



# Document 502 Chapter Application To Acquire An EWB- USA Program

Chapter: **Oregon State University Student  
Chapter**

Country: **Nicaragua**

Community: **Los Potrerillos**

First Project: **Expansion of the Potable  
Water System in Los Potrerillos**

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ENGINEERS WITHOUT BORDERS USA  
[www.ewb-usa.org](http://www.ewb-usa.org)

**Please check one of the following boxes:**

- Chapter 502 application submitted for Open Program from EWB-USA website.
- Chapter 502 application submitted with 501 – Community Application for an EWB-USA Program/1<sup>st</sup> Project.
- Has the 501 application already been approved by the Application Review Committee (ARC)?  Yes  No

**Travel for Student Chapters:**

Student chapters must check their university's policy regarding travel to the destination country before submitting this application. If the university does not allow travel to the destination country, the chapter will not be allowed to apply for this program.

- Does the university/college allow students to travel to the destination country?  
 Yes  No

**Submittal Options:**

- **Chapter Submitting 502 Application for an Open Program on EWB-USA Website**
  - Chapter selects which program they wish to adopt from the Open Programs listed on the EWB-USA website.
  - Chapter submits this application and all supporting documents to [projects@ewb-usa.org](mailto:projects@ewb-usa.org).
  - The review cycle for this application follows the standard monthly review cycle for all reports. Please see the submittal deadlines on the EWB-USA website for more details.
  - *PLEASE NOTE: The NGO/Community contact information is not available on the 501 application on the website. If you have specific clarifying questions for the submitter, contact the Project Coordinator, [projects@ewb-usa.org](mailto:projects@ewb-usa.org). Please do not contact the submitter directly.*
- **Submittal Options for Chapter with Established Community Partnership**
  1. **Chapter submits 502 chapter application AFTER 501 community application is approved:**
    - Chapter submits 502 – Chapter Application to Acquire an EWB-USA Program by the next submittal deadline after the 501 – Community Application for an EWB-USA New Program/1<sup>st</sup> Project has been approved. For example, if the 501 application is submitted on September 30<sup>th</sup> and is approved on November 5<sup>th</sup>, then the 502 can be submitted by the next submittal deadline in mid-November (see monthly submittal deadlines on EWB-USA website for exact date.). The review cycle for the 502 application will follow the monthly review cycle for all other reports.
    - 501 applications are due the last day of each month and the review process is 4 to 6 weeks.
    - The community will add the name of the chapter it is submitting with their 501 application.
    - If the 501 application is declined, the 502 application should be not be submitted.
    - All applications with supporting documents should be submitted to [projects@ewb-usa.org](mailto:projects@ewb-usa.org).
  2. **Chapter submits 502 chapter application ALONG WITH 501 community application:**
    - Chapter submits 502 – Chapter Application to Acquire an EWB-USA Program along with the 501 – Community Application for an EWB-USA New Program/1<sup>st</sup> Project according to the monthly submittal deadline schedule for 501 applications. 501

- applications are due the last day of each month and the review process is 4 to 6 weeks. The community will add the name of the chapter it is submitting with in their 501 application.
- The partnering chapter can either submit both the 502 application and the 501 application together OR the community can submit the 501 application and the chapter can submit the 502 application separately. Both applications should note the partnering chapter or community.
  - **The 502 application will not be reviewed until the 501 application is approved. If the 501 is declined, the 502 will not be reviewed.**
  - If the 501 is approved, the review cycle for the 502 application will follow the monthly review cycle for all other reports. For example, if the 501 and 502 applications are submitted on September 30<sup>th</sup>, the 501 will immediately enter the October review process, which starts October 1<sup>st</sup>. The 502 will enter the standard monthly review cycle, which would start mid-October (see monthly submittal deadlines on EWB-USA website for exact date). The 502 reviewer will not begin their review until after approval of the 501, which in this case might not occur until mid-November.
  - All applications should be submitted to [projects@ewb-usa.org](mailto:projects@ewb-usa.org).
3. **Chapter Submitting Two 502 Chapter Applications to Adopt Separate Programs:**
- For the 502 to be eligible for review, all existing programs must be in the post-assessment phase.
  - If two 502s are submitted concurrently and the chapter is otherwise qualified to adopt a new program, at least one assessment trip must be taken on the chapter's priority program, and the 522 Post-Assessment Trip Report reviewed, prior to the chapter being eligible to adopt the second priority program.
  - If the chapter's second priority program was from the EWB-USA Open Programs list, the program will remain on the website and available for other chapters to apply to adopt it.
  - If the chapter's second priority program came to the organization through the chapter's relationship with the subject community, the 502 will not be reviewed until an assessment trip has been taken on the chapter's top priority program. In this case, the program will not be open for other chapters to apply to adopt.

