

**Appendix E: Model Survey
Table of Contents
Planning Models Improvement Program**

E 1: SURVEY DEVELOPMENT	1
INTRODUCTION	1
STATUS	1
ISSUES.....	2
SURVEY	2
SAMPLE.....	3
E 2: SURVEY RESULTS	4
SUMMARY	4
<i>Common traits:</i>	4
<i>Specific Models:</i>	4
<i>Business Processes:</i>	4
INTRODUCTION	5
QUESTION: BENEFITS/DRAWBACKS OF PARTICULAR MODELS; OTHER COMMENTS.....	5
<i>HEC-FDA</i>	5
<i>IWR-PLAN</i>	6
<i>HES</i>	6
<i>HEP</i>	6
<i>IWR-Main</i>	6
<i>WAM</i>	6
<i>STELLA</i>	7
<i>HEC-FIA</i>	7
<i>CACFDAS</i>	7
<i>BECKY</i>	7
<i>Essence/Revised Essence</i>	7
<i>@Risk</i>	7
<i>Other comments</i>	7
QUESTION: WHAT ARE THE CURRENT MODEL NEEDS/GAPS?	8
GENERAL	9
QUESTION: WHAT OTHER MODELS (NOT LISTED IN PART 1) DO YOU USE?	10
ADDITIONAL MODELS:	10
E 3 SURVEY INSTRUMENT	12

PLANNING MODELS IMPROVEMENT PROGRAM

APPENDIX E: MODEL SURVEY

E 1: SURVEY DEVELOPMENT

Introduction

This paper is structured in two parts. The first is a modification of a discussion paper prepared in May 03. It covers the objectives of the survey, the issues to be decided, and the draft survey. The second part of the paper presents a summary of the survey results.

The objectives of the survey effort are:

- Identify what models are available. What do they do?
- Determine redundancies in models.
- Identify gaps--what new tools are needed for current work.

Corps' studies often employ many models that accomplish a variety of analyses for economic evaluations, environmental assessments, plan formulation and a range of other planning tasks. Commonly, the models have been developed by: Corps of Engineers' research offices at the Engineer Research and Development Center, the Institute for Water Resources, and the Hydrologic Engineering Center. Other models have been developed by: universities, contractors, other Federal agencies, and state or local governments. Some "home grown" models have been developed in the Corps' districts and divisions. In developing models, developers may use "off the shelf" software or they may be totally original. In order to improve planning models, we need to know more about the universe of models being used in Corps' planning

Status

There are many efforts related to models going on now within the Corps. We have talked with the points of contact and work groups for the Science Engineering and Technology (SET), SMART, Regional Sediment Management (RSM), and TOWNS efforts. We have also obtained catalogues and other compilations of Corps' models and are following up on previous model focused tasks that were mentioned during the first task force meeting.

The SET is the most comprehensive of the related work. It is a corporate approach being managed in headquarters. The group has developed an inventory of models used for science and engineering work in the Corps. It includes some planning models; the intent is that it will include all planning models. Susan Durden of the PMIP task force has attended meetings of the SET team and provided feedback to the task force. The SET and

the PMIP task force are dealing with many of the same issues and will continue to maintain close coordination.

Issues

How much information do we gather at this time? Inventory (what is there?) versus survey (what is there, detailed description, history of uses, documentation, training, what do you think of it, etc.).

Do we include a quality indicator at this time? Is it useful? What will it tell us? Would a red, amber, green evaluation be of any help? Rating 1-10?

What is the universe of planning models? Particularly how are H&H models to be treated? They are critical to planning work. Should they be listed in the PMIP inventory? How are they evaluated?

Are contractor-developed models included in the inventory? Models which sponsors use to perform in-kind work?

Coordination with SET is necessary and useful, corporately and technically. Sharing data on models that have been identified is a win-win situation. SET is determining how to evaluate the models on its list. Since this includes planning models, there is potential for conflict and/or coordination with the PMIP. How will decisions on quality, redundancy etc. be made for planning models if both SET and PMIP are ongoing?

