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Evaluation of Predicted and Actual Impacts of Construction Grants Projects in Three River Basins of Region V

Lower Portion of Upper Mississippi River Basin

Saginaw River Basin

Maumee River Basin

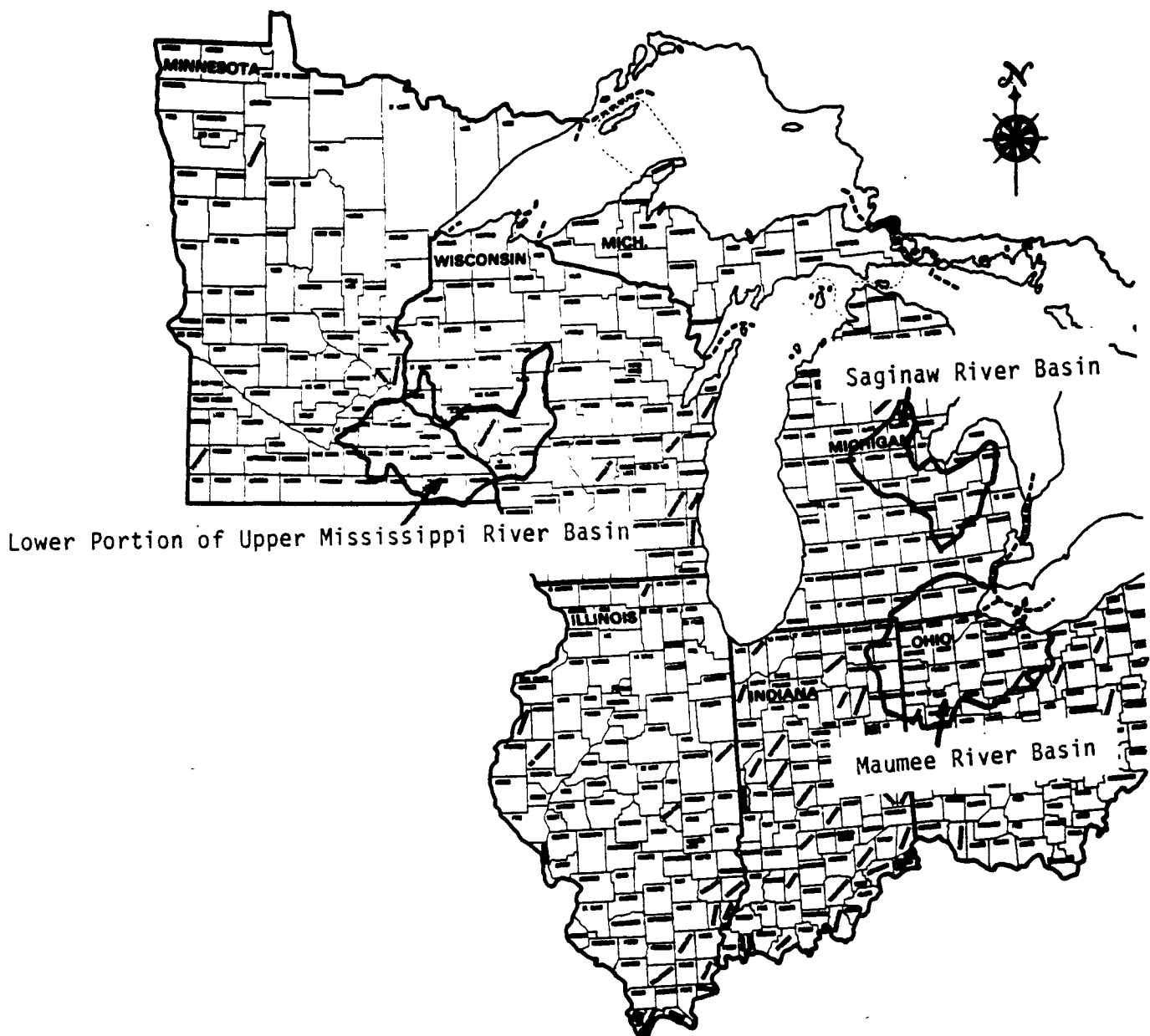EVALUATION OF PREDICTED AND ACTUAL IMPACTS
OF CONSTRUCTION GRANTS PROJECTS IN THREE RIVER BASINS OF
REGION V
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Prepared by:

United States Environmental Protection Agency
Region V
Environmental Planning Section
230 South Dearborn Street
Chicago, Illinois 60604

and

Science Applications International Corporation
8400 Westpark Drive
McLean, Virginia 22102

ABSTRACT

This investigation compares environmental predictions, obtained from National Environmental Policy Act (NEPA) decision documents from 1975 to 1982, concerning the impacts of Construction Grants projects, against the actual impacts observed during site visits conducted in 1985. Forty-four projects located in three river basins of USEPA Region V were evaluated. These projects accounted for a total of 649 environmental predictions. These predictions are categorized into four groups: 1) as predicted or better than predicted; 2) prediction not sustained; 3) not an issue; and 4) conclusion now would be premature. An analysis of these predictions revealed the following:

- The study results find 21% of all predictions were quantitative, while 79% were qualitative.

- The study finds 412 or 63.5% of the predictions were "as predicted or better than predicted."

- The study finds that both quantitative and qualitative predictions were greater than 60% "as predicted or better than predicted" and suggests that both quantitative and qualitative predictions can be useful when evaluating the same environmental issue.

- The study supports a minimum accuracy rate for NEPA predictions of 80% and a potentially higher accuracy rate of 94%, depending upon the outcome of various long-range predictions which can be best evaluated after 20 years has elapsed.

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Note: Complete data base is available upon request from USEPA-Region V.

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I. PURPOSE OF STUDY

The purpose of this study is to assess the effectiveness of the United States Environmental Protection Agency (USEPA) Region V review processes required under the National Environmental Policy Act (NEPA) in predicting the environmental impacts of Federal Construction Grants projects for wastewater treatment facilities. This study uses a sample of environmental predictions obtained from 44 NEPA actions dated between 1975 and 1982. These predictions, concerning the effects of construction and operation of Construction Grants projects were then compared to actual impacts observed during site visits conducted in 1985.

II. INTRODUCTION AND BACKGROUND

The enactment of the National Environmental Policy Act (NEPA), in 1969, provided for the development of a process by which Federal agencies were required to assess the environmental impacts of their actions. In addition, the Council on Environmental Quality has established regulations (40 CFR Part 1500-1508) to guide Federal agencies in determinations of whether Federal funds or approvals would involve a project that could significantly affect the environment. USEPA has the environmental review responsibility for the funding and construction of a wastewater treatment plant as defined in 40 CFR Part 6 (Implementation of the National Environmental Policy Act).

Throughout the 1970's, environmental impact assessment methodologies were refined, areas of concern expanded and environmental data bases accumulated.

Also, the intensiveness with which certain environmental issues were evaluated changed with the passage of specific Federal legislation or requirements such as those relating to wetlands and floodplains. Appendix B provides a list of statutes and regulations pertinent to NEPA review.

The Federal Water Pollution Control Act (FWPCA, Public Law 92-500), as amended by the Clean Water Act of 1977 (CWA, Public Law 95-217), established a uniform, nationwide water pollution control program under which all State water quality programs operate. Section 201 of the Act established Federal criteria and funding for the development of wastewater management plans to achieve the goals of the Act. Funding is provided to municipalities via the Municipal Wastewater Treatment Construction Grants Program, which is administered by USEPA.

The USEPA Construction Grants Program defined requirements for the facilities planning process. The Facility Plan (FP) prepared by a municipality must include an Environmental Information Document (EID) which addresses the environmental impacts of the various alternatives. Following review of a FP and prior to award of a Step 3 grant, the NEPA review is required. Based on the NEPA review, a preliminary decision document is issued for public comment. The process and responsibilities for the FP/EID and NEPA reviews have changed over the years.

In 1978 USEPA began delegation, a process by which many of the administrative functions of the Construction Grants Program were turned over to the State agencies. Prior to delegation USEPA had primary responsibility for facility

plan reviews. If after the review it was determined that a project would not significantly impact the environment and that the more detailed Environmental Impact Statement (EIS) was not needed, USEPA would complete its NEPA review by issuing a negative declaration (negative dec). These documents were often extremely brief since USEPA conducted the full FP review and would therefore only need to document USEPA's decision that the project would have no significant impact on the environment and that it could proceed without an EIS.

USEPA, as the oversight agency for the Construction Grants Program has always maintained final NEPA authority. However, in many cases where the facilities plan review has been delegated, detailed reviews are accomplished at the State level where a preliminary environmental assessment (EA) is prepared. Currently, USEPA's responsibility is carried out based mainly on its review of an EA. The Agency will then determine if an EIS or a Finding of No Significant Impact (FNSI) is needed. The FNSI has since replaced the negative dec as USEPA's formal NEPA action. USEPA supplies the FNSI and an attached EA for issuance to the public for comment. If no substantive comments emerge to cause a change of plans, the preliminary actions become final after 30 days.

As part of an evaluation of program effectiveness of the Construction Grants Program and NEPA in restoring the quality of the nation's waters and in protecting the environment, USEPA-Region V undertook a program to evaluate the accuracy of impact predictions made in NEPA documents. After some research it was determined that a standardized methodology would be valuable.

III. METHODS

A methodology for carrying out such an evaluation was developed in A Manual for Evaluating Predicted and Actual Impacts of Construction Grants Projects. The Manual, prepared for USEPA by ESEI/ Ecolsciences of South Bend, Indiana, was designed for use in evaluating the accuracy of predicted impacts for a single project, a group of projects, or an entire program. A flow chart from the Manual (Figure 1) shows the process of evaluating the accuracy and effectiveness of the environmental impact assessment system established by NEPA.

The Manual focused on the twelve environmental issues outlined in 40 CFR Part 6 as necessary to consider during a NEPA review. Also identified were several sub-issues for better clarification of the issue being addressed. The issues and sub-issues used for this study are as follows:

1. Water Quality
   - Surface Water
   - Groundwater

2. Wetlands

3. Floodplains

4. Biota
   -Terrestrial
   -Aquatic
   -Rare, Endangered, or Threatened

5. Socioeconomic
   -Population
   -Land-Use
   -Employment
   -Property Values
   -User Charges
   -Secondary Development

Monitoring & Evaluation Flowchart
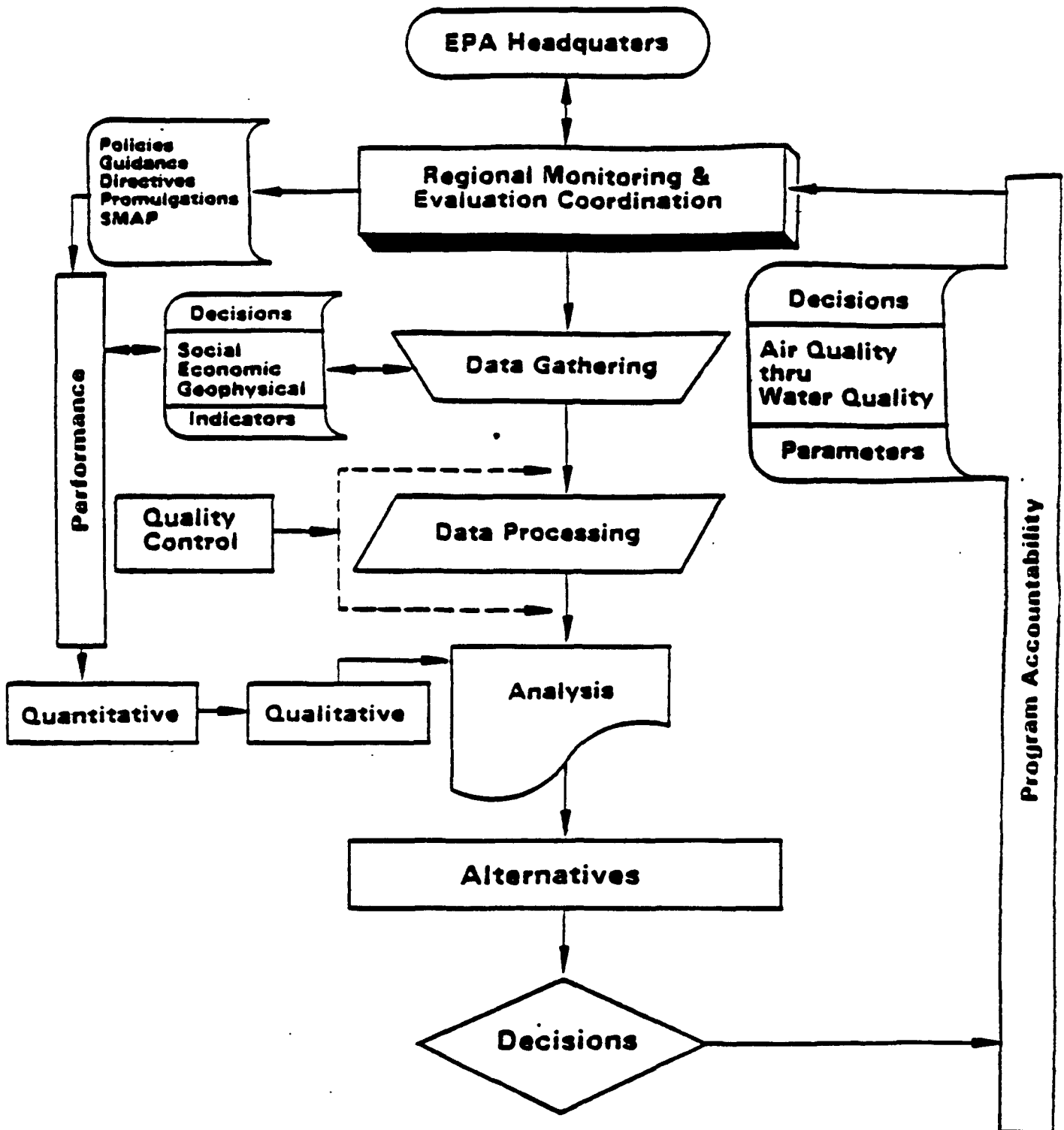
Figure 1

6. Agriculture

7. Physical Environment
   -Climate
   -Topography
   -Soils

8. Cultural Resources

9. Solid Waste
   -Sludge
   -Spoil Disposal

10. Energy

11. Air Quality

12. Other Issues
    -Recreation

It was the intent of the Manual to develop a methodology which determines the accuracy with which planning and environmental review documents (NEPA documents) assessed predicted environmental effects of the Construction Grants projects.

This study utilized the Manual to assess the effectiveness of the environmental review process by comparing predictions concerning environmental effects of Construction Grants projects in Region V with actual impacts observed during visits to project sites.

A. Sample Selection for the Study

In order to evaluate the accuracy of predictions made in Region V, a sample of NEPA documents had to be selected which would be manageable and representative of a regional profile. Potential choices for a

regional profile include using geographical boundaries such as States, county, or river basins. Three river basins chosen for this study include: the Saginaw River Basin of Michigan, the Maumee River Basin of Ohio and Indiana, and the Lower Portion of the Upper Mississippi River Basin of Wisconsin and Minnesota (Figure 2).

