

AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
THE CITY AND COUNTY OF DENVER
FOR THE
ADAMS AND DENVER COUNTIES, CO FEASIBILITY STUDY

THIS AGREEMENT is entered into this _____ day of _____, 2013 by and between the Department of the Army (hereinafter the “Government”), represented by the U.S. Army Engineer, Omaha District and the City and County of Denver (hereinafter “the City”), represented by the Mayor.

WITNESSETH, THAT:

WHEREAS, by resolution dated September 24, 2008, the Committee on Transportation and Infrastructure, U.S. House of Representatives has requested a review of the report of the Chief of Engineers on the South Platte River and Tributaries, Colorado, Wyoming and Nebraska, published as House Document 669, 80th Congress, and other related reports to determine whether any modifications of the recommendations contained therein are advisable at the present time in the interest of flood damage reduction, floodplain management, water supply, water quality improvement, recreation, environmental restoration, watershed management, and other allied purposes, in Adams and Denver Counties, Colorado;

WHEREAS, the U.S. Army Corps of Engineers conducted a reconnaissance study of environmental restoration and flood damage reduction, pursuant to such request and determined that further planning in the nature of a feasibility study for environmental restoration and flood damage reduction should proceed;

WHEREAS, the Government and the City desire to enter into an agreement (hereinafter the “Agreement”) to conduct such feasibility study (hereinafter the “*Study*” as defined in Article I.A. of this Agreement);

WHEREAS, Section 105(a) of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2215(a)), specifies the cost-sharing requirements applicable to the *Study*;

WHEREAS, the City desires to provide in-kind contributions (hereinafter the “*in-kind contributions*” as defined in Article I.K. of this Agreement) that are necessary to prepare the feasibility report and to receive credit for such contributions toward the amount of its required contribution for the *Study*;

WHEREAS, the City may provide up to 100 percent of its required contribution for the *Study* as *in-kind contributions*;

WHEREAS, the Government and City have the full authority and capability to perform as hereinafter set forth and intend to cooperate in cost-sharing and financing of the *Study* in accordance with the terms of this Agreement; and

WHEREAS, the Government and the City, in connection with this Agreement, desire to foster a partnering strategy and a working relationship between the Government and the City through a mutually developed formal strategy of commitment and communication embodied herein, which creates an environment where trust and teamwork prevent disputes, foster a cooperative bond between the Government and the City, and facilitate the successful *Study*.

NOW, THEREFORE, the Government and the City agree as follows:

ARTICLE I – DEFINITIONS

A. The term “*Study*” shall mean the activities and tasks required to identify and evaluate alternatives and the preparation of a decision document that, when appropriate, recommends a coordinated and implementable solution for flood risk management and environmental restoration at Denver County, CO, as generally described in the Section 905(b) Preliminary Analysis, Reconnaissance Study Addendum for Denver County, Denver and Adams Counties Study, South Platte River and Tributaries, approved by the Director of Programs, Northwestern Division on March 17, 2010. The term includes *in-kind contributions* described in paragraph K. of this Article.

B. The term “*total study costs*” shall mean the sum of all costs incurred by the City and the Government in accordance with the terms of this Agreement directly related to performance of the *Study*. Subject to the provisions of this Agreement, the term shall include, but is not necessarily limited to: the Government’s costs of plan formulation and evaluation, including applicable economic, engineering, real estate, and environmental analyses; the Government’s costs of preparation of the decision document for the *Study*; the costs of *in-kind contributions* determined in accordance with Article II.E. of this Agreement; the Government’s costs of Agency Technical Review and other review processes required by the Government; the Government’s costs of Independent External Peer Review, if required, except for the costs of any contract for an Independent External Peer Review panel; the Government’s supervision and administration costs; the City’s and the Government’s costs of participation in the Study Coordination Team in accordance with Article III of this Agreement; the Government’s costs of contract dispute settlements or awards; and the City’s and the Government’s costs of audit in accordance with Article VI.B. and Article VI.C. of this Agreement. The term does not include any costs of dispute resolution under Article V of this Agreement; any costs incurred as part of reconnaissance studies; any costs incurred as part of feasibility studies under any other agreement; the City’s costs of negotiating this Agreement; any costs of a contract for an Independent External Peer Review panel; or any costs of negotiating a design agreement for a project or separable element thereof.

C. The term “*study costs to be shared during the period of study*” shall mean the difference between *total study costs* and *excess study costs*.

D. The term “*excess study costs*” shall mean the difference between the most recent estimate of *total study costs* and the amount of *total study costs* specified in Article IV.A.1. of this Agreement, excluding any increase in *total study costs* that resulted from a change in Federal law or a change in the scope of the *Study* requested by the City or any increase in *total study costs* that otherwise was agreed upon in writing by the parties.

E. The term “*period of study*” shall mean the time from the effective date of this Agreement to the date that:

1. the Assistant Secretary of the Army (Civil Works) submits the feasibility report to the Office of Management and Budget (OMB) for review for consistency with policies and programs of the Administration, if the project or project modification that is the subject of this *Study* will require further Congressional authorization to implement the recommended plan; or

2. the decision document for the study is duly approved by the Government, if the project or project modification that is the subject of this *Study* will not require further Congressional authorization to implement the recommended plan; or

3. the date that this Agreement is terminated in accordance with Article IX of this Agreement.

F. The term “*financial obligations to be shared during the period of study*” shall mean the financial obligations of the Government and the costs for *in-kind contributions*, as determined by the Government, that result or would result in costs that are or would be included in *study costs to be shared during the period of study*.

G. The term “*non-Federal proportionate share*” shall mean the ratio of the sum of the costs included in *study costs to be shared during the period of study* for *in-kind contributions*, as determined by the Government, and the City’s total contribution of funds required by Article II.C.1.b. of this Agreement to *financial obligations to be shared during the period of study*, as projected by the Government.

H. The term “*Federal program funds*” shall mean funds provided by a Federal agency, other than the Department of the Army, plus any non-Federal contribution required as a matching share therefor.

I. The term “*fiscal year*” shall mean one year beginning on October 1 and ending on September 30.

J. The term “*PMP*” shall mean the project management plan, and any modifications

thereto, developed by the Government, and agreed to by the City, that specifies the scope, cost, and schedule for *Study* activities and guides the performance of the *Study* through the *period of study*.

K. The term “*in-kind contributions*” shall mean planning, supervision and administration, services, materials, supplies, and other in-kind services that are performed or provided by the City after the effective date of this Agreement in accordance with the *PMP* and that are necessary for performance of the *Study*.

ARTICLE II - OBLIGATIONS OF THE GOVERNMENT AND THE CITY

A. The Government, subject to receiving funds appropriated by the Congress of the United States (hereinafter the “Congress”) and using those funds and funds provided by the City, expeditiously shall conduct the *Study*, applying those procedures usually applied to Federal projects, in accordance with Federal laws, regulations, and policies. The City expeditiously shall perform or provide *in-kind contributions* in accordance with applicable Federal laws, regulations, and policies.

1. To the extent possible, the Government and the City shall conduct the *Study* in accordance with the *PMP*.

2. The Government shall afford the City the opportunity to review and comment on all products that are developed by contract or by Government personnel during the *period of study*. The Government shall consider in good faith the comments of the City, but the final approval of all *Study* products shall be exclusively within the control of the Government.

3. The Government shall afford the City the opportunity to review and comment on the solicitations for all Government contracts, including relevant scopes of work, prior to the Government’s issuance of such solicitations. To the extent possible, the Government shall afford the City the opportunity to review and comment on all proposed contract modifications, including change orders. In any instance where providing the City with notification of a contract modification is not possible prior to execution of the contract modification, the Government shall provide such notification in writing at the earliest date possible. To the extent possible, the Government also shall afford the City the opportunity to review and comment on all contract claims prior to resolution thereof. The Government shall consider in good faith the comments of the City, but the contents of solicitations, award of contracts or commencement of work on the *Study* using the Government’s own forces, execution of contract modifications, resolution of contract claims, and performance of all work on the *Study*, except for *in-kind contributions*, shall be exclusively within the control of the Government.

4. At the time the U.S. Army Engineer, Omaha District (hereinafter the “District Engineer”) furnishes the contractor with the Government’s Written Notice of Acceptance of

Completed Work for each contract awarded by the Government for the *Study*, the District Engineer shall furnish a copy thereof to the City.

5. The City shall afford the Government the opportunity to review and comment on the solicitations for all contracts for the *in-kind contributions*, including relevant scopes of work, prior to the City's issuance of such solicitations. To the extent possible, the City shall afford the Government the opportunity to review and comment on all proposed contract modifications, including change orders. In any instance where providing the Government with notification of a contract modification is not possible prior to execution of the contract modification, the City shall provide such notification in writing at the earliest date possible. To the extent possible, the City also shall afford the Government the opportunity to review and comment on all contract claims prior to resolution thereof. The City shall consider in good faith the comments of the Government but the contents of solicitations, award of contracts or commencement of work on the *Study* using the City's own forces, execution of contract modifications, resolution of contract claims, and performance of all work on the *in-kind contributions* shall be exclusively within the control of the City.

