Prince William County Potomac River Commuter Ferry Study & Route Proving Exercise

Summary of Results

November 12, 2009

MWCOG Board of Directors Meeting

GREENHORNE & O'MARA
CONSULTING ENGINEERS
Inspired Solutions, Improving Lives

Potomac Riverboat Company

STRAUGHAN ENVIRONMENTAL SERVICES, INC.

Study Goals

1. Obtain actual run times between potential ferry stops in VA, MD & DC
2. Obtain vessel wake measurements during runs
3. Obtain noise measurements at various points along the Potomac River
4. Observe operations to determine feasibility of docking locations
5. Determine likely capital and operating costs for service
6. Determine likely fares and ridership using VDOT 2000 feasibility study model
7. Apply data to previous 2000 ferry study and provide conclusions & recommendations

Vessel Selection

Minimum Vessel Requirements

- Minimum speed of 30 knots
- Low wake/wash characteristics
- Double-hull, catamaran style hull
- Minimum capacity of 149 persons

Provincetown III

General Particulars:

Length Overall……98 feet

Beam……31 feet

Draft……5.5 feet

Speed……30 knots

Passenger Capacity……...149 people

RPE Docking Selection & Plan Development

Selection Criteria

•For origin points, location must be reasonably accessible to populations likely to utilize a ferry service

•For destination points, location must be within reasonable proximity to a user's final destination point

RPE Plan Goals

•Provide the most comprehensive timing data.

•Arrange runs so that any given run was traveled at least twice to allow for averaging of the run times and speeds.

•Allow for the inclusion of passengers during the RPE. Passengers included members of the general public, Prince William County staff and elected officials as well as staff and elected officials from local governments across the region.

May 4th, 2009 , Morning Run

DEPARTURE (Boarding by Invitation)
Location: Occoquan Harbour Marina
Departure: 7:40 am

STOP 1 (No Boarding/Deboarding)
Location: Indian Head
Arrival: 8:20 am
Departure: 8:30 am

STOP 2 (No Boarding/Deboarding)
Location: Fort Belvoir
Arrival: 8:50 am
Departure: 9:00 am

STOP 3 (No Boarding/Deboarding)
Location: Marshall Hall
Arrival: 9:15 am
Departure: 9:25 am

STOP 4 (No Boarding/Deboarding)
Location: National Harbor
Arrival: 9:50 am
Departure: 10:00 am

STOP 5 (No Boarding/Deboarding)
Location: Old Town Alexandria
Arrival: 10:20 am
Departure: 10:30 am

STOP 6 (No Boarding/Deboarding)
Location: National Airport
Arrival: 11:00 am
Departure: 11:10 am

STOP 7 (No Boarding/Deboarding)
Location: Navy Yard/Nationals Park
Arrival: 11:30 am
Departure: 11:40 am

ARRIVAL (Deboarding Only)
Location: Occoquan Harbour Marina
Arrival: 1:10 pm

May 4th, 2009 , Afternoon Run

DEPARTURE
Location: Occoquan Harbour Marina
Departure: 1:20 pm

STOP 1
Location: Navy Yard/Nationals Park
Arrival: 2:50 pm
Departure 3:00 pm

STOP 2
Location: Belmont Bay Marina
Arrival: 4:20 pm
Departure: 4:30 pm

STOP 3
Location: Prince William Marina
Arrival: 4:50 pm
Departure: 5:00 pm

ARRIVAL
Location: Occoquan Harbour Marina
Arrival: 5:10 pm

May 4th, 2009, Evening Run

DEPARTURE (Boarding by Invitation)
Location: Occoquan Harbour Marina
Departure: 5:20 pm

STOP 1 (Boarding /Deboarding)
Location: Washington Channel (Nats Game)
Arrival: 6:50 pm
Departure: 10:00 pm to 11:00 pm (End of 9th Inning)

ARRIVAL (Deboarding Only)
Location: Occoquan Harbour Marina
Arrival: 11:00 pm to 12:00 am

Timing Plan Development

Primary Goal:

Ensure that accurate timing data was obtained at all times.

