

## RICH PASSAGE PASSENGER ONLY FAST FERRY STUDY UPDATE

### *INTRODUCING THE RICH PASSAGE NEWSLETTER FOR WATERFRONT PROPERTY OWNERS*

The Rich Passage Study is designed to investigate the technical and economic feasibility of adding passenger only fast ferry service between Seattle and Bremerton. This Newsletter is prepared for Rich Passage waterfront property owners as a means of sharing specific information related to the shoreline part of the investigations. The Rich Passage Passenger Only Fast Ferry Research Project was initiated in June of 2004 and is funded under a federal grant program administered by the Federal Transportation Administration (FTA) designed to support research and investigations of emerging transportation systems. The study is being conducted under the direction of Pacific International Engineering, PLLC, (PI Engineering) of Edmonds. PI Engineering staff are a natural fit for the challenges facing the Rich Passage Passenger Only Fast Ferry Study having worked in the water transportation industry for over ten years, both nationally and internationally, to develop techniques to accurately assess and model vessel wakes and wave impacts on shorelines and sensitive habitats. A first and critical step in the process

is to accurately assess potential shore and marine impacts associated with the passenger fast ferry watercraft that may be chosen to operate through Rich Passage. This part of the study will include collection of a large quantity of data on the water and on the shoreline. Over the next 4 to 5 months, engineers and scientists and their data collection equipment will be very visible throughout the passage. Keeping residents informed about the ongoing activity and engaging their observations is an important part of the work. Communication will be accomplished by meetings, publishing information on the website and with direct mailings. This is the first of a series of newsletters that have been designed to keep the waterfront property owners along Rich Passage informed about the ongoing details of the study work being planned for this winter. This Newsletter will be circulated approximately monthly. It is planned that the newsletter will contain information on the study plan, schedule of study events, ongoing observations and final results.



## WORK TO DATE MEETINGS WITH RESIDENTS

*The purpose of the meetings was to share information on the project's status and to get feedback from property owners.*

Two meetings were held with Rich Passage waterfront property owners on October 13 on Bainbridge Island and October 14 in Port Orchard. Letters inviting property owners were sent to approximately 400 residents along the Rich Passage ferry route and the meetings were advertised on the project website. Attendance at the meetings included 25 persons at the Bainbridge meeting and 15 at the Port Orchard meeting. The purpose of the meetings was to share information on the project's status and to

get feedback from property owners. Concerns raised by residents included the impacts of wakes to biological habitat, to shale bedrock hardpan, and the interface between bedrock and bulkheads on the Port Orchard side. In response to a request to have property owners' concerns and comments placed on the project website, a "Comments and Feedback" page has been added to the website. Letters and comments that have been received from property owners are summarized there and the page will be updated regularly.

Three general community meetings were held in the evening in Port Orchard, Bainbridge and Bremer-

ton on October 19, 20, and 21. The community meetings were advertised in the SUN, Bremerton Patriot, Port Orchard Independent and Bainbridge Island Review and on the project website. The community meetings were not as well attended but provided an opportunity for briefing several additional waterfront property owners who were not able to attend the previous week's meetings. Pacific International Engineering partnered with the Marine Transportation Association of Kitsap (MTAK) to organize the property owners' and community meetings.

## MONITORING AND DATA COLLECTION

Collection of baseline environmental data has been underway and will continue throughout the study. Beach surveys are being conducted on a quarterly basis. Beach profiles have been surveyed and sediments characterized in terms of size and stratification in August 2004 and November 2004, building on the



*Sediment size distributions have been determined from photographs using quantitative image analysis techniques.*

dataset collected during the previous wake impact studies. Sediment size distributions have been determined from photographs using quantitative image analysis techniques.

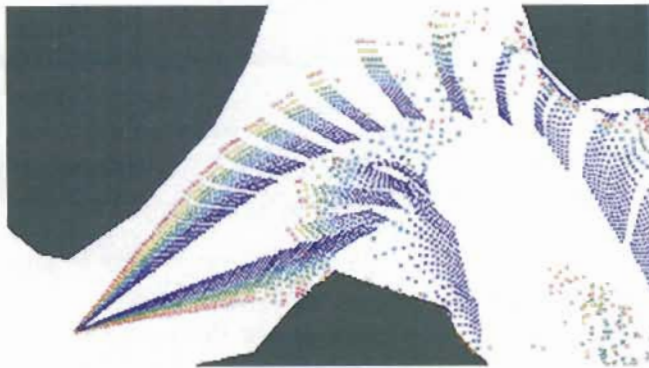
Observation of exposed bedrock and the condition of existing bulkheads along the ferry route is also ongoing.

Biological monitoring, including characterization of benthic infauna and observation of the presence and health of kelp (*Nereocystis leutkeana*), is scheduled to begin in early January 2005 at selected indicator sites within Rich Passage. Similar data will be collected at several reference sites for comparison. Environmental monitoring will continue during experimental trials of a low-wake vessel in early 2005.

*Environmental monitoring will continue during experimental trials of a low-wake vessel in early 2005.*



## WAKE PREDICTION AND SHORELINE RESPONSE MODELING



*Wake height pattern predicted by the Lagrangian Super-critical Vessel model*

A thorough assessment of the hydraulic conditions on the Seattle to Bremerton ferry route is needed to assess the potential changes to shorelines and habitat that might arise from alternative fast ferry operations and to investigate the potential operating constraints that may apply under a range of wave, tide and current conditions.