**Note:** *It is possible for the 502 application to be declined even though the 501 application is approved. In this case, the community will be contacted and can choose to have their program listed as an "Open Program" on the EWB-USA website to potentially be adopted by another chapter or remove their approved 501 application from the EWB-USA application process.*

- **Submitting the Initial 521 – Pre-Assessment Trip Report after Program Approval:**
  - The chapter may submit a 521 -Pre-Assessment Trip Report- by the submittal deadline *after* this 502 application has been approved. See the EWB-USA website for submittal deadlines.

## Evaluation Criteria for Reviewers

- **Commitment to EWB-USA Theory of Change.** The EWB-USA theory of change is that all members of our partner communities will enjoy an improved quality of life through being able to access, use, and maintain technologies that are appropriate to their needs. In the accompanying 501, the applicant community identified the elements of change that they hope to affect with this program. The chapter should include a statement acknowledging acceptance of these goals and a commitment to developing a monitoring plan for the projects in this program that will study those specific elements of change.
- **Chapter is in Good Standing.** In order to adopt a new program, EWB-USA chapters must currently be in good standing, which includes:

- Valid and signed Chapter Agreement with EWB-USA.
  - For student chapters, the annual university chapter fee is paid in full for the current year.
  - Chapter is not restricted from adopting a new program per the 203 – Corrective Action Process.
- **Quality of Existing Programs.** Chapters with existing programs must demonstrate that each program is progressing at a reasonable pace, is under the direction of qualified mentors, and requires minimal review time and support from EWB-USA Headquarters (HQ). Specific indicators that will be reviewed to assess the quality of the existing programs are listed below:
    - At least one assessment trip has been taken and the 522 Post-Assessment Trip report has been reviewed on all existing programs. If any existing programs are new and there has not yet been a 522 review after the first assessment trip, this 502 will not be reviewed until that requirement is met, per Submittal Options, 3., above.
    - Progress is made on an annual basis in the form of trips or significant advancement in the design.
    - A team of professional mentors are committed to each program.
    - All programs require an average amount of time of EWB-USA HQ staff over the life of the program from initial assessment through final implementation.
- **Capacity of Chapter to Take on Additional Programs in Terms of Fundraising and Member Support.** Chapters must demonstrate that their membership base and fundraising capacity exceeds the demands of their current programs. Specific indicators that will be reviewed as part of the application process include:
    - Demonstrated success in fundraising. At a minimum, a chapter will have to show that none of their existing programs are experiencing significant delays (greater than 1 year) due to fundraising challenges. The chapter will also need to present their plan for funding an additional program without taking needed funding away from their existing programs.
    - A large membership base. At a minimum, it will be expected that each program, existing and proposed, have at least 10 active members on each project team and an adequate team of professional mentors (as defined in the subsequent criteria). Active members include those who have assigned responsibilities and regularly attend meetings.
- **Strength of Professional Mentor Team.** The chapter has a team of professional mentors that include experience in each of the technical disciplines required of the project, construction, and international development. Additional detail on the professional mentor team requirements is included in the 405 - EWB-USA Professional Mentor Teams and Qualifications on the Sourcebook Downloads page of the EWB-USA website. Please note that the requirements for professional mentors apply to both professional and student chapters.
- **Strength of Program Quality Management Plan.** The quality of each EWB-USA program is the responsibility of the chapter that has adopted the program. While the Project Engineers at EWB-USA HQ are valuable resources for the chapters and can provide some assistance to the chapter in their quality management, they are not responsible for the program quality. Likewise, the technical advisory committee (TAC) that reviews all projects prior to implementation is not responsible for the quality of projects. The chapter must demonstrate that it has deliberate quality control processes which are designed to ensure that the project design and implementation is of high quality.

- **Education of Project Team.** The project team is well-educated on the EWB-USA mission, vision, development approach, technical guidelines, and policies. The team will need to demonstrate their preparedness by listing all of the on-line resources that they have reviewed, all of the EWB-USA webinars and conferences they have attended, and any other education the team feels is pertinent.

## 1.0 Program and First Project Summary (Provide a short summary of the proposed program from Section A.3) and the first project from Section B.1)2) on the 501 application):

The goal of the program proposed by the Los Potrerillos community is to improve the quality of life of the inhabitants. Los Potrerillos is an agrarian community with few economic resources. It has a population of 1,012 people. The community lacks agricultural technology, and does not have adequate water supply. Many people migrate to neighboring countries in search of jobs in order to provide for their families.

The proposed first project will improve the water supply to the community by installation of pumps and implementation of a water distribution system to provide household water to the entire community. The project will allow the community to more easily access the water resources of the community and will allow families to spend more time on other activities. EWB-USA Oregon State University recognizes the goals of Los Potrerillos for the first project and the program as a whole, and looks forward to working with the community to achieve these goals.

