



Water Distribution Systems in Latin America



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Abstract

Very few people in Latin America have constant access to an adequate water supply. To address this crisis, our project – sponsored by the AVINA Foundation – was to provide construction guides for water distribution systems that the local communities can implement to ensure sufficient water supply for the town. We contacted experts and conducted extensive research into different components of water distribution systems in an effort to understand the elements of the needed construction guides. We also created a simple questionnaire to help design customized construction guides for an appropriate water distribution system for each area so that, in the future, this project can affect all regions in need, regardless of geographical diversity. The basic construction guides and questionnaire have been sent to Paula Burt, Program Coordinator at the AVINA Foundation. Improved water distribution systems would cause many social benefits such as an enhanced quality of living, fewer health issues, and the security of a critical resource. Since local residents will be constructing these systems themselves, there will be a stronger sense of self-sufficiency as they will be able to perform maintenance and build more systems on their own.

Project Goal

Our project goal was to create simple guides for local Latin American communities to construct new (or expand upon old) water distribution systems. In order to accomplish this goal, we had to select one city to focus on. The city we selected is Isla Pucú, Paraguay.

Different cities in Latin America will require different solutions. Therefore, we created a basic questionnaire to help customize the recommended water distribution system for each community based on the unique characteristics of the area. This questionnaire can serve as a base for the development of a software program that can later be implemented anywhere in the region.