Survey

A sub-team of the Task Force was tasked with preparing, implementing and analyzing the survey of planning models. The team had extensive discussions with and apart from the Task Force, and relied on the input provided in the Task Force papers (see Appendix D) to prepare a three-part questionnaire (see Appendix E). Part 1 requested information about models that the Task Force identified as being commonly used on a national basis in Corps planning. Part 2 requested information about other models that were not listed in Part 1. This was intended to identify local “home grown” models. Part 3 requested information about new models that are needed now or will be needed in the future. The team took great care to ensure that the number of questions was minimized, and that each question was clear, easy to answer, and provided information necessary to meet the survey purposes. A test of the survey was performed prior to implementation to ensure that the mechanics performed correctly and that the questions were understandable.

The survey is based on the following principles.

- Data on extant planning models is needed as part of the PMIP report. What this data will be is flexible.
- Maximum use will be made of existing information on models so the field will not be burdened with providing data on corporate or commonly used models.

- This effort will be an inventory more than a survey. The focus will be identifying the models, which are out there and what they do.
- For this inventory models will be defined as computerized models and spreadsheets which support decision-making.
- H&H models will be listed in the inventory to the extent that they directly support planning work.
- This is data gathering, not a scientific survey or sampling. Anyone can provide input. Respondents will be asked to identify themselves so they may be contacted for additional information if needed.
- The method of gathering data is determined by the uses that will be made of it. For efficiency and corporate consistency, it is desirable to gather information in a format, which is consistent with the SET inventory, which is a spreadsheet. An open ended question will be included asking about current gaps or future needs.

Sample

Rich Whittington of IWR is providing expert assistance in implementing this as a web based survey. The following information will be collected for each of the new models identified.

Name of model

Business Process—inland navigation, deep draft navigation, flood control etc.

Community of Practice—economics, environmental, etc.

Step in the Planning Process—Problems and Opportunities, etc.

Function—Note: This will be multiple-choice. Function list developed by task force.

Study Phase

Contact for model (technical)

Contact who did survey

Current Needs/Gaps—Note: Will be open ended.

Future Needs—Note: Will be open ended.

Additional information: Name, District, years of experience.

A spreadsheet with the corporate/commonly used models will be provided to participants in the survey. A profile sheet with information on business process, community of practice, etc. will be provided.

E 2: SURVEY RESULTS

Summary

There were several themes, which appeared in the comments on existing models and current/future model needs. They are listed below. Some are specific to a type of model while others provide a vision of the common traits, which future models should include. At the most general level, the need to be able to collaborate and share our models with our partners was emphasized.

The following pages provide a summary of the comments on the existing models and current/future model needs.

Common traits:

- Need to be GIS based or compatible with the use of GIS based data.
- People need to know what models are available—catalogue, CD.
- Maintenance and updating are a problem—not updated to run on current versions of software, not Windows based or compatible.
- Need scalable models to be adaptable to size of project, time frames, budgets, lack of data. Especially need models, which are practical for CAP and small studies.
- Data issues are important: quality, quantity needed, scientific base, GIS interface.
- Strong interest in having models which incorporate risk and uncertainty.

Specific Models:

- Need a coastal storm damage model.
- HEC-FDA needs to be modernized and to be more user friendly.
- Need models that can be used for watershed or regional studies.
- Need models to link NER and NED evaluations, for flood control studies particularly.
- Need models for ecosystem restoration that are based on good science, less subjective.
- Need models to relate physical changes to service outputs for environmental parameters.

Business Processes:

- Navigation, inland and deep draft--Few needs were mentioned. (NETS work which is ongoing is well known.)
- Flood Control—HEC-FDA is commonly used by many districts.
- Ecosystem restoration—Many needs, current and future, were identified.
- Coastal storm damage reduction—One of the most often mentioned as needing a corporately approved, standardized model.