## 2.0 Chapter Contact Information

Please fill in the fields below. All projects must have a team of qualified professional mentors that cover all technical and non-technical disciplines of the project. One person from the team must be designated as the Responsible Engineer in Charge. The qualifications of the Responsible Engineer in Charge and all other members of the professionals mentor team should be described in Section 5.0 with resumes attached. Only the Responsible Engineer in Charge needs to be identified in this table.

	Name	E-mail Address	Phone
<b>President</b>	Sonja Michelson	<a href="mailto:president@ewb-osu.org">president@ewb-osu.org</a>	915-799-5892
<b>Project Leads</b>	Isabella Lewis & Emily Oldenkamp	<a href="mailto:belize@ewb-osu.org">belize@ewb-osu.org</a>	503-754-7596 & 360-477-7394
<b>Responsible Engineer in Charge #1</b>	Lewis Semprini, PhD	lewis.semprini@oregonstate.edu	541-737-6895
<b>Responsible Engineer in Charge #2</b>	John Selker, PhD	John.Selker@oregonstate.edu	541-737-6304

## 3.0 Chapter Standing

3.1 Your chapter must have a valid chapter agreement. Does your chapter have one?  Yes  No

3.2 Does your chapter currently have any active EWB-USA programs?  Yes  No

3.3 If Yes, list all active Programs:

Country	Community	Type of Projects in Program	Year Started
Kenya	Lela	Water Supply	2009

**3.4 Please answer the following questions for each existing active program listed in the table above (create a separate table for each active program)**

	Program Name:
1	<p><b>What is the current status of each project in this program? Please select one of the following options: assessment, design, construction, or monitoring for each active project.</b></p> <p>Construction and monitoring</p>
2	<p><b>Provide a timeline (month/year) of major milestones of the program (project start dates, trips, design submittals, etc.)</b></p> <ul style="list-style-type: none"> <li>• January 2008: Project application submitted by Lela community to EWB-USA</li> <li>• May 2009: EWB-OSU officially adopts the Lela project</li> <li>• December 2009: First assessment trip (community needs and health assessment)</li> <li>• June 2011: Second assessment trip (technical assessment)</li> <li>• July 2012: First implementation trip (drilled well, rainwater catchment)</li> <li>• June 2013: Second implementation trip (drilled well, capacity building)</li> <li>• July 2014: Monitoring and evaluation trip</li> <li>• Summer 2015: Implementation trip expected</li> </ul>
3	<p><b>Has the program experienced significant delays (greater than 1 year) due to fundraising challenges?</b></p> <p>No</p>
4	<p><b>Describe the professional mentor team including names, primary area of expertise, duration of involvement, and level of activity on the project. If any of the mentors listed are also proposed to support the new program, please comment on their capacity to support the additional work.</b></p> <p>The Responsible Engineer in Charge is Dr. Jeff Randall, a recently retired groundwater hydrologist, who began involvement with the project in 2012. Dr. Randall reviewed and approved the design documents and was the travelling mentor for the 2012 and 2013 implementation trips. He also participated in the Technical Advisory Committee conference call. His technical experience may pertain to the project in Nicaragua depending on the potential systems determined after preliminary assessment trips.</p> <p>Jaynie Whinnery has also been a part of the professional mentor team. She is a recent graduate from the Master of Public Policy program at OSU, and holds additional degrees in Mechanical and Environmental Engineering. In 2014 she accompanied the team on their monitoring and evaluation trip. Before the trip she helped develop a household survey and guided the team in their efforts to plan and execute a rigorous evaluation of the project. Ms. Whinnery continues to be a valuable asset to EWB-OSU by providing sound and thoughtful advice.</p>

<b>5</b>	<p><b>Has this program ever been in the Corrective Actions Process?</b>  <i>(If you are unfamiliar with the Corrective Actions Process, please refer to the 203-Corrective Actions Process on the Sourcebook Downloads page of the website.)</i></p> <p>No</p>
<b>6</b>	<p><b>Please indicate the number of active members who contribute to the existing program. If any of the members will support the new EWB-USA program, please comment on their capacity to support the additional work.</b></p> <p><b>Students:</b> About 12 active student members are contributing to the Kenya Program.</p> <p><b>Professionals:</b> EWB-OSU's faculty advisor and Kenya professional mentor are the most involved. However, other professionals from Oregon State University and local CH2M Hill offices are consulted for technical advice depending on the project's phase. These professionals' work load and commitment is not expected to increase from with the adoption of an additional program.</p>

**4.0 Team Overview:** How many people will be working on the first project within the new program?

Number of Students	Number of Professionals	Are all participants members of EWB-USA (Yes/No)
~ 15	4	No (but all will be encouraged to join)

**5.0 Professional Mentor Team Experience:**

**Strength of Professional Mentor Team.** The chapter has a team of professional mentors that include experience in each of the technical disciplines required of the project, construction, and international development. Additional detail on the professional mentor team requirements is included in the 405 - EWB-USA Professional Mentor Teams and Qualifications on the Sourcebook Downloads page of the EWB-USA website. Please note that the requirements for professional mentors apply to both professional and student chapters.

