These work items were developed to help new economists identify things that need to be accomplished, and remind experienced economists of steps needed, to evaluate a project.

Type of project: Watershed Protection

Preliminary Staff Information about a potential project has been received.

Project Evaluation

Project potential is determined by the staff accessing the following:

A. Identify the resource problems
   1. Quantify problems
   2. Determine if problem fits purpose listed under PL-566 (urban flood, ag. flood, watershed protection, irrigation, etc.)
   3. Determine if project can best be solved under the PL-566 program
A. Determine potential for project economic feasibility

B. Identify objectives of local people and determine potential sponsors
   1. Compare sponsor objectives to program requirements
   2. Determine range of alternatives that are socially acceptable

C. Assist in preparing a preliminary report and if project planning continues, use the following work items to guide the economic analysis

Develop a study plan, economics portion.

A. List in time sequence all economic work items needed to solve the problems identified in the project. Use the work items described below. Add and delete work items to make the plan of work specific to the project being planned.
COORDINATE WITH APPROPRIATE STAFF AND TSC ECONOMISTS AS NEEDED.
(BEGINNING OF POST APPLICATION PLANNING 502.31(a)
NWSM)

B. DESCRIBE PROCEDURES FOR ACCOMPLISHING EACH WORK ITEM WITH WORK DAYS REQUIRED. PROVIDE TO STUDY LEADER.

C. OBTAIN COPY OF THE OVERALL SCHEDULE AND USE IT TO SCHEDULE THE ECONOMIST WORK ITEMS ON DESK CALENDAR, INDIVIDUAL ANNUAL PLAN OF OPERATIONS OR STATE ANNUAL PLAN OF OPERATIONS.

202AG ASSEMBLE BASIC STAFF RESOURCE DATA

A. ASSEMBLE ON A WATERSHED OR COUNTY BASIS AS APPLICABLE. GATHER ONLY DATA THAT IS USEFUL FOR THE PROJECT EVALUATION AND NARRATIVE

1. BASIC ECONOMY OF THE AREA

A. POPULATION— BOTH RURAL AND URBAN, AGE, EDUCATION, MINORITIES

B. EMPLOYMENT BY SECTOR, E.G. AG, MFG., COMMERCIAL, ETC.

C. INCOME
   (1) RANGE
   (2) MEDIAN
   (3) COMPARE TO STATE AND NATION

D. FARM AND RANCH ENTERPRISES
   (1) TYPE— DAIRY, BEEF, SPECIALIZED,
CASH CROP, ETC.
(2) SIZE
(3) NUMBER
(4) TENURE
(5) AVERAGE VALUE
OF BUILDINGS
E. OFF-FARM EMPLOYMENT
(1) NUMBER OF DAYS
(2) KINDS, IF KNOWN

2. PROJECT BASE MAP.
3. SOILS INFORMATION
4. DRAINAGE AREA
5. COUNTY MAPS
6. AERIAL MOSAICS
7. WATERSHED LAND USE
   (PRESENT AND FUTURE)
8. WATER AND LAND RESOURCE
   PROBLEMS

SOURCE: PUBLISHED SOIL
SURVEYS, AERIAL PHOTOS,
CITY & COUNTY DATA BOOK, AG.
CENSUS, STATE AG.
STATISTICS, ONSITE FIELD
EXAMINATION,
APPLICATION FOR ASSISTANCE, AND
OTHER SUCH SOURCES.
B. OTHER DATA: "MOST RECENT
PRICES AND INTEREST
TO BE USED IN PLAN.
1. PRICE DATA:
   EHWR 620-C
   PRICES PAID AND PRICES
   RECEIVED BY
   COMMODITY GROWN.
2. INTEREST RATES
   EHWR 620.02(C)
3. EVALUATION PERIOD
   EHWR 620.02(D)

SOURCE: NATIONAL BULLETINS,
EXTENSION SERVICE,
AG. STATISTICS,
AG. COMMISSIONERS

203AG COMPUTER PRO-
GRAMS

A. DETERMINE POTENTIAL FOR USE
OF COMPUTER PROGRAMS
1. ECONZ-CALCULATE DAMAGES
   TO CROPS & OTHER AG
2. LDAMG-CALCULATE LAND
   DAMAGE
3. VAGFR-COMPUTE PROJECT
   RETURNS FOR DIFFERENT
ALTERNATIVES

204AG PROBLEM AREA LOCATION

A. AERIAL PHOTOS OR MOSAICS OR OTHER SUITABLE BASE AND FLOODPLAIN PROFILE SHOWING ELEVATION OF SIGNIFICANT PROPERTIES, PROBLEM AREAS, (FLOOD PLAINS) REACHES, AND CROSS SECTIONS.