- Watershed studies—Models, which work at this scale, are needed.

Introduction

The following is a compilation of the responses to the open ended questions on the survey. Comments on particular models have been grouped for ease of review. Any response that particularly mentioned the need for a new model has been included in the responses to the question “What new models are needed?”

Question: Benefits/drawbacks of particular models; other comments.

(Each bullet under the model name is one person’s comments)

HEC-FDA

(HEC-FDA was cited by 27 out of 123 respondents as being used frequently.)

- Need GIS based version. Is HEC working on this?
- Not user friendly
Needs to compute damages at river mile of structure, not index station.
Calculations can be wildly off.
DIRB does calculations better.
Too sensitive to spacing.
Not easy to change data.
Output files do not focus on data needed.
Too many quirks.
- Not enough control over printouts—cannot track versions.
- Not user friendly.
Cumbersome to use.
Difficult to tell when/if mistakes were made.
- Use 2 dimensional flood depths as input for risk and uncertainty analysis.
Currently only uses 1-d results from HEC-RAS.
- More user-friendly--simplified, transparent, easier to use format.
- Better explanation of errors, especially input data that will cause model to stop.
Make unsteady flow H&H compatible with FDA.
- Excellent working model.
Needs to be windows based.
- Many drawbacks—have been discussed with HEC.
- Challenge to learn.
Error messages need to actually tell what is wrong.
- Needs modernizing for ease of input/output display.
Better import/export capability.

IWR-PLAN

- Not enough flexibility, especially cost uncertainty, to deal with real world.
Too many bells and whistles.
- Use frequently for ecosystem restoration projects.
Helpful and easy to use.
- Not compatible with Windows XP.
IM contacted IWR—told no resources devoted to keeping it updated.
If not updated, will not use much in future.
- Tosses edited data when a new build is performed (more detail in original comment).
- Needs to be able to handle more alternatives.
- Version that will run on newer version of Windows (several comments).
- Needs more flexibility.

HES

- Quick and accurate, especially for small projects.
Less cumbersome than HES.
USFWL accept results when work with the Corps on it.
- Prefer over HEP.
Much quicker and the same results.

HEP

- Good ecological models.
- Useful tool.
Often do not have this much data.
Many species do not apply to southern California or deserts.
- Can be time-consuming and expensive.
Data is subjective.
- Outdated and quasi-scientific.

IWR-Main

- Preferred choice of state of Kentucky Division of Water for analyzing public water resource needs.
- Add interface with HEC CWWIS suite for water supply analyses.

WAM

- Needs to be replaced with GIA/data base model.

STELLA

- Used for lake draw down.

HEC-FIA

- Cumbersome to use re: data requirements.
- Redesign for easier use.

CACFDAS

- Upgrade to integrate GIS and flood damage analysis.
- Upgrade to a Windows-based system.
- Long overdue for update.

BECKY

- Not available yet.
- May not work for west coast damages.

Essence/Revised Essence

- Does not quantitatively address uncertainties.

@Risk

- Great general application tool.

Other comments

- Recommend HES be used throughout the Corps.
- Consider riverine habitat models such as In-stream Flow Incremental Methodology (IFIM) and RSCHARC.
- Models from other Districts lack documentation.
- Often only a specific person can explain how model works or change input.
- Some models far too powerful for the quantity/quality of data.
- Models need to be GIS capable/compatible.
- Habitat evaluation models need to be less cumbersome, less expensive and adaptable to various ecosystems.
- Need true Windows-based models (cut and paste between programs).
- TOWCOST, GEM and WAM are out of date.
- Training course on probability/statistics using @Risk.
- Better BC data for justifying non-structural.

Question: What are the current model needs/gaps?