Manual Data Recording Form

May 4th Afternoon			
Event	**Timing Marker**	**Anticipated Time**	**Time**
Departure	Occoquan Harbour Marina	1:20 PM	
CP 2	Route 1 Bridge		
CP 3	Occoquan River Channel Daybeacon 15 Green		
CP 4	Occoquan River Channel Light 14 Red		
CP 5	Occoquan River Channel Daybeacon 13 Green		
CP 6	Occoquan River Channel Light 12 Red		
CP 7	Occoquan River Channel Daybeacon 10 Red		
CP 8	Occoquan River Channel Daybeacon 7 Green		
CP 9	Occoquan River Channel Daybeacon 4 Red		
CP 10	Occoquan River Channel Light 2 Red		
CP 11	Upper Potomac River Channel Lighted Buoy 51 Green		
CP 12	Upper Potomac River Buoy 54 Red		
CP 13	Upper Potomac River Lighted Buoy 55 Green		
CP 14	Upper Potomac River Buoy 57 Green		
CP 15	Upper Potomac River Lighted Buoy 60 Red		
CP 16	Hallowing Point Light		
CP 17	Upper Potomac River Buoy 61 Green		
CP 18	Upper Potomac River Lighted Buoy 62 Red		
CP 19	Upper Potomac River Lighted Buoy 64 Red		
CP 20	Upper Potomac River Buoy 66 Red		
CP 21	Upper Potomac River Channel Lighted Buoy 67 Green		
CP 22	Upper Potomac River Channel Buoy 69 Green		

Trimble GeoXT Handheld GPS Unit

Noise Testing Plan Development

Primary Goal:

Determine potential noise impacts of a ferry service on sensitive areas along the shores of the Potomac River.

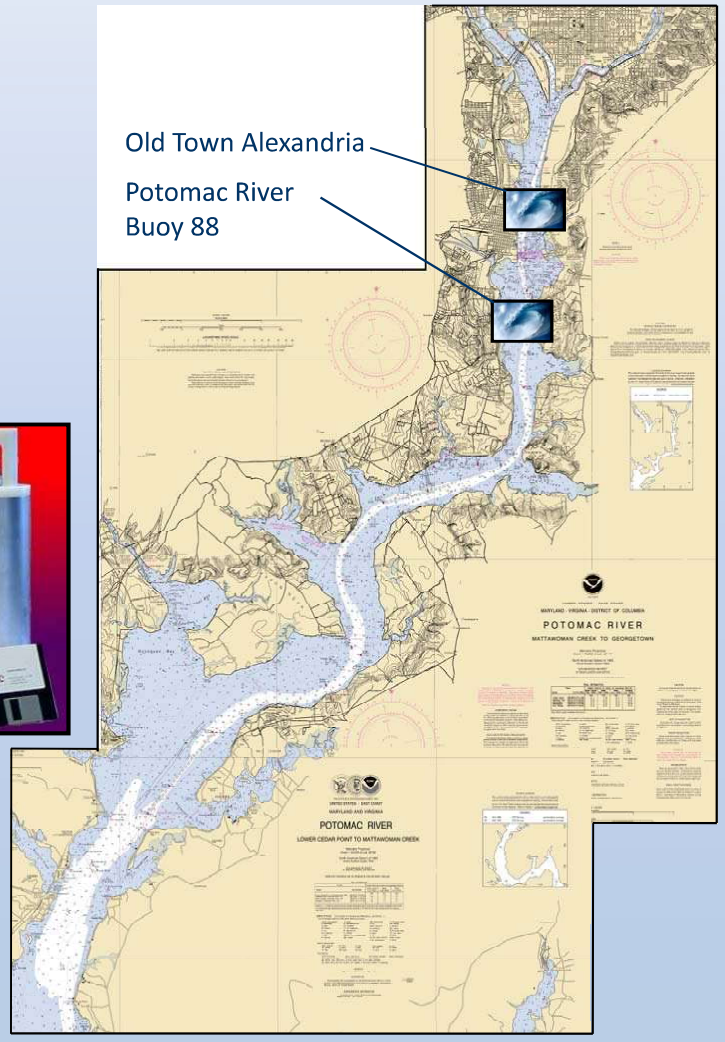
Occoquan Harbour Marina

Belmont Bay Marina

Wave Testing Plan Development

Primary Goal:

Determine potential wave impacts of a ferry service on marinas and shorelines of the Potomac River.