B. DETERMINE IF FLOOD DAMAGES WILL COVER ALL THE AREA OR IF A SAMPLE WILL BE USED.

C. DEFINE NUMBER AND LOCATION OF REACHES IN ORDER TO PROPERLY STRATIFY RESOURCE PROBLEMS FOR ANALYSIS. THINGS TO CONSIDER:
   1. ROAD CROSSINGS IN THE FLOODPLAIN
   2. HEIGHT OF ROADS CROSSING THE FLOODPLAIN
   3. OTHER NATURAL OBSTRUCTIONS
   4. HIGH DAMAGEABLE PROPERTIES
   5. SIMILAR DAMAGE VALUES AND RATES

HV

205AG DETERMINE PRESENT LAND USE CROPPING PATTERNS IN PROBLEM AREA

USE AERIAL PHOTOS, COUNTY LAND USE MAPS, AND ON SITE INVESTIGATIONS

206AG DETERMINE FUTURE LAND USE-CROPPING PATTERNS IN PROBLEM AREA

USE THE PRESENT LAND USE AND CROPPING PATTERNS AS A BASE
207AG DETERMINE BASE AG YIELDS UNDER PROBLEM FREE CONDITIONS

208WP ESTABLISH TYPE GS AND EXTENT OF EROSION PROBLEM

209WP SHEET & RILL EROSION

210WP IDENTIFY NEEDED EVALUATION UNITS FOR CROPLAND, RANGELAND, & FORESTLAND

211WP INVENTORY ACRES TREATED BY EVALUATION UNIT AND LEVEL OF MANAGEMENT

212WP SELECT SAMPLE FARMS IF NEEDED

213WP OBTAIN ESTIMATES OF EROSION AND SEDIMENT DELIVERY BY EVALUATION UNITS

214WP CROPLAND

215WP DEVELOP YIELD MATRIX BY EVALUATION UNIT, CROPPING SYSTEM, LEVEL OF MANAGEMENT, & STRUCTURAL PRACTICE

216WP DEVELOP TILLAGE OPERATION MATRIX BY CROPPING SYSTEM & MANAGEMENT

217WP DETERMINE VAR-

YIELDS SHOULD BE BASED ON INFORMATION OBTAINED FROM ON-SITE INTERVIEWS AND SIMILAR PROBLEM FREE CONDITIONS. STATISTICAL REPORTING SERVICE COUNTY AVERAGES AND SOILS 5 YIELDS MAY BE HELPFUL. AVERAGE MANAGEMENT IS ASSUMED. DISPLAY IN TABLE FORM.

A. CLASSIFY AS SHEET AND RILL, CONCENTRATED FLOW OR STREAMBANK

B. DETERMINE IF DAMAGES ARE IN EQUILIBRIUM, INCREASING, OR DECREASING IN EXTENT (AREA) OR DEGREE (SEVERITY).

METHOD: EMER 621-0

DEVELOP AVERAGE ANNUAL DAMAGES USING WORK ITEMS 210-225

CONSIDER DEGREE OF RESOURCE PROBLEMS, EFFECTIVENESS OF CONSERVATION PRACTICES, SOILS, PRECIPITATION, ETC.

USE AERIAL PHOTOS, SOILS MAPS, FIELD OFFICE RECORDS

USE SAMPLE FARMS TO OBTAIN USEL TRANS., TILLAGE OPERATIONS, YIELDS, RANGE CONDITION, FOREST TYPE

USE INFORMATION FROM RIVERBASIN STUDIES, SAMPLE FARMS, ETC., INCLUDE ALL TYPES OF EROSION (SHEET & RILL, CONCENTRATED FLOW, GULLY, STREAMBANK) SEDIMENT DELIVERY FROM SEDIMENT POND STUDIES CAN ALSO BE USEFUL.