- HEC-FDA GIA based version-link to ArcView.
- Need model to quantify estuarine habitat benefits and functions.
- Modern GIS/database model to replace WAM.
- Flood damage model developed in conjunction with Marshall and Swift.
- Complete coastal erosion model which is under development.
- Complete HEC-FIA to include economic evaluation.
- Environmental benefits model.
- Structural damage models for hurricane protection studies.
- TMDL, water quality, assimilative capacity.
- Quantify estuarine benefits and functions. Integrate habitats to quantify benefits.
- Regional hydro geomorphic wetland classification.
- Regional Rosgen classification flow curves.
- Watershed behavior models.
- Geomorphic model.
- Risk-based flood damages model that is user friendly and easy to understand.
- More user-friendly FDA-simplified, transparent, easier to use format
- Aid for analysis of containership benefits for deep-draft navigation economic studies.
- Easy to use, uncomplicated models for CAP-FDR and ecosystem.
- Environmental models for volcanic island geology and climate.
- Tidal wetlands restoration.
- Measuring environmental habitat units as secondary benefits of FDR.
- Shore protection.
- FDA with risk and uncertainty.
- Risk based dredged material disposal analysis.
- Shoreline erosion.
- More statistical programs such as SPSS.
- Coastal storm damage (several comments).
- HQ endorsed coastal storm damage model with risk and uncertainty—needs to handle all coastal areas.
- Habitat assessment for inland lakes.
- Economic model for west coast coastal storm damages (details in comment.)
- Trade-off analysis.
- Watershed planning model to show interaction of outputs.
- Evaluation of grasslands/prairies.
- Habitat evaluation model that is inexpensive.
- Life cycle analysis for coastal storm damage reduction (like GRANDUC).
- Watershed models which can address both high and low flows (details in comment).
- Better links between predictive models for FDR and graphic/GIS software.
- Ecosystem model for quantifying ecological values.

- Translate physical changes into water quality into flora and fauna abundance (several comments).
- Relate wetland area and function to fishery production (several comments).
- Relationship total suspended solids and turbidity.
- Wetland evaluation.
- Watershed evaluation (several comments).
- Model to evaluate small boat harbors in Alaska.
- Deep draft navigation model?
- Incorporate risk based analysis in NER.
- Link coastal (CHL) models into a common GIS framework.
- Risk based cost model.
- Monetized environmental outputs, within 10 years.
- Simplified version of HGM, HEP and HES.
- Risk based cost model.
- Risk analysis navigation model.

General

- Catalogue of models. Information packet/CD (for new employees) explaining each model. Also need to know where to go and find it.
- Need to build our internal modeling capability due to lack of experience.
- Gaining a better understanding of ecosystem restoration benefits and their application to watershed planning.
- People need to be aware models are available (several comments).
- Ability to evaluate benefits at programmatic level.
- Way to integrate NED and NER (several comments).
- Spreadsheets are used for deep-draft, recreation, some shallow-draft, impact assessment and other purposes. Suggest sharing these tools among Districts. Standardization of application would be useful. (comment condensed)
- Rosgen's models often used by inter-disciplinary teams.
- Need to keep updated for compatibility with changing software.
- Process for incorporating models into the feasibility phase is unclear.
- Models which link pieces of analysis.
- Proper training to apply ecological models. Better inputs.
- More scientific valid method of assessing habitat impacts and benefits of restoration (ecosystem services).
- Cannot layer data into GIS. Cannot interface with other systems that our partners use. Critical as our work becomes more collaborative.
- Analyze biodiversity and genetic pathways for environmental restoration projects at landscape or regional scale.
- Training for each community of practice.
- Too many choices now. Pick the best and provide information on which models are best for which studies.
- Greater use of risk analysis for studies which greater than normal variance.

Question: What other models (not listed in part 1) do you use?