Please complete the table below clearly specifying the roles of all professionals who will be part of the Professional Mentor Team. Review the 405 - EWB-USA Professional Mentor Teams and Qualifications available on the EWB-USA website before completing this section. For all design engineer roles, please specify the specific technical discipline that will be covered by that design engineer. All technical and non-technical disciplines required of the project should be included in the table. If one person will fill more than one role, fill in their name for each applicable role. Add and delete rows as necessary.



In addition to the table below, include the following with this application:

- A completed 408 - Mentor Application Form (available on the Sourcebook Downloads page of the website) for each member of the Mentor Team
- The resumes of all members of the Professional Mentor Team
- A completed 404 - Mentor Statement of Intent (available on the Sourcebook Downloads page of the website) for the Responsible Engineer in Charge

<b>Mentor Team Role</b>	<b>Name and Title</b>
Design Engineer 1 – Responsible Engineer in Charge #1: (Environmental Engineering)	Lewis Semprini, PhD Distinguished Professor of Environmental Engineering Oregon State University
Design Engineer 2 – Responsible Engineer in Charge #2: (Ecological Engineering)	John Selker, PhD Professor of Biological and Ecological Engineering Oregon State University
Design Engineer 3: (Chemical Engineering)	Travis Walker, PhD Professor of Chemical Engineering Oregon State University
Construction Lead: (Chemical Engineering)	Nick Wannemacher, PhD Oregon State University
International Development Lead: (Ecological Engineering)	John Selker, PhD Professor of Biological and Ecological Engineering Oregon State University

**Note:** We plan to continue to grow our professional mentor team over the course of the program to strengthen the experience and expertise represented. Specifically, we would like to connect with professionals outside of Oregon State University to broaden our skill set. This may be achieved through EWB-OSU's connections, and potentially using EWB-USA's mentor database. For example, we were advised by an EWB-OSU alumnus to reach out to Mallia Kupillas, a professional mentor for EWB-OSU's former program in El Salvador. She has more than 20 years of experience in groundwater hydrology, as well as experience with community projects in Latin America. We hope she will be available and willing to collaborate with us on the program in Los Potrerillos.

#### **Lewis Semprini:**

EWB-OSU faculty advisor Lewis Semprini holds degrees in civil, chemical, and environmental engineering. He is a distinguished professor at Oregon State University. In addition to his administrative role within EWB-OSU, he is also acting as one of the program's "responsible engineer in charge". He is regularly available by appointment to meet with the project leadership to ensure its progress, and shows concern for the project's social and technical sustainability. Depending on the team's needs, he has made himself available for consultation and discussion for 1-5 hours in a given week.

Dr. Semprini's professional and research experience in engineering make him an excellent resource both for technical guidance on engineering systems and for project management, and intercultural cooperation and communication.

Dr. Semprini has expressed interest in participating in EWB-OSU trips to the community. However, he is an involved member of the OSU faculty, so scheduling conflicts may arise. It remains to be seen whether he will participate in EWB-OSU trips to Los Potrerillos. If Dr.

Semprini, or any other existing member of the mentor team is not available to travel, EWB-OSU will reach out to our network of local professionals. In the event that we cannot find a mentor via these resources, we will utilize the EWB-USA mentor database. A resume for any other selected travelling mentor will be provided in the pre-assessment trip report (521).

Dr. Semprini's resume, completed 408 application, and signed 404 document are attached to the application email.

**John Selker:**

Dr. Selker is an agricultural engineer with expertise in water resource science and groundwater processes. Having worked professionally in various countries on 5 different continents, he has a significant amount of experience with international development and travel. He has experience with irrigation engineering and has taught classes on sanitation and wastewater at Oregon State University. He is familiar with EWB-OSU's work and has presented at our general meetings in the past. Dr. Selker will be responsible for providing advice about international travel and expertise on the design of the project.

He has expressed interest in traveling to Nicaragua and, depending on his schedule as a Oregon State University faculty member, may travel on a future trip. Dr. Selker will be able to meet with the program team upon request.

Dr. Selker's resume, completed 408 application, and signed 404 document are attached to the application email.

**Travis Walker:**

Dr. Walker has a PhD in chemical engineering, and is an assistant professor at Oregon State University. He conducts research in fluid transport, which will be an asset as we assess and develop a water distribution system. Dr. Walker also has extensive experience in international engineering work through involvement in a group similar to EWB (Engineers and Scientists Abroad) during his undergrad. Dr. Walker has also travelled extensively. His vast international experience makes him well qualified to help the team understand the unique challenges of working internationally.

Dr. Walker is excited to get involved as a professional mentor for EWB-OSU. He is on campus daily and will be available to meet with the program team as needed. He is interested in traveling on future trips to Los Potrerrillos. However, his level of participation will be dependent on his busy schedule. In addition, Dr. Walker has contacts in Nicaragua who may be useful when traveling.

