Natural Energy Laboratory of Hawaii Authority
Site Visit and Briefing
Wednesday, September 17, 2014

Visitors: Commission on Water Resource Management

8:10 – 8:15 am  Welcoming
Mr. Gregory Barbour
NELHA Executive Director

8:15 – 8:30 am  NELHA Briefing
Mr. Keith Olson
NELHA Water Quality Laboratory Manager

Mr. Alexander Leonard, PhD
NELHA Administrative and Project Manager

8:35 – 8:50 am  Field Observations of NELHA Anchialine Pond A3

8:55 – 9:15 am  Field Observations of NELHA Ocean Transect OT6

Visitors should bring sunglasses, hat and wear close-toed shoes
Location Map showing NELHA Facilities at the Hawaii Ocean Science and Technology Park Kailua-Kona, Island of Hawaii
Commission on Water Resource Management
NELHA Site Visit

*September 17, 2014*

Environmental Monitoring at the Natural Energy Laboratory of Hawaii Authority
NELHA is a state operated, master-permitted, zoned industry, ocean science and technology park on the Big Island of Hawaii.

NELHA has managed 870 acres and an ocean research corridor for 40 years with no significant impact to the environment.

NELHA’s tenants, scientists, government agencies and the public depend on pristine quality class AA ocean water for their operations, research projects, recreation and cultural practices.
Seawater Pumping at NELHA

• NELHA pumps ~30Mgal/day of seawater to its clients for aquaculture, mariculture, alternative energy and water bottling activities

• ~ 30Mgal/day of seawater is discharged into onshore surface trenches throughout the 870 acre facility
32 Years of Monitoring Results

NELHA’s monitoring program has found no evidence of harmful change to its benthic, fish biota, and anchialine pond communities.
NELHA's Been Provided Several Servings of Compliance Regulation Alphabet Soup

SMA
EIS
HAR
COVA
NPOES
Monthly Pipeline Sampling

Deep Seawater
3 pipelines, 3 sample locations

Surface Seawater
3 pipelines, 3 sample locations

Quarterly Environmental Sampling

Groundwater Sample Locations
34 Wells
3 Anchialine Ponds

Marine Water Sample Locations
30 Marine Transect Stations
1 Coastal Station

Tenant Effluent Discharge Locations
54 Tenant Discharge Sites

Annual Biota Surveys

Marine Fish Species and Biomass
18 Marine Fish Survey Sites

Coral Species Abundance
18 Benthic Community Sites

Anchialine Pond Species Abundance
15 Anchialine Pond Survey Sites

"128 Location Sampled Quarterly"
Environmental Monitoring Parameters at NELHA

**Surface Seawater Pipeline Monitoring (n=1282)**
- NO$_3$ & NO$_2$, PO$_4$, SiO$_3$ (1982 – present)
- NH$_4$, TDN & TDP (1986 – present)
- Salinity (1982 – present)
- Temperature (1982 – present)
- TOC (1986 – 2007)
- TSS (1986 – present)
- DO (1987 – present)
- Turbidity (2010 – present)

**Deep Seawater Pipeline Monitoring (n=986)**
- NO$_3$ & NO$_2$, PO$_4$, NH$_4$, SiO$_3$ (1988 – present)
- TDN & TDP (1988 – present)
- Salinity (1988 – present)
- Temperature (1988 – present)
- TSS (1994 – present)
- DO (1988 – present)
- Turbidity (2010 – present)

**Nearshore Transects Monitoring (n=2520)**
- NO$_3$ & NO$_2$, PO$_4$, NH$_4$, SiO$_3$ (1993 – present)
- TDN & TDP (2007 – present)
- Salinity (1993 – present)
- Temperature (1993 – present)
- DO (2007 – present)
- Chl-a (2007 – present)
- Turbidity (1993 – present)

**Groundwater Monitoring (n=6012)**
- NO$_3$ & NO$_2$, PO$_4$, SiO$_3$ (1989 – present)
- Salinity (1989 – present)
- Temperature (1989 – present)
- DO (1989 – present)
- Turbidity (2008 – present)

**Tenant Effluent Monitoring (n=954)**
- TN (2010 – present)
- TP (2010 – present)
- TSS (2010 – present)
- BOD$_5$ (2010 – present)
Conclusions

✓ NELHA serves the public interest by balancing environmental concerns and economic development in energy generation, water desalinization, mariculture and aquaculture

✓ NELHA has an extensive environmental monitoring program to protect the pristine class AA ocean water

✓ NELHA’s 32 years of environmental monitoring shows no significant impact on the environment
NELHA’s historical monitoring data may be informative to help guide future direction.
Questions?