- Hydro Rehab
- EDT-- Ecological Diagnosis and Treatment
- ABE--Agriculture Benefits Evaluation
- Deep Draft Analytical Spreadsheets
- Charleston's Beach Model
- Stage-Damage Generator
- Life Cycle Cost Analysis
- HNA Query Tool
- WVA—Wetland Value Assessment
- DIRB
- ADDAMS
- HEC-RAS, HEC-HMS, HEC-FFA
- IFIM—In stream Flow Incremental Methodology
- Annual Projects Benefits Spreadsheets
- IMPLAN
- GENESIS
- Monte Carlo Bluff Erosion
- HGM, ExHGM, Modified Riverine HGM model for AZ
- RMA—Resource Management Associates
- COSTDAM—Coastal Damage Assessment Model
- NAVPAT
- GLLAST
- Lock and Dam 3 risk and benefit cost assessment
- ECONPACK
- PEM—Program Encroachment Model
- HEC-5
- Shallow Draft Navigation
- MONTE
- EIFS—Economic Impact Forecast System
- EFM
- Archeological Site/Soils
- Hydrologic Simulation Program in FORTRAN
- Reebie Transportation Cost Models for Rail, Truck, Barge
- SSFATE
- Recreation Benefit Analysis
- MCACES Gold Edition Composure Gold Software, Version 5.31

Additional models:

(Identified by the PMIP task force, not from survey results)

- ORMIM
- WHAG
- AHAG

- PAMHEP
- FIST (Flood Impact Support Tool)
- MOFISH
- Savannah Harbor Navigation
- Delaware River spreadsheets
- IWR-VOC (vessel operating costs)
- Louisiana coastal area study models
- Everglades study models (1x1, 2x2, NSM, ROGEM, ELM, ATLSS, WRAP, EXPERT CHOICE/FIT)
- EXICA
- ECO EASY
- Upper Mississippi environmental models
- Lock rehab models
- Hoover Dike rehab model
- Deep draft models
- Pacific northwest fish models
- Soo locks spreadsheet
- PROSYM
- POWER SYM

E 3 SURVEY INSTRUMENT

Planning Model Improvement Program Inventory

The purpose of this survey is to obtain information about the universe of models and analytical tools utilized in the Corps planning process.

Definitions for use of this survey.

- Planning models are those models and analytical tools used by plan formulation, environmental, socio-economic and public involvement disciplines. They may have been developed by a District, lab, other agency, university, sponsor or contractor.
- Planning models include analytical tools such as spreadsheets. Do not include tools that are only data bases. While most models are computer based, do not restrict your replies to only computer based models.

This survey is in three parts:

- **Part 1** of the survey is a list of planning models commonly used in the Corps. Please answer the questions shown for these models. Profile descriptions of the models are provided by clicking on its hyperlinked name.
- **Part 2** asks you to identify planning models and tools you currently use/have used/plan to use, that **are not** on the list of models shown in Part 1. This may include local and regional "homegrown" models as well as models developed by others. *Please note that there are five opportunities to enter new/unlisted models in this part. If you have no new models please skip to part 3.*
- **Part 3** asks you to identify current and future needs for new models.

Feel free to discuss this survey with your Project Delivery Teams. However, information is requested on planning models only. Engineering and other models are being assessed via ongoing corporate initiatives.

If you have questions about this survey, please contact Susan Durden, IWR, susan.e.durden@usace.army.mil or 703-428-9089.