DEVELOP AVERAGE ANNUAL DAMAGES USING WORK ITEMS 215-218

USE SOILS 5 YIELDS AND ASCS PROVEN YIELDS ADJUSTED BY PROFESSIONAL JUDGEMENT BY QUALIFIED AGRICULTURAL OFFICIALS, AND ON FARM INTERVIEWS

USE EXTENSION SERVICE CROP BUDGETS, RIVERBASIN BUDGETS, AND SAMPLE FARM BUDGETS ADJUSTED BY PROFESSIONAL JUDGEMENT AND ONFARM INTERVIEWS

USE TILLAGE OPERATIONS IDENTIFIED IN WORK ITEM
1. COSTS BY CROP-PHASE SYSTEM, LEVEL OF MANAGEMENT AND STRUCTURAL PRACTICES

216WP TO ESTIMATE VARIABLE COSTS BY CROPPING SYSTEM AND LEVEL OF MANAGEMENT. FOR STRUCTURAL PRACTICES DETERMINE ADDITIONAL LABOR, SEED, FERTILIZER, FUEL, ETC.. USE SAMPLE FARM INTERVIEWS, UNIVERSITY OF IDAHO FARM SIMULATION PROGRAM, OR SIMILAR COMPUTER PROGRAM.

BASED ON RATE OF SOIL LOSS DETERMINE LOSS IN LONG TERM PRODUCTIVITY. VARIOUS COMPUTER MODELS ARE AVAILABLE--EPIC, ICE, ETC.
219WP Rangeland

Calculate average annual damages using work items 220-222.

For each evaluation unit determine range condition response time by practice. Use case studies, sample farms, and professional judgment.

From sample farms, extension bulletins, etc., develop partial budgets.

220WP Obtain range productivity response matrix by evaluation unit by practice.

221WP Determine change in costs for range management practices.

222WP Convert response matrix to annual response by evaluation unit and practice.

223WP Forestland

Calculate average annual damages using work items 224-225.

Obtain forest productivity response data by evaluation unit and practice. Agnet productivity programs are available for certain species.

Determine changes in costs for forest management practices.

224WP Obtain forest productivity data.

225WP Determine change in costs.

226WP Other sediment & erosion damages.

Calculate average annual damages using work items 227-234.

Consider damages from cropland voiding, crop smothering, etc.

227WP Determine other damages from sediment & erosion.

Consider damages to roads, ditches, reservoirs, recreation, navigation, power generation, fisheries, etc.

228WP Determine off-farm damages from erosion and sediment.

Use rates from previous projects adjusted by response from meetings with sponsors and public meetings.

229WP Determine incentive payments for management practices.

Use ACP rates when available.

230WP Determine costs for structural practices.

231WP Determine level of participation.

Base on goals of sponsors & level of incentive payments (review tech note by Barbara Osborn).

232 WP Compute benefits

Compute average annual benefits by evaluation unit for each management level and structural practice.
233WP COMPUTE COSTS

COMPUTE AVERAGE ANNUAL COSTS BY LEVEL OF MANAGEMENT AND STRUCTURAL PRACTICE. THIS IS DONE BY AMORTIZING COSTS DETERMINED IN WORK ITEM 229 & 230.

234WP INCREMENTAL ANALYSIS

CONDUCT AN INCREMENTAL ANALYSIS BY EVALUATION UNIT TO DETERMINE THE NED ALTERNATIVE.

METHOD: NWSM 504
236WP EROSION AND SEDIMENT
DEVELOP AVERAGE ANNUAL DAMAGES USING WORK ITEMS 236-252.

236WP DETERMINE CURRENT LAND USE
DEVELOP CROPPING PATTERNS ON PROBLEM FREE AREAS BY REACHES AND DISPLAY ON BASE MAPS IN A TABLE WITH ACRES AND/OR PERCENT LAND USE AND CROPS GROWN. CORRELATE CURRENT LAND USE TO LAND USE DEVELOPED IN WORK ITEM 205.