Actual Run Times and Distances

Time and Distance from potential docking locations	Quantico	Harbor Station	Prince William Marina	Occoquan Harbour Marina	Belmont Bay	Indian Head	Fort Belvoir	Marshall Hall	National Harbor	Old Town Alexandria	Reagan National Airport	Washington D.C. (Southwest Waterfront)	Washington D.C. (Anacostia Waterfront)	
Quantico	--	18.3	57.2	51.2	43.5	19.3	33.0	35.5	58.4	58.9	73.4	76.0	79.4	
Harbor Station	7.41	--	51.9	45.9	38.2	14.0	27.7	30.2	53.1	53.6	68.1	70.7	74.1	
Prince William Marina	13.47	10.50	--	6.0	13.7	46.9	60.1	62.6	85.5	86.0	100.5	103.1	106.5	
Occoquan Harbour Marina	12.96	9.99	0.51	--	7.7	40.9	54.1	56.6	79.5	80.0	94.5	97.1	100.5	
Belmont Bay	11.84	8.87	1.63	1.12	--	33.2	46.4	48.9	71.8	72.3	86.8	89.4	92.8	
Indian Head	8.11	5.14	6.73	6.22	5.10	--	19.2	21.7	44.6	45.1	59.6	62.2	65.6	
Fort Belvoir	15.68	12.71	14.04	13.53	12.41	7.70	--	8.5	31.4	31.9	46.4	49.0	52.4	
Marshall Hall	17.36	14.39	15.72	15.21	14.09	9.38	3.04	--	26.9	27.4	41.9	44.5	47.9	
National Harbor	26.60	23.63	24.96	24.45	23.33	18.62	12.28	10.02	--	16.9	31.4	34.0	37.4	
Old Town Alexandria	27.49	24.52	25.85	25.34	24.22	19.51	13.17	10.91	3.29	--	16.3	18.9	22.3	
Reagan National Airport	30.10	27.13	28.46	27.95	26.83	22.12	15.78	13.52	5.90	2.71	--	26.6	30.0	
Washington D.C. (SW Waterfront)	32.31	29.34	30.67	30.16	29.04	24.33	17.99	15.73	8.11	4.92	6.25	--	18.0	
Washington D.C. (Anacostia Waterfront)	32.85	29.88	31.21	30.70	29.58	24.87	18.53	16.27	8.65	5.46	6.79	3.14	--	
Distance (Miles)														Time (Minutes)