6. At the time the City furnishes a contractor with a notice of acceptance of completed work for each contract awarded by the City for the *in-kind contributions*, the City shall furnish a copy thereof to the Government.

B. The Government shall allocate *total study costs* between *study costs to be shared during the period of study* and *excess study costs*.

C. The City shall contribute 50 percent of *study costs to be shared during the period of study* in accordance with the provisions of this paragraph.

1. The City shall provide a contribution of funds as determined below:

a. If the Government projects at any time that the collective value of the City's contributions under Article III and Article VI of this Agreement will be less than the City's required share of 50 percent of *study costs to be shared during the period of study*, the Government shall determine the amount of funds that would be necessary to meet the City's required share prior to any consideration of the credit the Government projects will be afforded for *in-kind contributions* pursuant to paragraph F. of this Article.

b. The City shall provide funds in the amount determined by this paragraph in accordance with Article IV.B. of this Agreement. To determine the contribution of funds the City shall provide, the Government shall reduce the amount determined in accordance with paragraph C.1.a. of this Article by the amount of credit the Government projects will be afforded for *in-kind contributions* pursuant to paragraph F. of this Article.

2. The Government, subject to the availability of funds and as limited by paragraph G. of this Article, shall refund or reimburse to the City any contributions in excess of 50 percent of

study costs to be shared during the period of study if the Government determines at any time that the collective value of the following has exceeded 50 percent of *study costs to be shared during the period of study*: (a) the City's contribution of funds required by paragraph C.1.b. of this Article; (b) the amount of credit to be afforded for *in-kind contributions* pursuant to paragraph F. of this Article; and (c) the value of the City's contributions under Article III and Article VI of this Agreement.

D. The City shall contribute 50 percent of *excess study costs* in accordance with the provisions of this paragraph.

1. The Government shall determine the amount of funds that would be necessary to meet the City's required share prior to any consideration of the credit the Government projects will be afforded for *in-kind contributions* pursuant to paragraph F. of this Article.

2. The City shall provide funds in the amount determined by this paragraph in accordance with Article IV.C.3. of this Agreement. To determine the contribution of funds the City shall provide, the Government shall reduce the amount determined in accordance with paragraph D.1. of this Article by the amount of credit the Government projects will be afforded for *in-kind contributions* pursuant to paragraph F. of this Article.

E. The Government shall determine and include in *total study costs* any costs incurred by the City for *in-kind contributions*, subject to the conditions and limitations of this paragraph. The City in a timely manner shall provide the Government with such documents as are sufficient to enable the Government to determine the amount of costs to be included in *total study costs* for *in-kind contributions*.

1. Acceptance by the Government of *in-kind contributions* shall be subject to a review by the Government to verify that all economic, engineering, real estate, and environmental analyses or other items performed or provided as *in-kind contributions* are accomplished in a satisfactory manner and in accordance with applicable Federal laws, regulations, and policies, and to verify that all analyses, services, materials, supplies, and other in-kind services provided as *in-kind contributions* are necessary for the *Study*.

2. The City's costs for *in-kind contributions* that may be eligible for inclusion in *total study costs* pursuant to this Agreement shall be subject to an audit in accordance with Article VI.C. of this Agreement to determine the reasonableness, allocability, and allowability of such costs.

3. The City's costs for *in-kind contributions* that may be eligible for inclusion in *total study costs* pursuant to this Agreement are not subject to interest charges, nor are they subject to adjustment to reflect changes in price levels between the time the *in-kind contributions* are provided and the time the costs are included in *total study costs*.

4. The Government shall not include in *total study costs* any costs for *in-kind*

contributions paid by the City using *Federal program funds* unless the Federal agency providing the funds verifies in writing that such funds are authorized to be used to carry out the *Study*.

5. The Government shall not include in *total study costs* any costs for *in-kind contributions* in excess of the Government's estimate of the costs of the *in-kind contributions* if the services, materials, supplies, and other in-kind services had been provided by the Government.

F. The Government, in accordance with this paragraph, shall afford credit toward the amount of funds determined in accordance with paragraph C.1.a. and paragraph D.1. of this Article for the costs of *in-kind contributions* determined in accordance with paragraph E. of this Article. The credit for *in-kind contributions* first shall be afforded toward the amount of funds determined in accordance with paragraph C.1.a. of this Article. If the amount of credit afforded exceeds the amount of funds determined in accordance with paragraph C.1.a. of this Article, the remaining portion of credit to be afforded shall be afforded toward the amount of funds determined in accordance with paragraph D.1. of this Article. However, the maximum amount of credit that can be afforded for *in-kind contributions* shall not exceed the least of the following amounts as determined by the Government: the amount of funds determined in accordance with paragraph C.1.a. and paragraph D.1. of this Article; the costs of *in-kind contributions* determined in accordance with paragraph E. of this Article; or 50 percent of *total study costs*.

G. Notwithstanding any other provision of this Agreement, the City shall not be entitled to reimbursement of any costs of *in-kind contributions* determined in accordance with paragraph E. of this Article and included in *total study costs* that exceed the amount of credit afforded for *in-kind contributions* determined in accordance with paragraph F. of this Article and the City shall be responsible for 100 percent of all costs of *in-kind contributions* included in *total study costs* that exceed the amount of credit afforded.

H. Upon conclusion of the *period of study*, the Government shall conduct an accounting, in accordance with Article IV.C. of this Agreement, and furnish the results to the City.

I. The City shall not use *Federal program funds* to meet any of its obligations for the *Study* under this Agreement unless the Federal agency providing the funds verifies in writing that such funds are authorized to be used to carry out the *Study*.

J. This Agreement shall not be construed as obligating either party to implement a project. Whether the Government supports a project authorization, if authorization is required, and budgets for implementation of the project depends upon, among other things, the outcome of the *Study* and whether the proposed solution is consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and with the budget priorities of the Administration.

ARTICLE III - STUDY COORDINATION TEAM

A. To provide for consistent and effective communication, the City and the Government, not later than 30 calendar days after the effective date of this Agreement, shall appoint named senior representatives to a Study Coordination Team. Thereafter, the Study Coordination Team shall meet regularly until the end of the *period of study*. The Government's Project Manager and a counterpart named by the City shall co-chair the Study Coordination Team.

B. The Government's Project Manager and the City's counterpart shall keep the Study Coordination Team informed of the progress of the *Study* and of significant pending issues and actions, and shall seek the views of the Study Coordination Team on matters that the Study Coordination Team generally oversees.

C. Until the end of the *period of study*, the Study Coordination Team shall generally oversee the *Study*, including matters related to: plan formulation and evaluation, including applicable economic, engineering, real estate, and environmental analyses; scheduling of reports and work products; independent technical review and other review processes required by the Government; external peer review, if required; completion of all necessary environmental coordination and documentation; contract awards and modifications; contract costs; the Government's cost projections; the performance of, scheduling, and determining the value of *in-kind contributions*; determination of anticipated future requirements for real property and relocation requirements and performance of operation, maintenance, repair, rehabilitation, and replacement of the proposed project including anticipated requirements for permits; and other matters related to the *Study*. This oversight of the *Study* shall be consistent with the *PMP*.

D. The Study Coordination Team may make recommendations to the District Engineer on matters related to the *Study* that the Study Coordination Team generally oversees, including suggestions to avoid potential sources of dispute. The Government in good faith shall consider the recommendations of the Study Coordination Team. The Government, having the legal authority and responsibility for performance of the *Study* has the discretion to accept or reject, in whole or in part, the Study Coordination Team's recommendations.

E. The City's costs of participation in the Study Coordination Team shall be included in *total study costs* and shared in accordance with the provisions of this Agreement, subject to an audit in accordance with Article IV.C. of this Agreement to determine reasonableness, allocability, and allowability of such costs. The Government's costs of participation in the Study Coordination Team shall be included in *total study costs* and shared in accordance with the provisions of this Agreement.

ARTICLE IV - METHOD OF PAYMENT

A. In accordance with the provisions of this paragraph, the Government shall maintain

current records and provide to the City current projections of costs, financial obligations, the contributions provided by the parties, the costs included in *total study costs* for *in-kind contributions* determined in accordance with Article II.E. of this Agreement, and the credit to be afforded for *in-kind contributions* pursuant to Article II.F. of this Agreement.

1. As of the effective date of this Agreement, *total study costs* are projected to be \$3,000,000; the value of the City's contributions under Article III and Article VI of this Agreement is projected to be \$30,000; the amount of funds determined in accordance with Article II.C.1.a. of this Agreement is projected to be \$1,430,000; the costs included in *total study costs* for *in-kind contributions* determined in accordance with Article II.E. of this Agreement are projected to be \$80,000; the credit to be afforded for *in-kind contributions* pursuant to Article II.F. of this Agreement is projected to be \$80,000; the City's contribution of funds required by Article II.C.1.b. of this Agreement is projected to be \$1,320,000; and the *non-Federal proportionate share* is projected to be 47 percent. These amounts and percentage are estimates subject to adjustment by the Government, after consultation with the City, and are not to be construed as the total financial responsibilities of the Government and the City.

