years	FY 1 (2005/06)	FY 2 (2006/07)	FY 3 (2007/08)	FY 4 (2008/09)	FY 5 (2009/10)	FY 6 (2010/11)	
7	Note: All maximums outlined below are on CIDA contributions								
8									
9	1. Project administration (12% max. for admin personnel)								
13									
25	On-campus personnel	74,558	11,033	11,668	12,018	12,378	12,750	14,711	94,400
26	On-campus personnel overhead	40,261	5,958	6,301	6,490	6,684	6,885	7,944	50,976
27	Off-campus personnel								
28	Off-campus personnel overhead								
29									
36	Administration-related travel	13,636	9,650	-	1,135	-	2,851	-	
37									
42	Other direct admin. costs	20,460	3,454	3,126	3,258	3,395	3,539	3,688	
43									
44	Subtotal 1	148,914	30,095	21,094	22,900	22,458	26,024	26,343	145,376
45	2. Non-Administrative personnel								
49									
64	On-campus personnel	135,463	18,567	22,018	22,678	23,359	24,060	24,781	133,523
65	On-campus personnel overhead	73,150	10,026	11,890	12,246	12,614	12,992	13,382	72,102
68	Off-campus personnel	7,402	-	3,646	3,756	-	-	-	-
69	Off-campus personnel overhead	2,591	-	1,276	1,314	-	-	-	-
70	Subtotal 2	218,605	28,593	38,830	39,995	35,973	37,052	38,163	205,625
71									
72	3. Public Engagement (5% max)								
75									
76	Subtotal 3	-	-	-	-	-	-	-	-
77									
78	4. Consultants (excluding mid-term evaluator)								
83									
84	Subtotal 4	-	-	-	-	-	-	-	-
85									
86	5. Student and trainee costs								
87	Long-term student costs (2yr programs):								
94	DCETO Faculty @ MSc. Program UC & UW	110,966		57,534	53,432				
95	DCETO faculty @ UC & UW - thesis research	12,000		12,000	-				
100	DCETO Faculty @ MSc. Program CARA Network	61,386	7,216	30,305	23,865				
101	DCETO faculty @ CARA Network-thesis research	12,000		12,000	12,000				
106	DCETO students @ MSc. Program UNAH & UES	210,351		11,760	49,392	51,862	54,455	42,883	
107	DCETO students @ UNAH/UES- Thesis research	58,414				27,783		30,631	
113	Thesis Support: Teaching Equipment Rental & Short Course Instructors								80,000
114									
115	Short-term student and trainee costs:								
119	CA Students Travel (UNAH & UES)	11,192		2,520	2,977	2,778	2,917	-	
120									
121	Subtotal 5	476,310	7,216	114,119	141,666	82,423	57,372	73,514	80,000
122									
123	6. Travel (per diem, transportation, accommodation)								
124	Financial field training, monitoring and close-out	10,189	3,453		3,663			3,074	
125	DCETO faculty @ CARA Network-Supervisor Travel	1,103			1,103				
126	DCETO Student @ UNAH/UES- Supervisor Travel	4,868				2,315		2,553	
136	Cdn Instructor Travel (UC & UW)	23,342	-	7,748	5,727	4,860	5,006	-	
140	CA Instructor Travel (UNAH & UES)	11,192		2,520	2,977	2,778	2,917	-	
143	Subtotal 6	50,694	3,453	10,268	13,469	9,954	7,923	5,626	
144									
145	7. Mid-term evaluation								
146	Mid-Term evaluation-Consultant	20,000			20,000				
147	Mid-Term evaluation - Travel	10,000			10,000				
148	Subtotal 7	30,000	-	-	30,000	-	-	-	
149									
150	8. Capital Expenditures (add relevant line items)(15% max)								
151	Equipment for DCETO-UNAH	30,661		23,100	7,561				
152	Equipment for DCETO-UES	30,661		23,100	7,561				
153	Books for DCETO UNAH	2,127		1,050	1,077				
154	Books for DCETO -UES	2,127		1,050	1,077				
157	Subtotal 8	65,576	-	48,300	17,276	-	-	-	

