

We propose to install the following equipment for hydrological monitoring at the Cihafen. All equipment is semi-permanent, intended for deployment from March through November on an annual basis.

1. Staff Gauge and Instructional Signage

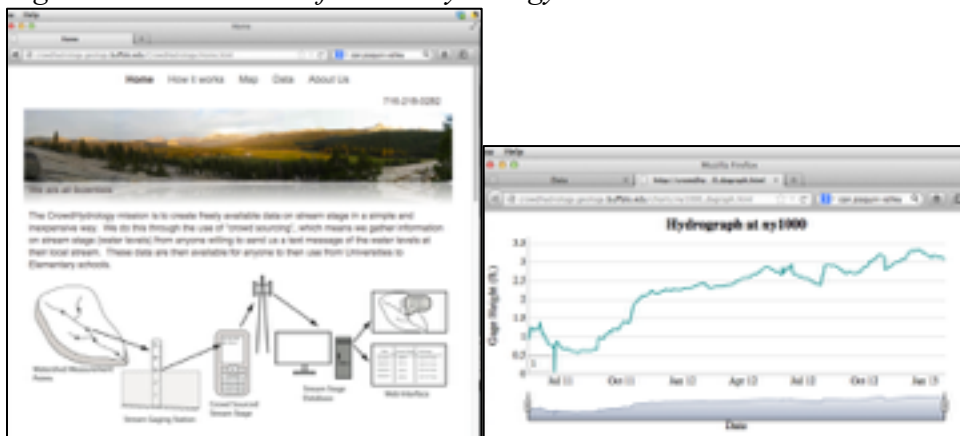
A fiberglass staff gauge of approximate dimensions 4-in wide by 4-ft tall will be installed in the southern-most water body at the site. This installation includes installing a semi-permanent metal fence post in the fen itself, and fixing the staff gauge to that post. We expect a post would need to be sunk approximately 6-ft into the subsurface (installed by hand) to remain vertical.

Figure 1: Sample staff gauge, representative of installation proposed



Additionally, we will install an instructional sign mounted on a 4x4 wooden post adjacent to the staff gauge on the shoreline of the water body. This signage would explain why we are monitoring water level, and ask guests to read the staff gauge (with instructions provided) and text that water level to our database. The data will be housed on www.crowdhydrology.org and will be freely available for public viewing. We view this as an opportunity to engage the public in the management of this resource, and to aid our monitoring efforts.

Figure 2: Screen-shots of CrowdHydrology website



2. Meteorological Station

We propose to install a small meteorological station at the site in the open area between the middle and northern ponds. This station will monitor a suite of environmental variables, and will allow us to monitor precipitation inputs to and estimate evapotranspiration outputs from the site. The system will be mounted on a semi-permanent fence post or small diameter steel pipe driven into the ground.

Figure 3: Proposed Decagon Microclimate monitoring system. For scale, the datalogger (white box) is 5-in wide by 8-in tall.



3. Soil Moisture Monitoring Network

We propose to install a network for monitoring soil moisture near the middle pond on the site. Our network will consist of two primary monitoring activities:

A. Soil Moisture Data Loggers

We will install three sets of nested soil moisture probes at depths of 10, 25, and 50-cm below the ground surface. Each sensor nest will require that we auger a 6-inch diameter hole to a total depth of about 60-cm to install the sensors, which will be backfilled with in-situ material and vegetation replanted. Each soil moisture nest will be supported by a small datalogger (the same as pictured in Figure 3) mounted just above the ground surface on a very short PCV or metal standpipe. The data logger and standpipe will be painted green and brown to minimize visual disturbance to the landscape.

Figure 4: Buried soil moisture sensor



B. Manual soil moisture monitoring via access ports

We propose to install 20-40 small diameter (approximately 1-in) PVC tubes in the shallow subsurface of the site, in and around the middle pond. Tubes will be entirely subsurface (not protruding above the landscape), and will be capped both top and bottom. These access tubes allow us to make manual measurements of soil moisture to compliment the logger network proposed above.

Figure 5: Soil moisture monitoring tube



4. Piezometers to monitor groundwater elevation

We propose to install a network of approximately 10 shallow wells to monitor groundwater elevation near the middle pond. Piezometers will be constructed of 2- to 3-inch PCV pipe, and will protrude approximately 6-in above the ground surface, painted brown/green to minimize visual impact at the site. Piezometers will be capped at all times not in use. Piezometers will be manually measured to record water level, or may house small internal loggers for water depth.