231WP PROJECT FUTURE LAND USE AND CROPPING PATTERNS
DETERMINE WHAT CHANGE IS EXPECTED FROM THE CURRENT CONDITION. PROJECT BY APPROPRIATE TIME PERIOD AND DISPLAY IN TABLE. PROJECTIONS SHOULD BE BASED ON INTERVIEWS WITH FARMERS, LOCAL RESIDENTS, EXTENSION PERSONNEL, AND OTHER KNOWLEDGEABLE PEOPLE. CORRELATE FUTURE LAND USE TO LAND USE DEVELOPED IN WORK ITEM 206.

235WP ESTABLISH CURRENT YIELDS WITH SEDIMENT AND/OR EROSION
YIELDS SHOULD BE DETERMINED FROM DAMAGE QUESTIONNAIRES FROM AFFECTED RESIDENTS. AVERAGE MANAGEMENT IS ASSUMED. YIELDS REFLECT THE CURRENT EROSION PROBLEM AND OTHER HAZARDS STILL EXIST.

236 WP PROJECT FUTURE AG YIELDS WITHOUT EROSION
DETERMINE CHANGE EXPECTED FROM CURRENT CONDITIONS PROJECT BY TIME PERIOD AND DISPLAY RESULTS IN A TABLE.

240WP COMPUTE PROJECTED DAMAGEABLE VALUES
USE PROJECTED YIELDS ESTIMATED ABOVE TIMES THE CURRENT NORMALIZED PRICES AND DISPLAY IN TABLE.

241WP CALCULATE NET RETURNS FOR CROPS
USE CROP BUDGETS TO CALCULATE VARIABLE COSTS AND WITH THE PROJECTED VALUES FROM WORK ITEM 240 TO CALCULATE THE NET RETURNS FOR EACH CROP.
1. CALCULATE NET RETURN FOR EACH CROP
2. CALCULATE NET RETURNS FOR EACH ALTERNATIVE

242WP EROSION-CONCENTRATED FLOW DAMAGES
CALCULATE NET LOSS IN INCOME AS A RESULT OF CONCENTRATED FLOW AND DISPLAY IN TABLE AS POTENTIAL RECOVERABLE NET INCOME.

243WP EROSION-CONCENTRATED FLOW BENEFITS
CALCULATE INCREASED INCOME TO LAND

244WP SEDIMENT SNAPPING DAMAGE
CALCULATE NET LOSS IN INCOME AS A RESULT OF SWAMPING AND DISPLAY IN TABLE AS POTENTIAL RECOVERABLE NET INCOME.
METHOD: EHWR 621-D

24 SEDIMENT SNAPPING BENEFITS
CALCULATE INCREASED NET INCOME TO LAND
METHOD: EHWR 621-D
2. SEDIMENT DEPOSITION DAMAGE

CALCULATE NET LOSS IN INCOME AS A RESULT OF SEDIMENT AND DISPLAY IN TABLE AS POTENTIAL RECOVERABLE NET INCOME.

METHOD: EHRG 621-D

247mp SEDIMENT DEPOSITION BENEFITS

CALCULATE INCREASED NET INCOME TO LAND

METHOD: EHRG 621-D
2. SEDIMENT N...OME AS A RESULT OF SCOUR
SCOUR DAMAGE

CALCULATE NET LOSS I
AND DISPLAY IN TABLE AS POTENTIAL RECOVERABLE NET INCOME.
METHOD: EMR 621-D

249WP SEDIMENT
SCOUR BENEFITS

CALCULATE INCREASED NET INCOME TO LAND
METHOD: EMR 621-D

250WP SEDIMENT-OTHER GS
PROPERTIES INVENTORY

DETERMINE THE NUMBER AND LOCATION OF PROPERTIES
EFFECTED. USE A MAP OR TABLE TO DISPLAY THE
PROPERTIES EFFECTED.

251WP SEDIMENT-OTHER GS
PROPERTIES DAMAGES

A. DETERMINE ADVERSE EFFECTS OF SEDIMENT TO DRAINS
1. CONSIDER COSTS OF REMOVAL & HAULING
2. ADJUST DAMAGES FOR NORMAL MAINTENANCE
3. IDENTIFY SOURCE OF DAMAGES SO EFFECTS CAN
BE DETERMINED FOR DIFFERENT ALTERNATIVES