Part I: Planning Model Usage

1. Please indicate whether you have used these models, and if so, how often

	No, never used it	Yes, only once	Yes, 2 - 5 times	Yes, 6 - 10 times	Use it frequently
At Risk	<input type="radio"/>				
CACFDAS	<input type="radio"/>				
Archaeological Predictive Model	<input type="radio"/>				
Eco-Easy	<input type="radio"/>				
Ecological Dynamics Model (EDYS)	<input type="radio"/>				
Essence/new Essence	<input type="radio"/>				
GEM	<input type="radio"/>				
GRANDUC	<input type="radio"/>				
HEC-FDA	<input type="radio"/>				
HEC-PRM	<input type="radio"/>				
HEP (Habitat Evaluation Procedure)	<input type="radio"/>				
HES (Habitat Evaluation System)	<input type="radio"/>				
IWR-Annualizer	<input type="radio"/>				
IWR-Becky	<input type="radio"/>				
IWR-HarborSym	<input type="radio"/>				
IWR-Hydro-Repair	<input type="radio"/>				
IWR-LockSym	<input type="radio"/>				
IWR-Main	<input type="radio"/>				
IWR-NavSym	<input type="radio"/>				
IWR-Plan	<input type="radio"/>				
NIM	<input type="radio"/>				
SBEACH (Storm Induced Beach Erosion)	<input type="radio"/>				
SDM	<input type="radio"/>				
TOWCOST	<input type="radio"/>				
URBAN	<input type="radio"/>				
WAM	<input type="radio"/>				

2. Additional comments: benefits/drawbacks of particular models; other comments.

3. Years Experience: How many years of experience do you have in planning?

- Less than 3
- 3 - 10 years
- 10 - 15 years
- over 15

4. Which District do you represent?



A dropdown menu with a blue header and a scrollable list of districts. The visible items are Alaska, Albuquerque, Baltimore, Buffalo, Charleston, and Chicago. The menu has a small upward-pointing arrow at the top and a downward-pointing arrow at the bottom.

Do you have a model you'd like to submit that is not on the list?

[Yes, go to part 2](#)

[No, go to part 3](#)

Part II: Planning Model Inventory

5. Name of model

What is the name of the model

6. Developer

Who/what organization developed this model?



------(Districts/Divisions)-----
Alaska
Albuquerque
Baltimore
Buffalo
Charleston

7. What business process does this apply to? (check all that apply)

- Inland Navigation
- Deep Draft Navigation
- Flood Control
- Coastal Storm Damage reduction
- Ecosystem Restoration
- Water Supply
- Hydropower
- Recreation
- Multipurpose

8. Community of practice (check all that apply)

- Economics
- Environmental
- Plan Formulation
- Public Involvement
- Social Impact Analysis
- Other (specify)

9. Function - what does it do? (check all that apply)

- Calculate average annual damages
- Calculate benefits
- Calculate costs
- Compare plans

- Cost effectiveness and incremental cost analysis
- Forecast future conditions
- Formulate alternative plans
- Identify National Economic Development Plan
- Impact analysis of alternatives
- Problem and opportunity definition
- Public involvement
- Recreation analysis
- Risk and uncertainty analysis
- Simulate systems
- Trade off analysis
- With and without analysis
- Other (specify)

10. What step in the planning process can this model be used? (check all that apply)

- problems and opportunities
- inventory and forecast
- formulate alternative plans
- evaluate effects of alternative plans
- compare alternative plans
- select recommended plan

11. What part of the study phase does this model apply to?

- reconnaissance
- feasibility
- post-authorization evaluation
- operations
- Continuing Authorities

12. Technical contact information for the model

Name:

Phone:

13. District which provided this model information

A dropdown menu with a blue header and a scrollable list of districts. The visible items are: Alaska, Albuquerque, Baltimore, Buffalo, Charleston, and Chicago. The menu has a small upward-pointing arrow at the top and a downward-pointing arrow at the bottom.

14. Comments or additional information

Do you have any other models you'd like to submit?

[Yes, go to second submission](#)

[No, go to part 3](#)

[Review answers in part 1](#)

Part II: Planning Model Inventory

Second model submission

15. Name of model

What is the name of the model

16. Developer

Who/what organization developed this model?