Pacific International Engineering is developing a wake propagation model that can be used to predict vessel wake parameters (e.g. height, period, direction, phase) at the shoreline along the ferry route. The model will be used to evaluate potential effects of alternative fast ferry operations on shoreline erosion and sediment transport and ultimately to evaluate possible shore protection solutions for areas where impacts cannot be minimized. PI Engineering has recently calibrated and validated a regional-scale wake-propagation model suitable for predicting the wakes from high-speed vessels that previously operated in Rich Passage.

Effort is now needed to calibrate and verify the wake propagation and wake impact models for potential candidate low wake high-speed passenger vessels.

Wake height pattern predicted by the Lagrangian Super-critical Vessel model for a high-speed vessel in Rich Passage. (An animated version of the model output may be viewed at [www.pugetsoundfastferry.com/techinfo.com](http://www.pugetsoundfastferry.com/techinfo.com))

## EXPERIMENTAL TRIALS OF A LOW WAKE PASSENGER VESSEL

A state-of-the-art foil-supported catamaran designed by Teknicraft, New Zealand (left) is being built by All American Marine, Inc. of Bellingham, WA.

Wake measurements of a similar vessel (M/V Condor Express suggest that the design may generate wake characteristics that could substantially reduce the impact to shoreline and make the foil-supported catamaran a candidate for operation at high speeds as a passenger-only ferry in Rich Passage.

The availability of the experimental vessel for trials between January and May 2005 is a significant opportunity



*A state-of-the-art foil-supported catamaran designed by Teknicraft*

to test a candidate low-wake vessel both in terms of wake characteristics and potential shoreline impacts. The trials would provide valuable data for direct validation of the numerical wake and shoreline response models. The models and data will enable a detailed assessment of potential shore impacts and provide a tool to evaluate possible shore protection solutions for areas where impacts cannot be minimized.

PI Engineering has requested the FTA add a scope of work to the study for experimental trials with the vessel and develop a program to work with waterfront residents on monitoring the wakes and potential impacts associated with the new vessel. This portion of the study is under review and is yet to be approved by the FTA.

Intensive vessel trials and detailed wake measurements are planned on a portion of the Seattle to Bremerton route (between Bemerton and Rich Passage) over a period of 3 days in late January or early February 2005. The purpose of the intensive trials is to provide detailed measurements of wake patterns for calibration and verification of the wake prediction models being developed as part of the study. The intensive trials will focus on gathering vessel operat-



*M/V Condor Express*

*The intensive trials would provide the first data set of this scale and level of detail for a passenger-only fast ferry vessel in the Puget Sound*

ing data, rather than analysis of potential shoreline impacts. During the intensive trials, the experimental vessel will be operated through a range of speeds between 15 and 35 knots and at a range of distances between 1000 and 3000 ft from shore. The planned measurements for the intensive trials include:

- Deployment of a 5-point cross-shore instrument array. The deployment sensors will include 2 non-directional wave gauges and 3 velocity and pressure sensing gauges located within 1000 ft of the shoreline. The sensors will measure time series of wave heights, wave orbital velocities, wave directions, and wave period at a range of distances from the sailing line and for a range of vessel speeds.
- Vertical aerial photography of wakes to determine planview shape of the wakes at a range of speeds.

The intensive trials would provide the first data set of this scale and level of detail for a passenger-only fast ferry vessel in the Puget Sound environment that would include wave directional information, wave orbital velocities, and spatial records of wake propagation and shape.

An extended trial (2 to 3 months) of the vessel on the Seattle to Bremerton route (passing through Rich Passage) is also planned starting in early February 2005 specifically to assess potential impacts from the wakes of the experimental vessel on shorelines. The extended trial will allow data to be gathered during a range of tide and weather conditions. The planned measurements and trials include:

- Vessel operation plan to simulate the frequency of a commercial ferry operation (approximately 8 round-trip runs per day).
- Measurements of wakes, water levels, and wave orbital velocities at up to 3 locations near the shoreline in Rich Passage.
- Repetitive beach profile monitoring surveys at 12 indicator sites.
- Bi-weekly observations of beach sediments, beach characteristics, beach elevations relative to structures, wave-structure interactions, and potential impacts to beaches and structures.

PI Engineering staff will use an inflatable craft during data gathering, and also station data observers on the shoreline. The data generated by the extended trials will be of significant value for further development and verification of 1-D and 2-D beach response models and for determining the potential of the experimental vessel to provide a passenger-only fast ferry operation through Rich Passage.

[www.pugetsoundfastferry.com](http://www.pugetsoundfastferry.com)

## **Web Site, Project Information and Feedback**

***We encourage your input and comments regarding this study, and the upcoming trials.***

*To help you gather information in a systematic way a Beach Observation data sheet is available at:*

[www.pugetsoundfastferry.com/contact.htm](http://www.pugetsoundfastferry.com/contact.htm)

*Further information on the study can be obtained from the project web site at:*

[www.pugetsoundfastferry.com](http://www.pugetsoundfastferry.com) or by sending e-mail to [CoastalWA@piengr.com](mailto:CoastalWA@piengr.com) or contacting Bryan McConaughy at, [BMConsult@comcast.net](mailto:BMConsult@comcast.net), (206) 953-6026 or Marie Garrett at, 509 669-1800 [marieg@piengr.com](mailto:marieg@piengr.com).

*The web site will be updated as data from the experimental trials are gathered and analyzed.*