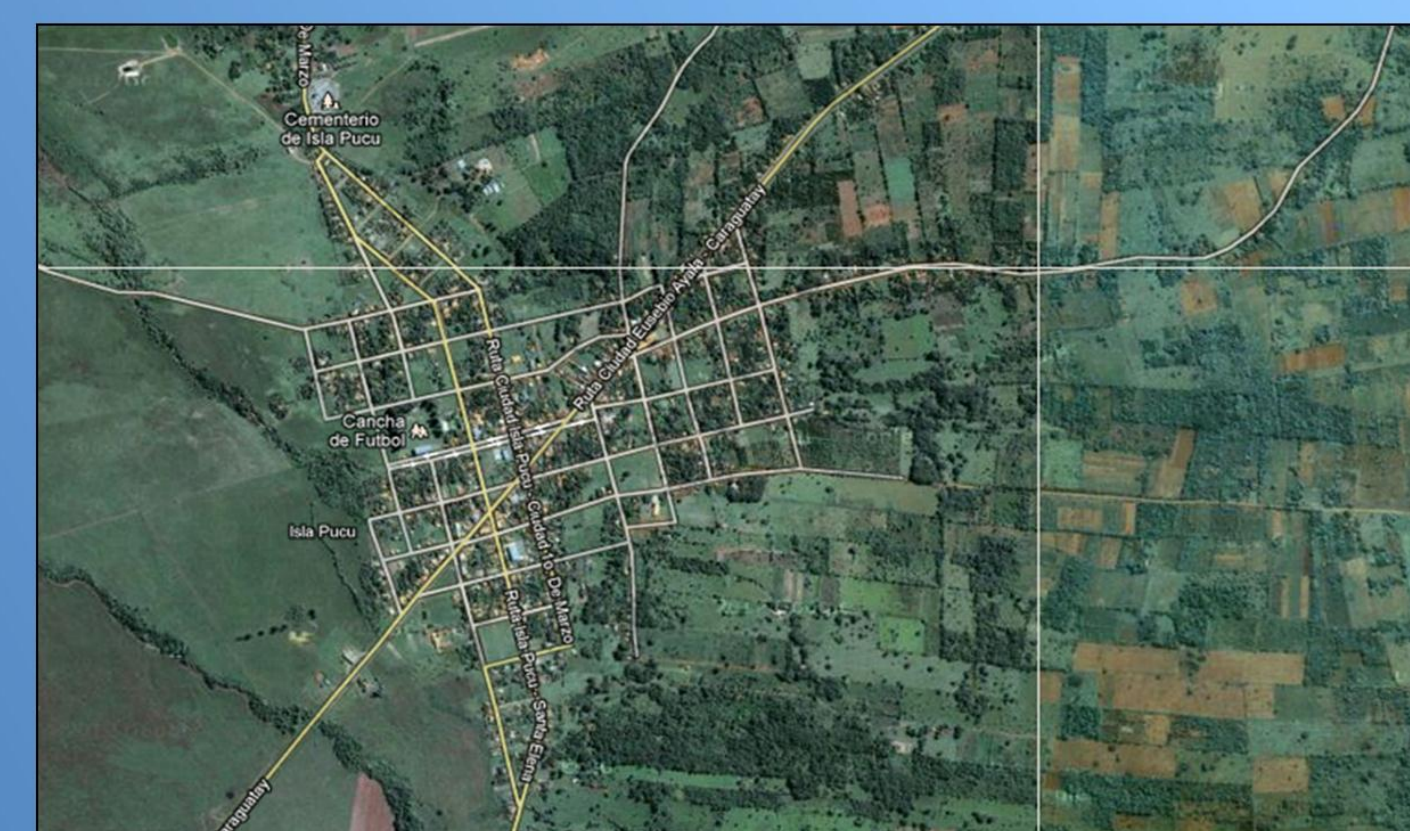
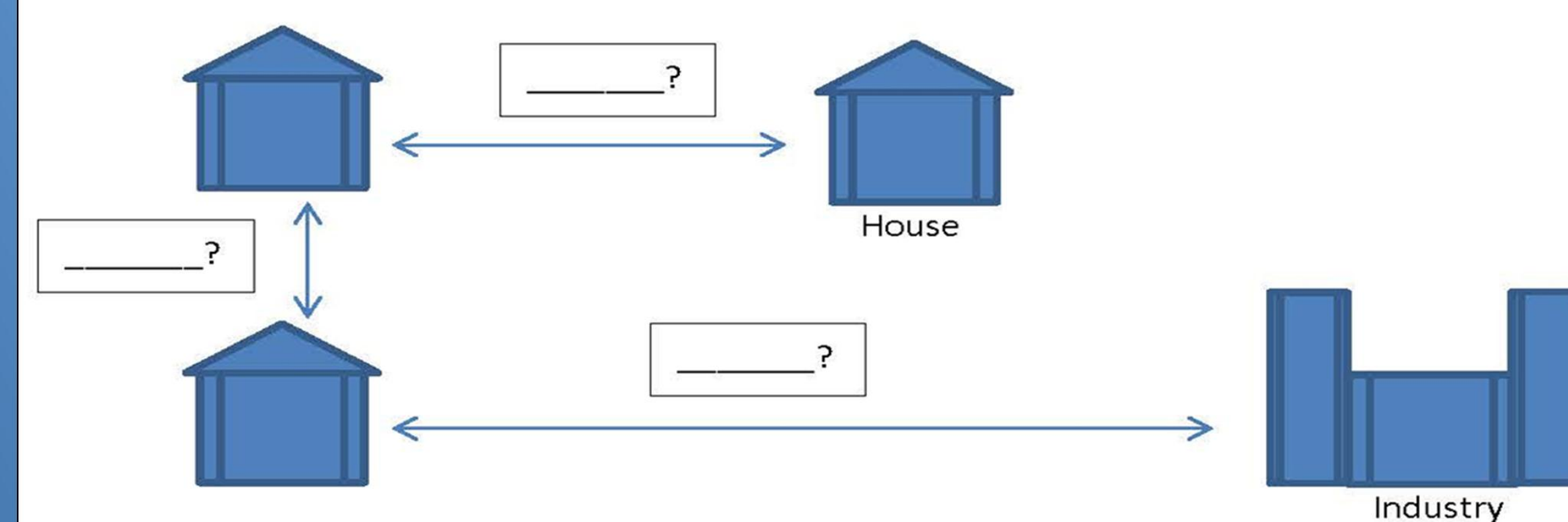
Results

Questionnaire:

- Online survey to help customize the recommended water distribution system for each community
- Including, but not limited to, questions regarding:
 - ❖ Terrain
 - ❖ Current source of water
 - ❖ Current system in place
 - ❖ Distances from water source
 - ❖ Easily accessible resources
 - ❖ Number of users in the area
 - ❖ Populations growth projections
- Once the criteria is entered into the online survey, the data is automatically organized in a spreadsheet and ready to be analyzed.