**UPCD Tier 2 projects
Detailed project budget**

	A	B	F	I	L	O	R	U	X
1	Project number: S61268-570		Project title: WATER MANAGEMENT IN HONDURAS / EL SALVADOR						
2	Duration : April 2005 - March 2011		Cdn. institution: University of Calgary			Developing country: HONDURAS/EL SALVADOR			
3									
4	PART A								
5	EXPENSE CATEGORIES:	Total CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	CIDA contribution	Total Canadian intitution(s) contributions all fiscal years
6	See attached budget notes.	all fiscal years	FY 1 (2005/06)	FY 2 (2006/07)	FY 3 (2007/08)	FY 4 (2008/09)	FY 5 (2009/10)	FY 6 (2010/11)	
158	9. Other non-adm. direct costs								
159									
160									
161	Subtotal 9	-	-	-	-	-	-	-	-
162									
163	Total before Contingency	990,099	69,356	232,612	265,307	150,807	128,371	143,646	431,001
164									
165	10. Contingency (1%)	9,901	694	2,326	2,653	1,508	1,284	1,436	
166									
167	TOTALS	1,000,000	70,049	234,938	267,960	152,315	129,655	145,083	431,001
168									
169	PART B								
170	SUMMARY OF CASH & IN-KIND CONTRIBUTIONS								
171		CIDA	Canadian institutions	Overseas institutions	Others (specify)	Total Project Value			
172	PART C	1,000,000	431,001	570,000	-	2,001,001			
173	COST-SHARING RATIOS								
174	a) Total personnel and overhead costs	CIDA (50% max)	Cdn institutions (50% min)	Total Cdn Contribution					
175		333,424	351,001	684,425					
176		49%	51%	100%					
177		OK	OK						
178	b) Contribution made by CIDA and Canadian institution(s)	CIDA (max 70%)	Cdn. institutions (min. 30%)	Total Cdn contribution					
179	to total Canadian contribution	1,000,000	431,001	1,431,001					
180									
181		70%	30%	100%					
182		OK	OK						

DETAILED PROJECT BUDGET NOTES

Project Number S61268-570/I *Water Management in Honduras/El Salvador*

University of Calgary (January 2006)

UC : University of Calgary

UW: University of Waterloo

UNAH: National Autonomous University of Honduras

UES: University of El Salvador

UCR: University of Costa Rica

UNAN: National Autonomous University of Nicaragua

USAC: University of San Carlos, Guatemala

General Notes:

-all CI expenses include 3% inflation unless indicated by other CIDA regulations.

-all DCETO country expenses include 5% inflation

-all CI personnel salaries (on-campus and off-campus) include 18% benefits

-all CI personnel (on-campus) overhead calculated as 54% of (salary + benefits)

-all CI personnel (off-campus) overhead calculated as 35% of (salary + benefits)

-all CI personnel basis for payment is calculated based on annual salary/260 days = daily rate/7 hours per day = hourly salary rate. The work week is 35 hours/week.

-all CI personnel in-kind contributions of personnel time include 18% benefits and overhead calculated as 54% of (salary + benefits)

1. Project Administration

On-campus personnel

CIDA: UC Project Director (\$4,285), UC Admin Asst (\$22,898) and UC Accountant (\$47,375) including 18% benefits. Overhead rate = 54%. CI in-kinds: Based on time of UC International Center Executive Director, UC IC Director International Development & Research, UC IC Manager Finance and Admin., UC Project Director (50% of time provided as cash from the Faculty of Science), UC Faculty on Advisory Committee, UW Project Director and UW Office of Research personnel.