2. By January 15, 2014 and by each quarterly anniversary thereof until the conclusion of the *period of study* and resolution of all relevant claims and appeals, the Government shall provide the City with a report setting forth all contributions provided to date and the current projections of the following: *total study costs*; *study costs to be shared during the period of study*; the value of the City's contributions under Article III and Article VI of this Agreement; the amount of funds determined in accordance with Article II.C.1.a. of this Agreement; the City's contribution of funds required by Article II.C.1.b. of this Agreement; *excess study costs*; the amount of funds determined in accordance with Article II.D.1. of this Agreement; the City's contribution of funds required by Article II.D.2. of this Agreement; the costs included in *total study costs* for *in-kind contributions* determined in accordance with Article II.E. of this Agreement; the credit to be afforded for *in-kind contributions* pursuant to Article II.F. of this Agreement; the total contribution of funds required from the City for the upcoming contract and upcoming *fiscal year*; and the *non-Federal proportionate share*.

B. The City shall provide the contribution of funds required by Article II.C.1.b. of this Agreement in accordance with the provisions of this paragraph.

1. Not less than 7 calendar days after the effective date of this Agreement, the Government shall notify the City in writing of the funds the Government determines to be required from the City to meet: (a) the *non-Federal proportionate share* of *financial obligations to be shared during the period of study* incurred prior to the commencement of the *period of study*; (b) the projected *non-Federal proportionate share* of *financial obligations to be shared during the period of study* to be incurred for such contract; and (c) the projected *non-Federal proportionate share* of *financial obligations to be shared during the period of study* using the Government's own forces through the first fiscal year. Within 30 calendar days of receipt of such notice, the City shall provide the Government with the full amount of such required funds by delivering a check payable to "FAO, USAED, Omaha District, G6" to the District Engineer,

or verifying to the satisfaction of the Government that the City has deposited such required funds in an escrow or other account acceptable to the Government, with interest accruing to the City, or by presenting the Government with an irrevocable letter of credit acceptable to the Government for such required funds, or by providing an Electronic Funds Transfer of such required funds in accordance with procedures established by the Government.

2. Thereafter, until the work on the *Study* is complete, the Government shall notify the City in writing of the funds the Government determines to be required from the City, and the City shall provide such funds in accordance with the provisions of this paragraph.

a. The Government shall notify the City in writing, no later than 60 calendar days prior to the scheduled date for issuance of the solicitation for each remaining contract for work on the *Study*, of the funds the Government determines to be required from the City to meet the projected *non-Federal proportionate share of financial obligations to be shared during the period of study* to be incurred for such contract. No later than such scheduled date, the City shall make the full amount of such required funds available to the Government through any of the payment mechanisms specified in paragraph B.1. of this Article.

b. The Government shall notify the City in writing, no later than 60 calendar days prior to the beginning of each fiscal year in which the Government projects that it will make *financial obligations to be shared during the period of study* using the Government's own forces, of the funds the Government determines to be required from the City to meet the projected *non-Federal proportionate share of financial obligations to be shared during the period of study* using the Government's own forces for that fiscal year. No later than 30 calendar days prior to the beginning of that *fiscal year*, the City shall make the full amount of such required funds for that fiscal year available to the Government through any of the payment mechanisms specified in paragraph B.1. of this Article.

3. The Government shall draw from the funds provided by the City such sums as the Government deems necessary, when considered with any credit the Government projects will be afforded for *in-kind contributions* pursuant to Article II.F. of this Agreement, to cover: (a) the *non-Federal proportionate share of financial obligations to be shared during the period of study* incurred prior to the commencement of the *period of study*; and (b) the *non-Federal proportionate share of financial obligations to be shared during the period of study* as *financial obligations to be shared during the period of study* are incurred. If at any time the Government determines that additional funds will be needed from the City to cover the City's share of such financial obligations for the current contract or to cover the City's share of such financial obligations for work performed using the Government's own forces in the current *fiscal year*, the Government shall notify the City in writing of the additional funds required and provide an explanation of why additional funds are required. Within 60 calendar days from receipt of such notice, the City shall provide the Government with the full amount of such additional required funds through any of the payment mechanisms specified in paragraph B.1. of this Article.

C. Upon conclusion of the *period of study* and resolution of all relevant claims and

appeals, the Government shall conduct a final accounting and furnish the City with written notice of the results of such final accounting. If outstanding relevant claims and appeals prevent a final accounting from being conducted in a timely manner, the Government shall conduct an interim accounting and furnish the City with written notice of the results of such interim accounting. Once all outstanding relevant claims and appeals are resolved, the Government shall amend the interim accounting to complete the final accounting and furnish the City with written notice of the results of such final accounting. The interim or final accounting, as applicable, shall determine *total study costs*, *study costs to be shared during the period of study*, and *excess study costs*. In addition, the interim or final accounting, as applicable, shall determine each party's required share thereof, and each party's total contributions thereto as of the date of such accounting.

1. Should the interim or final accounting, as applicable, show that the City's total required share of *study costs to be shared during the period of study* exceeds the City's total contributions provided thereto, the City, no later than 90 calendar days after receipt of written notice from the Government, shall make a payment to the Government in an amount equal to the difference by delivering a check payable to "FAO, USAED, Omaha District (G6)" to the District Engineer or by providing an Electronic Funds Transfer in accordance with procedures established by the Government.

2. Should the interim or final accounting, as applicable, show that the total contributions provided by the City for *study costs to be shared during the period of study* exceed the City's total required share thereof, the Government, subject to the availability of funds and as limited by Article II.G. of this Agreement, shall refund or reimburse the excess amount to the City within 90 calendar days of the date of completion of such accounting. In the event the City is due a refund or reimbursement and funds are not available to refund or reimburse the excess amount to the City, the Government shall seek such appropriations as are necessary to make the refund or reimbursement.

3. Should the final accounting show that the City's total required share of *excess study costs* exceeds the City's total contributions provided thereto the City, within the applicable time frame described below, shall make a payment to the Government in an amount equal to the difference by delivering a check payable to "FAO, USAED, Omaha District (G6)" to the District Engineer or by providing an Electronic Funds Transfer in accordance with procedures established by the Government.

a. If the project or project modification that is the subject of this *Study* will require further Congressional authorization to implement the recommended plan and:

i. the project or project modification is authorized for construction – then the payment shall be made no later than the date on which a Project Partnership Agreement is entered into for the project or project modification; or

ii. the project or project modification is not authorized for

construction within 5 years after the date of the final Report of the Chief of Engineers concerning the project or project modification – then the payment shall be made no later than 5 years after the date of the final Report of the Chief of Engineers; or

iii. the *Study* is terminated and the project or project modification is not authorized for construction - then the payment shall be made no later than 2 years after such termination date.

b. If the project or project modification that is the subject of this *Study* will not require further Congressional authorization to implement the recommended plan, then the payment shall be made:

i. no later than the date on which a Project Partnership Agreement is entered into for the project or project modification; or

ii. no later than 5 years after the date the decision document is duly approved by the Government; or

iii. no later than 2 years after the date of the termination of the *Study*, whichever is earliest.

ARTICLE V - DISPUTE RESOLUTION

As a condition precedent to a party bringing any suit for breach of this Agreement, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to both parties. Each party shall pay an equal share of any costs for the services provided by such a third party as such costs are incurred. The existence of a dispute shall not excuse the parties from performance pursuant to this Agreement.

ARTICLE VI - MAINTENANCE OF RECORDS AND AUDIT

A. Not later than 60 calendar days after the effective date of this Agreement, the Government and the City shall develop procedures for keeping books, records, documents, or other evidence pertaining to costs and expenses incurred pursuant to this Agreement. These procedures shall incorporate, and apply as appropriate, the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 C.F.R. Section 33.20. The Government and the City shall maintain such books, records, documents, or other evidence in accordance with these procedures and for a minimum of three years after completion of the accounting for which such books, records,

documents, or other evidence were required. To the extent permitted under applicable Federal laws and regulations, the Government and the City shall each allow the other to inspect such books, records, documents, or other evidence.

B. In accordance with 32 C.F.R. Section 33.26, the City is responsible for complying with the Single Audit Act Amendments of 1996 (31 U.S.C. 7501-7507), as implemented by OMB Circular No. A-133 and Department of Defense Directive 7600.10. Upon request of the City and to the extent permitted under applicable Federal laws and regulations, the Government shall provide to the City and independent auditors any information necessary to enable an audit of the City's activities under this Agreement. The costs of any non-Federal audits performed in accordance with this paragraph shall be allocated in accordance with the provisions of OMB Circulars A-87 and A-133, and such costs as are allocated to the *Study* shall be included in *total study costs* and shared in accordance with the provisions of this Agreement.

C. In accordance with 31 U.S.C. 7503, the Government may conduct audits in addition to any audit that the City is required to conduct under the Single Audit Act Amendments of 1996. Any such Government audits shall be conducted in accordance with Government Auditing Standards and the cost principles in OMB Circular A-87 and other applicable cost principles and regulations. The costs of Government audits performed in accordance with this paragraph shall be included in *total study costs* and shared in accordance with the provisions of this Agreement.