Dr. Walker's resume and completed 408 application are attached to the application email.

**Nick Wannemacher**

Dr. Wannemacher has a PhD in chemical engineering, and is currently a courtesy faculty member at Oregon State University, among other appointments. His extensive experience and working knowledge of fluid flow systems make him an excellent fit for the position of construction lead. He is passionate about education and outreach program, and is excited about working within EWB's model. Dr. Wannemacher will primarily be responsible for guidance in the correct design and implementation of a water distribution system (or other kind of system if appropriate). He is willing to travel on a trip to Los Potrerrillos, if desired by the chapter. Dr. Wannemacher will be available to meet with the program team upon request.

Dr. Wannemacher's resume and completed 408 application are attached to the application email.

**6.0 Chapter Preparation:** How prepared is your chapter to implement the first project in the program? Please describe chapter preparedness in each of the areas below.

**6.1 Project Education and Training:** Please list out all training and educational resources that the team plans to take advantage of in preparation for the project work. This should include those offered by EWB-USA, the University, or other organizations. Topics should consider all aspects of the project with focus on design, construction, and international development.

The team will hold workshops related to the specific design and construction problems the team is likely to encounter in the program. Since we are expecting to implement a water distribution system, the team will work with Oregon State professors who have experience with water distribution and filtration systems. The university has a strong civil engineering program and a strong environmental engineering program with an emphasis on water systems. Our chapter has highly involved members from both of these programs, and the Nicaragua team plans to take advantage of the resources these connections provide.

Oregon State University has recently introduced a Humanitarian Engineering program that focuses on engineering abroad. This program already works closely with our chapter. The team plans to take advantage of these resources throughout the program for advice on design and implementation components, and international relations. For example, the team plans on attending workshops that the Humanitarian Engineering program facilitates.

The team will examine the methods and strategies used in current and past EWB-OSU projects in Kenya and El Salvador to gain an understanding of techniques common to successful projects. However, we understand that local conditions (cultural, political and environmental) may have a large impact on identifying the best strategy to use for this project. In order to accommodate local factors, we will consult with El Porvenir and other water-related NGO's in Nicaragua throughout the program process to determine what kinds of strategies should be used for our construction and developmental work. El Porvenir, the partnering organization, has had extensive experience working with communities in the area to obtain clean drinking water. The team has already established a working relationship with El Porvenir, and will continue to improve this relationship throughout the program. The team will also take advantage of relevant international relations and water development materials previously compiled by said NGOs (such as educational resources related to water development in Nicaragua). The Nicaragua team will also rely on the community's knowledge to effectively plan and implement our designs.

EWB-OSU consistently sends members to EWB conferences. The Nicaragua team will take advantage of information and knowledge gained by these members through debriefings during team and chapter meetings. In addition, the Nicaragua team plans to take advantage of resources provided online by EWB-USA to improve the design development and implementation process. Such resources include webinars such as Assessment Trips for Water Supply Projects, Planning for Sustainability on Assessment Trips, Project Process , etc. and referencing the material uploaded from the conferences to expand the team's knowledge.

**6.2 Cultural Training:** How will your team members prepare for any intercultural experiences and communication that will come about through the course of this project? How will your team ensure that your project planning includes the participation of the community?

EWB-OSU will provide workshops and presentations to the entire chapter to take advantage of intercultural resources within the university. Members who have travelled abroad in the past can share their experiences with intercultural communication. The chapter also plans to get in contact with Nicaraguan students at Oregon State University who can share their perspective on the culture of Nicaragua. Finally, EWB-OSU will contact faculty members and doctoral graduates who have close connections with universities in Nicaragua to gain insight into Nicaraguan culture and society. A member of our professional mentor team, Travis Walker, has contacts in Nicaragua who may be available to share their culture with the team. The team will also consult the professional mentor team on their international/intercultural experiences.

EWB-OSU will contact other EWB chapters who have experience working in Nicaragua. We will use these connections to learn about the culture of Nicaragua and to receive advice on how to approach social, economic and political concerns. One method of forming these connections is through attendance at EWB conferences. EWB-OSU consistently sends members to EWB-USA conferences. Members of the team attended the 2014 National Conference, and members will attend future conferences to form first-hand connections with chapters and professionals, and to learn from sessions provided at the conferences.

The chapter will ensure community participation in the project by keeping in contact with the Los Potrerillos Committee of Parents and Potable Water Committee to make certain that the project reflects the needs of the community. EWB-OSU will work closely with this committee throughout the program to ensure that the community has an active voice in all decisions, plans, and designs. The financial buy-in, and skilled and unskilled labor graciously provided by the community will fortify the community's sense of ownership of the project.