These three geographical areas were plotted in the STORET data base by latitudinal and longitudinal coordinates and then redefined in GICS (Grants Information and Control System), the computer data base of the Construction Grants Program. Hundreds of projects were identified by GICS at various stages of administration and physical completion. The number of projects was reduced to a smaller and more cost-manageable sample size, yet was still large enough to represent a regional profile. GICS was used to provide a list of seventy (70) projects that were greater than 50 percent physically complete. The criterion, 50 percent physically complete, ensured identification of direct construction impacts to the environment, even though a project may not have been operational. A timeframe for the study was determined to be between 1975 and 1982.

The final sample was reduced to 44 projects, all of which were complete and operational. Table 1 presents the location, project name and year of NEPA document for each project of this study. Table 2 presents the distribution of projects by year of NEPA document for each river basin.

United States
Environmental Protection Agency

Region V

Figure 2: Locations of the Saginaw (1), Maumee (2), and Lower
Portion of the Upper Mississippi (3) River Basins

TABLE 1: List of Projects for Study

LOCATION	PROJECT NAME	YEAR OF NEPA DOCUMENT
Ada, OH	Ada Sewage Treatment Plant	1976
Cridersville, OH	Cridersville, Village of	1977
Fort Wayne, IN	Fort Wayne, City of	1980
Harrod, OH	Harrod, Village of	1977
Kalida, OH	Kalida, Village of	1976
Monroeville, IN	Monroeville Sewage Disp Authority	1980
Montpelier, OH	Montpelier Sewage Treatment Plant	1980
Napoleon, OH	Napoleon, City of	1977
Ridgeville Corners, OH	Henry County	1976
Toledo, OH	Toledo, City of (Bayview)	1980
Toledo, OH	Toledo, City of (Ten Mile Creek)	1977
Toledo, OH	Toledo-Walbridge	1980
Uniopolis, OH	Uniopolis, Village of	1977
Weston, OH	Weston, Village of	1979
Burton, MI	Genessee County (Davison Segment)	1978
Cass, MI	Saginaw County WWTP	1977
Chesaning, MI	Chesaning, Village of	1975
Durand, MI	Durand, City of	1976
Gladwin, MI	Gladwin, City of	1976
Holly, MI	Oakland County Dept. of Public Works	1977
Howell, MI	Howell, City of	1976
Lapeer, MI	Lapeer, City of	1976
St. Louis, MI	St. Louis, City of	1976
Tittabawasee TWP, MI	Tittabawasse Township WWTP	1979
Alma, WI	Alma Municipal WWTP	1980
Augusta, WI	Augusta, City of	1977
Bangor, WI	Bangor, Village of	1978
Barron, WI	Barron, City of	1980
Birchwood, WI	Birchwood, Village of	1982
Bruce, WI	Bruce, Village of	1980
Butternut, WI	Butternut, Village of	1981
Coon Valley, WI	Coon Valley Municipal WWTP	1981
Cornell, WI	Cornell, City of	1980
Cumberland, WI	Cumberland, City of	1978
Desoto, WI	Desoto, Village of	1978
Fountain City, WI	Fountain City, City of	1979
Goodhue, MN	Goodhue, City of	1982
Phillips, WI	Phillips, City of	1980
Plum City, WI	Plum City, Village of	1979
Rochester, MN	Rochester, City of	1978
Rushford, MN	Rushford, City of	1980
Shell Lake, WI	Shell Lake, City of	1980
Strum, WI	Strum, Village of	1980
Westby, WI	Westby Sewage Treatment Plant	1980

TABLE 2:   NEPA Documents By Year For Each River Basin

River Basin	1975	1976	1977	1978	1979	1980	1981	1982	Total
Maumee	0	3	5	0	1	5	0	0	14
Saginaw	1	5	2	1	1	0	0	0	10
Upper Mississippi	0	0	1	4	2	9	2	2	20
Total	1	8	8	5	4	14	2	2	44

B. Data Gathering Activities

Once the sample had been selected, a review of background files for each project was conducted by a Field Group. The Field Group was comprised of several personnel from Science Applications International Corporation (SAIC), a consultant to USEPA. SAIC staff performing the field investigations are referred to as field investigators.

The field investigators reviewed files at USEPA and at State pollution control agencies to get an overview of each project and to document the predictions for the twelve issues outlined in 40 CFR Part 6. NEPA predictions existed for all years in the timeframe of this study. Emphasis was on predictions made in public notices. Public notices of NEPA decisions were found in Negative Declarations (Negative Decs) between the years 1975 and 1979 or in Environmental Assessment/Findings of No Significant Impact (EA/FNSI) between 1979 and 1982. At times, Facilities Plans were consulted in lieu of a Negative Dec or an EA/FNSI when additional information was desired. None of the projects in the sample investigated by this study were the subject of an EIS.

Field visits to each Construction Grants project site were made in the
autumn of 1985, by one or two field investigators from SAIC. Each visit
consisted of an inspection of the wastewater treatment system and interviews
with plant operators, local officials, and area planning agencies, when
available. The object of each field visit was to complete an environmental
inventory while documenting the actual impacts that occurred during construc-
tion and any other impacts related to the operation of the facility. Following
the visit, the actual impacts on all twelve environmental issues were recorded.

The emphasis of each visit was to document the findings by way of an
evaluation form in order to input the data into a computer for analysis. A
narrative report was also prepared for each project, which summarized the
project and/or field visit.

C. Data Processing and Analysis Activities

A Task Group, comprised of USEPA-Region V staff, conducted a review of
the preliminary data prepared by the Field Group (narrative reports,
evaluation forms, and computer data). The first of three tasks was
to ensure that the data stored in the computer was accurate and uniform.
This was done by reviewing the narrative reports and computer data for
each project to ensure consistency. Adjustments were made to language
and format of entries to achieve the necessary consistencies for cross-
tabulations of the data.

The second task was to evaluate the predictions made for each project
and each issue. The Task Group categorized each prediction into
quantitative or qualitative groups in order to prepare for an analysis
to determine if the qualitative or quantitative nature of a prediction
has any impact on overall effectiveness.

A quantitative prediction was assumed to be a numerical based prediction that could be measured and compared to actual findings. This study assumed that the use of the word "no" in a prediction, when not modified by an adjective, rendered the prediction quantitative or to mean "zero" (e.g. no wetlands will be impacted). Qualitative predictions, on the other hand, were predictions that did not reference numerically measurable parameters. Although, in cases where a qualified numerical value was included, the prediction was considered qualitative.

The third and most significant task was to compare the accuracy of each prediction, by issue, with the actual impact, and to code each prediction using the following system.

Code	Explanation
A	AS PREDICTED OR BETTER THAN PREDICTED

This code represents an accurate prediction of impacts. If no prediction was made and the investigator mentioned that no impact had occurred, the prediction was coded "A".

B	PREDICTION NOT SUSTAINED

This code represents an inaccurate prediction of impacts. In such cases, where the actual findings were worse than predicted, the prediction was coded "B".

C	NO IMPACT CONCERNS

This code represents parameters that were considered not an issue. If no impact or no significant impact was implied as a prediction and the field investigator did not find any actual impacts, the prediction was coded "C".

D   CONCLUSION NOW WOULD BE PREMATURE

This code represents a prediction in which the accuracy could

not be determined. For example, this coding was entered for

situations where the timeframe of the predictions extended

beyond 1985, or in cases where chemical or biological data

was not available. In such cases the prediction was coded "D".

The accuracy coding and quantitative/qualitative coding for each predic-

tion was then entered into the computer data base. The data base was

reviewed again for consistency by the Task Group and additional revisions

were made. The data base is available upon request from USEPA-Region V.

IV. RESULTS AND DISCUSSION

The data base was used to conduct cross-tabulations and derive findings

on trends in the data. The evaluation of specific trends in environmental

predictions is provided in the following sections: Overview of Predictions

and Effectiveness in Making Accurate Predictions.

A. Overview of Predictions

1. Predictions Present or Implied

A total of 649 predictions were recorded for the 44 projects. Of the 649

predictions, 410 were actual prediction statements made in NEPA documents

(prediction present) and 239 were implied or absent. An implied prediction

reflects a situation in which no impact or no significant impact relative

to that issue was expected and thus no statement was included in the NEPA

document (prediction implied). Table 3 presents a detailed chart of the
number of predictions present or implied in NEPA documents for each of the
twelve issues outlined in 40 CFR Part 6 and the Manual. Note also that the
total number of predictions was greater than 528 (12 issues X 44 projects),
because for several projects more than 12 predictions were made due to the
various sub-issues.

Figure 3 shows the trend of percentages for predictions made from 1975
to 1982. The percentage of predictions present increased from 1976 to
1981. This is due to the fact that prior to delegation to the States
in 1979, USEPA had full review of a project and thus would typically
prepare a NEPA document for public notice which included statements
that the FP review process had resulted in predictions of no significant
impacts from the project. As delegation occurred between 1979 and
1982 with project files and facilities plan review responsibility
transferred to the State agencies, an increased need to document each
40 CFR Part 6 issue in specific prediction statements was apparent in
the State prepared preliminary NEPA document to allow USEPA to review
and approve projects for public notice.

It should be noted that the trend indicates a large jump from 1975 to 1976.
This can be attributed to the fact that only one project from 1975, for which
a negative declaration was issued, was part of the study. The results for
1982, in Figure 3, are somewhat misleading since data for one of the two
projects for that year was misrepresented in the computer data base. This
inconsistency was discovered late in the data analysis phase of the study.

Table 3: Prediction Present or Implied Per Issue

Issue	n=1 1975 P	I	n=8 1976 P	I	n=8 1977 P	I	n=5 1978 P	I	n=4 1979 P	I	n=14 1980 P	I	n=2 1981 P	I	n=2 1982 P	I	TOTAL P	I
Water Quality	1	1	14	2	10	6	6	4	9	3	19	9	4	0	1	3	64	28
Wetlands	0	1	0	8	4	4	0	5	1	4	6	7	0	2	1	1	12	32
Floodplains	0	1	1	7	1	7	3	2	1	4	10	3	2	0	1	1	19	25
Biota	0	1	5	3	5	3	3	2	7	0	14	5	3	0	1	1	38	15
Socioeconomic	1	1	14	3	19	4	11	0	19	3	44	4	5	0	4	0	117	15
Agriculture	0	1	2	6	4	4	3	2	2	3	8	5	1	1	1	1	21	23
Physical Environment	0	1	5	3	5	3	3	2	5	1	12	5	2	0	0	2	32	17
Cultural Resources	0	1	3	5	5	3	2	3	5	0	12	1	2	0	1	1	30	14
Solid Waste	0	1	3	5	5	3	3	2	2	4	10	3	2	0	0	2	25	20
Energy	0	1	4	4	0	8	1	4	1	4	5	8	2	0	1	1	14	30
Air Quality	0	1	3	5	6	2	2	3	5	0	10	3	2	0	1	1	29	15
Other/Recreation	0	0	0	3	0	2	2	0	2	0	4	0	0	0	1	0	9	5
TOTAL Count	2	11	54	54	64	49	39	29	59	26	154	53	25	3	13	14	410	239
Percentage(%)	15	85	50	50	57	43	57	43	69	31	74	26	89	11	48	52	63	37

n = number of projects that year
P = prediction present
I = prediction implied

FIGURE 3:   Percentage of Impact Predictions Present in
             NEPA Documents for Each Year of the Study

	1975	1976	1977	1978	1979	1980	1981	1982
	n=1	n=8	n=8	n=5	n=4	n=14	n=2	n=2
	TP=13	TP=108	TP=113	TP=68	TP=85	TP=207	TP=28	TP=27
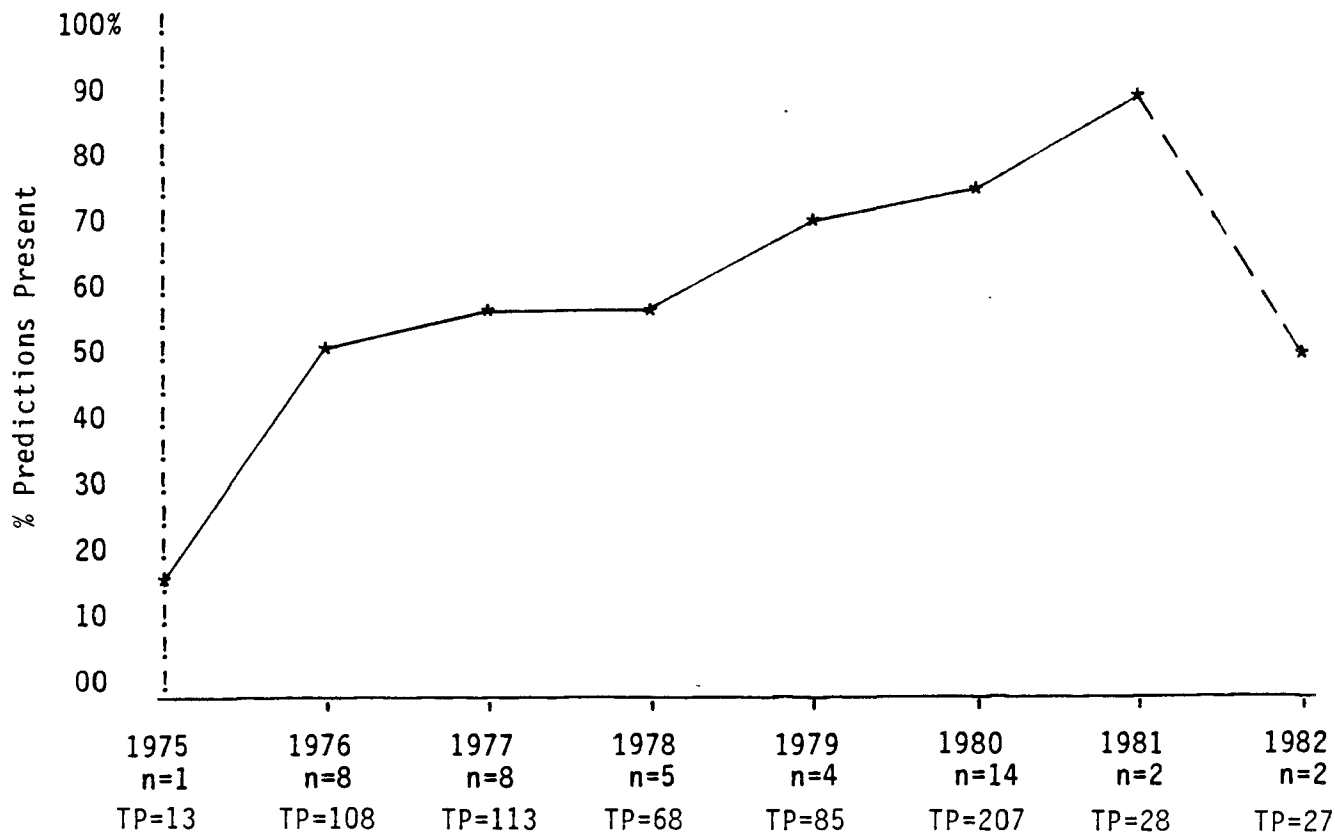
n= Number of Projects for the Year
TP= Total Present and Implied Predictions for the Year

% Predictions   # of Predictions Present
    Present=   TP

NOTE: The dashed line for the 1982 data reflects that there was an inconsistency
      in the data base for that year. This inconsistency concerns the Goodhue, MN
      project, for which data from a 1977 Negative Dec was encoded instead of the
      1982 FNSI.