ARTICLE VII - FEDERAL AND STATE LAWS

In the exercise of their respective rights and obligations under this Agreement, the City and the Government shall comply with all applicable Federal and State laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d) and Department of Defense Directive 5500.11 issued pursuant thereto and Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army".

ARTICLE VIII - RELATIONSHIP OF PARTIES

A. In the exercise of their respective rights and obligations under this Agreement, the Government and the City each act in an independent capacity, and neither is to be considered the officer, agent, or employee of the other.

B. In the exercise of its rights and obligations under this Agreement, neither party shall provide, without the consent of the other party, any contractor with a release that waives or purports to waive any rights the other party may have to seek relief or redress against that contractor either pursuant to any cause of action that the other party may have or for violation of any law.

ARTICLE IX - TERMINATION OR SUSPENSION

A. Prior to conclusion of the *period of study*, upon 30 calendar days written notice to the other party, either party may elect without penalty to terminate this Agreement or to suspend future performance under this Agreement. In the event that either party elects to suspend future performance under this Agreement pursuant to this paragraph, such suspension shall remain in effect until either the Government or the City elects to terminate this Agreement.

B. If at any time the City fails to fulfill its obligations under this Agreement, the Assistant Secretary of the Army (Civil Works) shall terminate this Agreement or suspend future performance under this Agreement unless the Assistant Secretary of the Army (Civil Works) determines that continuation of performance of the *Study* is in the interest of the United States or is necessary in order to satisfy agreements with any other non-Federal interests in connection with the *Study*.

C. In the event the Government projects that the amount of Federal funds the Government will make available to the *Study* through the then-current *fiscal year*, or the amount of Federal funds the Government will make available for the *Study* through the upcoming *fiscal year*, is not sufficient to meet the Federal share of *total study costs* that the Government projects to be incurred through the then-current or upcoming *fiscal year*, as applicable, the Government shall notify the City in writing of such insufficiency of funds and of the date the Government projects that the Federal funds that will have been made available to the *Study* will be exhausted. Upon the exhaustion of Federal funds made available by the Government to the *Study*, future performance under this Agreement shall be suspended. Such suspension shall remain in effect until such time that the Government notifies the City in writing that sufficient Federal funds are available to meet the Federal share of *total study costs* the Government projects to be incurred through the then-current or upcoming *fiscal year*, or the Government or the City elects to terminate this Agreement.

D. In the event that this Agreement is terminated pursuant to this Article, the parties shall conclude their activities relating to the *Study* and conduct an accounting in accordance with Article IV.C. of this Agreement. To provide for this eventuality, the Government may reserve a percentage of total Federal funds made available for the *Study* and an equal percentage of the total funds contributed by the City in accordance with Article II.C.1.b. of this Agreement as a contingency to pay costs of termination, including any costs of resolution of contract claims and contract modifications. Upon termination of this Agreement, all data and information generated as part of the *Study* shall be made available to the parties to the Agreement.

E. Any termination of this Agreement or suspension of future performance under this Agreement in accordance with this Article shall not relieve the parties of liability for any obligation previously incurred. Any delinquent payment owed by the City shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 per centum of the average bond equivalent rate of the 13 week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3

month period if the period of delinquency exceeds 3 months.

ARTICLE X - NOTICES

A. Any notice, request, demand, or other communication required or permitted to be given under this Agreement shall be deemed to have been duly given if in writing and delivered personally or sent by telegram or mailed by first-class, registered, or certified mail, as follows:

If to the City:

Assistant Director of Capital Projects Management
City and County of Denver
2000 W. 3rd Ave.
Denver, CO 80223

If to the Government:

District Engineer
U.S. Army Corps of Engineers, Omaha District
1616 Capitol Avenue
Omaha, NE 68102-9000

B. A party may change the address to which such communications are to be directed by giving written notice to the other party in the manner provided in this Article.

C. Any notice, request, demand, or other communication made pursuant to this Article shall be deemed to have been received by the addressee at the earlier of such time as it is actually received or seven calendar days after it is mailed.

ARTICLE XI - CONFIDENTIALITY

To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.

ARTICLE XII - THIRD PARTY RIGHTS, BENEFITS, OR LIABILITIES

Nothing in this Agreement is intended, nor may be construed, to create any rights, confer any benefits, or relieve any liability, of any kind whatsoever in any third person not party to this Agreement.

ARTICLE XIII - OBLIGATIONS OF FUTURE APPROPRIATIONS

A. Nothing herein shall constitute, nor be deemed to constitute, an obligation of future appropriations by the City Council of the City and County of Denver, where creating such an obligation would be inconsistent with Article X, Section 20 of the Constitution of the State of Colorado, and Section 7.2.2 of the Charter of the City and County of Denver.

B. The City intends to fulfill its obligations under this Agreement. The City shall include in its budget request or otherwise propose appropriations of funds in amounts sufficient to fulfill these obligations for that year, and shall use all reasonable and lawful means to secure those appropriations. The City reasonably believes that funds in amounts sufficient to fulfill these obligations lawfully can and will be appropriated and made available for this purpose. In the event funds are not appropriated in amounts sufficient to fulfill these obligations, the City shall use its best efforts to satisfy any requirements for payments or contributions of funds under this Agreement from any other source of funds legally available for this purpose. Further, if the City is unable to fulfill these obligations, the Government may exercise any legal rights it has to protect the Government's interests related to this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, which shall become effective upon the date it is signed by the District Engineer.

DEPARTMENT OF THE ARMY

CITY AND COUNTY OF DENVER

BY: _____
Joel R. Cross
Colonel, Corps of Engineers
District Engineer

BY: _____
Michael B. Hancock
Mayor

DATE: _____

DATE: _____

CERTIFICATE OF AUTHORITY

I, _____, do hereby certify that I am the principal legal officer of the City and County of Denver, that the City and County of Denver is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the Department of the Army and the City and County of Denver in connection with the feasibility study for the Adams and Denver Counties, CO Feasibility Study, and to pay damages, if necessary, in the event of the failure to perform in accordance with the terms of this Agreement and that the persons who have executed this Agreement on behalf of the City and County of Denver have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this
_____ day of _____ 2013.

Douglas J. Friednash
Attorney for the City and County of Denver

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Michael B. Hancock
Mayor

DATE: _____

Contract Control Number: PWADM-201312540-00

Contractor Name: U.S. Army Corps of Engineers

See attached for signatures

By: _____

Name: _____
(please print)

Title: _____
(please print)

ATTEST: [if required]

By: _____

Name: _____
(please print)

Title: _____
(please print)



Contract Control Number:

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of

SEAL

CITY AND COUNTY OF DENVER

ATTEST:

By _____

APPROVED AS TO FORM:

REGISTERED AND COUNTERSIGNED:

By _____

By _____

By _____





**US Army Corps
of Engineers**

PROJECT MANAGEMENT PLAN

DENVER COUNTY FEASIBILITY STUDY ADAMS AND DENVER COUNTIES AUTHORITY

Omaha District Corps of Engineers
August 2013

PROJECT MANAGEMENT PLAN
DENVER COUNTY FEASIBILITY STUDY
August 2013

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**PROJECT MANAGEMENT PLAN
DENVER COUNTY, COLORADO FEASIBILITY STUDY
ADAMS AND DENVER COUNTIES AUTHORITY**

1. Authority and Purposes

Original authority for the Adams County, CO, study was expanded by a resolution adopted 24 September, 2008, by the Committee on Transportation and Infrastructure, U.S. House of Representatives, Docket 2813, Adams and Denver Counties, Colorado, as follows:

Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That the Secretary of the Army review the report of the Chief of Engineers on the South Platte River and Tributaries, Colorado, Wyoming and Nebraska, published as House Document 669, 80th Congress, and other related reports to determine whether any modifications of the recommendations contained therein are advisable at the present time in the interest of flood damage reduction, floodplain management, water supply, water quality improvement, recreation, environmental restoration, watershed management, and other allied purposes, in Adams and Denver Counties, Colorado.

This expanded authority adds Denver County and slightly modifies the purposes contained in the original Adams County authority.

The Corps completed a General Investigation Study, “Reconnaissance Study Addendum for Denver County,” in January 2010. Its approval by Director, Programs, Northwestern Division, March 2010 allows commencement of the Feasibility Study phase.

The scope and purpose of this Feasibility study includes environmental restoration and flood risk management. These are Corps priority missions. Other related purposes, in the authority or otherwise, could be addressed to some degree. However, they could reduce ability of available funds, people, and schedule to achieve the main purposes, and may impacts prospects of project approval, budgeting, and funding. If such other purposes were added, the study would clearly identify their separate objectives, evaluations, authorities, and implementation funding, discrete from Corps objectives and implementation funding. No such other purposes are proposed at this time.

2. Responsible Parties and Stakeholders

The Omaha District Corps of Engineers is responsible for general study management. The City of Denver is sponsor and cost share partner with Omaha District. The City may enter official agreements with additional partners who will contribute portions of the study, perhaps including the Greenway Foundation, Urban Drainage and Flood Control District, Colorado Water Conservation Board, The Trust for Public Land, Denver Trout Unlimited, Great Outdoors Colorado, or Denver Water. Other stakeholders include

Colorado White Water Association, Colorado Department of Transportation, Colorado Parks and Wildlife, and others.