El Porvenir has proved to be a strong connection with the community and a immensely knowledgeable local resource. The Nicaragua team will continue to improve the connection with El Porvenir and will use the organization as a valuable resource for cultural, political and communication concerns.

**6.3 Health and Safety Preparation:** The Health and Safety Officers are responsible for complying with our Health and Safety Policy (available on the Health and Safety Program page of our website) and planning and implementing the Health and Safety Plans for each trip. Two Health and Safety Officers must travel on each trip. Who will be your Health and Safety Officers and what are their qualifications? Are they available to travel? Have they read the Health and Safety Policy? Does the first proposed project have any unique health and safety hazards that would require additional training (for example, working at extreme elevations, confined space entry, exposure to lead-based paint, etc.)? What education and training activities have and will the Health and Safety Officers and other team members participate in?

Two Health and Safety Officers will travel on each trip and will be designated shortly following their selection to travel. Each Health and Safety Officer will read and comply with all requirements outlined by the EWB-USA Health and Safety Policy. Health and Safety Officers

will receive Red Cross (or Red Cross Equivalent) first aid and CPR training. Safety Officers and all travelers will also be prepared for safety and/or health risks according to the circumstances and working conditions of each trip.

A Health and Safety Workshop will be held to educate members of our team on the rules and regulations learned at the 2014 National Conference, as well as inviting previous Health and Safety Officers to provide information on what is required of that position.

There are few anticipated unique hazards. The community is rural, but not too remote, and the elevation is about 1150 feet (350 m). Nicaragua is located in Central America, and therefore the weather is relatively wet. The community receives between 25 and 50 inches of precipitation each year. The rainy season is approximately May to September. Travel dates will be planned accordingly, as project accessibility could be hindered during this time. A site-specific Health and Safety Plan following the standards of EWB-USA will be submitted for each trip.

On the trip to Los Potrerillos, the travel team will most likely go through Managua, the capital of Nicaragua. While Nicaragua is one of the safest countries in Central America, precautions will be taken. To minimize risks while in urban areas, we will avoid blatantly displaying wealth and prosperity, stay at safe hotels, and ask locals about the area before venturing out on our own. We will also avoid the unsafe neighborhoods of the city. Communication with El Porvenir will be helpful in devising a plan for safe in-country travel to and from the community. In general, the major risks associated with traveling abroad also apply when traveling to Nicaragua and the travelers sent by EWB-OSU will take all precautions necessary to avoid these risks.

Each travel team member will be encouraged to receive the vaccinations and preventative medications recommended or required by the Center of Disease Control for travel to Nicaragua. These include:

- Measles-mumps-rubella (MMR) vaccine
- Diphtheria-tetanus-pertussis vaccine
- Varicella (chickenpox) vaccine
- Polio vaccine
- Flu shot (yearly)
- Hepatitis A
- Typhoid
- Vaccines/medicines necessary due to the circumstance/duration of a trip

The CDC also recommends that some travelers receive the following vaccines and medicines, based on the location in the country, duration of trip, activities on the trip, and travel to any other countries:

- Hepatitis B
- Malaria
- Rabies
- Yellow Fever

The project team will evaluate whether or not these will be necessary for our trips to Los Potrerillos. It is also recommended that travelers to Nicaragua drink bottled water, as it is readily available and most tap water is highly chlorinated (to levels that Americans are not accustomed to).

The CDC reports that in June 2014, Chikungunya was locally transmitted in El Salvador, for the first time in Central America. This means that mosquitoes in the area are infected and are

spreading the disease to people. The disease has since been reported in other Central American countries. Travelers to Nicaragua should avoid mosquito bites by using mosquito repellent, not bearing too much skin, and sleeping under mosquito nets.

Before travel, team members (including Health and Safety Officers) will be educated on safe hygiene in rural environments. The chapter and many team members have experience with health and safety from EWB-OSU's current water project in Lela, Kenya. Experience from Kenya includes concerns such as mosquitoes and sanitation, in addition to specific concerns for water projects, which will be relevant to this program.

**6.4 Language and Translation:** What languages are spoken in and around the program area? How do you propose to work effectively given language differences between the project team and community? Will you hire a local translator or will someone on your team be able to translate? Is anyone on your project team from the project area?

Spanish is the official spoken language of Nicaragua and is spoken by the people of Los Potrerillos. Our chapter does not currently have any members from Nicaragua. We do have several chapter members who are fluent in Spanish, and many others who are proficient in Spanish. One of our professional mentors, John Selker, who may be available to travel on some trips, is also fluent in Spanish. At present we do not anticipate needing a translator. However, in the event that none of the members chosen for travel is fluent in Spanish and Dr. Selker is unable to travel, the team will hire a translator from the Teustepe area during the trip planning process.

**6.5 Education Lead:** EWB-USA requires that community members are trained in operation and maintenance and in any unfamiliar implemented technologies. Who will be responsible for developing the education materials and for leading the education for the community? What are his or her qualifications for this role?