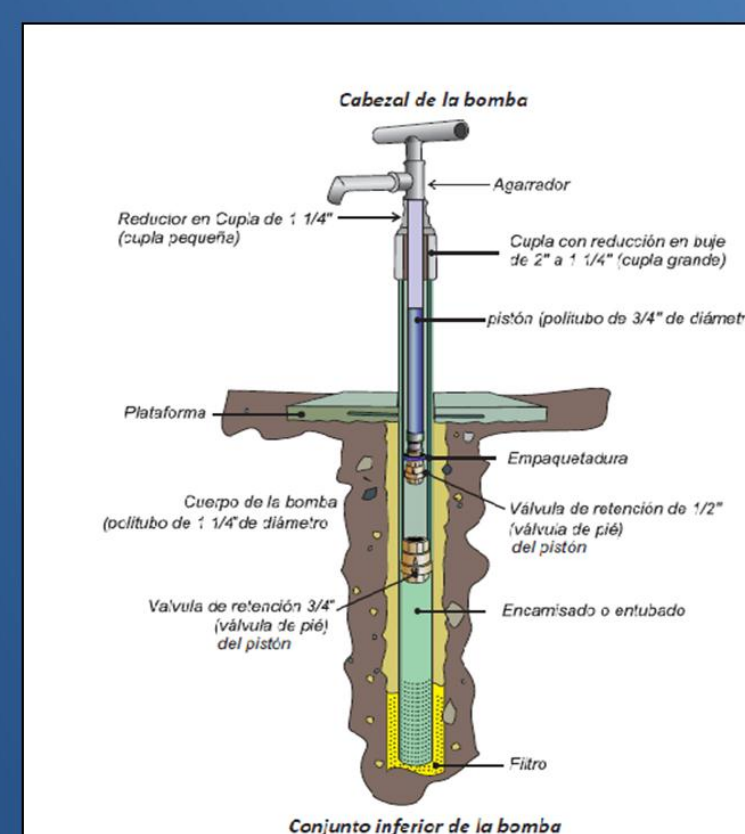


2. On average how far apart are the Houses/Buildings in Meters?



Construction Guides:

- Contains pictures and simple language to accommodate people with a lower level of education
- Includes directions for drilling, wells, pumps, storage tanks, and piping
- Supplies the client with more technical references and constructions guides if a higher level of detail is required