------(Districts/Divisions)-----
Alaska
Albuquerque
Baltimore
Buffalo
Charleston

17. What business process does this apply to? (check all that apply)

- Inland Navigation
- Deep Draft Navigation
- Flood Control
- Coastal Storm Damage reduction
- Ecosystem Restoration
- Water Supply
- Hydropower
- Recreation
- Multipurpose

18. Community of practice (check all that apply)

- Economics
- Environmental
- Plan Formulation
- Public Involvement
- Social Impact Analysis
- Other (specify)

19. Function - what does it do? (check all that apply)

- Calculate average annual damages
- Calculate benefits
- Calculate costs
- Compare plans
- Cost effectiveness and incremental cost analysis
- Forecast future conditions
- Formulate alternative plans
- Identify National Economic Development Plan
- Impact analysis of alternatives
- Problem and opportunity definition

- Public involvement
- Recreation analysis
- Risk and uncertainty analysis
- Simulate systems
- Trade off analysis
- With and without analysis
- Other (specify)

20. What step in the planning process can this model be used? (check all that apply)

- problems and opportunities
- inventory and forecast
- formulate alternative plans
- evaluate effects of alternative plans
- compare alternative plans
- compare alternative plans
- select recommended plan

21. What part of the study phase does this model apply to?

- reconnaissance
- feasibility
- post-authorization evaluation
- operations
- Continuing Authorities

22. Technical contact information for the model

Name:
 Phone:

23. District which provided this model information

A dropdown menu with a blue header and a scrollable list of districts. The visible items are: Alaska, Albuquerque, Baltimore, Buffalo, Charleston, and Chicago.

24. Comments or additional information

Do you have any other models you'd like to submit?

[Yes, go to third submission](#)

[No, go to part 3](#)

[Review answers in part 1](#)

Part II: Planning Model Inventory

Third model submission

25. Name of model

What is the name of the model

26. Developer

Who/what organization developed this model?

------(Districts/Divisions)-----

- Alaska
- Albuquerque
- Baltimore
- Buffalo
- Charleston

27. What business process does this apply to? (check all that apply)

- Inland Navigation
- Deep Draft Navigation
- Flood Control
- Coastal Storm Damage reduction
- Ecosystem Restoration
- Water Supply
- Hydropower
- Recreation
- Multipurpose

28. Community of practice (check all that apply)

- Economics
- Environmental
- Plan Formulation
- Public Involvement
- Social Impact Analysis
- Other (specify)

29. Function - what does it do? (check all that apply)

- Calculate average annual damages
- Calculate benefits
- Calculate costs
- Compare plans
- Cost effectiveness and incremental cost analysis
- Forecast future conditions
- Formulate alternative plans
- Identify National Economic Development Plan
- Impact analysis of alternatives
- Problem and opportunity definition
- Public involvement
- Recreation analysis
- Risk and uncertainty analysis
- Simulate systems
- Trade off analysis

- With and without analysis
- Other (specify)

30. What step in the planning process can this model be used? (check all that apply)

- problems and opportunities
- inventory and forecast
- formulate alternative plans
- evaluate effects of alternative plans
- compare alternative plans
- compare alternative plans
- select recommended plan

31. What part of the study phase does this model apply to?

- reconnaissance
- feasibility
- post-authorization evaluation
- operations
- Continuing Authorities

32. Technical contact information for the model

Name:

Phone:

33. District which provided this model information

- Alaska
- Albuquerque
- Baltimore
- Buffalo
- Charleston
- Chicago

34. Comments or additional information

Do you have any other models you'd like to submit?

[Yes, go to forth model submission](#)

[No, go to part 3](#)

[Review answers in part 1](#)

Part II: Planning Model Inventory

Forth model submission

35. Name of model

What is the name of the model

36. Developer

Who/what organization developed this model?



A dropdown menu with a blue header and a scrollable list of options. The options are: -----(Districts:Divisions)-----, Alaska, Albuquerque, Baltimore, Buffalo, and Charleston.