The EWB-OSU chapter and professional mentor team as a whole will take charge of operation and maintenance training for the implemented systems by seeking assistance from professionals and professors in the OSU community to educate us on the implemented technologies. Prior EWB-OSU water projects in Kenya and El Salvador have been met with great success in developing a long term education plan with the community. Successful O&M training methods used by EWB-OSU's previous Kenya and El Salvador teams will be reviewed by the Nicaragua team. A review of these methods will be used to help develop an education plan in Nicaragua.

Since the implementation of any system will occur within the coming years of the project, the project coordinator at that time will be responsible for ensuring an adequate O&M training plan is developed for the community. The plan will be developed by the Nicaragua team. The final education plan will be reviewed by the project coordinator and professional mentors, and the Committee of Parents (community CBO) to ensure that it is comprehensive, sustainable and accessible to all community members. EWB-OSU will ensure that the training is delivered to the committee or delegates responsible for overseeing the implemented system, as agreed upon by both the community and EWB-OSU.

**6.6 Planning, Monitoring, Evaluation and Learning Lead:** EWB-USA requires that the chapter develop a monitoring and evaluation plan that will measure the efficacy of their role in the partnership with the community and local partners. Who will be responsible for developing the PMEL documents and for leading the

monitoring efforts during the life of the program? What training has the proposed PMEL Lead had for this role?

The current PMEL Lead is Dylan Hinson who meets the PMEL lead qualifications as outlined in the 904 document, and has completed the PMEL webinar training. Either the current PMEL lead or a representative of the PMEL lead will be chosen as a member of each travel team to directly monitor the progress of the program and its effect on the community. The entire travel team is responsible for surveying the community to gather the community's opinion regarding the ability of the project to meet their goals. This survey will also assess any unexpected effects of the project. Data regarding project impact on the community is stored on a common Google Drive that all registered members of our project team can view.

A new PMEL lead is chosen by our team members each year. From year to year, the former PMEL lead transitions information to the PMEL elect through the above mentioned Google Drive database. Before taking office, the PMEL elect must complete the online training webinar provided by EWB-USA which educates and informs new PMEL leads. In addition, our chapter requires the new PMEL lead read all 900 series documents relevant to their project prior to taking office, or within a short period after.

**6.6.1** The chapter should review the community's stated goals for the program in the 501. In this section include a statement acknowledging acceptance of these goals and a commitment to developing a monitoring plan for the projects in this program that will study those specific elements of change.

Our chapter is committed to helping the Los Potrerillos community gain access to potable drinking water. We are committed to expanding the community's water infrastructure and providing the citizens with an equal access, sustainable water system. After each trip to the community, our chapter will reassess our progress with the community. We will evaluate how we have helped the community meet their basic needs and how we've addressed the goals they expressed at the beginning of the project adoption. Our chapter understands that the project is a minimum of a five year commitment. If necessary, we will continue to work with the community for more than five years in order to fulfill all of the communities needs and assure sustainability.

Over the course of the project our chapter will work to make permanent, positive changes in the community to improve their basic needs and quality of life.

Our chapter will accomplish this change by:

- Signing a memorandum of understanding between the Committee of Parents and EWB-OSU to ensure transparency of goals, motivations and methods.
- Educating the community on how to operate and maintain the projects.
- Working with the Committee of Parents to create a long term funding plan to maintain the projects and cover repair costs.
- Establishing with the community of Los Potrerillos and the CBO, the Committee of Parents who specifically is in charge of maintaining the projects to ensure the projects' future sustainability.

**6.7 Fundraising:** Please describe the team's fundraising plan. If the Chapter has other active programs, please explain how your team's fundraising plans for this program will not negatively impact the funding of the other active programs.

The program will be primarily funded with grants and donations we receive from various companies and organizations. Our organization makes yearly funding requests to many of the large engineering firms in the area such as CH2M Hill and Boeing International. We also apply to the grants offered through EWB-USA and other organizations. In the past we have received funding from the College of Engineering (COE) at Oregon State University. In the 2012 - 2013 school year, the COE awarded us with \$24,000 with the intent of our chapter adopting an additional program. We anticipate continued financial support from the COE.

EWB-OSU has been financially stable throughout the Kenya Program. We know that our expenses will grow with the adoption of the program in Los Potrerillos. However, we believe the chapter has sufficient member participation and initiative to take on funding for a second program. In support of this, we plan to expand upon the funding resources we have used in the past and to explore new funding opportunities from sources more specific to the program goals of the Los Potrerillos community.

EWB-OSU's current fundraising plan includes both small fundraising projects and large collegiate or corporate contributions. EWB-OSU plans to fund the Los Potrerillos project using a similar strategy. Both large events, such as an annual banquet, and smaller projects, such as on-campus sales and promotions, will be organized by the Nicaragua team. Last year, our Annual Banquet event brought in \$2800. This year, we are already expanding the chapter's fundraising efforts by hosting a benefit concert in addition to our annual banquet. In addition, the Nicaragua team will apply for grant money from EWB-USA and local corporations such as CH2M Hill. A grants coordinator has been chosen to facilitate this process. The team will seek input from long-term EWB-OSU members to aid in the grant search and submission process.