Administration-related travel

CIDA: Includes a) AUCC orientation session (May/2005; UC, UNAH and UES Project Directors), b) travel to one of the three CARA Network universities by UES project directors (Sept/2005) and UNAH project director (Jan/2006), d) Project inception mission in El Salvador and Honduras (October/2005; UC, UW, UNAH and UES Project Directors) and d) one Steering Committee meeting in Year 3 following the external evaluation (UC, UW, UNAH and UES Project Directors). Note that other administrative/project management meetings will take place as needed to coincide with Project short courses as the four Project Directors will be attending many of the short courses as instructors. This will reduce administrative-related travel significantly.

Other direct admin. costs

Office supplies and communications for printing, photocopy, project website (www.caragua.org) domain license fee (\$171 for 5 year license), improved Internet connections (for UNAH/UES MSc students and key professors) and long-distance telephone and fax (UC-\$6,923, UW-\$1,294, UNAH/UES-\$6,122 each).

2. Non-Administrative personnel

On-campus personnel

CIDA: UC Project Director (\$104,647), UC Accountant (\$4,902), UW Project Director (\$25,914). Note that UC Accountant will be conducting financial training as a non-administrative activity.

CI in-kinds: UC Project Director; UW Project Director UC and UW faculty will provide in-kind personnel time to the following:

- DCETO short course instructors
- DCETO student supervisors (direct supervision to faculty-in-training students at UC and UW and indirect supervision to students of DCETO M.Sc. programs).
- DCETO curriculum and policy advisors.

Off-campus personnel

CIDA: UC Cdn instructor to teach a semester course in the first promotion of the UNAH and UES MSc programs. Instructor will spend 6 months consecutively in Central America (3 months at each university) (\$7,402 for salary). Note travel and living allowance in accordance with CIDA guidelines budgeted under 6. Travel - Cdn Instructor travel.

3. Public Engagement – note that this activity will be executed with non-administrative on-campus personnel (budgeted above under category 2 (CIDA=\$14,105 salary and overhead; In-kind=\$34,527 salary and overhead). There will not be any direct costs as materials prepared under the CARA Network will be utilized. Activities will include distribution of CARA Network “Water for the World” video (Watering the Seeds of Time) and high school teaching module executed with Engineers without borders (see <http://www.caragua.org/HTML/HighSchoolCurriculaEnglish.htm> or the Project Description for more details).

4. Consultants – not required.

5. Student and trainee costs

Long-term student costs:

CIDA:

- A1) DCETO faculty at UC/UW MSc programs (\$110,966): Two students (one each from UNAH and UES), will be enrolled full-time in two-year programs (one each at UC and UW). Includes international and in-Canada student travel and personnel effects shipping to and from Canada (\$5,098 per student), tuition (\$15,235 at UC and \$32,480 at UW), book allowance \$600 per year, one-time clothing allowance of \$350, a one-time installation allowance of \$600 and a living allowance of \$1000 per month (x 24 months).
- A2) DCETO faculty at UC/UW MSc programs - thesis research (\$12,000 or \$6,000 per student): For thesis research costs (data collection and thesis production/binding according to CIDA long-term trainee manual). Supervisor travel not required as research will be conducted in Canada.
- B1) DCETO faculty at CARA Network (UCR, UNAN, USAC) MSc program (\$61,386): Two full time students (one each from UNAH and UES), two-year programs. Includes travel (\$2,153 per student includes thesis research travel), tuition (\$5,663 per student), book allowance \$600 per year, a one-time installation allowance of \$600 and a living allowance of \$1000 per month (x 22 months). Costs based on experience of CARA Network M.Sc. programs.
- B2) DCETO faculty at CARA Network MSc program - thesis research (\$13,320 or \$6,000 plus inflation per student for research costs (data collection and thesis production/binding-not governed by CIDA long-term trainee manual). The above costs are based on the experience of the CARA Network . Tuition costs are based on UCR (UNAN and USAC are slightly less). Living allowance is for 22 months as the programs begin in March and end in December. To attract and really train someone it is necessary for the student to study full-time and still pay for rent/accommodation near the university of study. Our experience in each of the CARA countries is that the cost of living is similar to that of Canada and thus we use the allowable monthly stipend of \$1000 per month for these students. The reality of how the DCETO’s distribute these funds to the students is on an as-needed basis. Each student has individual financial circumstances and differing needs for assistance. Books should also follow CIDA guidelines for trainees in Canada. A clothing allowance is not necessary. In addition, the *Management of Students and Trainees in Canada – Manual for Executing Agencies* indicates that “long-term students are allowed FOR FIELD RESEARCH a maximum of \$6,000 for the entire program, with receipts, and divided across two budget items of \$3,000 (a) books, supplies, research equipment and (b) preparation and binding of thesis or other work”. This also applies to students pursuing studies in one of the institutions of the CARA network.