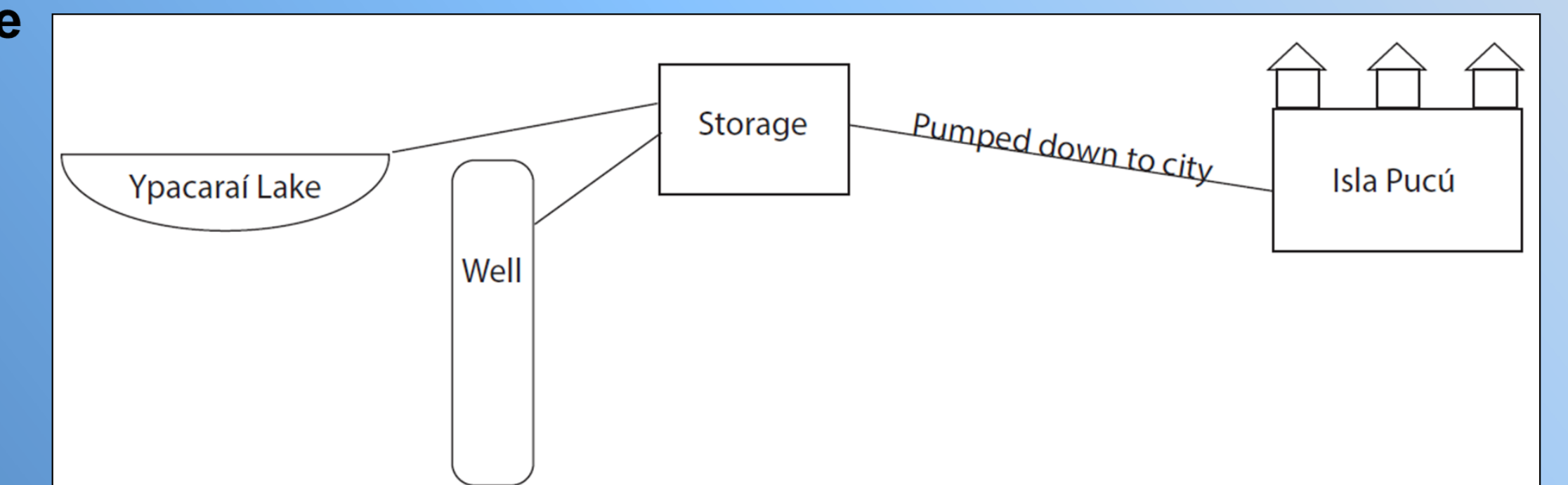


Concept Diagrams

Water Distribution System Plan:

Source to House

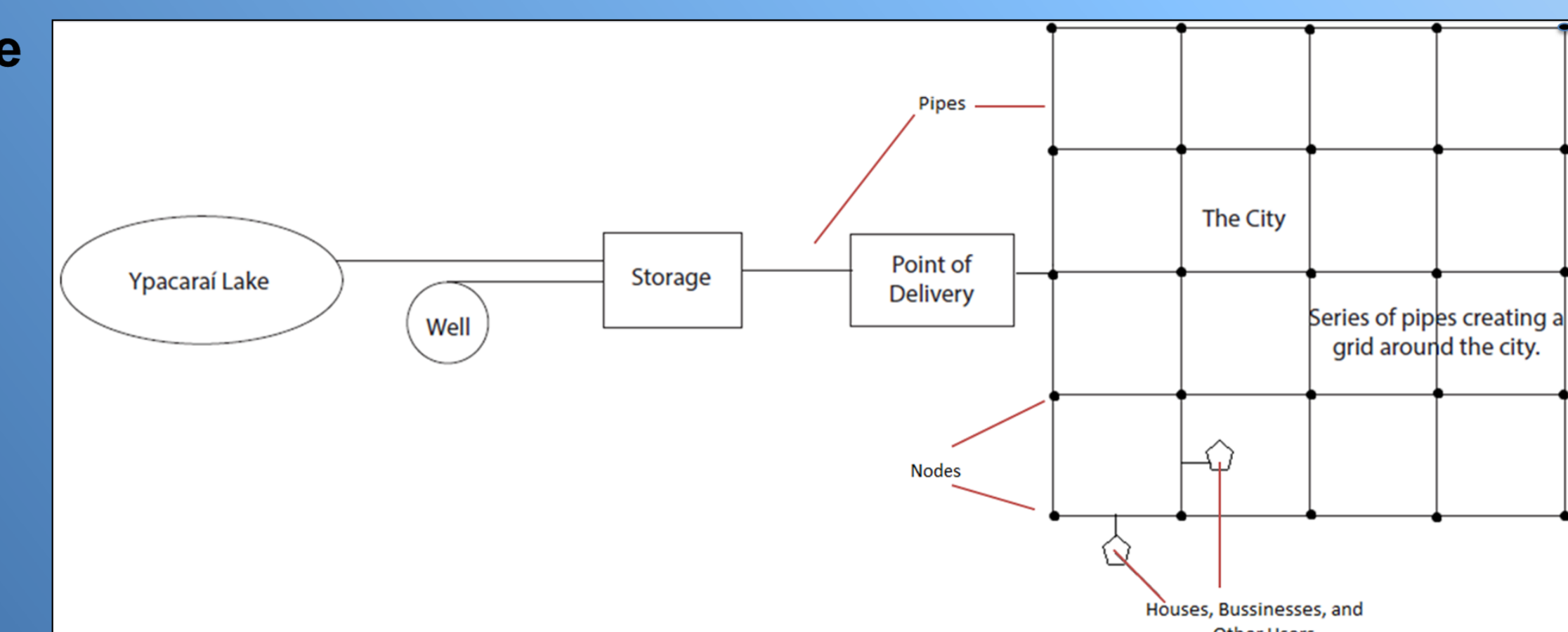
(Side View)