As we explored the data further it was important to document how the trend of predictions present or implied affected accuracy in making predictions.

2. <u>Quantitative vs. Qualitative Predictions</u>

Figure 4 presents the breakdown of predictions as qualitative or quantitative. Over 21% of all predictions (present or implied) in the study's NEPA documents for all years were quantitative. Every implied prediction in the documents was considered to be qualitative.

Table 4 presents the overall breakdown of qualitative and quantitative predictions for each issue over all NEPA document years. Issues for which a significant portion of the predictions were quantitative include socioeconomic issues (50% quantitative), cultural resource issues (55%), other/recreation issues (29%), and agriculture issues (20%).

Socioeconomic issues lend themselves to quantitative predictions because they often refer to factors such as population figures, user charges, and property values. Cultural resource and other/recreation issues involve quantitative predictions which are stated using the word "no." For example, the predictions are phrased as "no cultural resource will be impacted" or "no impacts will occur to a cultural resource." Predictions concerning agricultural issues are often quantitative by virtue of reference to the number of acres of farm land expected to be impacted by a project.

Between 1975 and 1979, there was a noticeable increase in quantitative predictions, with the greatest amount of quantitative predictions occurring in 1979. The prediction statements contain no quantitative information for any

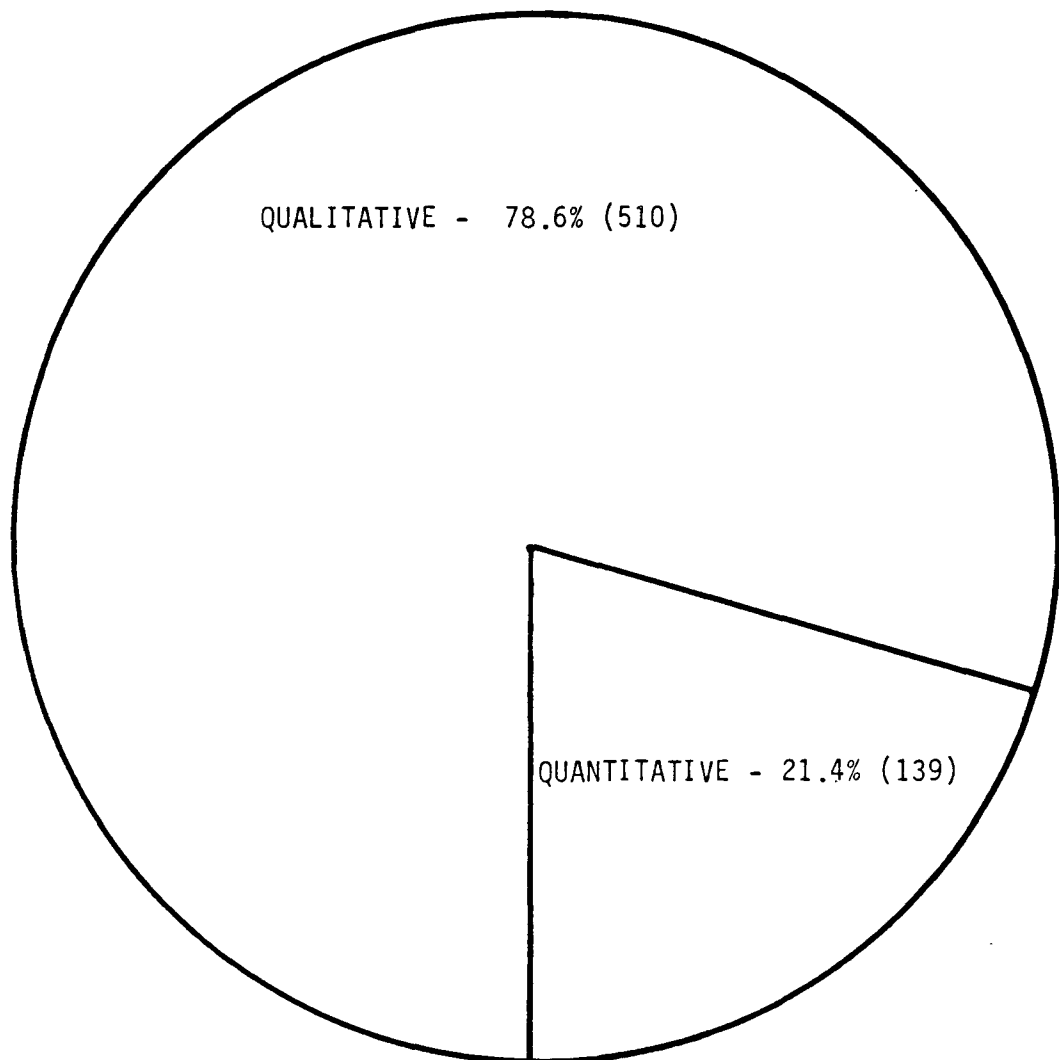FIGURE 4: Quantitative and Qualitative Predictions

QUALITATIVE - 78.6% (510)

QUANTITATIVE - 21.4% (139)

Table 4: Count of Quantitative vs. Qualitative Predictions Per Issue Per Year

	n=1 1975		n=8 1976		n=8 1977		n=5 1978		n=4 1979		n=14 1980		n=2 1981		n=2 1982		n=44 TOTAL	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1(%)	2
Water Quality	0	2	1	15	0	16	0	10	3	9	0	28	0	4	0	4	4(4)	88
Wetlands	0	1	0	8	3	5	0	5	0	5	3	10	0	2	0	2	6(14)	38
Floodplains	0	1	0	8	1	7	0	5	1	4	3	10	0	2	0	2	5(11)	39
Biota	0	1	0	8	0	8	0	5	2	5	2	17	0	2	1	2	5(9)	48
Socioeconomic	0	2	6	11	11	12	5	6	7	15	30	18	3	2	4	0	66(50)	65
Agriculture	0	1	2	6	1	7	1	4	1	4	2	11	1	1	1	1	9(20)	35
Physical Envir-onment	0	1	1	7	1	7	0	5	0	6	1	16	1	1	0	2	4(8)	45
Cultural Re-sources	0	1	2	6	5	3	2	3	4	1	8	5	2	0	1	1	24(55)	20
Solid Waste	0	1	1	7	3	5	0	5	1	5	0	13	0	2	0	2	5(11)	40
Energy	0	1	3	5	0	8	0	5	0	5	1	12	0	2	0	2	4(10)	40
Air Quality	0	1	0	8	0	8	0	5	3	2	0	13	0	2	0	2	3(7)	41
Other/Recrea-tion	0	0	0	3	0	2	0	2	2	0	2	2	0	0	0	1	4(29)	10
TOTAL (Count)	0	13	15	92	25	88	8	54	24	61	52	136	7	20	7	21	139	510
PERCENT QUANT-TITATIVE(%)	0%		14%		22%		13%		28%		28%		26%		25%		21%	

n = Number of projects for year
1 = Quanitative predictions
2 = Qualitative predictions

issue in 1975, and less than five quantitative predictions over the eight year timeframe of this study for water quality, physical environment, energy, air quality and other/recreation. Since 1979, a slight decrease in quantitative predictions has occurred.

3. Accuracy Classification of Predictions

In order to better illustrate the coding and how it was used, Table 5 presents five examples of predictions that fell into each accuracy coding category.

TABLE 5: Examples of Predictions

CODE A: AS PREDICTED OR BETTER THAT PREDICTED

1. Issue: Water Quality/Surface Year: 1980

    Prediction: Project would alleviate surface water pollution to Brown Ditch

    Actual Impact: Facility easily meets their NPDES limits for all parameters Ditch is no longer covered with black film. Healthy vegeta tion exists around outfall. Surface water quality in Brown Brown Ditch significantly improved.

2. Issue: Water Quality/Ground Year: 1977

    Prediction: Water Quality enhanced: elimination of improperly treated sept tank effluent.

    Actual Impact: Water Quality improved. Houses adjacent to new lines have hook-up, thereby eliminating on-site systems.

3. Issue: Biota Year: 1977

    Prediction: No significant wildlife will be affected by the project.

    Actual Impact: No habitat was affected by the plant expansion. Fishing an trapping have improved. Fish presently caught downstream d not have a film on their scales, taste better when cooked. Some change in aquatic plant species, more diversity.

4. Issue: Socio/User Charge   Year: 1977

   Prediction: Increased financial burden for residents. Estimated costs-$156/
               Yr.

   Actual Impact: User charges are $19.15/month. Prediction was $21/month.

5. Issue: Cultural Resource   Year: 1982

   Prediction: No historical or cultural impacts.

   Actual Impact: No artifacts found during construction. Area around site
               appears to have been previously disturbed.

CODE B: PREDICTION NOT SUSTAINED

   1. Issue: Socio/User Charge   Year: 1980

      Prediction: Estimated monthly user charge: $6.00

      Actual Impact: Average user charge about $13.50. Increase is over 1% of
                  their income.

   2. Issue: Air Quality   Year: 1980

      Prediction: (No prediction present)

      Actual Impact: Frequent odor complaints from nearby commercial establish-
                  ments and residences. Major source of odors could be
                  overloaded RBC or poorly operated digester.

   3. Issue: Wetlands   Year: 1977

      Prediction: No environmentally sensitive areas in planning area.

      Actual Impact: 19 acres of wooded swampland purchased. 5 acres used for
                  construction, wooded swampland used.

   4. Issue: Biota/Terr.   Year: 1980

      Prediction: (No prediction present)

      Findings: During warm weather thick swarms of midge flies engulf area
               surrounding lagoon forcing businesses to close. Town more or less
               hibernates.

5. Issue: Socio/Secdev   Year: 1978

   Prediction: Adequate wastewater treatment is not expected to have any effe
              on rate, density, or type of development in service area.

   Actual Impact: Adequate sewage treatment ended sewer extension ban; 168 nei
                 lots platted in designated residential zone. Growth rate
                 since the project is 4 times projected rate.

CODE C: NOT AN ISSUE

1. Issue: Water Quality/Ground   Year: 1977

   Prediction: (No prediction present)

   Actual Impact: Groundwater concerns were not an issue.

2. Issue: Wetlands   Year: 1980

   Prediction: (No prediction present)

   Actual Impact: Construction not located in wetlands

3. Issue: Cultural Resource   Year: 1980

   Prediction: (No prediction present)

   Actual Impact: No impacts were predicted or occurred

4. Issue: Energy   Year: 1979

   Prediction: (No prediction present)

   Actual Impact: Not an Issue

5. Issues: Air Quality   Year: 1976

   Prediction: (No prediction present)

   Actual Impact: (No impacts noted by investigator)

CODE D: CONCLUSION NOW WOULD BE PREMATURE

1. Issue: Water Quality/Ground   Year: 1976

   Prediction: Rehabilitation of sewers will prevent exfiltration to ground-
              water.

   Actual Impact: No data was available after rehabilitation. No evidence of
                 groundwater contamination noted.

2. Issue: Biota/Aquatic   Year: 1980

   Prediction: Improved water quality will significantly improve aquatic life
   in Chippewa River.

   Actual Impact: No current fish or benthic surveys conducted.

3. Issue: Socio/Population   Year: 1980

   Prediction: Projected growth rate of population is 1.2%. Design
   population is 1,706.

   Actual Impact: No growth has occurred since 1980. Population has
   remained constant at about 1374 people.

4. Issue: Socio/Land Use   Year: 1980

   Prediction: Approximately 450 acres will be needed for residential
   development by the year 2000.

   Actual Impact: No impact apparent. Land use impact could not be
   assessed by site investigation.

5. Issue: Other/Recreation   Year: 1978

   Prediction: Downstream recreational capabilities will be enhanced due
   to reduced pollution in the stream.

   Actual Impact: Data were not available for water quality. They are under
   review by a consultant. In terms of recreational enhance-
   ment, no studies have been conducted.

---

a. Accuracy Classification of Qualitative and Quantitative Predictions

The data generated by the accuracy analysis for quantitative and qualitative

predictions are examined from two viewpoints. The first viewpoint, as

presented in Table 6 and Figure 5, examines the distribution of quantitative

and qualitative predictions across accuracy codes. For example, the first

viewpoint could answer a question such as: "what percent of quantitative

predictions is coded 'as predicted or better than predicted'?" On the other

hand, the second viewpoint, as presented in Table 7, examines the distribution

of quantitative and qualitative predictions within each accuracy code.
This viewpoint could answer a question such as: "what percent of predictions
classified as 'not an issue' are quantitative?" The results for each viewpoin·
are discussed below.

° Viewpoint 1: Table 6 and Figure 5 present a breakdown of the accuracy code
by qualitative or quantitative predictions. Overall, both the qualita-
tive and quantitative predictions were greater than 60% "as predicted or
better than predicted," showing no significant difference in improving
the accuracy of a prediction by its qualitative or quantitative state.
The likelihood of a quantitative prediction being coded B ("prediction
not sustained") or inaccurate was nearly three times that of a qualita-
tive prediction. This is based on the fact that there is typically one
discrete measureable value of a quantitative prediction upon which to
to evaluate accuracy.

Table 6: Accuracy Classification By Quantitative and Qualitative
Predictions

| | Accuracy Code | | | | |
	A	B	C	D	Total
Quantitative	92(66%)	15(11%)	0(0%)	32(23%)	139 (100%)
Qualitative	320(63%)	21(4%)	106(21%)	63(12%)	510 (100%)

    A = "As predicted or better than predicted"
    B = "Prediction not sustained"
    C = "No impact concerns, not an issue"
    D = "Conclusion now would be premature"

Figure 5: Accuracy Classification By Quantitative and Qualitative Predictions

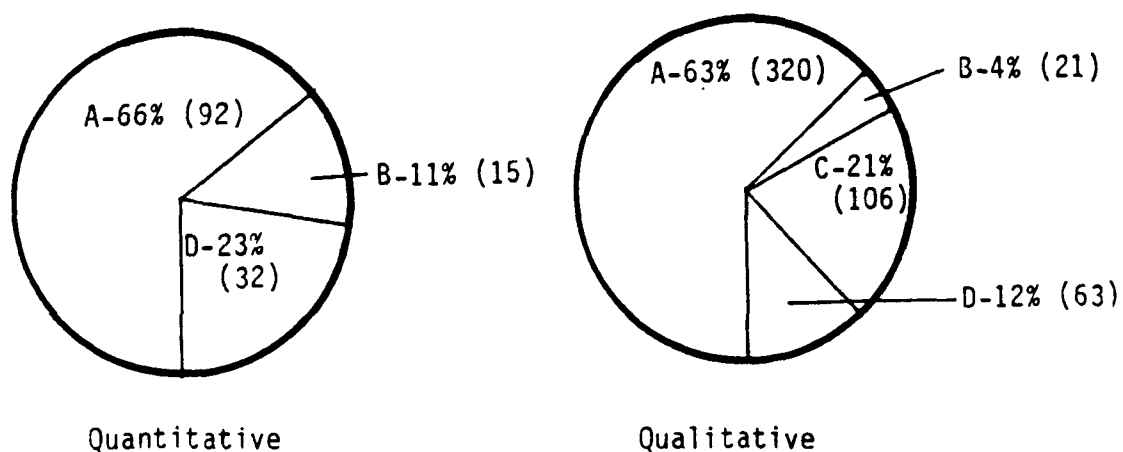Quantitative   Qualitative

A = "As predicted or better than predicted"
B = "Prediction not sustained"
C = "No impact concerns, not an issue"
D = "Conclusion now would be premature"

° Viewpoint 2: Table 7, in contrast to Table 6, presents the breakdown
of qualitative and quantitative predictions in each accuracy code
category. Accurate predictions, or those coded "A" were 78% qualita-
tive. All predictions coded "C" were qualitative because the category
consisted primarily of implied predictions or predictions that were
considered not an issue. The percentage figure for quantitative
predictions in Category B ("prediction not sustained") was nearly the
same as the figure for qualitative.

