

# Testing of the EcoPDA Beach Protocol

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**Introduction:** To test and further develop a device to facilitate data collection.

## Overview of Project

- Research applications to enhance the EcoPDA**  
 Explore different programs can be implemented into the EcoPDA that will assist research in the field and lab
- Design a standard survey pertaining to water quality research**  
 To test the efficiency and accuracy of the EcoPDA a series of questions will be developed to compare recording methods using paper versus the EcoPDA.
- Deploy the EcoPDA in the field**  
 Deploying the EcoPDA with environmental researchers will test the development in a authentic setting. Using the survey comparing paper against the EcoPDA will produce results to show the actual benefits of the EcoPDA



**Motivation:** Enhancement of the accuracy and efficiency of data collection benefiting research.

The motivation for the development of the EcoPDA is the necessity for field data collection to be expeditiously gathered in a more efficient manner while increasing the accuracy of the information analyzed. The current methods of recording data by pen and paper potentially introduce a significant margin of error in the collection process in the field and evaluation of the data in the lab. Research done with the EcoPDA has many potential advantages such as a prompted standard of questions; accessibility to various sensors by Bluetooth wire connection; and organization by use of data tables. Since water quality research impacts human safety the results of tests and the accuracy is extremely important; therefore, the EcoPDA will be apart of the effort of quickly obtain the status of water conditions that are hazardous to the public.

**Proposed Solution:** One line with the main idea of the proposed solution

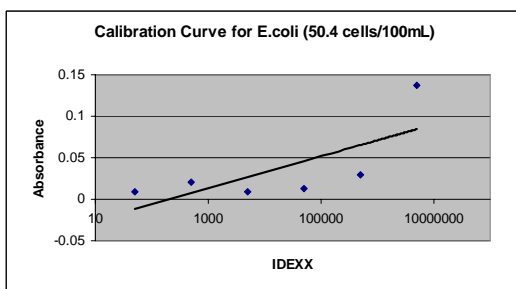
The testing of the EcoPDA involves a deployment to a testing site used for collecting water samples for water quality analysis, in our case Ventura Beach, CA. The field deployment provides significant information on the efficiency of data collection with the EcoPDA; furthermore, a comparison of the original data collection protocol using pen and paper makes available a standard to the grade both the accuracy and efficiency.

To make the comparison of the two methods for recording data a survey of questions pertinent to collecting water samples was produced to create a standard. Optimally two testers would assist in the deployment; one would test while the other made observations on the how the EcoPDA could be enhanced. When analyzing and comparing both methods of data collections the factors being compared will be: time taken to record; accuracy of the measurements; and the time it takes to transfer data to the main data base. Other factors being accounted for in the effort to replace the paper method will be: the ability for the EcoPDA to capture photos and tag them to the data collection sample; battery life; accessibility of the GPS; and the user-friendliness. Integrated features of the EcoPDA, such as the ability to transfer the data from tables to graphs, will also be taken into account.

The EcoPDA will also be evaluated as a lab instrument. This will also be done with a comparison to recording data by paper. The benefit of this evaluation will potentially solve the problem of the limited use of computers in a lab setting with many various projects.



Site where water and sediment samples are collected for water quality analysis.



•Example of the type of graph the EcoPDA would potentially produce.

Hypothetically, the use of the EcoPDA will greatly benefit research in the field and lab. The EcoPDA will potentially evolve research in many ways by increasing the efficiency of collecting data. By having a device to create a standard the information will be more valid and meaningful. With the capability to create graphs and analyze data in the field researchers may be able to infer more while still in the field to continue to collect. The EcoPDA will be a great instrument adding to the progression of multi-variable research.

## Recommendations for Future Work

- Integrate sensors into the EcoPDA for more versatile data collections.
- Devise a shield the screen of the EcoPDA from the sun for visibility.
- Develop a help menu to assist researchers when manipulating EcoPDA