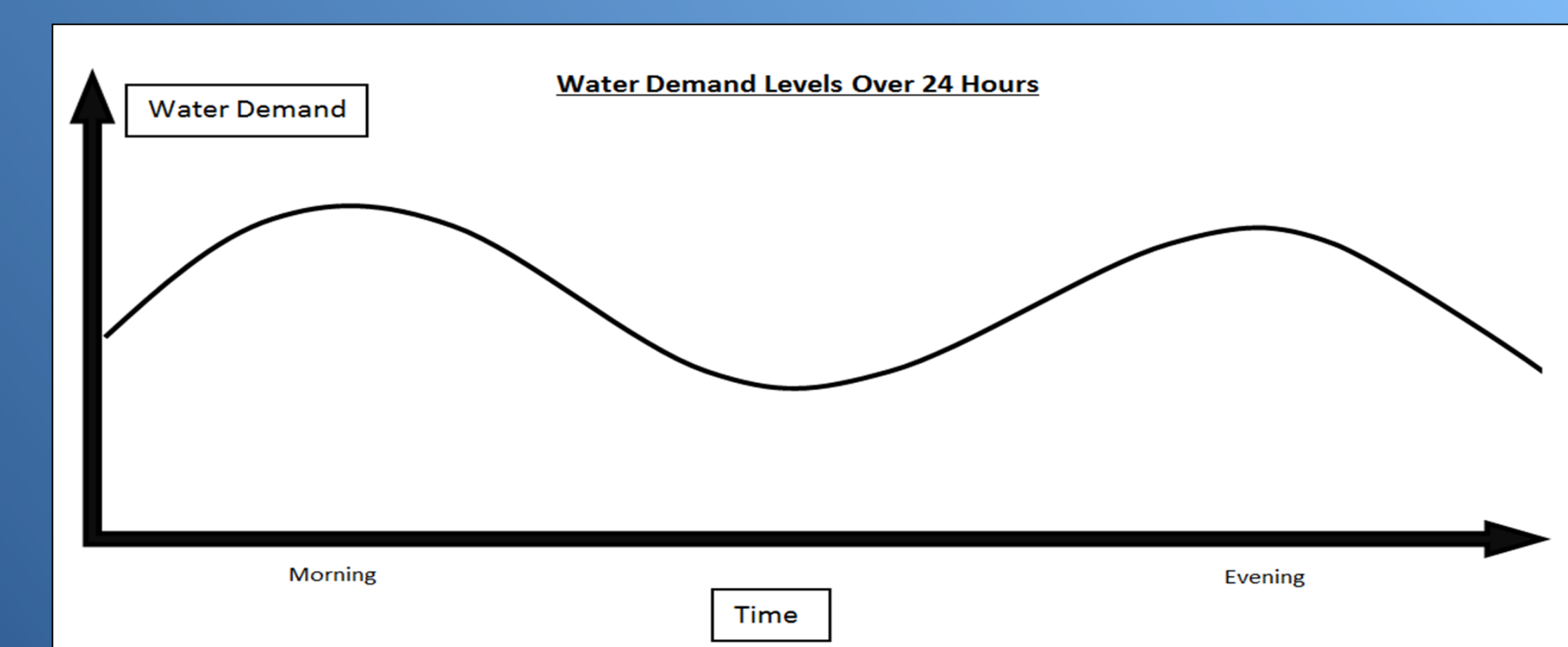
Water Distribution System Plan:

Source to House

(Top View)



Water Demand vs. Time Graph



Future Goals

- Develop different systems to accommodate any region within in Latin America
- Create a software program that can generate a construction guide for any community based on unique input
- Incorporate water purification into the distribution systems
- Investigate different strategies of collecting water to alleviate stress on the natural source (e.g. rain water collection)
- Expand these concepts to the other regions of the world and aid all communities in need of improved water management systems



Special Thanks Selected References

- **Paula Burt**, our sponsor and Program Coordinator of the AVINA Foundation.
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