3. Cost Sharing, Work Sharing, and Work In Kind

The cost of the feasibility phase will be shared equally (50/50) between the Federal government and the non-Federal Sponsor, except that any required Independent External Peer Review (IEPR) would be at 100% federal cost. The Sponsor will help develop objectives and plans that meet study goals; conduct study components and provide results and findings; provide technical and local policy expertise for alternative analysis; facilitate community input into public involvement and NEPA scoping efforts; and help document a sound basis for decision makers to evaluate recommended action(s).

Denver and its partners may provide in-kind services toward Denver's share. The scope of work attached to this Project Management Plan (PMP) identifies preliminary in-kind components; these may be revised as needed to reflect changing scope and costs and to enable cost-share balancing. Determination of in-kind costs and credit will adhere to the Feasibility Cost Share Agreement. The Corps does not give credit for public domain information or work done for purposes other than the specific project.

4. Teams

The study will include a:

- Project Development Team
- Corps Vertical Team
- several Review Teams
- Study Coordination Team

Currently known membership in these teams is shown in Appendix A of this PMP.

A. Project Delivery Team (PDT)

The study PDT is a multidisciplinary group which develops and owns the study. The District is responsible for the study, and District staff form the heart of the PDT. The PDT also includes select staff and contractors of the sponsor and its partners.

B. Corps Vertical Team (VT)

The VT is to include representatives of the District, Division, and HQUSACE throughout project development. The VT is to engage and communicate continually with the PDT, including the sponsor, from the beginning of the study, to identify and resolve policy, technical, and legal issues early in the process. VT members include:

- District leaders
- Northwestern Division (Division, NWD) representatives.
- Review Lead representing the Office of Water Project Review (OWPR).
- Representative from the Ecosystem Planning Center of Expertise (PCX).
- Agency Technical Review (ATR) Lead.
- Regional Integration Team (RIT) representative at HQUSACE.

C. Review Teams

Review Teams will include representatives of the District, Division, ATR Team, Ecosystem Planning Center of Expertise, and HQUSACE. The District Quality Control (DQC, QC) team will include the PDT plus District reviewers external to the PDT. The Division is involved identifying the DQC team in the Review Plan, and may make adjustments to the DQC team as part of its Quality Assurance (QA) function. Team members and the ATR leader will be identified and/or confirmed at study initiation. The ATR leader will be appointed by the Ecosystem PCX, and the leader will identify and engage the ATR team (ATRT). Either the ATRT or the PCX will provide a subject matter expert for the initial charette. HQ's Office of Water Policy Review will assign a review manager and assemble the HQ policy review team. The Review Team will conduct independent technical, policy, and legal review.

In some large, complex, or controversial studies, elements of the study are subject to an Independent External Peer Review (IEPR). In this study, such review is not expected to be needed.

D. Study Coordination Team (SCT)

The SCT defined in the Feasibility Cost Share Agreement (FCSA) will include select senior representatives of the Corps and Denver, will be chaired by the Corps' and Denver's Project Managers (PMs), and will meet regularly throughout the study. The PMs will keep the SCT informed of progress and significant issues and actions, and will seek views of the SCT. The SCT will generally oversee study matters including plan formulation and evaluation, schedule, reviews, environmental compliance, costs, and work-in-kind, and may advise the District Engineer on study matters.

5. Study Area

The study includes the South Platte River, its tributaries, and select other water bodies and adjacent lands in the politically consolidated City and County of Denver (CCD, Denver); and potentially includes minor portions of Adams County of other adjoining counties. The City and County of Denver covers approximately 153 square miles which is only 0.15 percent of the State's area, but is densely populated with approximately 12 percent of the State's population; the total metropolitan area population (2.4 million) is approximately 50 percent of the State population. Population growth has been rapid. Denver County lies approximately 10 miles east of the Front Range of the Rocky Mountains. This heavily influences the County's weather. Denver has a semi-arid climate with all four seasons discernible. Average annual precipitation is 16 inches. The natural land cover is primarily short-grass prairie and semi-desert. Denver County is entirely within Colorado Congressional District 1.

For approximately 10 river miles the South Platte River flows north through Denver. Its tributaries in Denver include Cherry Creek, smaller Bear Creek, and still smaller Weir Gulch, Lakewood Gulch, Sanderson Gulch, Harvard Gulch, and West Harvard Gulch.



Figure 1. Denver County location

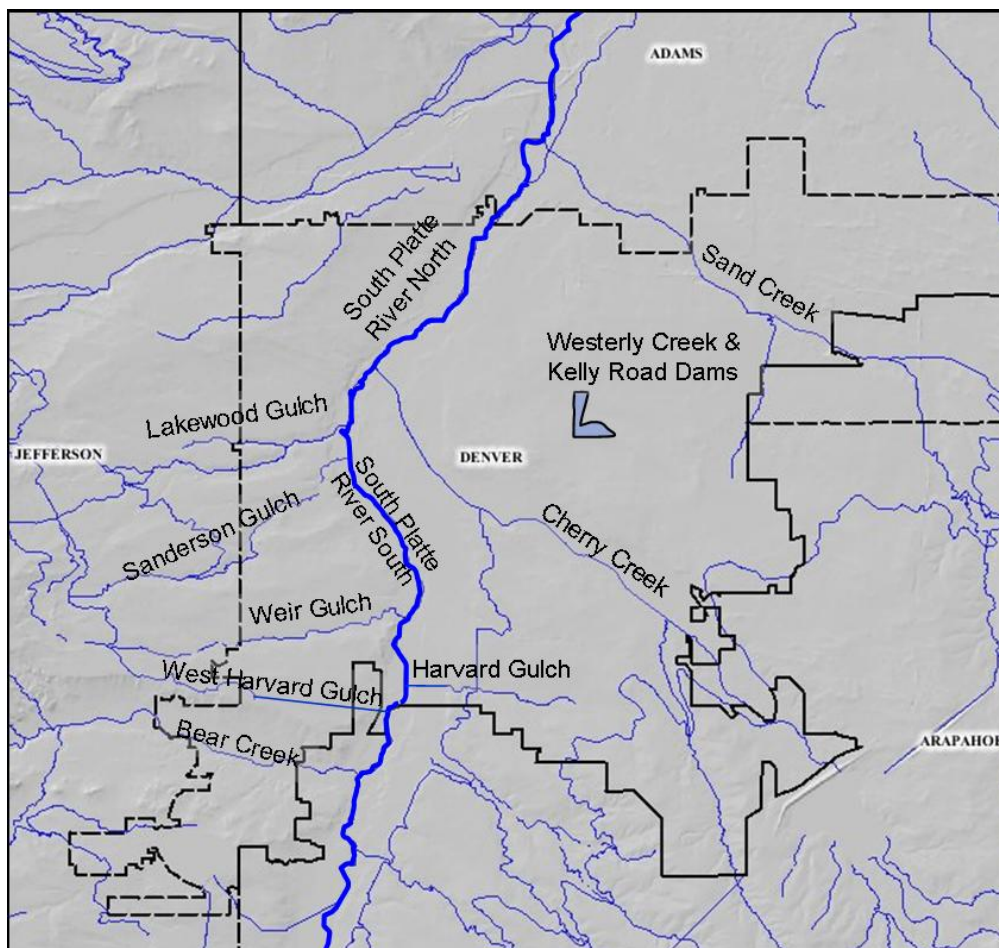


Figure 2. Denver's South Platte River and tributaries

The Corps' January 2010 Reconnaissance Study found greatest opportunity for habitat restoration in areas with abundant land and minimal development: Northside Park, Heron Pond, Overland Golf Course, Harvard Gulch and Harvard Gulch Park, Denver Water Board's property along Cherry Creek, Westerly Creek Dam, Kelly Road Dam, and Sand Creek culvert. However, the South Platte River main stem also offers riverine restoration opportunities, and is the focus of sponsor and partner interest.

6. Problems, Assumptions, and Constraints

A. South Platte River Problems

Upstream reservoirs, urbanization, wastewater discharges, and diversions all influence the aquatic habitat quality and riparian corridor. The river has been channelized and narrowed and is incised between high banks. The river margin is impinged by buildings, highways, streets, railroads, parking lots, and mown parks. The flows have been fully appropriated to agricultural, municipal, and industrial uses, such that most manipulation of water invokes water rights issues. As a result, multiple habitat problems exist.

- Flows are not reliable; in some locations the river is dry and/or intermittent at various times, especially in winter.
- Sinuosity is nearly nil and meandering does not occur. As a result, diversity of depths, velocity, substrate, and bank slopes is very limited.
- Aquatic species populations are limited, and have been invaded by exotic species.
- Water quality has declined because, for much of the year, the main inputs are urban runoff, drainage, and effluent.
- Surrounding grassland habitat is gone, so some wildlife species that historically used the stream are no longer supported.
- Riparian vegetation is scarce, is concentrated between high banks, and includes exotics.