Table 7: Quantitative and Qualitative Predictions By Accuracy Classification

Accuracy Code	Quantitative	Qualitative	Total
A	92(22%)	320(78%)	412(100%)
B	15(42%)	21(58%)	36(100%)
C	0(0%)	106(100%)	106(100%)
D	32(34%)	63(66%)	95(100%)
Total	139(21%)	510(79%)	649(100%)

A = "As Predicted or Better Than Predicted"
B = "Prediction not sustained"
C = "No impact concerns, not an issue"
D = "Prediction now would be premature"

b. Accuracy Classification By Issue

Table 8 provides a summary of the accuracy classification of predictions

per issue. A more detailed discussion of results for each issue is contained

in Appendix A. Physical Environment and Air Quality predictions ranked

highest in Category A, "as predicted or better than predicted". The quali-

tative nature of these predictions are, perhaps in turn, least complex to

assess. Energy predictions ranked lowest in Category A. The driving factor

for this is the fact that Energy predictions were not typically predicted;

they were implied or just not a major concern of the construction activities.

The highest percentage of predictions not sustained occurred for the Socio-

economic issue. Most socioeconomic data are based on quantitative population

and economic data developed by agencies other than USEPA. Unlike the other

predictions that have been examined among NEPA documents, socioeconomic data

are typically on records developed for broad applications by the U.S. Census

Table 8: Accuracy Classification of Predictions Per Issue

ISSUE	A	B	C	D	TOTAL
WATER QUALITY	55 (60%)	4 (4%)	15 (16%)	18 (20%)	92(14%)
WETLANDS	26 (59%)	3 (7%)	15 (34%)	0 (0%)	44(7%)
FLOODPLAINS	34 (78%)	1 (2%)	8 (18%)	1 (2%)	44(7%)
BIOTA	39 (74%)	2 (4%)	6 (11%)	6 (11%)	53(8%)
SOCIO ECONOMIC	70 (53%)	18 (14%)	1 (1%)	43 (32%)	132(20%)
AGRICULTURE	28 (64%)	1 (2%)	11 (25%)	4 (9%)	44(7%)
PHYSICAL ENVIRONMENT	40 (82%)	0 (0%)	7 (14%)	2 (4%)	49(8%)
CULTURAL RESOURCES	34 (77%)	0 (0%)	9 (21%)	1 (2%)	44(7%)
SOLID WASTE	29 (64%)	4 (9%)	8 (18%)	4 (9%)	45(7%)
ENERGY	13 (30%)	2 (5%)	18 (41%)	11 (24%)	44(7%)
AIR QUALITY	35 (80%)	1 (2%)	7 (16%)	1 (2%)	44(7%)
OTHER/RECREATION	9 (64%)	0 (0%)	1 (7%)	4 (29%)	14(2%)
TOTAL	412	36	106	95	649

A = As Predicted or Better Than Predicted
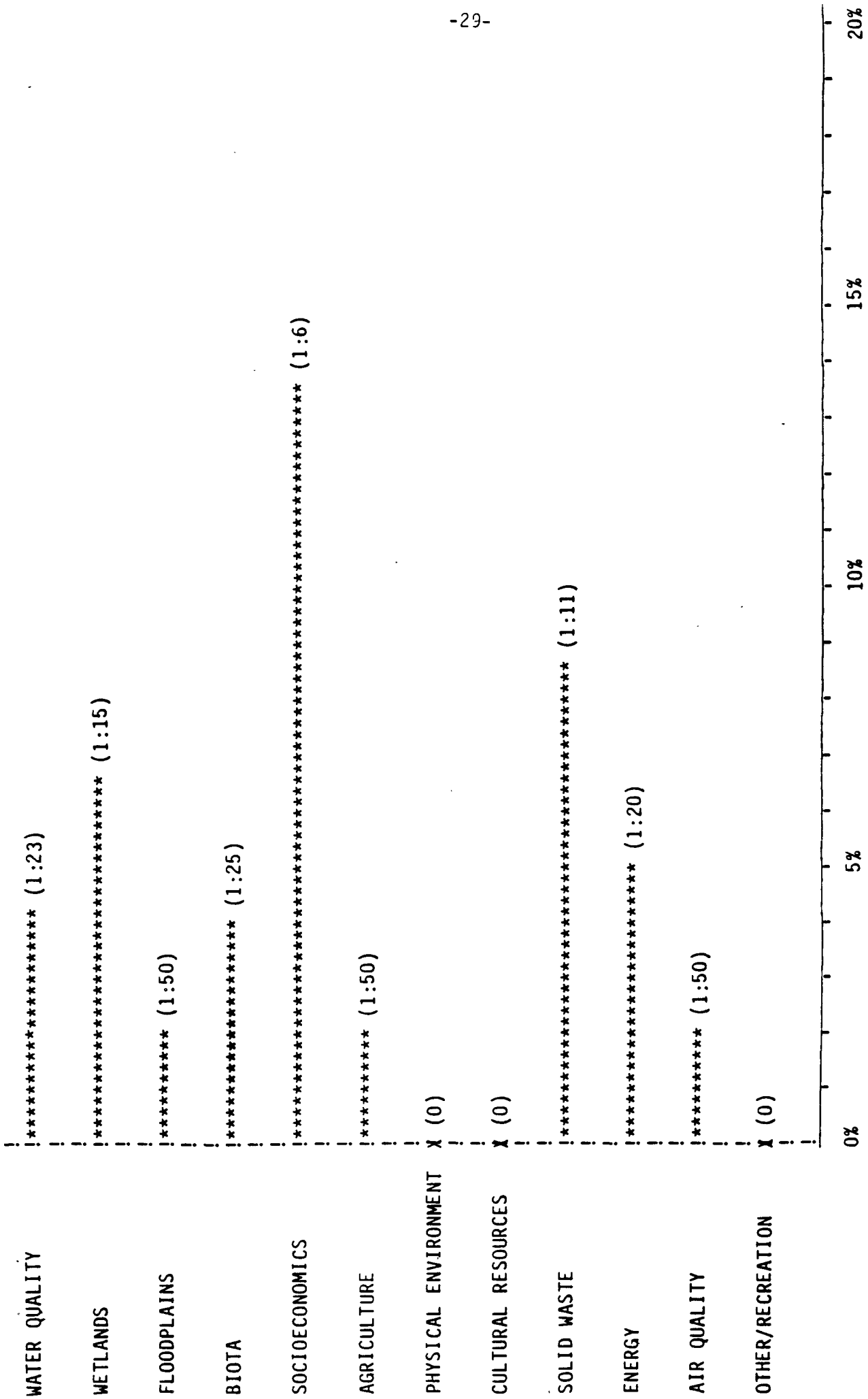B = Prediction Not Sustained
C = Not an Issue
D = Conclusion Now Would Be Premature (could not be evaluated)

Bureau and State Demographic Centers. Economic data such as user cost predictions are usually based on costs developed by facilities planning consultants. The high percentage of predictions for the Socioeconomic issue which were classified in Category B, "prediction not sustained", may be attributed to the recession in 1979/1980 which impacted growth in communities and led to large increases in the costs of goods and services (and thus construction costs). Thus, predictions made during the planning phase of projects were not accurate due to unforeseen changes in the economy. Due to the greater variability in forecasting socioeconomic data, a higher rate of predictions not sustained for this data is expected. Therefore, a reassessment may be warranted of how socioeconomic data are utilized in studies which evaluate prediction accuracy.

Socioeconomic predictions also ranked as the highest percentage of predictions for which a "prediction now would be premature" or could not be evaluated. Because many socioeconomic predictions are made on a 20-year basis, such as a projected 20-year population, it would not seem appropriate to evaluate the accuracy of that prediction during the 20-year planning period.

Solid Waste and Wetland predictions ranked respectively, behind Socio-economic predictions in Category B, "prediction not sustained". The reason for these predictions not being sustained is a little different than for socioeconomic predictions in that these predictions had a fairly high percentage of implied predictions which were later found to have some adverse impact.

FIGURE 6: PROBABILITY OF MAKING AN INACCURATE PREDICTION

WATER QUALITY | ******************** (1:23)

WETLANDS | ****************************** (1:15)

FLOODPLAINS | ************ (1:50)

BIOTA | ***************** (1:25)

SOCIOECONOMICS | ** (1:6)

AGRICULTURE | ************ (1:50)

PHYSICAL ENVIRONMENT X (0)

CULTURAL RESOURCES X (0)

SOLID WASTE | ** (1:11)

ENERGY | ************************** (1:20)

AIR QUALITY | ************ (1:50)

OTHER/RECREATION X (0)

0%   5%   10%   15%   20%

Percentage of Predictions in Category B ("Prediction Not Sustained")

NOTE: Values in parentheses "()" represent a ratio equal to the percentage of inaccuracy

The probability of making an inaccurate prediction (or a prediction that could not be sustained) for each issue is illustrated in Figure 6. As discussed previously socioeconomic predictions are the least likely to be accurate at 14%, or a 1 in 6 chance of making an inaccurate prediction.

c. Accuracy Classification By River Basin

The major focus of this study was to evaluate prediction accuracy in Region V using three river basins which provided the geographical boundaries from which to select a sample of projects. The three river basins that were used include; the Maumee, the Saginaw, and the Lower Portion of the Upper Mississipp Table 9 and Figure 7 present a breakdown of accuracy classification for each river basin.

Table 9: Accuacy Classification of Predictions Per River Basin

River Basin	Number of Projects	Total Predictions	A	B	C	D
Maumee	14	215	156 (72.6%)	7 (3.3%)	22 (10.2%)	30 (13.
Saginaw	10	137	67 (48.9%)	8 (5.8%)	48 (35.0)	14 (10.
Upper Mississippi	20	297	189 (63.6%)	21 (7.1%)	36 (12.1%)	51 (17.
Total	44	649	412 (63.5%)	36 (5.6%)	106 (16.3%)	95 (14.

Figure 7: Accuracy Classification of Predictions By River Basin
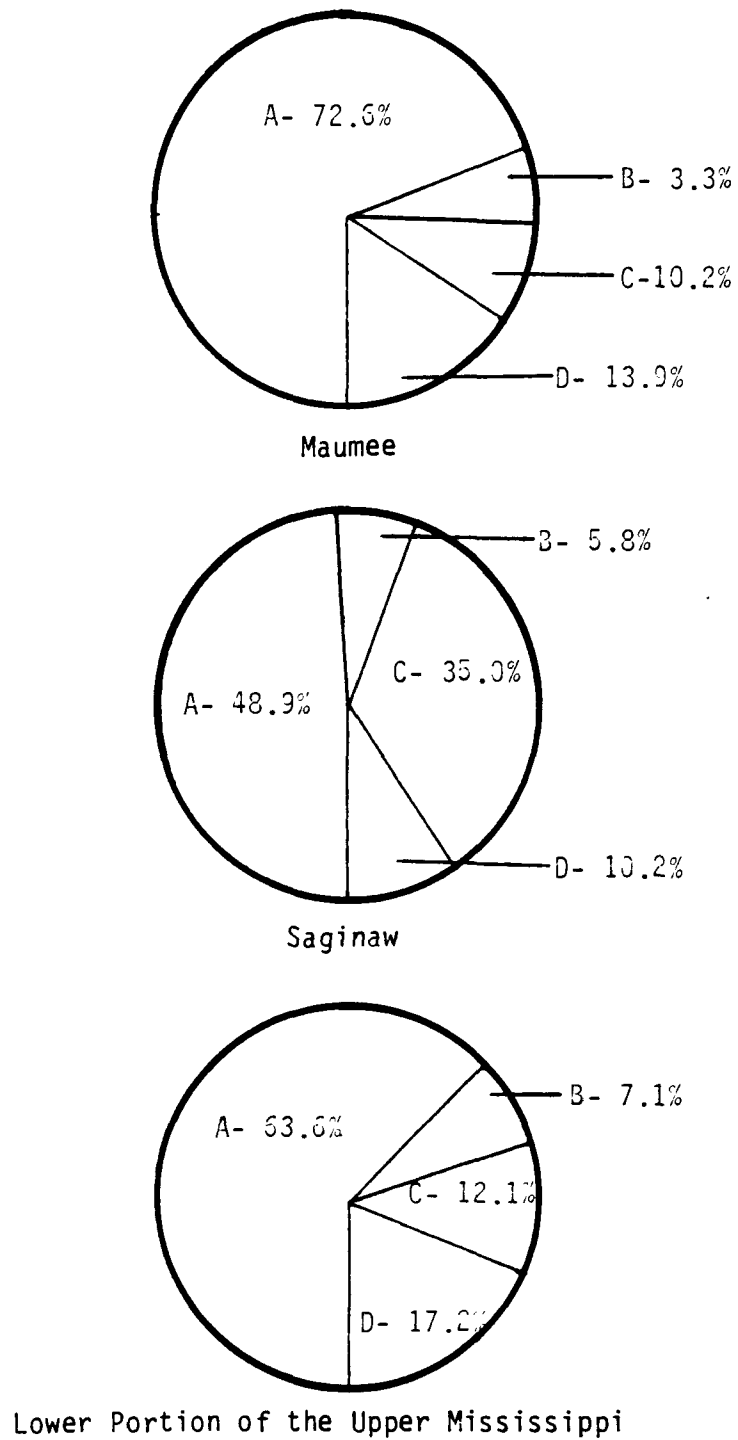
Maumee

Saginaw

Lower Portion of the Upper Mississippi

A = "As predicted or better than predicted"
B = "Prediction not sustained"
C = "No impact concerns, not an issue"
D = "Conclusion now would be premature"

The highest percentage of predictions in Category A, "as predicted or better than predicted", was found for the Maumee River Basin, at 72.6%, while the Saginaw River Basin had the lowest percentage of predictions in Category A, at 48.9%. The low percentage in Category A for the Saginaw may be attributed to the high percentage of predictions classified in Category C, "not an issue", at 35.0%. All the projects for the study found in the Saginaw River Basin were limited to the time period of 1975 to 1979, when negative decs were predominant. As mentioned previously, the negative decs contained few predicti statements due to the complete facilities plan review conducted by USEPA prior to issuance of the NEPA document. Predictions classified in Category C, "not an issue", were mainly implied predictions for which no impacts were expected and no actual impacts were found during the field investigations, and thus, the predictions can be considered accurate predictions.