B. DETERMINE ADVERSE EFFECTS OF SEDIMENT TO
IRRIGATION SYSTEMS.
1. CONSIDER COST OF REMOVAL & HAULING
2. IF LOSS OF INCOME DUE TO LOSS OF USE, USE
WORK ITEMS DESCRIBED IN IRRIGATION SECTION.
THE COST TO RESTORE WATER DELIVERY TO THE
AREA NEEDS TO BE INCLUDED.
3. ADJUST DAMAGES FOR NORMAL MAINTENANCE
4. IDENTIFY SOURCE OF DAMAGES SO EFFECTS CAN
BE DETERMINED FOR DIFFERENT ALTERNATIVES

C. DETERMINE ADVERSE EFFECTS OF SEDIMENT TO DAMS
1. LOSS OF SERVICE METHOD—BASED ON EXTENDING
LIFE OF DAM
2. COST OF SEDIMENT REMOVAL METHOD—BASED ON
ACTUAL COSTS OF REMOVING SEDIMENT
3. ADJUST DAMAGES FOR NORMAL MAINTENANCE
4. IDENTIFY SOURCE OF DAMAGES SO EFFECTS CAN
BE DETERMINED FOR DIFFERENT ALTERNATIVES

D. ESTIMATE SEDIMENT DAMAGES TO M&I WATER SUPPLIES
1. CONSIDER COST OF REMOVAL, DAMAGE TO
EQUIPMENT, AND ADDITIONAL TREATMENT COSTS
FROM SEDIMENT FROM PROJECT AREA.

E. ESTIMATE SEDIMENT DAMAGE AFFECTING PRODUCT
QUALITY.
F. INVENTORY EACH OF THE FOLLOWING ITEMS OCCURRING
IN THE PROBLEM AREA:
1. MILES OF FENCE
2. ACRES OF DEBRIS
3. ACRES OF WOODED SEED
4. NUMBER, LOCATION, AND ELEVATIONS OF FARM
STEADS

5. AMOUNTS OF FARM MACHINERY, LIVESTOCK, CORRALS, IRRIGATION EQUIPMENT
A. CONSIDER INCREASED REPAIRS
B. CONSIDER REDUCED LIFE OF MACHINES

6. LENGTHS OF FARM ACCESS ROADS, FIELD ROADS, DIVERSES, AND LEVEES
7. NUMBERS AND LOCATION OF FARM ROAD CULVERTS, BRIDGES, AND OTHER SUCH IMPROVEMENTS

8. HIGH-WATER MARKS

9. TABULATION OF DAMAGE OCCURRING IN EACH REACH

REDUCED COST OF REMOVAL, INCREASED INCOME, INCREASED LIFE OF DAM, OR REDUCED COSTS
CALCULATE NET INCOME LOSS TO LAND BY TIME FRAME BY SOILS TYPE.
A. CONSIDER TEMPORARY MEASURES AND RELOCATION
B. CALCULATE VOIDING DAMAGES
C. CALCULATE DEPRECIATED VALUE OF AREAS NEAR THE GULLIES

METHOD: EHWR 621-D

DISPLAY CHANGE IN NET INCOME TO LAND FOR EACH ALTERNATIVE.

DETERMINE ADVERSE EFFECTS OF STREAMBANK EROSION. CONSIDER TEMPORARY MEASURES AND RELOCATION
METHOD: EHWR 621-D

DISPLAY CHANGE IN NET INCOME TO LAND FOR EACH ALTERNATIVE.

DETERMINE ADVERSE EFFECTS OF STREAMBANK INCISION.
METHOD: EHWR 621-D

DISPLAY CHANGE IN NET INCOME TO LAND FOR EACH ALTERNATIVE.

THIS IS FOR BENEFITS DERIVED FROM A CHANGE IN LAND USE OR CROPPING PATTERN. USE THE FOLLOWING WORK ITEMS TO CALCULATE INTENSIFICATION BENEFITS.

A. USE THE WORK ITEMS FOR INTENSIFICATION DESCRIBED UNDER URBAN FLOODING.

A. GATHER PHYSICAL, ECONOMIC, AND SOCIAL DATA NEEDED TO EVALUATE THE BENEFITS.
1. AGRONOMIC POTENTIAL OF THE LAND.
2. TYPE OF FARMING.
3. WIDTH AND TOPOGRAPHY OF AREA TO BENEFIT.
4. NEED FOR RESULTING PRODUCTION.