B. Tributary Problems

Urbanization has also impacted tributaries in Denver, though to a somewhat lesser degree. Some stream segments are channelized and narrow. Most bank areas are impinged by development or consist of mowed parks. Some segments are confined within open concrete channels; some are buried in culverts and pipes. Resulting problems include:

- Reduced quantity of tributary drainages and associated vegetation.
- Surrounding grassland habitat is gone, so some wildlife species that historically used the tributaries are not supported.
- Vegetation is altered. Habitat value of existing vegetation is low.
- Exotic vegetation species dominate some areas.

C. Wetland Problems

Development has also changed the landscape for wetlands. Historic wetlands were drained and filled. New ponds created through mining of aggregate and borrow material have low wetland value. High quality wetlands are scarce. Existing wetlands usually

have limited vegetation, excessive depths, and coarse non-nutritive substrates. The native vegetation has been invaded by exotic species.

D. Assumptions and Constraints.

It is assumed that most of the present day stressors listed above will persist for the foreseeable future, and so will create constraints limiting ecosystem restoration opportunities. Historic hydrology will not be restored; this constrains improvements to those which can take advantage of likely future hydrology. Effluent and urban runoff will likely improve only incrementally in quality. This will constrain the potential for success in aquatic restoration. Major highways, busy streets, and infrastructure will not be removed. This greatly constrains options for restoring natural stream geomorphology, meandering flow and meander channel dynamics, and resulting habitat diversity. Grasslands will not be recovered, constraining opportunities to more mesic riparian habitat options. Wetland water will be difficult to supplement under State water law, by impoundments or new excavations, for lack of water rights. This will limit wetland options largely to the use of existing water sources.

7. Opportunities

Opportunities are represented in the fact that Denver interests have produced master plans for the area which include objectives for ecosystem improvements. The approval and publication of these plans improve prospects for environmentally sound redevelopments. Beyond planning, Denver and local stakeholders have collaborated to fund and implement several ecosystem restoration efforts on other segments of the river and tributaries, creating opportunities for connectivity and setting expectations that restoration work can be done.

A recent hydrologic opportunity arose in the reallocation of some Chatfield Reservoir storage. Retiming reservoir releases from that reallocated storage could improve water-dependent habitat downstream, by augmenting flow at critical low flow times.

8. Objectives.

A. Ecosystem Objectives

The broad Federal ecosystem restoration objective is to contribute to National Ecosystem Restoration (NER). For ecosystem restoration projects, the plan that reasonably maximizes ecosystem restoration benefits compared to costs, as determined through incremental cost analysis, consistent with the Federal objective, is the National Ecosystem Restoration (NER) Plan. National priority ecosystems (e.g. Everglades, Missouri River) consume most ecosystem restoration (ER) appropriations. To compete for remaining ER appropriations, and consistent with the March 2010 NWD memo approving the recon report, it is important that this study focus on federally significant resource objectives. The target resources will be:

- habitat for international migratory birds protected under the Migratory Bird Treaty Act
- wetlands protected under the Clean Water Act

- aquatic resources of the South Platte River and tributaries

Specific ecosystem objectives will not always be those that historically occurred, because the constraints described above preclude historic conditions. While the goal remains to optimize federally significant resources, the specific objectives may serve different federally significant resources than in pre-settlement times.

For example, for international migratory birds, rather than grassland type objectives, the objective will be woody riparian habitat. This will include reliable surface water presence most of the year, thick cover near the shore, dense hydrophytic shrubs in or near the stream, and abundant tree and shrub cover within the meander belt.

For wetlands, objectives will include at least seasonally standing water, herbaceous hydrophytic vegetation that is diverse in structure and complexity, little or no woody cover, and good water quality.

For river aquatic resources, the objectives will be to protect fishery habitat from critically low flows in winter and summer, and to provide sufficient quantity and diversity of flow, depths, velocity, and cover, with sufficient water quality.

Objectives for all these resources will be to increase their abundance, quality, connectivity, hydrologic integrity, geomorphic integrity, and sustainability. The degree of success in increasing these habitat values may be used in ranking the proposed project in comparison with other projects nationwide, in the Corps budget process.

Another objective will be to reduce the abundance of invasive and exotic vegetation as well as wildlife species, and to restore native species. This will include the objective of creating conditions resistant to exotics and supportive of natives.

The study will support a systems approach and a watershed management perspective. The study will consider influences and effects beyond the boundaries of Denver County, such as connectivity of mainstem bird habitats with those of tributaries and the broader watershed, and will consider scarcity of resources within the broader watershed.

B. Flood Risk Management Objectives

The overall Federal objective in flood risk management (FRM) projects is increased National Economic Development (NED). Contributions to NED are increases in net value of the national output of goods and services, expressed in monetary units. The specific objectives would be to manage flood risk, reduce risk to life and safety, reduce long-term economic damages to the public and private sector, and improve the natural environment. A related local objective of any drainageway work in Denver County is to maintain or improve the flood control and conveyance functions of the drainageway. The NED Plan is that which reasonably maximizes net national economic development benefits, consistent with the Federal objective, and will be the recommended FRM plan.

South Platte River high peak floods are associated with thunderstorms and sustained rains. Long duration flooding is associated with snow melt. Cherry Creek Dam constructed in 1950, and Chatfield and Bear Creek Dams constructed since the 1973 flood, provide nearly 570,000 acre-feet of water storage and substantial flood protection. However, inflows downstream of the reservoirs can yield substantial discharges. Heavy urbanization has increased both runoff and the investments in the floodplain. And other tributaries are largely uncontrolled, notably Harvard Gulch. Therefore, there is risk of flood damage to developments within the County, as reflected in the Federal Emergency Management Agency flood hazard maps and in the CCD map below.

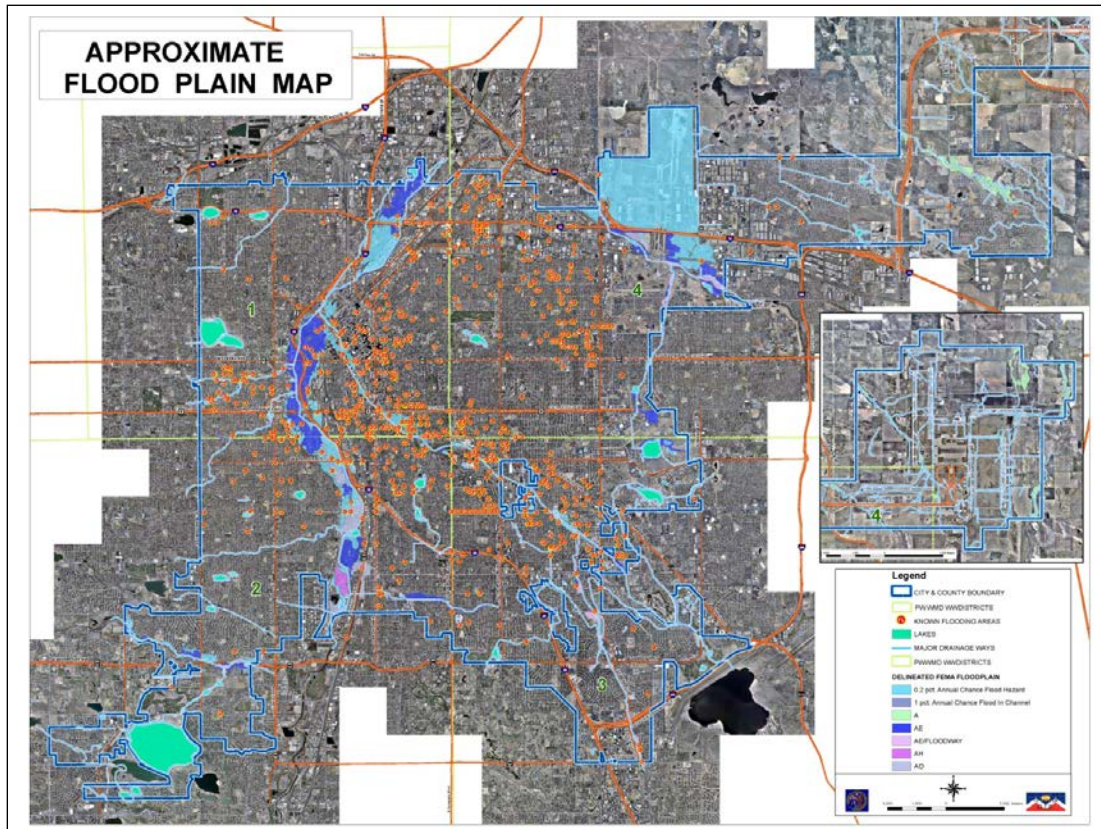


Figure 3. CCD GIS Map of Flooding in the City and County of Denver

C. Recreation.

As a matter of policy, recreation is not a Corps priority. However, recreation improvement is an objective of Denver stakeholders and is allowable as a minor component of Corps projects as long as it is compatible with project objectives, does not compromise ecosystem objectives, does not require additional lands, is cost-shared 50-50, and increases federal cost no more than 10 percent. Recreation objectives that would be included in this study include access, trails, and non-consumptive uses.