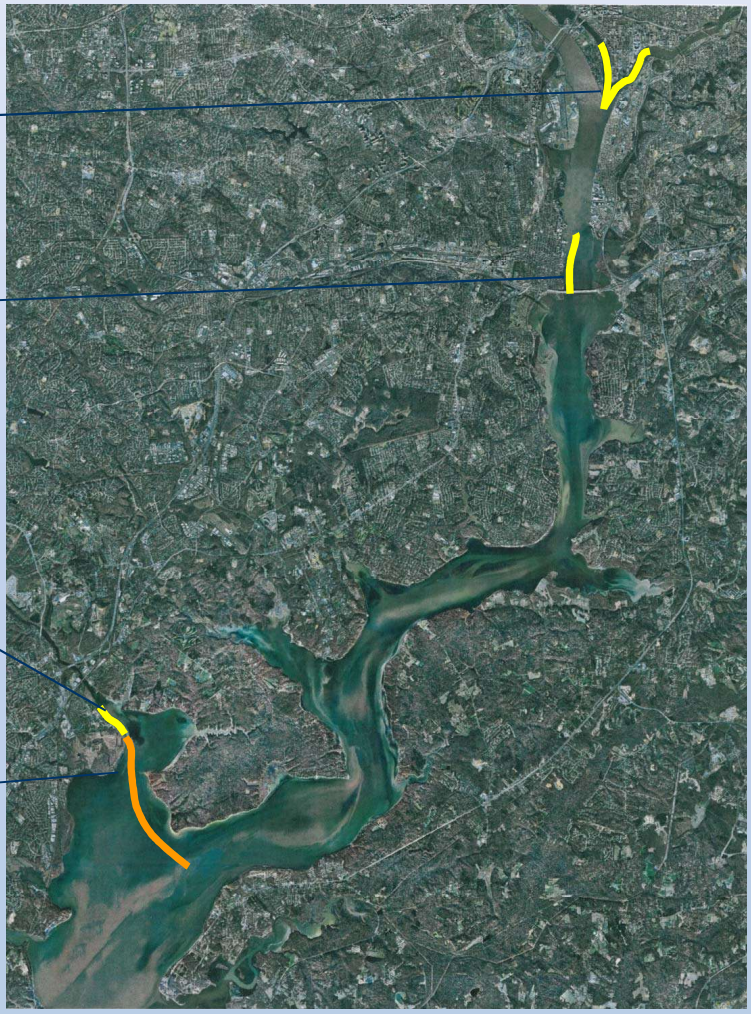
Actual Run Time Impacts

Impact #1
No Wake Zones along Washington Channel and Anacostia River

Impact #2
No Wake Zone along Old Town Alexandria Frontage of Potomac River

Impact #3
No Wake Zone between Prince William Marina and Belmont Bay Marina

Impact #4
Insufficient Depths to attain cruising speed along Occoquan River



Recommended Vessel Characteristics for Prince William Service

Characteristic	Measurement
Hull Type	Multi-hull
Draft (ft)	3.5 max
Average Cruising Speed (mph)	34.0
Maximum Speed (mph)	38.0
Propulsion	Water Jet
Wake at top speed (in)	7
Passenger capacity(persons)	99

Additional Recommended Amenities:

- **Snack Bar**
- **Televisions**
- **Wi-Fi**

Anticipated Run Times and Distances

Travel Time Reduction:

21 minutes

Anticipated Travel Times are Result of:

- Use of more suitable vessel
- Waiver of no-wake zones

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Quantico	--	13.3	30.9	27.8	21.1	14.6	28.1	32.2	52.3	48.9	61.9	57.4	57.8
Harbor Station	7.41	--	25.6	22.5	15.8	9.3	22.8	26.9	47.0	43.6	56.6	52.1	52.5
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Distance (Miles)

Time (Minutes)

Service Plan Statistics

Statistic	Woodbridge to Washington D.C. (Anacostia Waterfront)	Marshall Hall, MD to Fort Belvoir, VA / Marshall Hall, MD to Washington D.C. (Anacostia Waterfront)
Trip Time (Dock to Dock)	59 minutes	10 minutes / 30 minutes
Docking Time	15 minutes	15 minutes / 15 minutes
Peak Travel Time Headway	30 minutes	30 to 45 minutes / 30 minutes
Number of Vessels Required	5	3
Number of daily round trips	23	17 / 18

Potential Operating Impacts

1. High Waves
2. Fog
3. Ice
4. River Debris
5. Mechanical Failures
6. Recreational Boaters

Estimated Capital Improvement Costs

Primary Transportation Capital Costs:
- Boat Purchases
- Ticketing System

Primary Service Point Capital Costs:
- Parking Lots
- Docks
- Dredging
- Pedestrian Improvements (Sidewalks, Waiting Shelters)

Capital Cost	Woodbridge to Washington D.C. (Anacostia Waterfront)	Marshall Hall, MD to Fort Belvoir, VA / Marshall Hall, MD to Washington D.C. (Anacostia Waterfront)
Transportation Capital Cost Estimate	$19,300,000	$12,300,000
Service Point Capital Cost Estimate	$2,500,000 to $10,500,000	$3,400,000 to $8,600,000
Total	**$21,800,000 to $29,800,000**	**$15,700,000 to $20,900,000**