The percentage of predictions classified in Categories C and A could represent the total percentage of accurate predictions for a river basin. Therefore, the total percentage of accurate predictions for each river basin can be shown as:

<div align="center">

Maumee River Basin: 82.8%

Saginaw River Basin: 83.9%

Upper Mississippi River Basin: 75.8%

</div>

Comparing these results indicates that the prediction accuracy was relatively equal for the three river basins in this study.

B. **Effectiveness in Making Accurate Predictions**

This section discusses the overall effectiveness of USEPA-Region V in

making predictions, based on the results of this study. Figure 8 presents

the classification of accuracy for all 649 predictions.

Figure 8: Overall Accuracy of Predictions
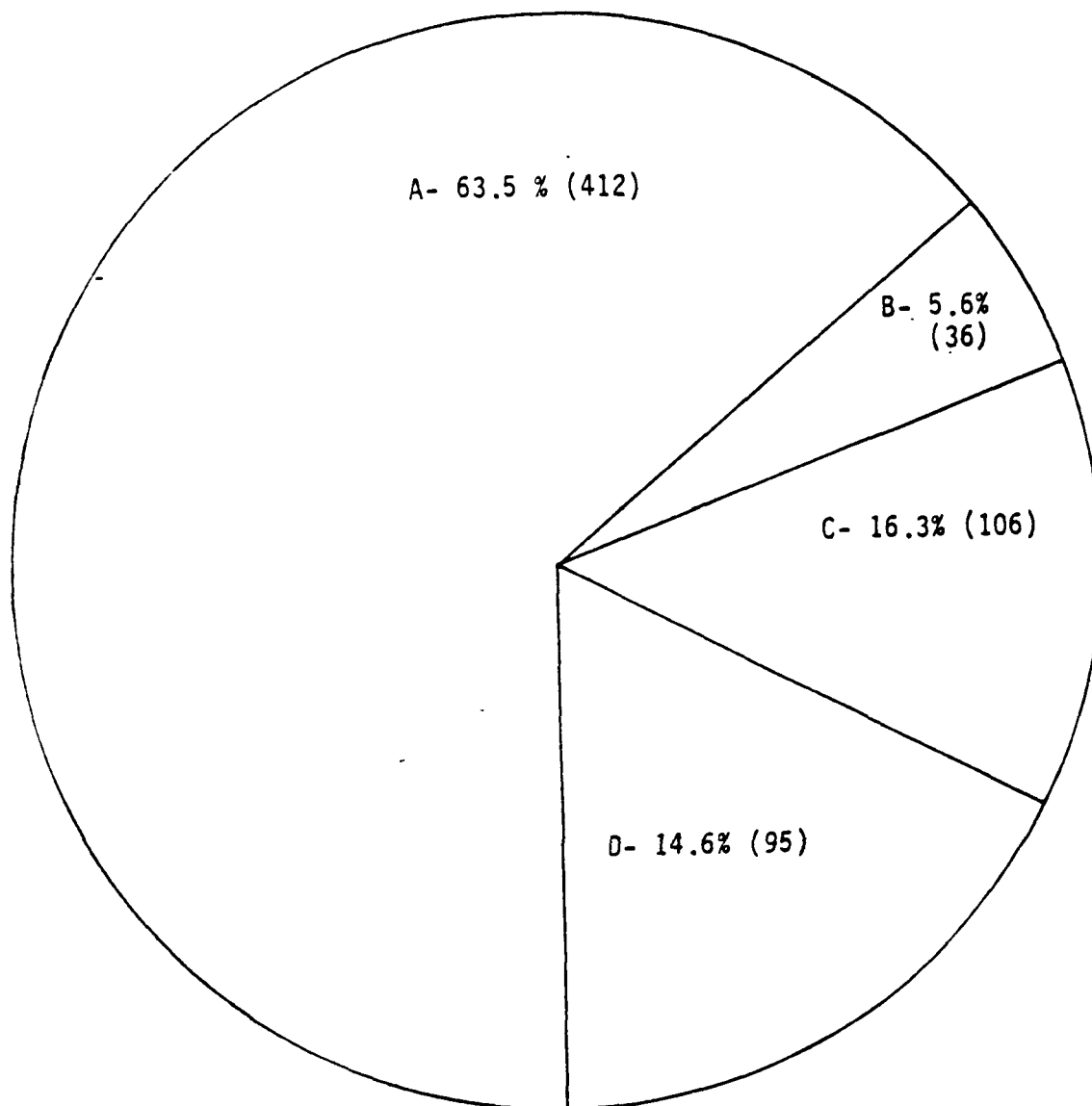
A = "As predicted or better than predicted"
B = "Prediction not sustained"
C = "No impact concerns, not an issue"
D = "Conclusion now would be premature"

The greatest frequency of prediction impacts are found in Category A - "as predicted or better than predicted" which comprises 63.5% or 412 of 649 predictions.

From the accuracy coding results it becomes necessary to discuss the effectiveness in making accurate predictions. Since the effectiveness should not be expressed simply as the percentage of predictions in Category A (accurate) or in Category B (inaccurate), this study takes into account predictions in Category C ("not an issue") and Category D ("could not be evaluated") needed to be taken into account.

Those issues with implied predictions in NEPA documents and no actual impacts observed in the field investigations are considered to be accurate predictions when evaluating effectiveness. Therefore, the percentage of predictions classified as "not an issue" (Category C) together with the percentage of predictions considered "as predicted or better than predicted" (Category A) would represent a valid value for total percentage of "accurate" predictions.

Predictions coded "D", or "conclusion now would be premature," should be tentatively considered in the evaluation of NEPA prediction effectiveness. Because the accuracy of these predictions cannot be evaluated at this time, it is not known whether each prediction at some point in the near future will be accurate or inaccurate. The predictions that could not be evaluated are part of the sample and can alter the effectiveness of prediction results.

Therefore, the overall effectiveness of Region V in predicting impacts accurately may be given as a range which incorporates those predictions classified in Categories A, C, and D. On the lower end of the range is the percentage of predictions coded A ("as predicted or better than predicted") plus the percentage of predictions coded C ("not an issue"). On the upper end of the range is the percentage of predictions coded A ,the percentage of predictions coded C, and the percentage of predictions coded D ("conclusion now would be premature"). The total percentage of accuracy, or the effectiveness in making an accurate prediction would be somewhere between these lower and upper bounds. The following mathematical relationship was developed to present the range of making an accurate prediction:

$$A + C \leq \text{Accuracy (\%)} \leq A + C + D$$

where:
  A= % of predictions "as predicted or better than predicted"
  C= % of predictions "not an issue"
  D= % of predictions "conclusion now would be premature"

This relationship can be expressed as: "The percentage of accuracy is greater than or equal to A + C and less than or equal to A + C + D."

This range of accuracy is based on the fact that we are at least as accurate as A + C (the lower bound of the range), but it could be better. The theoretical highest percentage of accuracy that could be achieved occurs if all Category D predictions were to become accurate.

Using the data results from this study, the effectiveness range of

USEPA-Region V in making an accurate prediction can be shown as:

$$A + C \leq \% \text{ Accuracy} \leq A + C + D \quad \text{[using the relationship developed above]}$$

$$63.5\% + 16.3\% \leq \% \text{ Accuracy} \leq 63.5\% + 16.3\% + 14.6\% \quad \text{[inserting data from Figure]}$$

$$79.8\% \leq \% \text{ Accuracy} \leq 94.4\%$$

Therefore, the effectiveness of USEPA-Region V in making accurate predictions

is in the range of 80% to 94%.

V. CONCLUSIONS

This section summarizes the key findings of the study.

- This study categorized 649 predictions present or implied from 44 study
  projects into four accuracy codes: A) as predicted or better than
  predicted; B) prediction not sustained; C) not an issue; and D) conclusion
  now would be premature.

- A general trend was evident that NEPA documents, over time, contained more
  predictions rather than relying on implied predictions.

- During the study's time span (1975-1982) 21% of all predictions were
  quantitative.

- The environmental issues that lent themselves more to quantitative
  predictions were: cultural resources (55%), socioeconomic (50%), other/
  recreation (29%), and agriculture (20%).

- The greatest frequency of prediction impacts are "as predicted or
  better than predicted" with 412 of 649 or 63.5%.

- No significant difference was observed with regard to the accuracy of
  quantitative or qualitative predictions. Both qualitative and quant-
  itative predictions were greater than 60% "as predicted or better than
  predicted."

- No significant difference was observed with regard to the accuracy of predictions between the three river basins.

- Region V effectiveness in making accurate predictions for this study is found to be in the range of 80% to 94%.

- This study of the Region V NEPA process for non-EIS projects indicates that an effective NEPA program is in place.

VI. RECOMMENDATIONS

This section makes recommendations for future environmental predictions in NEPA documents.

Because the responsibility for Facilities Plan review and preliminary environmental review has been delegated to the States, it is important that USEPA's oversight in reviewing the preliminary Environmental Assessments (EA) ensure adequate coverage of important issues. The USEPA reviewers should ensure that the EA makes predictions for all twelve issues outlined in 40 CFR Part 6. Baseline data on the environmental conditions prior to construction should be provided so that specific predictions can be made about the expected impacts to the existing environment. When possible, a prediction should be presented as a quantitative expression of the predicted environmental impact which would allow for a more measureable assessment of USEPA's effectiveness in predicting impacts. The nature of the data used for making predictions for socioeconomic issues in NEPA documents may warrant a reassessment of how they are used in studies which evaluate prediction accuracy, since socioeconomic data represent the Region's most frequent sources of inaccurate predictions.

VII. FURTHER STUDIES

This methodology could be used for further studies involving EIS's. Such a study could focus on the accuracy of predictions made for a certain issue in EIS's or on the overall accuracy of predictions for all issues. The relatively large data base for existing conditions and the depth of data and predictions in an EIS could prove to be very useful for the evaluation methodology used for this study. A study of prediction accuracy in EIS's could provide further data in evaluating the Region's and/or Nation's effectiveness in NEPA review.

Appendix A
Results and Discussion for Each Issue

1. WATER QUALITY

Water quality impacts concern both surface water and groundwater.
Approximately 96 percent of the predictions made for water quality issues
are qualitative. Most water quality impact predictions referred to
relative improvements or impacts to surface and groundwater quality.

Of the total 92 predictions made for water quality issues, 48 were pre-
dictions made for surface water quality issues (44 present, 4 implied) and
44 predictions made for groundwater quality issues (20 present, 24 implied.
Impacts on surface water due to improved effluent quality and elimination
of plant bypasses to a stream and on stream quality are common predictions
in NEPA documents. The most common predictions concerning groundwater
quality impacts addressed the removal of failing septic tank systems.
Figure A-1 illustrates the accuracy classification of water quality issues.

Figure A-1: Accuracy Classification of Water Quality Issues
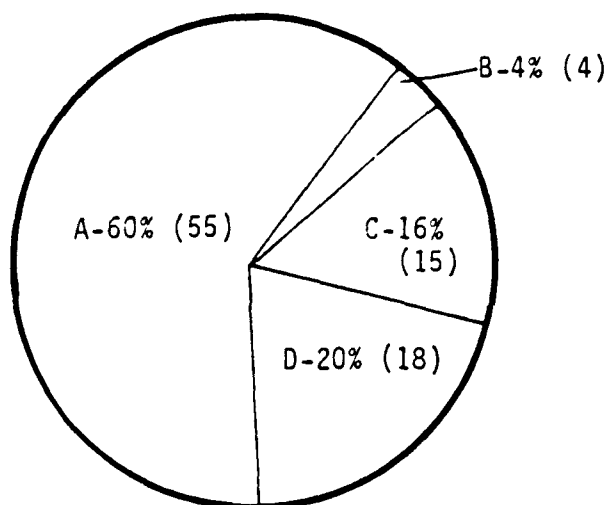
A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
D= "Conclusion now would be premature"

Table A-1 below, presents a comparison of surface water and groundwater quality sub-issues.

Table A-1: Accuracy Classification of Water Quality Sub-issues

	A	B	C	D	Total
Surface water	37 (77%)	3 (6%)	2 (4%)	6 (13%)	48
Groundwater	18 (41%)	1 (2%)	13 (30%)	12 (27%)	44
Total	55	4	15	18	92

A = "As predicted or better than predicted"
B = "Prediction not sustained"
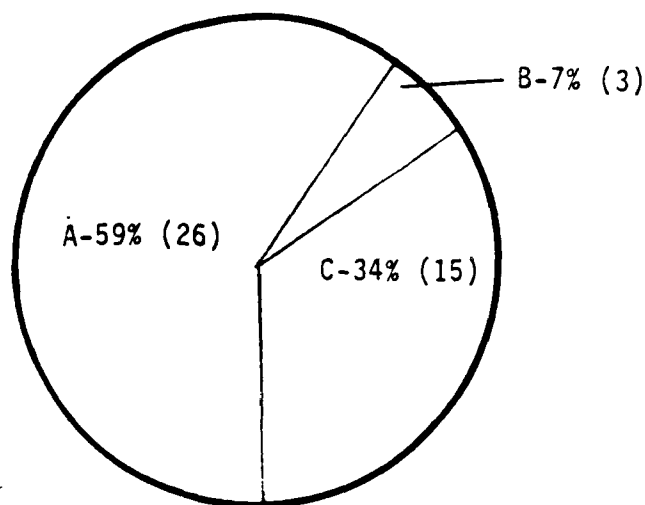C = "No impact concerns, not an issue"
D = " Conclusion now would be premature"

Whereas 60 percent of all water quality predictions are accurate, or as predicted, the above table shows that while the count of predictions are almost evenly split between surface and groundwater predictions, there are twice as many accurate surface water quality predictions as groundwater quality predictions. Variability exists in the accuracy classification of groundwater impacts. In more than half the NEPA documents for this study (24 of 44), there was no prediction present for the groundwater sub-issue. Nearly 30 percent of groundwater predictions were considered not an issue and could not be evaluated due, for the most part, to the lack of data or study of groundwater impacts. Where surface water quality predictions could not be evaluated, water sampling had yet to be completed for the receiving stream.

2. WETLANDS

Typically, predictions relating to impacts on wetlands have forecast whether new facilities would be built in or adjacent to wetlands or whether discharged effluent would affect wetlands. A total of 44 predictions (12 present, 32 implied) were made for wetland issues. Though the breakdown of quantitative/qualitative predictions for this issue shows that only 14 percent of wetland predictions were quantitative, six of twelve (50%) predictions actually recorded in the NEPA documents contained numeric values. The remaining six were phrased as "no wetlands will be impacted," thus zero acres of wetlands would be impacted (see Appendix B for specific predictions and actual impacts). Figure A-2 presents the classification of accuracy for the wetland issues.

