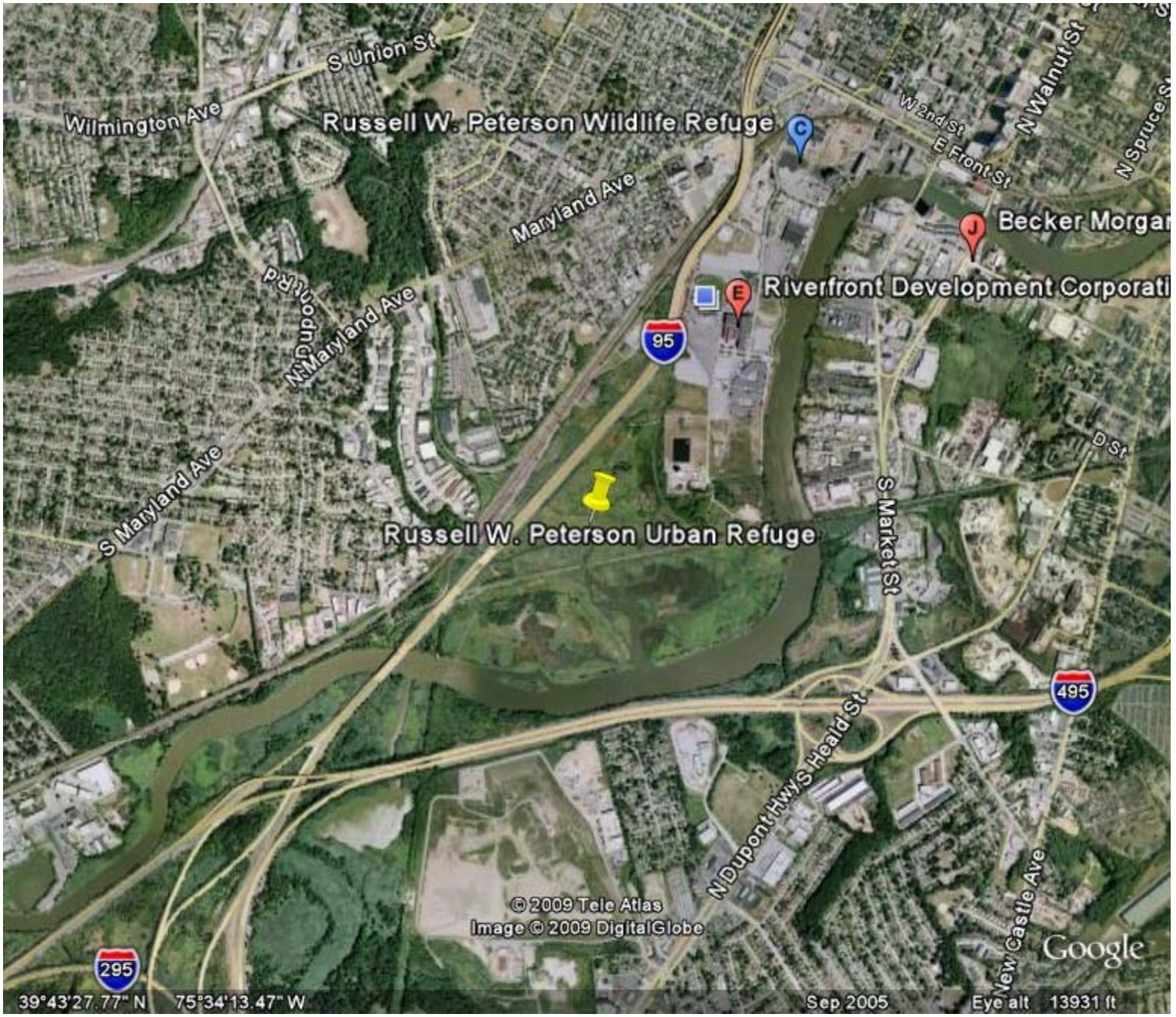
RUF Initiatives: Dupont and USFWS

Ralph Stahl, Dupont

Sherry Krest, USFWS

RUF Projects - DuPont

- State of Texas – McFaddin National Wildlife Refuge.
  - Multiple opportunities, credits estimated, costs estimated, implementation set for spring 2010.
  - Credits to apply to known debits at an existing facility.
- State of California – Sacramento Delta area.
  - Exploring costs and benefits of constructing Delta smelt habitat on existing company property.
- State of Delaware – Russell Peterson Urban Wildlife Refuge.
  - Multiple opportunities, some credits estimated, some costs estimated.
  - Discussions continue on design and implementation.