Estimated Annual Operating Costs

Operating Expense	Woodbridge to Washington D.C. (Anacostia Waterfront)	Marshall Hall, MD to Fort Belvoir, VA / Marshall Hall, MD to Washington D.C. (Anacostia Waterfront)
Salaries and Benefits	$1,089,500	$773,500
Boat Maintenance & Repairs	$175,000	$150,000
Administrative Office	$169,000	$169,000
Vessel Operations	$2,177,000	$1,644,000
Infrastructure Operation & Maintenance	$150,000	$150,000
Marketing/Advertising (Including Passes)	$125,000	$125,000
Total	**$3,885,500/year**	**$3,011,500/year**

Fare Box Recoveries and Required Ridership

Based on other system fare box recoveries, study team assumed a fare box recovery of 40% would be necessary to consider a ferry service viable

Based on estimated operational costs of $3,885,500/year, minimum annual fare collection would be $1,554,200

Average round-trip ferry service fare was set by study team to roughly equal average round-trip VRE service fare. Average round-trip fare for ferry service was set at $11.00/passenger

In order to meet minimum annual fare collection requirements, ferry service would be required to provide 280,000 person-trips annually

Commuter Demand

The scope of this study does not include trip demand modeling

To predict ridership in preliminary terms, the study team modified the input into the model prepared as part of the VDOT 2000 Potomac River Ferry Study

The use of this model ignores some current conditions not in existence at the time of model development.

Based on the model, predicted number of round-trip passengers on a ferry service as outlined within the report is expected to be approximately 340,000 person-trips/year.

Final Comparison to PRTC & VRE

Statistic****	PRTC Commuter Bus Service	VRE Commuter Train Service	Proposed Ferry Service
Annual Operating Cost	$12,408,491**	$46,192,429*	$3,885,000
Annual Fare Revenue	$5,641,332*	$19,685,561*	$1,905,750
Fare Box Recovery Percentage	45.5%**	42.6%	49.1%
Annual Operating Subsidy	$6,767,159**	$26,506,860	$1,979,250
Unlinked Annual Passenger Trips	1,738,556**	3,386,974*	337,838**
Operating Subsidy/Passenger Trip	$3.89**	$7.83	$5.86

***As published in the National Transit Database**

**** As provided by PRTC**

***** 95% of ferry riders assumed to take ferry both to and from work. Remaining 5% assumed to travel only one way on ferry and take alternate transportation home**

******Annual Operating Costs, Annual Fare Revenue and Unlinked Annual Passenger Trips for PRTC and VRE are system-wide and not specifically for the Woodbridge to S.E. Washington D.C. trip pairing**

Conclusions

1) The commuter ferry service described in this report will require public financial support and be operated in a manner similar to that of PRTC or VRE.

2) Based on the data and analysis contained herein, a public commuter ferry operation has the potential to offer a commuting option to the public that in terms of travel time and service between the area of Occoquan, VA and SE Washington D.C. would be competitive with those commuter services offered by PRTC and VRE.

3) Public commuter ferry service between points in Maryland and Virginia appears to also have real promise given the significant amount of travel time saved as a result of ferry usage

4) No significant noise or wave impacts associated with ferry service are anticipated given the operating parameters specified herein.

Please note that ridership numbers have been generated utilizing the model contained within the VDOT 2000 feasibility report. The use of this model ignores some current conditions not in existence at the time of model development

Recommendations for Moving Forward

1) The process of obtaining speed restriction waivers along the Potomac River should be initiated.

2) A more rigorous market analysis should be undertaken to analyze prospective demand by market in order to account for all the significant variables bearing on usage and estimated ridership diversions by mode.

3) Continued coordination with local governments and military installations that front the Potomac River should be pursued. While commuter ferry service from Prince William County to Washington D.C. appears viable, there is great potential for a ferry operation to serve cross-river commuters between Southern Maryland and Virginia.

4) Initial investigations into an authority to oversee ferry operations should also be discussed with those counties and cities that might have an interest in commuter ferry service.