**7.0 Quality Management Planning** – The quality of each EWB-USA program is the responsibility of the chapter that has adopted the program. Please describe the measures the chapter will take to ensure that the projects implemented under this program are of high quality by addressing each of the areas below.

**7.1 Statement of Quality Management Plan:** Please provide a brief statement about the methods that the chapter will employ to ensure that the documents submitted to EWB-USA HQ for review will be a high quality document. EWB-USA will not dictate the methods that should be used for this quality management. Each chapter is expected to develop a quality management plan based upon the resources that they have available to them and the specifics of the program they are working on.

Example methods that could be part of an overall quality management plan could include the following: 1) The chapter may use an independent peer review team to review key documents prior to submittal to EWB-USA HQ; 2) The chapter could require specific training and/or minimum education requirements for members of the project team (refer to training/education information in Section 6.0 of this application as necessary); 3) The chapter will establish a review schedule that provides time for reviews by the peer review team, mentors, community, and other local partners and regulatory agencies; 4) The review schedule will include time for review by the local NGO and CBO of the Alternatives Analysis (523) and Preliminary Design (524) Reports; 5) The chapter will do a post mortem review of each document that they have reviewed by the EWB-USA HQ or TAC to determine how they could have improved the



document; 6) The chapter will keep a lessons learned log to ensure that mistakes are not repeated; 7) The chapter will use design standards that have been approved for the area, etc. Note that there are many other things that could be part of a quality management plan for a chapter and can be included here.

The EWB-OSU chapter has an extensive internal review process for all documents prior to submission to ensure document quality. All reports are drafted and internally reviewed by EWB-OSU members and relevant professionals. Reports will be divided into sections to be written by volunteers from within the Nicaragua team. The document will be on a web-based document sharing platform (e.g. Google Docs) available to all team members. The program coordinator will set a deadline prior to the submission deadline when the sections must be completed. After this deadline, the completed document will be available for review by all members to ensure equal input. The program coordinator or a qualified volunteer from within the team will review the entire document and make necessary changes to ensure document quality and cohesion of style.

After a set time for internal review by the Nicaragua team, the document will be sent to associated professionals, like the professional mentor team, for final review. Prior to final submission, the program coordinator will format and provide final edits.

Educational materials will be subject to an additional review by members of the Committee of Parents to ensure cohesion with community goals and standards. Design materials will be developed with input from team mentors obtained via regular skype conferences and occasional face-to-face meetings.

**7.2 Quality Management Team Staffing:** Please describe the roles and responsibilities with implementing the team's quality management plan. Potential Quality Management Team Members could include: professional mentors, peer reviewers, community leaders, local partners, local government agencies, etc. Specific names do not need to be included in the table below. The Description of the Quality Management Roles should include review responsibilities at a minimum.

Quality Management Team Member	Description of Quality Management Roles
Responsible Engineer In Charge	Final review of all program documents; Design input and oversight for all design documents
Design Engineer	Design input and oversight for all design documents; Final review of all design documents
Construction Lead	Design input and oversight for all design documents; Final review of all design documents; Input and final review of all implementation related documents (e.g. 525, 526, MOU)
International Lead	Final review of all documents; Input for all assessment and monitoring documents; Input for all educational materials
Program Coordinator	Delegation and oversight of document writing; Compilation and preliminary review of all documents; Responsible for all document submission
PMEL Lead	Review of all documents to ensure compliance with EWB and community goals
Nicaragua Program Team	Contribute to writing and review process for all documents
Committee of Parents	Input and review of all educational, design and survey materials

**7.3 Review Requirements:** Please use the following table to indicate the level of review in terms of personnel and time that your team will follow for each EWB-USA submittal. It is expected that these reviews will occur before submitting your document to EWB-USA. The team should use this information to begin mapping their overall project timeline.

<b>EWB-USA Document</b>	<b>Reviewer(s) - review time needed</b>
521 – Pre-Assessment Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week
522 – Post-Assessment Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week
523 – Alternatives Analysis Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week
524 – Draft Final Design Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week
525 – Pre-Implementation Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week
526 – Post-Implementation Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week
530 – Pre-Monitoring Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week
531 – Post-Monitoring Report	Program Coordinator(s) and PMEL Lead – 1 week Professional Mentor Team – 1 week EI Porvenir and Committee of Parents – 2 weeks Peer Review Team – 1 week

***Please submit this application electronically via email to [projects@ewb-usa.org](mailto:projects@ewb-usa.org) for review by a EWB-USA Project Engineer. See EWB-USA website for submission deadlines.***