D. Procedural Objectives

Corps SMART planning aims to minimize study cost and time to what is essential for quality, and for sound decisions in the federal interest. It calls for using professional

judgment and risk analysis rather than detailed data and analyses where those are not essential to making a decision; focusing data and analysis on key areas of uncertainty in making decisions; reserving feasibility level design for only the recommended plan (and locally preferred plan if appropriate), and recording risk, uncertainty, and decisions in repeatedly updated records.

To support and justify a project, this study must follow these principles:

- Focus on federally significant resources and other federal interests
- Focus on feasible, cost effective alternatives with quick elimination of others
- Use only essential data and processes that influence the decision
- Document compliance with law and policy
- Produce a complete report, sufficient for decision makers to evaluate a recommendation and to decide whether to authorize and implement a project.
- Comply with the Corps' civil works strategic plan to the degree feasible:
 - (a) Work with others toward integrated, sustainable solutions across programs
 - (b) Restore and protect the environment
 - (c) A holistic and multipurpose focus
 - (d) Attention to the watershed as a logical area for managing water
 - (e) Collaboration, partnerships, and teamwork

9. Study Tools of Record

The teams will use the following tools throughout the study to help make and record decisions:

A. Draft Report

Decisions and work at the initial Planning Charette will be the basis for the first element of the Feasibility Report: the Report Synopsis. The PDT will develop the Report in iterations, with the draft report growing over time and confirmed at each milestone. The latest version of this study's Report Synopsis/Draft Report is attached as Appendix B to this PMP. All products developed by the PDT should directly support the report.

B. Risk Register

Risk analysis determines study detail. For efficient and effective planning, only necessary data and analyses will be used. The study will continually ask: Will additional detail improve the next decision? Where is the uncertainty? What are the consequences of a wrong decision? This will be formalized in the attached risk register. A risk register is a spreadsheet where the risks associated with study outputs and project outcomes are documented based on input from the PDT and feedback from a risk specialist and other vertical team members. The register will be prepared as early in the study process as possible, at the scoping charette, and will be updated throughout the feasibility study, including after IPRs, as the PDT assesses what data it needs. It will help identify the level of detail (models, data, etc...) to be used to evaluate and compare alternatives, or when additional data may be needed to reduce unacceptable uncertainty. The latest version of this study's Risk Register is attached as Appendix C of the PMP.

C. Decision Management Plan (DMP)

The Decision Management Plan is a 5 to 15 page summary list of next steps that the PDT is undertaking, from one milestone to the next, prepared throughout the course of the feasibility study. The DMP along with the decision log and risk register will be a guide for the PDT and a reference for reviewers. The DMP will convey PDT strategy on how to manage risk and reduce uncertainty in next actions. The DMP will include:

- The planning decision to be made
- Sequence of events required
- Criteria for deciding
- Decision makers
- Schedule for decision
- Decision summary (to be completed when decision is made)

D. Decision Log

The decision log will serve as documentation of decisions made during the study, to reduce chances of a dispute later. Its use will not exclude revisiting of decisions as needed to reflect new risks or opportunities. The decision log will include:

- A reference (identifier) for the decision.
- Date the decision was made.
- Description of what was agreed to and why.
- Who agreed to it. Get signatures.
- Where one can find information or supporting documentation.
- Any additional information needed for the study.

The decision log will be updated during In-Progress Reviews with higher Corps levels and will be signed at the time. The study's Decision Log is Appendix D of the PMP.

E. Value Management (VM) Plan

The study will use Value Engineering (VE) as a management tool to reduce costs. At least one Corps VE Study will occur during Alternative Formulation and Analysis. Start and completion of the VE study, presentation, and implementation response, may be scheduled in the Corps' P2 system as milestones. The VM Plan is Appendix E of this PMP.

F. Review Plan

The study's Review Plan is Appendix F of this PMP.

G. DrChecks

DrChecks is an online review system where products can be placed and shared, comments made, responses given, and final resolution of comments documented. It will be used at multiple review points.

10. Scope of Work, Tools and Models for Alternatives Analysis, Evaluation, and Comparison

The scopes of work for the various disciplines involved are summarized in Appendix K of this PMP.

Corps-approved models and tools will be used to quantify outputs of alternative measures, in metrics representing the objectives stated, and will be used to compare and rank the alternatives.

A. HEP

A modified habitat evaluation procedure (HEP) will be used. Habitat quantity and quality will be combined into a metric called average annual habitat units (AAHU, HU) using existing habitat suitability indexes (HSI) established by USFWS for certain species. The species expected to be used for woody riparian habitat are yellow warbler and mink.

B. FACWet

FACWet may be used to evaluate wetland outputs. FACWet rates three attributes of wetlands based on their ecological forcing factors:

- Buffer and Landscape Context;
 - Neighboring Wetland Loss;
 - Barriers to Migration and Dispersal;
 - Buffer Capacity;
- Hydrology;
 - Water Source;
 - Water Distribution within the wetland;
 - Water Outflow;
- Abiotic and Biotic characteristics.
 - Geomorphology;
 - Chemical Environment; and
 - Vegetation Structure and Complexity.

C. Cost Effectiveness / Incremental Cost Analysis

The study will use the Corps Institute for Water Resources' (IWR) software, IWR-Planning Suite, to conduct "Cost Effectiveness / Incremental Cost Analysis" (CE/ICA). This program will identify the most cost-effective plans: those whose output no other plan can match at a lower cost. Among these, it will evaluate their cost efficiency: the incremental increase in cost for each incremental gain in output. These indicate the "best buy" plans: those having greatest increase in output for least increase in cost. It will identify the NER Plan, the NED plan, or NED/NER plan.

D. IFIM and PHABSIM

The study will likely use Instream Flow Incremental Methodology (IFIM) and Physical Habitat Simulation (PHABSIM) for the South Platte River. These methods combine channel hydraulics with habitat information (flow, depth, velocity, cover) to predict habitat quantity and quality over time, for a range of flows and channel modifications. It

could utilize HSI and other models of quality for selected species such as brown and rainbow trout, channel catfish, common carp, sand shiner, longnose dace, and white sucker, to indicate quality at various values.

E. HEC-FDA

Economic benefits of flood risk management measures may be determined using the HEC-FDA model. HEC-FDA integrates hydrologic engineering and economic analysis to compute expected annual damage (EAD) and contains risk analysis procedures.

F. HEC-RAS

Hydraulic dynamics will be modeled using HEC-RAS. HEC-RAS performs one-dimensional hydraulic calculations for natural or constructed channels. Using topographic and bathymetric data together with hydrologic data inputs, it can produce steady flow water surface profiles, unsteady flow simulation, sediment transport computations, and water quality analysis. It is recognized that Urban Drainage and Flood Control District has been working to reconcile numerous HEC-type models that have been used in Denver over many years; it is yet to be determined whether this model would be used for this study.

G. M-CACES

Micro-Computer Aided Cost Estimating System (M-CACES) Second Generation (MII) will be used for detailed cost estimating.

11. Corps Planning Process.

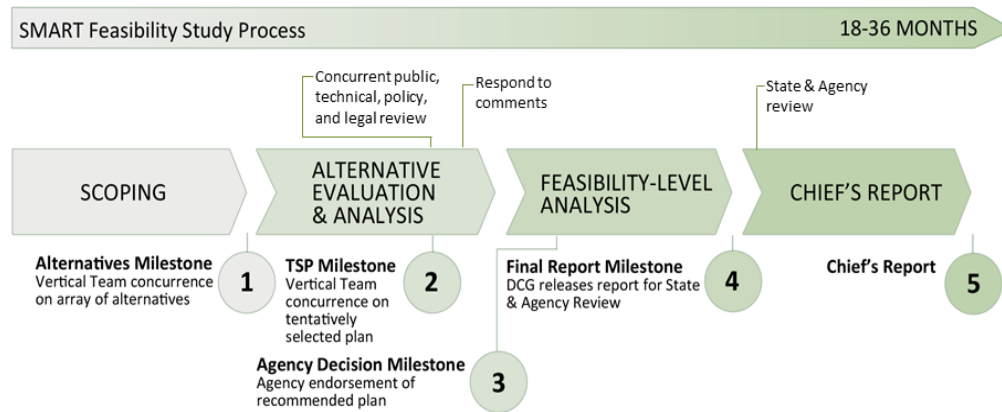
The study will apply critical thinking to focus limited resources on best uses, following the Corps’ traditional 6-step planning process based on the 1983 federal Principles and Guidelines, and the report structure will reflect these steps. Planning steps can be revisited as needed throughout the study. The six steps are summarized below.