Figure A-2: Accuracy Classification of Wetlands Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
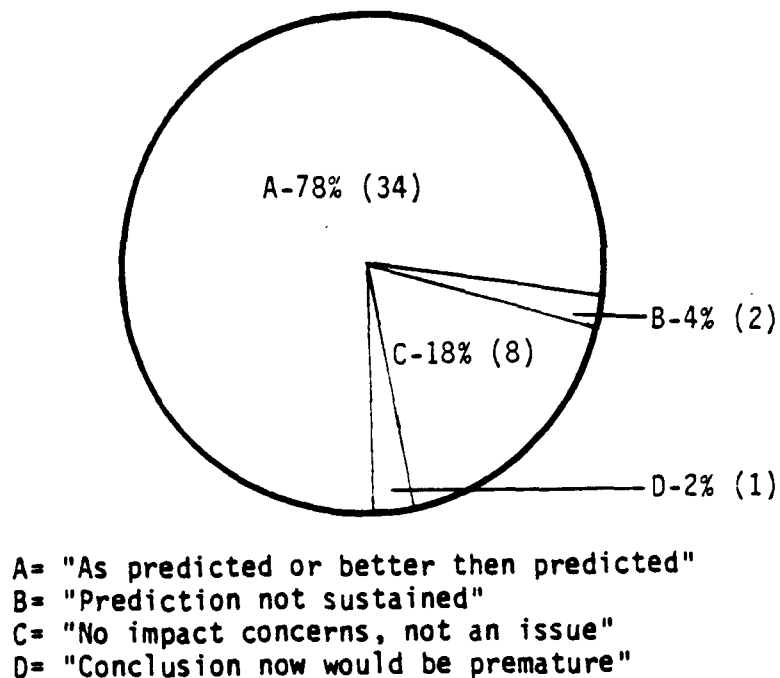D= "Conclusion now would be premature"

The percentage of wetland predictions considered "not an issue" was the second highest for the twelve issues (energy was highest). This is due to the fact that, in most cases, there were no wetlands in the area to be impacted by a facility. Consistently, a large number (32 of 44) of implied predictions indicate no impact to wetlands. None of the wetland predictions could be classified as "could not be evaluated".

3. FLOODPLAINS

Predictions about floodplain impacts were very similar to those for wetland impacts in that they concerned whether new facilities would be built in or adjacent to floodplains. Concern for floodplain impacts is whether the facilities created obstructions in the floodplain or increased flood elevations expanding the 100 year flood area. A total of 44 predictions (19 present, 25 implied) were tabulated for floodplain issues. Forty-three (43) percent of the NEPA documents addressed floodplains. Of the 19 predictions present, 5 (26%) were quantitative. Most floodplain impact predictions are phrased as expected relative impacts rather than as specific quantities to be impacted (see Appendix B for specific predictions and actual impacts). Figure A-3 presents the classification of accuracy for floodplain issues.

Of the twelve environmental concerns, floodplain predictions had the third highest percentage classified "as predicted of better than predicted" behind Physical Environment and Air Quality. Here the percentage of predictions that were "not an issue" may be indicative of the fact that, since a major facilities plan includes siting alternatives which avoid and/or mitigate impacts to floodplains, most projects evaluated did not involve impacts to floodplains.

Figure A-3: Accuracy Classification of Floodplain Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
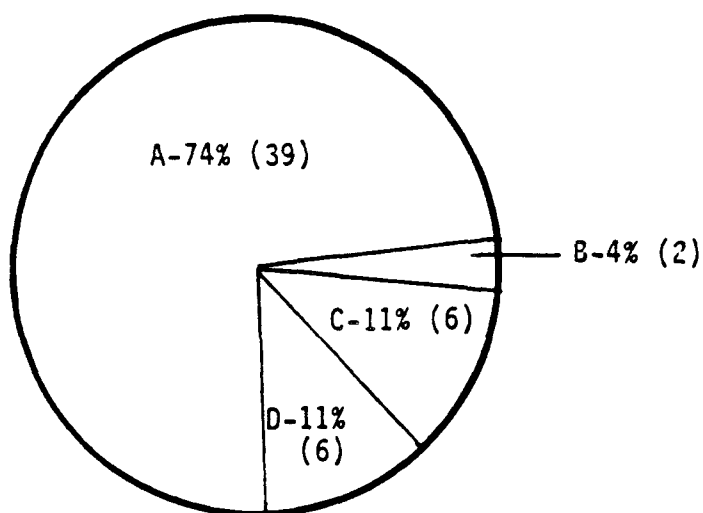D= "Conclusion now would be premature"

4. BIOTA

Predictions for the biota issue were concerned with potential impacts to plants and animals due to construction and/or operation of a facility. This environmental concern has three sub-issues: 1) terrestrial biota, 2) aquatic biota, and 3) rare, endangered, or threatened species. Of the total 53 predictions for biota issues there were: 6 for the terrestrial sub-issue (4 present, 2 implied); 8 for the aquatic sub-issue (7 present, 1 implied); 4 for the rare, endangered, threatened species sub-issue (2 present, 2 implied); and 35 for the generic issue of biota (25 present, 10 implied). Thus, the majority of biota issue predictions were not defined to a sub-issue.

Nearly 91 percent of the biota predictions were qualitative. Most impact predictions for biota issues concerned relative impacts to vegetation or animal species. Most quantitative predictions were phrased as "no vegata-

tion will be impacted" (Appendix B lists the specific predictions and actual impacts). Predictions for the biota issue resulted in the fourth highest percentage of accuracy("as predicted or better") of the twelve issues. Figure A-4 illustrates the classification of accuracy for the biota issue.

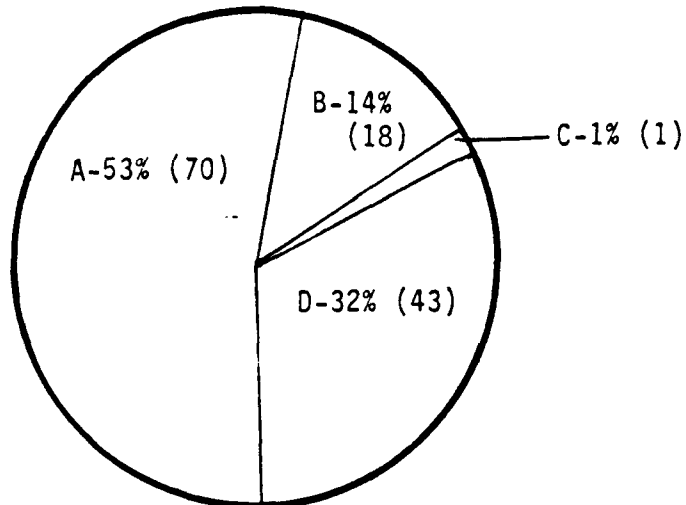Figure A-4: Accuracy Classification of Biota Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
D= "Conclusion now would be premature"

5. SOCIOECONOMIC

Twenty (20) percent of environmental impact predictions contained in this study referred to socioeconomic issues. Largely responsible for the abundance of socioeconomic predictions is the number of indicators included in the issue, such as population, growth, user charges, and employment for which predictions were made. A total of 132 predictions (117 present, 15 implied) were made for socioeconomic issues. Fifty (50) percent were quantitative.

Figure A-5 illustrates the accuracy classification distribution for the socioeconomic issue.

Figure A-5:   Accuracy Classification of Socioeconomic Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
D= "Conclusion now would be premature"

Socioeconomic issues had the second lowest percentage of accurate predictions and the highest percentage of inaccurate predictions. Because of the number of socioeconomic sub-issues a table of the results is provided to clarify the results. Table A-2 shows the accuracy classification for the various sub-issues. Following the table, further findings of each socioeconomic sub-issue are provided.

Table A-2:   Accuracy of Socioeconomic Sub-Issue Predictions

Accuracy Code

Sub-issue	A			B			C			D		
	Quant.	Qual.	Total	Quant.	Qual.	Total	Quant.	Qual.	Total	Quant.	Qual.	Tot
Employment	1	7	8	0	0	0	0	0	0	1	5	
User Charge	12	4	16	5	4	9	0	0	0	1	3	
Land-Use	10	17	27	0	0	0	0	0	0	1	3	
Population	2	3	5	4	2	6	0	1	1	23	1	2
Property Values	1	2	3	0	0	0	0	0	0	0	0	
Secondary Growth	3	8	11	0	3	3	0	0	0	2	3	
Total	29	41	70	9	9	18	0	1	1	28	15	4

A = "As predicted or better than predicted"
B = "Prediction not sustained"
C = "No impact concerns, not an issue"
D = "Conclusion now would be premature"

° Employment

Employment predictions in this study primarily relate to needs for additional staff to operate a wastewater treatment facility. This sub-issue was addressed in 14 of 44 projects Of the 14 predictions, 2 (14%) were quantitative predictions. Six predictions classified "could not be evaluated," relate to future employment projections, within a municipality for the 20-year planning period, for which assessments at this time would be premature.

° User Charges

Before 1979, less emphasis was placed on highlighting projected user fees-- and the like--in NEPA documents. Consequently, the results show that user fees were highlighted in 29 of 44 study documents (25 present, 4 implied). Sixty-two (62) percent of the predictions were quantitative and forecasted average household dollar costs, while the remaining qualitative predictions stated costs as an expected increase or decrease. Construction costs may

change due to weather, time expected, site problems, labor, and industrial market trends. This fact may account for the finding that fifty (50) percent of all innaccurate predictions ("prediction not sustained") for socio-economic issues were for user charges.

° Land-use

Predictions concerning the land-use primary addressed changes in land-use of facility sites or zoning changes prompted by the wastewater treatment project. Approximately 87 percent of land-use predictions for facility sites were accurate.

° Population

Facilities planning takes into account 20-year population projections for the area. These figures, prepared by the responsible State agency, are often reported in NEPA documents. Eighty-one (81) percent of population predictions were quantitative, which indicates that in some cases only a general prediction about the expected change in population was made.

Population predictions represented the largest percentage (18%) of all sub-issues that "could not be evaluated". This is due to the fact that, in most cases, it is premature to evaluate a 20-year projection when the projections were made less than 20 years ago.

° Property Values

Predictions concerning the potential impact of a project on property values were only addressed for 3 projects in the study. All predictions made were accurate.

° Secondary Growth

A concern for some projects was the potential for a facility to induce develop-
ment in the planning area. Predictions for this sub-issue were addressed in
19 projects. The majority of the predictions were qualitative, and a majority
were found to be accurate.

° Summary of Socioeconomic Sub-issues

As presented in Figure A-5, the low percentage of accurate ("as predicted or
better than predicted") predictions can be attributed to the large percentage
of predictions that could not be evaluated. Many predictions concerned a
20-year planning period yielding predictions that would be better examined
at the conclusion of the planning period. The high percentage of inaccurate
("prediction not sustained) predictions is probably due to a significant
reliance on quantitative measures and the fact that cost estimate figures
presented in facilities planning are susceptible to changes in the economy
between the planning, environmental review, and construction phases.

Socioeconomic data were based on population and economic data developed by
agencies other than USEPA. Unlike the other predictions that have been
examined among NEPA documents, socioeconomic data are typically based on
records for broad applications by the U.S. Census Bureau and State Demographic
Centers. Socioeconomic data were also used from 208 Planning Agencies but
when closely examined could not be readily distinguished from that of any
other socioeconomic data source.

6. AGRICULTURE

Predictions about the impacts of Construction Grants projects on agricultural land appeared in many early NEPA documents and virtually all of the more recent ones. The issue is related to both direct impacts of site selection and facility construction in terms of lost agricultural land as well as indirect or induced effects brought about by land development or sludge land application. A total of 44 predictions (21 present, 23 implied) were made for agricultural issues. Only 20 percent of the predictions were quantitative, stating the number of acres expected to be impacted. The remaining predictions were qualitative and reflected a statement of whether agricultural lands would be impacted. Figure A-6 presents the classification of accuracy for agriculture predictions.

Figure A-6: Accuracy Classification of Agriculture Predictions
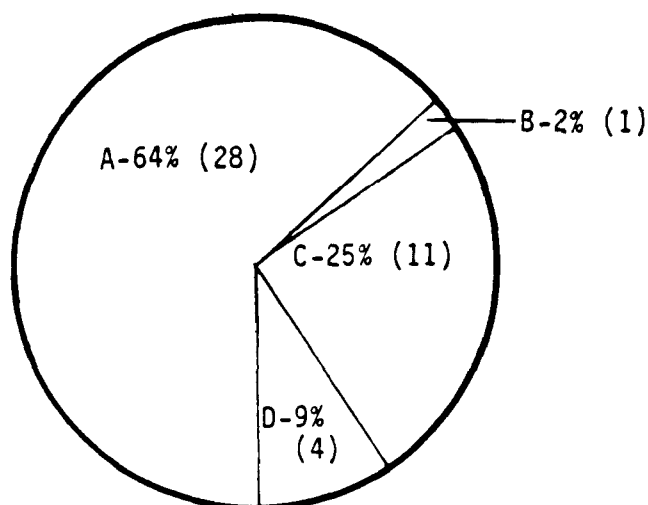
A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
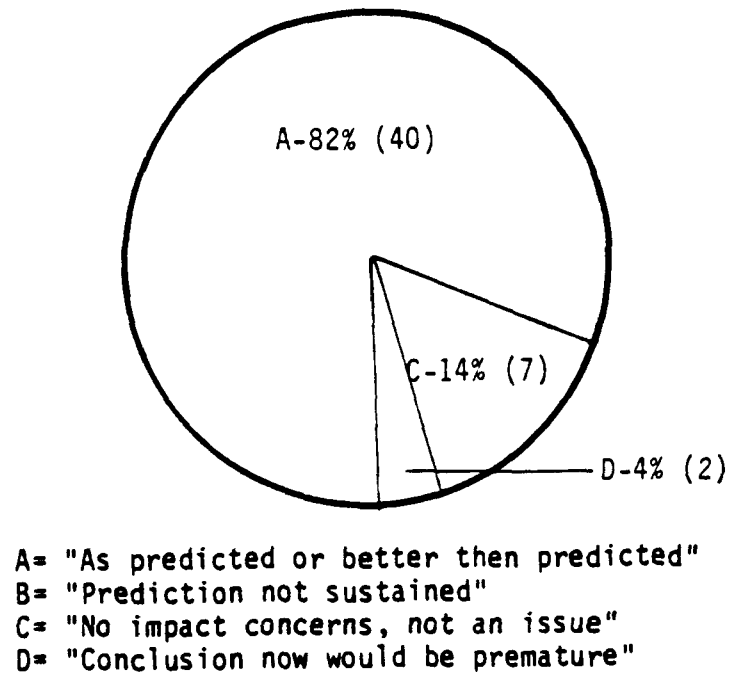D= "Conclusion now would be premature"

The percentage of accuracy ("as predicted or better") for agriculture is consistent with the general trend of accuracy for all issues (63%, as discussed later). The percentage of predictions considered "not an issue" was third highest. This is reflected by the large number of projects (23) for which a prediction was implied. That is, in more than half of the projects, impacts to agriculture were not considered an issue that needed to be transcribed to a NEPA document for public notice.