5. DEGREE OF PROTECTION OR SERVICE OFFERED BY PLANNED IMPROVEMENTS.
6. LAND USE CHANGE THAT THIS PROTECTION WILL ALLOW.
7. WILLINGNESS AND ABILITY OF PRODUCERS TO DEVELOP THE LAND.
8. AVAILABILITY OF MARKETS FOR PRODUCTS.
9. RESTRICTIONS OF ACREAGE ALLOTMENTS, MARKETING QUOTAS, OR ZONING.

B. EVALUATE THE PRODUCTIVITY AND RESPONSIVENESS OF THE LAND TO THE PRODUCTION INPUTS.
METHOD: EHWR 621-A

C. USE THE WORK ITEMS FOR INTENSIFICATION
ADJUST THE CALCULATED DAMAGES TO ACCOUNT FOR THE FOLLOWING SITUATIONS WHEN THEY APPLY.
A. ADJUST BENEFITS TO ACCOUNT FOR TIME REQUIRED TO CLEAR LAND OR PROPERLY PREPARE THE LAND
   METHOD: EMAP 621-A
B. ADJUST BENEFITS TO ACCOUNT FOR DELAYS STEMMING
   FROM MANAGEMENT AND FINANCIAL LIMITATIONS.
   METHOD: EMAP 621-A
HER VALUED GOODS WILL TAKE PLACE WITH PROJECT AND WILL BE SUBJECTED TO SOME REMAINING FLOODING, BENEFITS FROM THE PROJECT NEED TO BE REDUCED.

METHOD: EHWR 621-A

D. PARTICIPATION BY PRODUCERS WILL NOT BE 100 PERCENT AND BENEFITS WILL NEED TO BE ADJUSTED.

EVALUATE POSSIBLE OFFSITE DAMAGES THAT COULD BE ALLEViated WITH PROJECT ACTION. SUCH OFFSITE DAMAGES COULD INCLUDE DAMAGES TO: OYSTER BEDS, RECREATION, NAVIGATION, POWER GENERATION, FISHING, ETC.

ESTIMATES ARE MADE BY PLANNING STAFF BASED ON RECENT INSTALLATION EXPERIENCE.
A. CONSTRUCTION OR INSTALLATION COST
NHSM 501.30H, EHWR 630.01
B. ENGINEERING OR TECHNICAL SERVICES
NHSM 501.30E
C. LAND RIGHTS - NHSM 501.30G, EHWR 629
D. WATER RIGHTS - NHSM 501.30F
E. PROJECT ADMINISTRATION COST - NHSM 501.30J
F. OPERATION, MAINTENANCE AND REPLACEMENT - ESTI-
MATES MADE BY PLANNING STAFF AND LOCAL SPONSORS BASED ON SIMULATED OR RECENT O&M EXPERIENCES.
NHSM 501.30L, EHWR 630.01B
G. ASSOCIATED COST - NHSM 501.30M, EHWR 630.02
H. EXTERNAL DISCONOMIES - NHSM 501.30O, EHWR 630.01C
I. NONPROJECT COST - NHSM 501.30P

DO INCREMENTAL ANALYSIS TO ADD MEASURES IN ORDER OF GREATEST RETURN PER DOLLAR OF COST. DESIGNATE NED ALTERNATIVE; DOCUMENT IN TABULAR FORM.

ADD ADDITIONAL MEASURES OR PRACTICES IF NECESSARY TO PROTECT THE LONG TERM PRODUCTIVITY OF THE RESOURCE AT THE LEAST COST.
METHOD: EHWR 622.02

EMPLOYMENT BENEFITS CAN BE CLAIMED IN AREAS OF UNEMPLOYED OR UNDEREMPLOYED LABOR.
METHOD: EHWR 627

WHERE NECESSARY DEVELOP A SOCIAL WELL BEING ACCOUNT TO DISPLAY PROJECT EFFECTS RELEVANT TO DECISION-
MAKERS. USE CENSUS DATA AND OTHER APPROPRIATE
A. Prepare, as assigned, economic portions of the plan, EIS, Env. Assess. Summary, etc.
B. Assemble all relevant economic documentation in notebooks (preferably one) suitable for review. Refer to Organization of Documentation Checklist in this guide.
C. Participate in resolving state and NTC comments.