- C1) DCETO students at UNAH and UES MSc programs (\$210,351): Includes student travel (\$1,902), tuition (\$22,801), books and living allowance (\$188,176) for students in first two cycles (ie. four years) of the new UNAH and UES MSc programs. To be spent by UNAH and UES on students pending the financial needs of each student. It is estimated that each DCETO will fully or partially support 5-10 students with these funds.
- C2) DCETO students at UNAH and UES MSc programs- thesis research (\$58,414) for research costs (data collection and thesis production/printing). To be spent by UNAH and UES on students pending the financial needs of each student. It is estimated that each DCETO will fully or partially support 5-10 students with these funds.

CI in-kinds: only for A2) DCETO faculty at UC/UW MSc programs - thesis research. These students will conduct their thesis research in Canada within research projects funded by NSERC, industry other agencies (\$40,000). These in-kinds will be entirely associated with student thesis research and will consist of laboratory space rental, laboratory services (e.g. water chemical analyses), technician time, field equipment rental, monitoring well installation and other hydrogeologic field or laboratory costs. UC/UW personnel time as supervisors budgeted under 2. Non-administrative personnel.

Short-term student/trainee costs:

CIDA: DCETO student travel (\$11,192). This includes travel funds for UNAH and UES to cover the travel expenses of their M.Sc. students and municipal water technicians to attend short courses.

CI in-kinds: Canadian Professors (and Project Directors) delivering short courses at UNAH/UES will often use the CI research equipment (and record the contribution as an in-kind rental fee. Also includes Canadian volunteers (consultants, government employees, students donating their time as short course instructors (\$40,000).

6. Travel

CIDA:

- UC accountant for financial training, mid-project monitoring and financial close-out (\$10,189; three trips going to both countries on each trip).
- B3: DCETO faculty at CARA Network MSc program - thesis research supervisor travel (\$1,102) Travel for student supervisors (from CARA Network universities) to thesis field sites in various locations throughout Honduras and El Salvador.
- C3: DCETO students at UNAH and UES MSc programs- thesis research supervisor travel (\$4,868). Travel for student supervisors (from UNAH and UES) to thesis field sites in various locations throughout Honduras and El Salvador.
- CI (Cdn) instructor travel (\$23,342)
- DCETO instructor travel (\$11,192). The latter includes travel funds for UNAH and UES to bring in outside instructors and send their own instructors to rural locations for short courses.

7. Mid-term evaluation

CIDA: Includes fees (\$20,000) and travel (\$10,000) for external evaluator. The mid-term evaluation costs include the consultants' fees, domestic and international travel, per diems and accommodation as per Treasury Board guidelines, direct costs such as printing of reports, photocopies, communications, GST and PST, as applicable and contingency.

8. Capital Expenditures

CIDA: Includes DCETO equipment (e.g. water samplers, small-scale (research) drilling equipment, field chemical analyses kits, UNAH/UES water laboratory equipment, computers/software) and books (for DCETO libraries) for MSc Programs (teaching and thesis research) and Continuing Education.

DCETOS' in-kind contributions (\$CAN):

Each DCETO has committed infrastructure and personnel time to the project as follows:

Expense Category	UNAH	UES
Administration	71,666	72,777
Students/Trainees	80,000	75,695
Community Outreach	20,000	13,888
Curriculum Development	69,444	63,972
Policy Development	40,890	41,668
Library and Laboratory Capacity	10,000	10,000
TOTAL	292,000	278,000