Internet Appendices for

Lubell, Mark. 2003. "Collaborative Institutions, Belief Systems, and Perceived Policy Effectiveness." Forthcoming, *Political Research Quarterly*.

Internet Appendix A: Selection of Estuaries and Selection Equation Results

The quasi-experimental design in this paper compares 20 estuaries with the NEP to 10 without the NEP. For the NEP estuaries, I attempted to include all 28 estuaries that are currently in the program, but only 20 agreed to participate. Fortunately, the 20 NEP estuaries are well-distributed geographically and chronologically across the five cohorts (Tier I through Tier V) of the NEP program.

Because there are regional similarities in environmental problems and political cultures, I used geographic proximity as the main criterion to select non-NEP estuaries. The secondary criterion I used was population density. Even if estuaries face the same variety of environmental problems within a region, the severity of these problems is exacerbated by the intensity of human settlement.

[Table A.1. about here]

Table A.1 compares the NEP and non-NEP estuaries by region and by the geographic, demographic, and political independent variables used in the selection equation portion of the treatment effects model. The independent variables are similar to those found by Lubell et al. (2002) to predict the emergence of watershed partnerships: problem severity, total estuary area (1000 miles^2), 1990 population density (1000ppl/per miles^2), logged 1990 population, proportion African-American, ratio of farm to non-farm income, median income, prior watershed planning efforts, and presence of a soil and water conservation district. As can be seen, NEP estuaries are

generally larger, more densely populated, richer, and have more environmental problems, and a history of prior local environmental institutions. The geographic distribution of NEP estuaries makes it difficult to find matching non-NEP estuaries with directly comparable levels of development within the same region. Unfortunately, picking estuaries from different regions with very similar population densities would sacrifice other regional similarities.

The treatment effects model provides some purchase on this problem by directly entering these estuary characteristics as independent variables in the selection equation. While the survey data comes from only 20 estuaries, the probit selection equation takes advantage of data available for all 105 major estuaries in NOAA's Coastal Assessment and Data Synthesis System. The variables in the selection equation are measured at the estuary level, and each survey respondent is assigned the data from the estuary in which they are located. Hence, the probit selection equation is run simultaneously on the individual survey respondents from 30 estuaries, plus 75 estuaries without survey respondents. To avoid giving too much weight to the information provided by an individual survey respondent, the probit selection equation weights each survey respondent by (1/number of survey respondents in the estuary). Following Heckman's two-step procedure as implemented by LIMDEP, the estimated inverse Mill's ratio from the selection equation is then included in the regression outcome equation for only the survey respondents (Achen 1986; Greene 2000; Maddala 1983). The standard errors are also corrected as suggested by Greene (2000). Because Heckman's procedure is not fully efficient, conclusions based on standard definitions of statistical significance are conservative.

[Table A.2. about here]

Table A.2 presents the results of the selection equations for the treatment effects models presented in Table 2 of the text. As can be seen, several of the independent variables are

significant and the model fit statistics show the selection equation does an adequate job of predicting the presence or absence of the NEP. More importantly, the estimated lambda coefficients are not significantly different from zero in any model. This indicates that selection bias is not a problem, and the effects of the NEP on perceived effectiveness can safely be attributed to the difference in institutional structures.

Internet Appendix B: Variable Construction

Unless otherwise noted, all variables are measured on a disagree/agree scale with integer response values ranging between [0,10], with 0 = strongly disagree and 10 = strongly agree. Specific value labels are included in the descriptions below if needed. Question wording was slightly different for non-NEP and NEP respondents to reflect participation in different collective choice arenas. The questions were designed to insure NEP participants evaluated their experience in the NEP, as opposed to other existing institutions. I display both NEP and non-NEP wording for the dependent variables to give a basic idea of the difference, but for brevity all other variables are reported with NEP wording. Specific wording for all questions is available from the author.

Dependent Variable: Perceived Policy Effectiveness

NEP: Are the proposed or agreed upon management actions considered by the partnership very likely to significantly improve the problem, very unlikely to significantly improve the problem, or somewhere in between? 0= Very unlikely to improve, 10= Very likely to improve

Non-NEP: How likely are current government policies to significantly improve the problems of your estuary? 0= Very unlikely to improve, 10= Very likely to improve

Independent Variables: Beliefs about Problem Characteristics

Problem Severity

Concerning the overall health of your estuary, do you think the problems associated with each issue listed below are very severe, not severe, or somewhere in between? 0= The problems are not severe, 10= The problems are very severe.

Problem Diffusion

Would you say that a full resolution of the problem would require changes in the activities or behavior of a small number of citizens and businesses, would it require changes of almost everyone in the estuary, or somewhere in between? 0= Only a small number would need to change, 10= Almost everybody would need to change.

Science

On average, do you perceive the level of scientific understanding about the causes and causes of problems in your estuary to be very inadequate, very adequate, or somewhere in between? 0 = Scientific understanding is very inadequate, 10= Scientific understanding is very adequate.