37. What business process does this apply to? (check all that apply)

- Inland Navigation
- Deep Draft Navigation
- Flood Control
- Coastal Storm Damage reduction
- Ecosystem Restoration
- Water Supply
- Hydropower
- Recreation
- Multipurpose

38. Community of practice (check all that apply)

- Economics
- Environmental
- Plan Formulation
- Public Involvement
- Social Impact Analysis
- Other (specify)

39. Function - what does it do? (check all that apply)

- Calculate average annual damages
- Calculate benefits
- Calculate costs
- Compare plans
- Cost effectiveness and incremental cost analysis
- Forecast future conditions
- Formulate alternative plans
- Identify National Economic Development Plan
- Impact analysis of alternatives
- Problem and opportunity definition
- Public involvement
- Recreation analysis
- Risk and uncertainty analysis
- Simulate systems
- Trade off analysis
- With and without analysis
- Other (specify)

40. What step in the planning process can this model be used? (check all that apply)

- problems and opportunities
- inventory and forecast

- formulate alternative plans
- evaluate effects of alternative plans
- compare alternative plans
- compare alternative plans
- select recommended plan

41. What part of the study phase does this model apply to?

- reconnaissance
- feasibility
- post-authorization evaluation
- operations
- Continuing Authorities

42. Technical contact information for the model

Name:

Phone:

43. District which provided this model information



A dropdown menu with a blue header and a scrollable list of district names. The visible options are Alaska, Albuquerque, Baltimore, Buffalo, Charleston, and Chicago.

44. Comments or additional information



A large, empty rectangular text area with a vertical scrollbar on the right side, intended for user comments or additional information.

Do you have any other models you'd like to submit?

[Yes, go to fifth model submission](#)

[No, go to part 3](#)

[Review answers in part 1](#)

Part II: Planning Model Inventory

Fifth model submission

45. Name of model

What is the name of the model

46. Developer

Who/what organization developed this model?



A dropdown menu with a blue header and a scrollable list of options. The options are: -----(Districts/Divisions)-----, Alaska, Albuquerque, Baltimore, Buffalo, and Charleston.

47. What business process does this apply to? (check all that apply)

- Inland Navigation
- Deep Draft Navigation
- Flood Control
- Coastal Storm Damage reduction

- Ecosystem Restoration
- Water Supply
- Hydropower
- Recreation
- Multipurpose

48. Community of practice (check all that apply)

- Economics
- Environmental
- Plan Formulation
- Public Involvement
- Social Impact Analysis
- Other (specify)

49. Function - what does it do? (check all that apply)

- Calculate average annual damages
- Calculate benefits
- Calculate costs
- Compare plans
- Cost effectiveness and incremental cost analysis
- Forecast future conditions
- Formulate alternative plans
- Identify National Economic Development Plan
- Impact analysis of alternatives
- Problem and opportunity definition
- Public involvement
- Recreation analysis
- Risk and uncertainty analysis
- Simulate systems
- Trade off analysis
- With and without analysis
- Other (specify)

50. What step in the planning process can this model be used? (check all that apply)

- problems and opportunities
- inventory and forecast
- formulate alternative plans
- evaluate effects of alternative plans
- compare alternative plans
- compare alternative plans
- select recommended plan

51. What part of the study phase does this model apply to?

- reconnaissance
- feasibility
- post-authorization evaluation
- operations
- Continuing Authorities

52. Technical contact information for the model

Name:

Phone:

53. District which provided this model information



A dropdown menu with a blue header and a scrollable list of district names. The visible options are Alaska, Albuquerque, Baltimore, Buffalo, Charleston, and Chicago. The menu is currently open, showing the list.

54. Comments or additional information



A large, empty rectangular text input field with a vertical scrollbar on the right side, intended for entering comments or additional information.

[Finish survey, Go to part 3](#)

[Review answers in part 1](#)

Part III: Model Needs

55. What are the current models needs/gaps?

56. What are some future models needs/gaps?

[Review answers in Part 1](#)

[Review answers in Part 2](#)

Submit Survey