7. PHYSICAL ENVIRONMENT

Predictions of impacts to the physical environment from Construction Grants projects were related to effects on topography, soils and aesthetic values. In many cases, impacts on the physical environment were predicted to be short-term impacts from construction practices that should be mitigated as much as possible. Impacts due to erosion are of particular concern since construction activities may cause these water pollution abatement projects themselves to become non-point sources of water pollution. A total of 49 predictions (32 present, 17 implied) were made for this issue. Eight (8) percent of the predictions were quantitative. Most predictions concerning the physical environment deal with qualitative impacts, most of which include mitigative measures to reduce the potential impacts. Figure A-7 presents the classification of accuracy for physical environment predictions.

Physical Environment issues had the highest percentage of accuracy("as predicted or better"). None of the issues could be classified as worse than predicted.

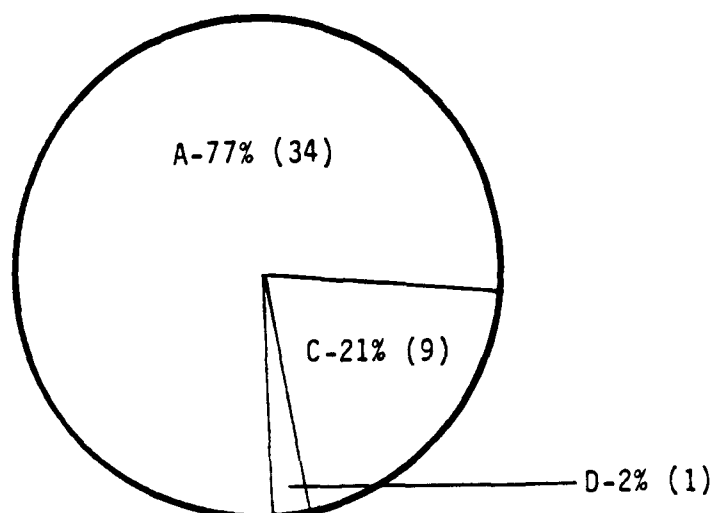Figure A-7:   Accuracy Classification of Physical Environment Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
D= "Conclusion now would be premature"

8.   CULTURAL RESOURCES

Cultural resource predictions concerned on the potential of facility con-
struction impacts on historical buildings and/or archaeological sites in
an area. The prediction is based on an evaluation provided by USEPA in
consultation with the State Historic Preservation Officer (SHPO). A
prediction concerning cultural resource impacts was present in 30 NEPA
documents for this study.

Fifty-five (55) percent of the predictions were quantitative predictions,
most of which were phrased as "no impacts to cultural resources will occur."
Figure A-8 presents the classification of accuracy for cultural resource
issues.

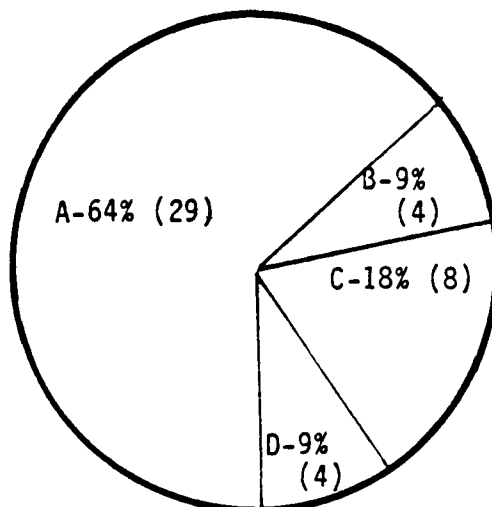Figure A-8:   Accuracy Classification of Cultural Resource Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
D= "Conclusion now would be premature"

This issue was one of three for which none of the predictions were innaccu-rate("prediction not sustained"). The percentage of accuracy("as predicted or better") is the third highest of all issues which is probably due to the quality of the SHPO data base or field surveys done in advance.

9.   SOLID WASTE

Solid waste predictions addressed in NEPA documents usually concerned sludge management and referred to both land application and landfilling of sludge. Many of the early NEPA documents made no predictions relating to solid waste issues, but virtually all later documents contained some reference to solid waste. Of the total of 45 predictions (25 present, 20 implied), only 11 percent were quantitative. Figure A-9 presents the accuracy classifica-tion for solid waste predictions.

Figure A-9: Accuracy Classification of Solid Waste Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
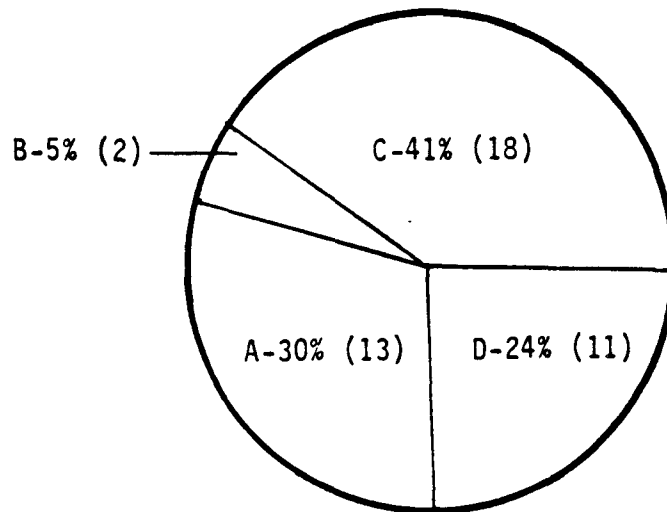D= "Conclusion now would be premature"

The relatively high percentage of predictions that were "not an issue" indicates that for several projects no sludge was generated by the selected process or the issue was not a concern of the NEPA public notice documents.

10. ENERGY

Most predictions on energy issues relate to energy use for the operation of facilities built with Federal Construction Grants. Predictions and findings of energy use focused on expected and actual energy use in new facilities. NEPA document predictions are stated in terms of fuel use, energy consumption, electricity use, or all of these. This issue was addressed in 14 projects. Figure A-10 presents the classification of accuracy for the energy issue.

Energy predictions resulted in the lowest accuracy percentage for "as predicted or better". The percent of predictions classified "not an issue," was highest of all environmental concerns. This clearly shows that energy

Figure A-10: Accuracy Classification of Energy Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
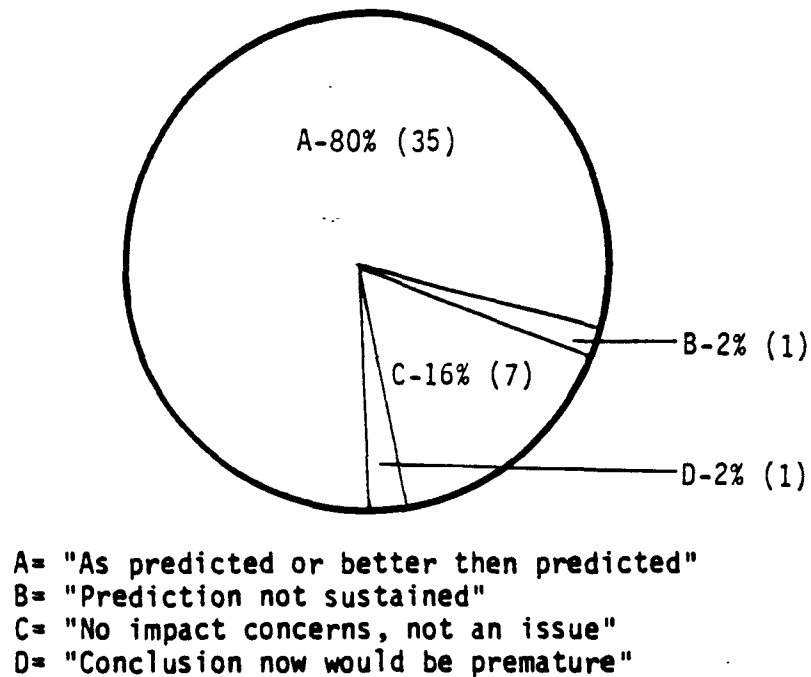D= "Conclusion now would be premature"

predictions were rarely extracted from the operational calculations of wastewater treatment plans.

11. AIR QUALITY

Predictions relating to the impact of Construction Grant projects on air quality are usually stated in terms of impacts due to dust or odors. Short term impacts such as dust problems, were often expected to be mitigated during construction. Either an increase or decrease in odors was a topic of concern for treatment plant operations. Long term air quality impacts were usually addressed by stating that the project conformed to the State Implementation Plan for air quality.

A total of 44 predictions (29 present, 15 implied) were made for this issue. Only 7 percent of the predictions were quantitative, mainly those phrased as "no impacts to air quality." Figure A-11 presents the classification of accuracy for air quality.

Figure A-11:   Accuracy Classification of Air Quality Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
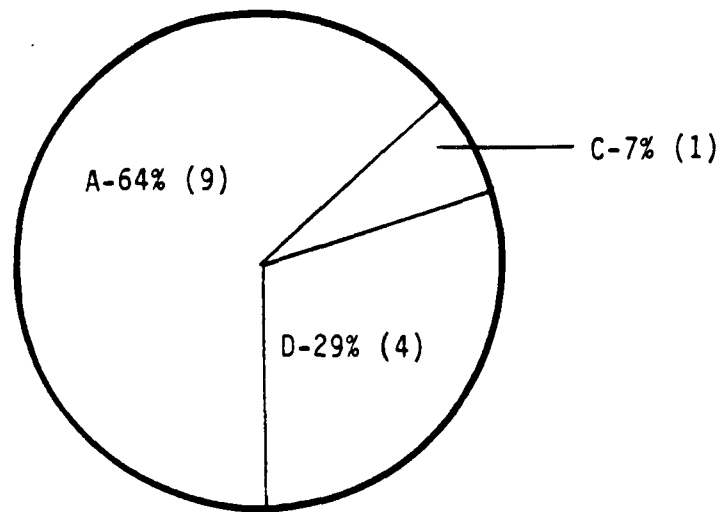D= "Conclusion now would be premature"

The second highest percent of accurate predictions ("as predicted or better") was for air quality issues. The relatively high percentage of "not an issue" indicates that the air quality issues are often not a concern or are easily and effectively mitigated.

12.   OTHER/RECREATION

Recreational impacts were addressed in 9 projects for this study. Figure A-12 presents the classification of accuracy for recreation.

The percentage of predictions that were classified in Category D, "could not be evaluated", is the second highest of all predictions. This is due to data that was not readily available, as explained earlier, and thus no comparison could be made during or following the field visit.

Figure A-12:   Accuracy Classification of Other/Recreation Predictions

A= "As predicted or better then predicted"
B= "Prediction not sustained"
C= "No impact concerns, not an issue"
D= "Conclusion now would be premature"

APPENDIX B

FEDERAL STATUTES PERTINENT TO ENVIRONMENTAL
REVIEW OF CONSTRUCTION GRANTS PROJECTS

B.1 Federal Regulations

Table B-1 lists major Federal statutes, regulations, and executive orders that may be expected to have influenced facility planning for construction grant projects and the review of plans through the NEPA process during the period of this study (1975 to 1982). This is a general list, and many of these regulations would not have affected the need to state potential environmental impact predictions for each project.

The new regulations listed in Table B-2 were especially relevant to the assessment of impacts of construction grant projects. Most of these were cited, in some manner, in guidance documents distributed to Federal and many State Construction Grants program staff for use in reviewing plans and other documents submitted to program staff by grantees and grant applicants. This list is excerpted from a more general one relating to all aspects of construction grant review contained in EPA's Office of Water Program Operations, Regulation and Policy Matrix: A Guide to the Rules Governing Grants Awarded Under the Construction Grants Program (December 1983). This list includes Federal regulations relating specifically to the implementation of NEPA as it relates to the Construction Grants program, in addition to closely related regulated costs (including cost effectiveness analyses and industrial cost recovery provisions).

NEPA documents rarely state which legal considerations formed the basis of decisions to include or exclude certain types of environmental impact issues, or decisions on methods of formulating predictions. Because of this, there is no way of knowing exactly which statutes or regulations were actually taken into account in preparing NEPA documents.

B.2 Program Guidance

The actual developments in the Federal regulatory climate that would most directly affect the preparation of NEPA documents would have been guidance documents, reflecting new Federal policies. These would be further affected

TABLE B-1   FEDERAL REGULATIONS IN EFFECT

WATER QUALITY

Surface Water
Clean Water Act of 1977, as amended (PL 95-523, 42 U.S.C. 300)
Federal Water Pollution Control Act of 1972
(PL 92-500, 33 USC 466 et. seq.)
USEPA. Regulations for the discharge of wastewater into the
waters of the U.S. (40 CFR Parts 122-125, 129, 133)
USEPA. Guidelines on discharge of dredged or fill materials
to navigable waters (40 CFR 230)
Rivers and Harbors Act of 1899 (33 U.S.C. 401 et. seq.)

Groundwater
Clean Water Act, as amended (PL 95-523, 42 U.S.C. 300)
Resource Conservation and Recovery Act of 1976, as amended
(PL 94-580, 42 USC 6901)
Safe Water Drinking Act of 1974 (PL 93-523, 42 USC 300)

WETLANDS
USEPA. "Statement of Procedures on Flood Management and
Wetlands Protection" (44 FR 1455, January 5, 1979)
Executive order 11990, Protection of Wetlands (42 FR 26961,
May 25, 1977)
Clean Water Act, Section 404 (33 U.S.C. 1251)
Rivers and Harbors Act, Section 10 (33 U.S.C. 401)

FLOODPLAINS
USEPA. "Statement of Procedures on Flood Management and
Wetlands Protection" (44 FR 1455, January 5, 1979)
US Water Resources Council. Floodplain Management Guidelines for
Implementing Executive Order 11988 (43 FR 6030, Febuary 10, 1978)
Executive Order 11988, Floodplain Management (42 FR 26951,
May 25, 1977)
Clean Water Act, Section 404 (33 U.S.C. 1251)
Flood Disaster Protection Act of 1973; National Flood Insurance
Act (42 USC 400 et. seq.)
Rivers and Harbors and Flood Control Act (33 USC 569 et. seq.)
Rivers and Harbors Act of 1899 (33 U.S.C. 401 et. seq.)

BIOTA
Endangered Species Act Amendments of 1982 (16 U.S.C. 153 et. seq.)
Executive Order 11911, Preservation of Endangered Species
(41 FR 15683 April 13, 1976)
U.S. Dept. of Interior, Fish and Wildlife Service. Interagency
Cooperation Endangered Species Act of 1973 (50 CFR Part 402)
Endangered Species Act of 1973, as amended
Marine Mammal Protection Act 1972 (16 U.S.C. 1361 et. seq.)
Wilderness Act of 1964, as amended (16 U.S.C. 1131)
Fish and Wildlife Coordination Act of 1934, as amended
(16 U.S.C. 661, 742; 43 CFR Part 17)

SOCIOECONOMIC
Land Use
Federal Coastal Zone Management Act of 1972, as amended
(16 U.S.C. 1451)

AGRICULTURAL
U.S. Dept. of Agriculture. Land Use Policy (Reg. 9500-3,
March 22, 1983)
Agriculture and Food Act of 1981, Farmland Protection Policy
(PL 97-98, Dec. 22, 1981)
USEPA. Policy to Protect Environmentally Significant Agricultural
Lands (September 8, 1978)

PHYSICAL ENVIRONMENT

Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1274)

CULTURAL RESOURCES

National Natural Landmarks Program (36 CFR Part 1212; 45 FR 81184, December 9, 1980)

Advisory Council on Historic Preservation. Protection of Historic and Cultural Properties (36 CFR Part 800)

Advisory Council on Historic Preservation. National Registration Criteria (36 CFR Parts 63, 64, 66)

Executive Order 11593, Protection and Enhancement of the Cultural Environment (May 13, 1979)

Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469 et. seq.)