S Union St
Wilmington Ave
Russell W. Peterson Wildlife Refuge
Maryland Ave
W 2nd St
E Front St
N Walnut St
N Spruce St
Becker Morgan
Riverfront Development Corporati
N Dupont Rd
N Maryland Ave
95
S Maryland Ave
Russell W. Peterson Urban Refuge
D St
S Market St
495
N Dupont Hwy
S Heald St
New Castle Ave
© 2009 Tele Atlas
Image © 2009 DigitalGlobe
Google
295
39°43'27.77" N 75°34'13.47" W
Sep 2005
Eye alt 13931 ft

Restoration Up Front
Russell W. Peterson Urban Wildlife Refuge

November 5, 2008 Team Progress Meeting

AGENDA

1. Restoration Alternative Screening
2. Restoration Alternative Evaluation
3. Conceptual Level Design and Construction Cost Estimate/Region
4. DSAYs Per Unit Cost of Restoration/Region
5. Action Items Moving Forward

Draft – Potential Restoration Alternatives Screening

	Restoration Alternative	Timing (Short-term?)[1]	In-Kind Restoration?[2]	High Likelihood of Success?[3]	Limited Disruption of Existing Resources?[4]	Long-term Benefits?[5]	Retain for Additional Analysis
1	Peterson UWR North, Central and SW Region – Low Marsh Restoration	?[6]	Y	Y	Y	Y	**Y**
2	Peterson UWR North Region – Low Marsh Restoration	?[6]	Y	Y	Y	Y	**Y**
3	Peterson UWR Central Region - Low Marsh Restoration	Y[7]	Y	Y	Y	Y	**Y**
4	Peterson UWR Southwest Region - Low Marsh Restoration	Y[7]	Y	Y	Y	Y	**Y**
5	Peterson UWR Eastern Region - Low Marsh Enhancement	Y	N[8]	?[9]	Y	Y	N
6	Buttonwood Marsh – Tidal Exchange Restoration	?[6]	Y	N[10]	Y	Y	N
7	No Action	N	N	N	N	N	N

Notes:

1. Refers to potential for project implemention within the short-term (e.g., <3yrs),
2. Refers to projects that potentially contribute to uplift of tidal wetland/wildlife habitat, water quality,
3. Does the project have a high likelihood of success without requiring extensive investigation and future monitoring?
4 Does the restoration minimize impacts to existing higher ecological functioning resources?
5. Does the restoration provide long-term benefit to the people of DE as well as substantial ecological function gains?
6. Reflects uncertainty regarding funding for this extent of restoration
7. Assumes that currently funding can be secured to complete limited restoration ($$ from several sources)
8. Assumes enhancement does not represent suitable in-kind ecological benefits
9. ? Represents uncertainty about ongoing maintenance that might be needed to control invasive species
10. Assumes excessive investigation, planning, and on-going maintenance/monitoring

Draft – Evaluation of Restoration Alternatives

	Restoration Alternative	Consistency with Restoration Objective (incl. future mgt)	Likelihood of Success (incl. technical feasibility)	Cost of Restoration	Avoid - Minimize Resource Injury	Maximize Resource Benefits	Effect on Public Safety
1	Peterson UWR North, Central and SW Region – Low Marsh Restoration	++	++	--	+	++	++
2	Peterson UWR North Region – Low Marsh Restoration	++	++	-	+	+	+
3	Peterson UWR Central Region - Low Marsh Restoration	++	++	-	+	+	+
4	Peterson UWR Southwest Region - Low Marsh Restoration	++	++	0	+	++	0
5	Peterson UWR Eastern Region - Low Marsh Enhancement	0	0	++	+	0	0
6	Buttonwood Marsh – Tidal Exchange	++	0	--	+	0	+
7	No Action	--	0	++	0	0	0

