SACRED FALLS, OAHU
SECTION 227
DEMONSTRATION PROJECT

cosponsored by:
US Army Corps of Engineers
Honolulu District

and:
State of Hawaii
Department of Land and Natural Resources
Office of Conservation and Coastal Lands

Program Workshop
St. Louis, MO
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TOPICS

- Site Characterization
  - Kihei, Maui
  - Sacred Falls, Oahu

- Numerical Modeling

- Physical Model
  - Shape Evaluation
  - Shape Performance
  - Modular Design

- Next Steps
PROTOTYPE SITE: Kihei, Maui

Coral Rubble Mounds
PROTOTYPE SITE: Bathymetry

Coral Rubble Mounds
SACRED FALLS, OAHU

Project Site
PROJECT SITE: Looking North
PROJECT SITE: Looking South
NUMERICAL MODELING
RefDif model results overlaid on IKONOS imagery.
SHAPES CONSIDERED

RECTANGLE

CRESENT

FAN
WAVE HEIGHT CONTOURS
Rectangle

 Depths in Meters
PHYSICAL MODEL
Shape Evaluation
PHYSICAL MODEL

- **Flume**: 56ft long X 32ft wide
- **Scale**: 1/16
- **Wave Parameters**:
  - **Height**: Depth Limited over Reef
  - **Period**: 9 and 16 second
  - **Direction**: -7 degrees
- **Longshore Current**
- **Sediment Transport**
PHYSICAL MODEL

Shape Performance
RECTANGLE: Dye Study (3)
PHYSICAL MODEL
Modular Design

- PVC Pipes
- Plastic Traffic Barriers
- Cylindrical Storage Tanks
- Hawaiian Fish Pond Wall
CRESCENT: Vertical PVC Pipe

128 feet
CRESCENT: Vertical PVC Pipe

Units: 4ft x 2ft

64ft
MODULAR PERFORMANCE

DYE TRAVEL TIME IN LEE OF STRUCTURE

TIME (seconds)

Existing

Crescent

PVC Crescent

STRUCTURE TYPE

d=4ft T=9s H=7ft

d=4ft T=16s H=7ft

d=8ft T=9s H=7ft

d=8ft T=16s H=7ft
NEXT STEPS

- Detailed Design (FY05)
- Sand Source Investigations (FY05)
- Environmental Coordination (FY05/06):
  - Construction (FY06)
- Monitoring and Evaluation (FY07->)
THANK YOU