National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et. seq.)

Historic Sites, Building and Antiquities Act of 1935

SOLID WASTE

1984 Hazardous and Solid Waste Amendments (PL 98-616, 98 Stat. 3221, November 8, 1984)

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (PL 96-510)

Solid Waste Disposal Act of 1980 (PL 96-482)

Used Oil Recycling Act of 1980 (PL 96-463)

Quiet Communities Act of 1978 (PL 95-609)

Resource Conservation and Recovery Act (PL 94-580, October 21, 1976)

Solid Waste Disposal Act (42 U.S.C. 3251)

AIR QUALITY

Clean Air Act Amendments of 1983 (PL 98-45, July 12, 1983)

Clean Air Act Amendments of 1981 (PL 97-23, July 17, 1981)

Clean Air Act Amendments of 1977 (PL 95-95, August 7, 1977)

Clean Air Act Amendments of 1970 (PL 91-604, December 31, 1970)

Clean Air Act (42 U.S.C. 1957 et. seq.)

NOISE

Quiet Communities Act (PL 95-609 Section 2, November 8, 1978)

Noise Control Act of 1972 (PL 92-842)

1970 Noise Pollution and Abatement Act (PL 91-604)

Date Published in F.R.	Affected Part and Sections	Effective Date	Comments
10/18/72	The Federal Water Pollution Control Act Amendments of 1972 (FWPCAA of 1972), PL 92-500	10/82/71	The FWPCAA of 1972 represents a significant commitment on the part of the federal government to abate water pollution. The Act, among other things, introduces the three-step grant processes, expands the types of eligible projects, increases the federal grant share of 75% and commits billions of dollars to the restoration of the nation's waters.
1/17/73 (P) 1/20/72 (P) 7/17/74 (f) 4/14/75	Part 6 – Preparation of Environmental Impacts Statements Sec. 6.10-6.95 Interim Preamble FR p. 1696	2/16/73	These regulations represent EPA's implementation of the National Environmental Policy Act of 1969. Subpart E – Guidelines for Preparation of Environmental Impact Statements for Wastewater Treatment Works and Associated Plans directly relates to the Construction Grants Program.
3/19/74 (I) 8/24/71 (I) 11/25/71 (I)	Part 4 – Implementation of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 Sec. 4.100-4.608 Appendixes A and B Interim Preamble FR p. 10362	3/19/74	Regulations superseded those published 8/24/71 and 11/25/71 and resulted from guidelines issued by OMB (Circular A-103, 5/1/72) plus experience to date by EPA; only change discussed in the preamble concerns Section 4.600 which has been revised to indicate that the acquisition of easements is subject to the policies and procedures governing land acquisition; no final Part 4 regulation has been issued as of March 1983.
4/14/75 (P) 1/20/72 (I) 1/17/73 (P) 7/17/74	Part 6 – Preparation of Environmental Impact Statements Final (complete reprint) Preamble FR p. 16814 6.504 Applicability (c) Retroactive application	4/14/75	Final regulations expanded criteria for decision concerning preparation of EIS; issues include: coastal zones, wild and scenic rivers; prime agricultural lands; wildlife habitat; floodplains; revision of definition of primary and secondary impacts; discussion of retroactive application; wetlands; explanation of data required in environmental assessments (energy, land use trends, population projections); consideration of endangered species.

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Date Published in F.R.	Affected Part and Sections	Effective Date	Comments
	6.512 Procedures for Implementing NEPA		New criteria for preparation of EIS not applicable to Step 2 or Step 3 grants awarded before 7/1/75 unless Regional Administrator consideres it appropriate; negative declarations issues before 4/14/75 remain in effect.
			Provides more detailed explanation of data required in environmental assessments.
2/4/77	Part 35 - State and Local Assistance	N/A	Proposed changes to guidelines provide detailed discussion of: population forecasting; reserve capacity; staging construction; capacity beyond grant eligible cost-effective capacity; interceptor sizing; average daily per capita flows; service life of conveyance pipes (see 2/25/77 for correction).
(I) 4/25/78 (F) 9/27/78	Subpart E - Grants for Construction of Treatment Works (FWPCAA of 1972)		
	Appendix A - Cost-Effectiveness Analysis Guidelines		
	Proposed Preamble FR p. 6841		
12/27/77	Clean Water Act of 1977 PL 95-217	12/27/77	The Clean Water Act of 1977 was enacted on this date and introduced major amendments to the Federal Water Pollution Control Act of 1972.
4/25/78	Part 35 - State and Local Assistance	N/A	Preamble provides detailed discussion of innovative and alternative technology considerations; recreational use and pretreatment; interim/final regulations implementing other provisions of the CWA of 1977 are published on this same date as shown below; these proposed regulations " ... should be read with the interim/final regulations ...:"
(I) 5/18/78 (I) 6/2/78 (F) 9/27/78	Subpart E - Grants for Construction of Treatment Works (CWA of 1977)		
	Proposed regulations Implementing Clean Water Act of 1977		
	Preamble FR p. 17690		

TABLE B-2   FEDERAL REGULATIONS AFFECTING THE IMPLEMENTATION OF NEPA IN THE CONSTRUCTION GRANTS PROGRAM (Continued)

Date Published in F.R.	Effective Date	Affected Part and Sections	Comments
4/25/78		User Charges 35.905-26 User charge	Allows grantees to use ad valorem taxes as a basis for developing its user charge system provided a dedicated and valorem system was in use on 12/27/77; other limitations on industrial and large commercial users discussed; if a user charge system based on actual use has been approved, may not now substitute a system based on ad valorem taxes; after 6/30/79 no Step 3 grant awarded unless user charge system approved, i.e., development of user charge system becomes Step 2 activity rather than Step 3 activity; for grants awarded after 4/25/78, user charge system must be approved by 6/30/79 or no Step 3 grant.
		35.929 Requirements for user charge system	
		35.929-1 Approval of the user charge system	
		35.929-2 Approval of the user charge system	
		35.929-2 General requirements for all user charge systems	
		35.929-3 Implementation of the user charge	
		Industrial Cost Recovery 35.905-6 Industrial cost recovery	Exempts from industrial cost recovery (ICR) industrial user which discharges the equivalent of 25,000 gallons per day or less of domestic sanitary waste; permits portion of recovery funds to be used for administration of ICR system; places 18 month moratorium (until 6/30/79) on the collection of ICR payments; however, grantees must continue to develop ICR systems during moratorium period; definition of industrial user revised; neither moratorium nor 25,000 gallons per day limitation apply to users of individual systems; after 4/25/78 payments withheld for noncompliance with ICR requirements will be released; after 6/30/79 no Step 3 grant awarded unless ICR system approved, i.e., development of ICR system becomes Step 2 activity rather than Step 3 activity.
		35.905-8 Industrial user	
		35.928 Requirements for an industrial cost recovery system	
		35.928-1 Approval of the industrial cost recovery system	
		35.928-2 Use of industrial cost recovery payments	

TABLE B-2 FEDERAL REGULATIONS AFFECTING THE IMPLEMENTATION OF NEPA IN THE CONSTRUCTION GRANTS PROGRAM (Continued)

Date Published in F.R.	Affected Part and Sections	Effective Date	Comments
	35.928-3 Implementation of the industrial cost recovery system		
	35.928-4 Moratorium on industrial cost recovery payments		
(P) 2/4/77 (F) 9/27/78	Part 35, Appendix A - Cost-Effectiveness Analysis Guidelines		Cost preference (15%) applied to entire system where innovative or alternative (I/A) technologies represent more than 50% of its cost; where I/A less than 50%, cost preference only applied to replaced components (see proposed regulations of this same date); may use state population forecasts rather than Department of Commerce if year 2000 projection does not exceed Department of Commerce by more than 5% or exceed a 208 agency projection by more than 10%; requires grantee to consider flow reduction methods except where population is 10,000 or less or average daily base flow is 70 gallons/capita/day or less; discount rate at 6-5/8%; for reserve capacity beyond that eligible for grant, grant is based on cost-effective size rather than proportion of cost-effective capacity to design capacity; state cost-effectiveness guidelines may be used provided they are at least as stringent as EPA's and have been subject to a public hearing.
6/30/78	30.410-2 Executive Order 11988		Concerns floodplains and requires evaluation to minimize harm.
	30.410-5 Executive Order 11990		New section concerning protection of wetlands.

TABLE B-2 FEDERAL REGULATIONS AFFECTING THE IMPLEMENTATION OF NEPA IN THE CONSTRUCTION GRANTS PROGRAM (Continued)

Date Published in F.R.	Affected Part and Sections	Effective Date	Comments
7/78 (P) 2/16/79	Part 25 - Public Participation in Programs Under the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Clean Water Act Sec. 25.1-25.19 Proposed Preamble FR p. 34794	N/A	Proposed new Part 25 regulations set forth procedures and requirements for public participation including the formation of Citizens Advisory Group; item 7 in the preamble discusses "Reimbursement of participatio expenses."
7/78	Part 35 - State and Local Assistance	N/A	Proposed revisions to Part 35 to incorporate the requirements for public participation in the proposed Part 25.
8/11/80	Municipal Wastewater Treatment Works; Construction Grants Limitations Provided by Section 316 of the Clean Water Act. Policy and Procedures Preamble FR p. 53382	8/11/80	Allows EPA to withhold, condition or restrict grants where the state implementation plan concerning air pollution is not being implemented; item IV in a reprinted memorandum addresses "allowable construction grants program costs associated with implementation of this air pollution policy."
11/3/80	Part 35 - State and Local Assistance Subpart E - Grants for Construction of Treatment Works (CWA of 1977) Appendix A - Cost-Effectiveness Analysis Guidelines Proposed Preamble FR p. 72984	N/A	Revised guidelines replace the 4% escalation factor for natural gas with escalation factors for all fuels and electricity.

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TABLE B-2   FEDERAL REGULATIONS AFFECTING THE IMPLEMENTATION OF NEPA IN THE CONSTRUCTION GRANTS PROGRAM (Continued)

Date Published in F.R.	Affected Part and Sections	Effective Date	Comments
12/5/80	35.920-3 Contents of application (b)(8)(ii)		Repeals all ICR requirements retroactive fo 12/27/77; ICE funds recovered between 3/1/73 and 12/27/77 to be used in accordance with then applicable regulations; existing work on ICR systems to be terminated and not eligible for grant after 12/31/80.
5/12/82 (P) 11/6/81	Part 35 - State and Local Assistance Subpart I - Grants for Construction of Treatment Works Sec. 35.2000-35.2350; Appendix A Interim/Final Preamble FR p. 20450 5. NEPA Compliance 18. Public Participation	5/12/82	The publication of the iterim/final regulations represents a major revision and reprinting of new construction grants regulations and primarily implements provisions of the "Municipal Wastewater Treatment Construction Grants Amendments of 1981" (PL 97-117); they significantly amend the Construction Grants Program, among other things, eliminating facilities planning (Step 1) and design (Step 2) grants and replacing the grants with an allowance at the time of construction (Step 3) grant award. The preamble to these regulations should be reviewed for all grants awarded after 5/12/82. Grant applicant encouraged to obtain environmental review of projects after completion of facilities planning and before design. EPA prohibited from requiring compliance with public participation regulations (Part 25) during facilities planning and design; encourages voluntary compliance however.

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Excerpts from: USEPA Office of Water Program Operations, Regulation and Policy Matrix: A Guide to the Rules governing Grants Awarded Under the Construction Grants Program, December 1983.

by the administrative procedures through which new policies and guidance were applied to individual projects at both the State and Federal levels, and would be further modified by each State's policies, laws, and regulations.

It is important to note that two very different kinds of "NEPA documents" were examined together in this study, based on guidance in the Manual for Evaluating Predicted and Actual Impacts of Construction Grants Projects. The purposes of the facilities plans and environmental reviews of the proposed projects are very different from each other.

Initial reviews of plans were usually conducted by the States in EPA Region V during the period of the study, and Environmental Assessments reviewed by States apparently formed the basis for many of EPA's Negative Declarations or Findings of No Significant Impact. The following analysis takes into account Federal guidance and policy documents, which were also used by the States.

Table B-3 presents a list of relevant Federal guidance documents issued from 1973 to 1982 on environmental impact predictions and review for Construction Grants projects. This list is also excerpted from a more general compilation contained in EPA's Regulation and Policy Matrix (December 1983).

These guidance documents were written and distributed to ensure that changes in Federal regulations would be implemented in a timely and uniform manner by Federal (and State) Construction Grants Program operations. All of these types of guidance contained instructions reflecting developments in the application of NEPA procedures for evaluating specific kinds of environmental impacts of construction grant projects.

TABLE B-3   RELEVANT GUIDANCE DOCUMENTS ON ENVIRONMENTAL
IMPACT PREDICTIONS AND REVIEW FOR CONSTRUCTION GRANT PROJECTS, 1975-1982

May 1973 - May 1976
"Program Guidance Memoranda" (68 sent out over entire 3-year period)

February 1976
Handbook of Procedures - Construction Grants Program for Municipal Wastewater
Treatment Works (MCD-03). Revised 1967 handbook, to establish uniform
national operating standards which can be readily adopted. Handbook was to be
applicable to grants processed as of July 1, 1975, and was to assist project
officers in reviewing grantee documents by explaining existing policies and
requirements.

July 1976 - December 1980
"Program Requirements Memoranda," (PRM) "Program Operation Memoranda," (POM)
and "Transmittal Memoranda" (TM)

- Program Requirements Memoranda conveyed program policies specifically
  applicable to the Construction Grants Program (within and outside EPA)
- Program Operation Memoranda were internal communications explaining
  "housekeeping" items
- Transmittal Memoranda were actually changes (insert replacement pages)
  to the Handbook of Procedures (MCD-03)

Fall 1979 (Effective 1980)
Handbook of Procedures, Second edition, replaced the 1976 Handbook, reflecting
laws, regulations, and policies as of October 1979. The second edition was
needed to incorporate large changes in the Construction Grants Program
resulting from the passage of the Clean Water Act of 1977. (Became obsolete
with Clean Water Act Amendments of 1981)

1981
Program Requirements Memoranda issued only on a fiscal-year basis to eliminate
confusion as to retroactive applicability of changes in requirements

March 1981
Facilities Planning 1981 (FRD-20)
Explained facilities planning requirements overall

July 1982
Construction Grants 1982 (CG-82) - Interim Final
Simplified construction grant requirements and ending the formal field
communication system; increased reliance on regulation for Federal
requirements, with more flexibility for States and EPA Regions for daily
operations. Revisions were based on the 1981 amendments to the Clean Water
Act, and completely revised implementing regulations. Provided step-by-step
guidance for preparing and reviewing construction grant project documents.