Notes:	
++	Very positive
+	Positive
0	Neither Positive or negative
-	Negative
--	Very Negative

CONCEPTUAL RESTORATION DESIGN AND CONSTRUCTION COST ESTIMATE
RESTORATION UP FRONT - RUSSELL W. PETERSON URBAN WILDLIFE REFUGE

RESTORATION COST FOR ENTIRE SITE		UNIT	ESTIMATED QUANTITY	Cost Per Unit	Area	Total Cost (including Labor)
1.0	**Final Restoration Design**					
	A. Design Review & Data Collection	LS	n/a	n/a	n/a	$8,000
	B. Hydrologic Study / Modeling	LS	n/a	n/a	n/a	$47,000
	C. Environmental Permitting	LS	n/a	n/a	n/a	$26,000
	D. Final Design Plans	LS	n/a	n/a	n/a	$30,000
2.0	**Restoration Construction**					
	A. Mobilization, Excavation & Grading - DNREC Cost	C.Y.	132,344	$5.50	47.25 acres	$728,000
	B. Mobilization, Excavation & Grading - Union/Prevailing Wage	C.Y.	132,344	$44.50	47.25 acres	$5,890,000
	Wildlife Enhancements (Bird Boxes & Nest Platforms)	n/a	n/a	n/a	n/a	$15,000
	C. Restoration Planting (3 Foot Spoils Buffer Areas - 3 lives stakes per sq. yd.)	Live Stake	11,601	$3.00	3867 sq. yds.	$44,000
	D. Restoration Seeding (Spoils Areas - 35 lb. / per acre)	lb.	525	$13.00	15 acres	$11,000
	Restoration Monitoring (5 years)	n/a	n/a	n/a	n/a	$67,000
TOTAL RESTORATION COST FOR ENTIRE SITE					**Low Estimate $976,000**	**High Estimate $6,138,000**

COST BY REGION		UNIT	ESTIMATED QUANTITY	Cost Per Unit	Area	Total Cost (including Labor)
North Region						
1.0	**Final Restoration Design**					
	A. Design Review & Data Collection	LS	n/a	n/a	n/a	$7,000
	B. Hydrologic Study / Modeling	LS	n/a	n/a	n/a	$47,000
	C. Environmental Permitting	LS	n/a	n/a	n/a	$26,000
	D. Final Design Plans	LS	n/a	n/a	n/a	$23,000
2.0	**Restoration Construction**					
	A. Mobilization, Excavation & Grading - DNREC Cost	C.Y.	65,193	$5.50	18.68 acres	$359,000
	B. Mobilization, Excavation & Grading - Union/Prevailing Wage	C.Y.	65,193	$47.25	18.68 acres	$3,081,000
	Wildlife Enhancements (Bird Boxes & Nest Platforms)	n/a	n/a	n/a	n/a	$5,000
	C. Restoration Planting (3 Foot Spoils Buffer Areas - 3 lives stakes per sq. yd.)	Live Stake	3,999	$3.00	1333 sq. yds.	$18,000
	D. Restoration Seeding (Spoils Areas - 35 lb. / per acre)	lb.	210	$13.00	6.0 acres	$6,000
3.0	**Restoration Monitoring (5 years)**	n/a	n/a	n/a	n/a	$52,000
TOTAL NORTH REGION RESTORATION COST					**Low Estimate $543,000**	**High Estimate $3,265,000**

CONCEPTUAL RESTORATION DESIGN AND CONSTRUCTION COST ESTIMATE
RESTORATION UP FRONT - RUSSELL W. PETERSON URBAN WILDLIFE REFUGE