Independent Variables: Beliefs about Institutional Processes

Conflict Resolution

When conflicts arise, do you think that you can resolve conflicts to the satisfaction of your organization with the partnership, or do you think your organization will need to shift the dispute to courts, political, or other administrative arenas? 0= Shift disputes outside partnership; 10= Resolve conflict inside partnership.

External Decisions

Almost all major decisions affecting estuary issues are made outside the partnership.

Disagree/Agree.

Procedural Fairness (alpha= .76)

1. Overall, the decision-making process in the partnership is fair to all stakeholders.

   Disagree/Agree.

2. My organization's interests and concerns are adequately represented in the partnership.

   Disagree/Agree.

Economic Domination

Economic interest groups have an undue influence on partnership decisions. Disagree/Agree.

Expert Domination

The partnership is dominated by experts and administrators. Disagree/Agree.

Independent Variables: Beliefs about Other Stakeholders

Number of Allies

Think about three people or organizations on which you have relied most heavily in dealing with estuary issues during the past year. Consider the full range of stakeholders, including government agencies, interest groups, and local officials. Please write the full name of the individual and/or organization in the space below. Again, all information will be held in confidence. Variable constructed by summing the number of mentions, with a maximum value of three allies.

Entrepreneur

Sometimes, a single individual can make a big difference in watershed partnerships, helping to call attention to an issue or getting people to cooperate when they might not otherwise have been able to work together. Is there a stakeholder in your estuary who is critical in maintaining or energizing the partnership? 0= No, 1= Yes.

Trust

Thinking about the range of contacts you have had with other stakeholders, do you completely trust these stakeholders to fulfill the promises and obligations made on each issue in the context of the partnership, completely distrust them, or somewhere in between? 0= Completely distrust, 10= Completely trust.

Independent Variables: Policy-core Beliefs

Environmentalism

In general, how would you describe your policy orientation on estuary issues when tradeoffs between environmental protection and economic development are important? 1-7 scale; 1= pro-development, 7= pro-environment.

Conservatism (alpha = .70)

1. Preserving the rights of individual citizens is more important than protecting the environment. Disagree/Agree.
2. In general, government agencies and regulations intrude too much on the daily lives of private citizens. Disagree/Agree.

Inclusiveness

Maximizing the scope of public participation in environmental policy improves policy effectiveness. Disagree/Agree

Table A.1. Comparison of NEP and Non-NEP Estuaries

	NEP Estuaries	Non-NEP Estuaries
Geographic Factors		
Problem Severity^	.577 (.065)	.438 (.044)
Estuary Area (1000 mi^2)	7.773 (2.354)	7.147 (5.156)
Population Density 1990 (1000/mi^2)^	.728 (.216)	.311 (.095)
Log Population**	13.664 (.395)	11.201 (.241)
Demographic Factors		
Proportion African-American	.107 (.017)	.127 (.017)
Farm/Non-Farm Ratio**	.007 (.002)	.015 (.002)
Median Income ($1000)**	31.731 (1.227)	26.702 (.725)
Institutional Factors		
Prior Planning Effort*	.129 (.048)	.007 (.006)
Soil and Water Conservation District*	.395 (.155)	.033 (.018)

Notes: Data extracted from NOAA's Coastal Assessment and Data Synthesis System (http://cads.nos.noaa.gov/). Contact authors for more details. Cells contain mean values in each estuary, with standard error in parentheses. T-tests of differences in means =0, with unequal variances assumed: ^p< .10, *p< .05, **p< .01.

Table A.2. Probit Selection Equation Results for Treatment Effects Models

	With Policy Belief Interactions	Without Policy Belief Interactions
Geographic Factors		
Problem Severity	.346 (.569)	.346 (.569)
Estuary Area (1000 mi^2)	-.021 (.008)**	-.021 (.008)**
Population Density 1990 ($1000/mi^2$)	-.845 (.335)**	-.845 (.335)**
Log Population	.580 (.161)**	.580 (.161)**
Demographic Factors		
Proportion African-American	-2.869 (2.033)^	-2.869 (2.033)^
Farm/Non-Farm Ratio	8.750 (15.578)	8.750 (15.578)
Median Income ($1000)	.076 (.033)**	.076 (.033)**
Institutional Factors		
Prior Planning Effort	6.129 (3.257)*	6.129 (3.257)*
Soil and Water Conservation District	1.823 (.708)**	1.823 (.708)**
Constant	-9.784 (2.397)**	-9.784 (2.397)**
	Diagnostic Statistics for Non-Random Selection	
Lambda (λ)	.010 (.012)	-.008 (.013)
	Model Fit Statistics	
Percent Predicted Correctly	74%	74%
McFadden R^2	.230	.230
χ^2 (9 d.f.)	61.074**	61.074**

Entries in cells are parameter estimates from the probit selection equations of the treatment effects models. Standard errors in parentheses. Hypothesis tests of coefficient=0, ^p< .10, *p< .05, **p< .01. N= 1293 for all models, due to inclusion of all NOAA estuaries for estimation of selection equation.