Central Region		UNIT	ESTIMATED QUANTITY	Cost Per Unit	Area	Total Cost (including Labor)
1.0	**Final Restoration Design**					
	A. Design Review & Data Collection	LS	n/a	n/a	n/a	$7,000
	B. Hydrologic Study / Modeling	LS	n/a	n/a	n/a	$47,000
	C. Environmental Permitting	LS	n/a	n/a	n/a	$26,000
	D. Final Design Plans	LS	n/a	n/a	n/a	$23,000
2.0	**Restoration Construction**					
	A. Mobilization, Excavation & Grading - DNREC Cost	C.Y.	46,673	$5.50	22.39 acres	$257,000
	B. Mobilization, Excavation & Grading - Union/Prevailing Wage	C.Y.	46,673	$47.25	22.39 acres	$2,206,000
	Wildlife Enhancements (Bird Boxes & Nest Platforms)	n/a	n/a	n/a	n/a	$5,000
	C. Restoration Planting (3 Foot Spoils Buffer Areas - 3 lives stakes per sq. yd.)	Live Stake	1,401	$3.00	467 sq. yds.	$10,000
	D. Restoration Seeding (Spoils Areas - 35 lb. / per acre)	lb.	56	$13.00	1.6 acres	$4,000
3.0	**Restoration Monitoring (5 years)**	n/a	n/a	n/a	n/a	$52,000
TOTAL CENTRAL REGION RESTORATION COST					**Low Estimate $431,000**	**High Estimate $2,380,000**
Southwest Region						
1.0	**Final Restoration Design**					
	A. Design Review & Data Collection	LS	n/a	n/a	n/a	$7,000
	B. Hydrologic Study / Modeling	LS	n/a	n/a	n/a	$0
	C. Environmental Permitting	LS	n/a	n/a	n/a	$26,000
	D. Final Design Plans	LS	n/a	n/a	n/a	$23,000
2.0	**Restoration Construction**					
	A. Mobilization, Excavation & Grading - DNREC Cost	C.Y.	20,478	$5.50	6.18 acres	$113,000
	B. Mobilization, Excavation & Grading - Union/Prevailing Wage	C.Y.	20,478	$47.25	6.18 acres	$968,000
	Wildlife Enhancements (Bird Boxes & Nest Platforms)	n/a	n/a	n/a	n/a	$5,000
	C. Restoration Planting (3 Foot Spoils Buffer Areas - 3 lives stakes per sq. yd.)	Live Stake	6,201	$3.00	2,067 sq. yds.	$24,000
	D. Restoration Seeding (Spoils Areas - 35 lb. / per acre)	lb.	263	$13.00	7.5 acres	$7,000
3.0	**Restoration Monitoring (5 years)**	n/a	n/a	n/a	n/a	$52,000
TOTAL SOUTHWEST REGION RESTORATION COST					**Low Estimate $257,000**	**High Estimate $1,112,000**

Assumptions:

1. DNREC would provide oversight during restoration construction and planting
2. Excavation would be completed during one restoration effort (minimum mobilization) for entire site and a minimum of 20,000 c.y. if completed by region.
3. Excavation costs based on calculated feet of material to be removed for an average marsh elevation of 1.5 feet
4. Construction costs assume the use of an excavator on crane mats and tidal flow cut off to expedite schedule
5. All excavated material will be reused on site in proposed and existing spoils areas
6. Tasks identified under "Final Restoration Design" would apply only once if regions were completed concurrently.

DSAYs Per Unit Cost of Restoration/Region

Restoration Alternative		DSAY Per Unit Cost of Restoration	
	Peterson UWR		
1	North, Central and SW Region – Low Marsh Restoration	Restoration cost estimate (low)	$976,000
		Restoration cost estimate (high)	$6,138,000
		Cost per DSAY (low)	$3,424
		Cost per DSAY (high)	$21,530
2	North Region – Low Marsh Restoration	Restoration cost estimate (low)	$543,000
		Restoration cost estimate (high)	$3,265,000
		Cost per DSAY (low)	$4,566
		Cost per DSAY (high)	$27,455
3	Central Region - Low Marsh Restoration	Restoration cost estimate (low)	$431,000
		Restoration cost estimate (high)	$2,380,000
		Cost per DSAY (low)	$2,726
		Cost per DSAY (high)	$15,052
4	Southwest Region - Low Marsh Restoration	Restoration cost estimate (low)	$257,000
		Restoration cost estimate (high)	$1,112,000
		Cost per DSAY (low)	$5,638
		Cost per DSAY (high)	$24,396