Step 1. Federal Interest and Problem Identification
a. Specify the federally significant ecosystem resources (wetlands, migratory bird habitat, significant aquatic resources), and the economic and social resources. Identify their Problems, Opportunities, Goals and Objectives (NEPA Purpose and Need), Assumptions, and Constraints.
b. Identify reasons for ecosystem resources’ significance: technical, institutional, or public. Consider the ranking criteria in the Corps’ budget EC (e.g. scarcity, connectivity, scale of existing plans included in, etc). Identify reasons for economic and social resources’ significance: income generation, life safety.
Step 2. Inventory existing conditions and forecast future-without conditions
a. Define existing and future without-project conditions. The future without-project condition provides the basis against which alternative plans are compared.
b. A qualitative and/or quantitative description of other resources affected or critical to alternative formulation is to be made, for both current and future conditions.
Step 3. Formulate and Screen Alternatives to Achieve Objectives
a. Identify measures that may achieve one or multiple objectives
b. Screen out measures that would not meet objectives, constraints, budget, feasibility, reliability, constructability, etc.

c. Combine the surviving measures into alternative plans
Step 4. Evaluate Alternative Plans
a. Quantify the outputs of each alternative plan using the selected models.
b. Estimate the cost of each plan: design, real estate interests, and construction including environmental mitigation; also costs of operation, maintenance, repair, replacement, and rehabilitation.
c. Assess the environmental impacts, other effects, and feasibility criteria of each plan.
d. An alternative plan will be eliminated as soon as it is shown to be infeasible for project purposes. The reason why it is infeasible will be documented in the report.
Step 5. Compare Alternative Plans (i.e. Ranking)
a. Use IWR Planning Suite to identify the most cost-effective plans, and among these, the “best buy” plans.
b. Rank the plans. It is possible that the recommended ecosystem “plan” could actually be a program for the Denver area, consisting of multiple non-mutually-exclusive project actions and sites to be implemented in order of rank as funds became available.
c. Identify the National Ecosystem Restoration (NER) Plan, reasonably maximizing environmental benefits. Identify the National Economic Development (NED) Plan, reasonably maximizing economic benefits.
d. Identify the locally preferred plan (LPP) if it is not the NER Plan, NED Plan, or Corps preferred plan. Identify the incremental costs and benefits of the LPP vs. NER or NED plans.
e. Other criteria that can be considered include various feasibility criteria, impacts, and Principles and Guidelines accounts. The four accounts established in the P&G are:
- The national economic development (NED) account displays changes in the economic value of the national output of goods and services.
- The environmental quality (EQ) account displays non-monetary effects on ecological, cultural, and aesthetic resources including the positive and adverse effects of ecosystem restoration plans.
- The regional economic development (RED) account displays changes in the distribution of regional economic activity (e.g., income and employment).
- The other social effects (OSE) account displays plan effects on social aspects such as community impacts, health and safety, displacement, energy conservation and others.
Step 6. Recommend Plan
a. Identify the recommended plan. The NER Plan and NED Plan will be recommended unless a strong reason exists otherwise. Next preference would be another “best buy” plan. It must be a cost effective plan.
b. Describe the plan’s rationale, including significance per the ranking criteria described above to aid budget preparation.
c. There may be multiple best plans for recommendation based on different objectives.
d. For an LPP that is smaller than the NER or NED Plan, net benefits must exceed those of still smaller alternatives. For an LPP more costly than the NER or NED Plan, ASA(CW) may grant an exception to recommend it as long as the sponsor pays the difference in cost between the NER or NED plan and locally preferred plans.

12. Planning Milestones

The study will move progressively through 4 general stages and five key decision points or milestones. These are further described in Appendix G. Actual study tasks needed are articulated in Appendix K, Scopes of Work.



A. Scoping Stage; Alternatives Milestone

Feasibility kickoff includes a site visit and a facilitated charette with a variety of participants. Charette participants will work through one or more iterations of the planning process, using existing information. The charette will identify the following products of planning steps 1 – 3, and these will be used to produce the first draft of the Feasibility Report.

1. Problems and Opportunities.
2. Objectives & Constraints.
3. Decision Criteria.
4. Key Uncertainties.
5. Without Project Condition.
6. Measures Screened Out.
7. Formulated Plans under consideration.

A subsequent vertical Alternatives Milestone Meeting may be held if needed to agree on the seven items above and the alternatives. The PDT will also develop the first risk register, a scoping plan laying out the agreed level of detail and approaches, and a decision log.

Additionally, scoping will include agency meetings and public meetings. The sponsor team will inform the public and local City and County entities, will arrange facilities, and will support the Corps at the meetings. The Corps will contact state and national agencies and tribes and will lead the meetings.

B. Alternative Formulation and Analysis Stage; Tentatively Selected Plan and Agency Decision Milestones

This stage is planning steps 4 through 6. The PDT will use reasonable detail, data, and modeling to evaluate alternatives, and will identify a Tentatively Selected Plan (TSP), and a Locally Preferred Plan (LPP) if appropriate. The study will have detail required by law and regulation for a Chief's Report and recommendation to Congress, but will focus on essentials. The PDT will update the draft report with an evaluation summary and rationale for the TSP; and will update the risk register, decision log, decision management plan, review plan, and other documents. At a TSP Milestone meeting, the VT and PDT will agree on the TSP or LPP, and on the above information. Any LPP costing more than the NER Plan must be approved for consideration by the Assistant Secretary of the Army for Civil Works (ASA/CW), prior to draft report release.

Following TSP Milestone and HQUSACE permission, the Corps will circulate draft report and NEPA documents for concurrent reviews: agency, public, HQUSACE, ATR, and legal. Public hearings will be held. All significant comments and responses will be documented in the decision document. Outstanding issues will be addressed in In-Progress Reviews (IPRs), and discussed during the Agency Decision Milestone meeting. ATR and policy concerns will be documented in the decision log. The PDT, VT, and Review Team will update the decision log and vet it through the VT, and will update the risk register, issue checklist, scoping plan, review plan, etc.

At an Agency Decision Milestone meeting, the VT will confirm that the analyses and recommendations are compliant with policy and that there is a sponsor. A panel of senior HQUSACE leaders will determine whether the selected plan should be the agency recommended plan, and will approve the plan for feasibility-level design.

C. Feasibility-Level Analysis Step; Final Report Milestone

In this step the PDT will do additional modeling and design on the selected recommended plan(s) to reduce risk and uncertainty in cost, effectiveness, environmental impacts, and economics. If HQUSACE Senior Leadership agreed that a LPP should be carried forward, the PDT will develop detail on both the agency recommended plan and the LPP to determine the appropriate cost allocation for authorization.

The design will require use of engineering judgment. Design will be only as detailed as needed to assure functionality, life safety, accurate cost and schedule, and to support a recommendation to Congress. The PDT will use the risk register to assess the risk or likelihood of each feature impacting cost, schedule and/or function/safety. This includes Cost Schedule Risk Analysis (CSRA), and IPRs with the VT as needed to resolve policy or agency issues. Risk mitigation strategies will be identified and/or discussed in the Risk Management Plan.

The PDT will produce a Draft Final Report. After successful District Quality Control (DQC) and Agency Technical Review (ATR), the District Commander will sign the final Report and will forward it with the final NEPA document and related materials to NWD.

NWD will conduct QA of the QC process, and any open issues will be resolved. Final report milestone is when the NWD Commander submits the final report and NEPA document to HQUSACE. NWD will publish the Division's Engineer Notice.

D. Washington Level Review Step; Chief's Report Milestone

HQUSACE policy review will assess compliance of submitted materials with previous guidance, and the decision log, to identify any obvious concerns. The Office of Water Project Review (OWPR) will summarize any policy and legal concerns for the Deputy Commanding General for Civil and Emergency Operations (DCG-CEO). If all issues have been addressed, the DCG-CEO may approve release of the final report, NEPA document, and draft report of the Chief of Engineers, for State and Agency (S&A) review and final NEPA review. OWPR will send a coordination package to the District including: a mailing list, signed transmittal letters, the draft Chief's Report, and mailing instructions. The District will mail the letters and enclosures and direct any comments to the USACE Director of Civil Works. OWPR will contact any agencies or Governor's offices that do not respond by the end of the review period. After resolution of any State or Agency comments that warrant a response, the Chief's Report would be developed for signature.

The Chief of Engineers' report, with recommendations, would be forwarded along with the feasibility study to the Assistant Secretary of the Army for Civil Works, ASA (CW). The feasibility study, along with ASA (CW) recommendations, would be forwarded to the Office of Management and Budget (OMB) for review and comment. If the recommendations and reports were approved by OMB, the ASA (CW) would forward the report to congress for authorization and then appropriations.

13. Study areas – Work Breakdown Structure

Ecosystem restoration and flood risk management study areas carried forward from the 2010 recon report include those shown in Appendix 1. Expected work and responsibilities are contained in Appendix 2, Study Scope. Estimated study costs are in Appendix 3, Cost Estimate.

14. Schedule

Corps guidance says feasibility studies should be completed within a target of 18 months and no more than 3 years. Such a schedule relies on adequate and timely funding, adequate and accurate data, acceptable study findings, consistent availability of Corps and sponsor resources, and positive results of reviews. A common cause of extended schedules is incomplete funding in Congressional appropriations and Presidential budgets. The table below shows the main process steps; durations may differ from those shown.

15. Resource Plan and Acquisition Strategy

The Corps and Denver will be responsible for performing the needed work, whether by in-house labor, by contract, or in Denver's case through its official partners. Due to

condensed scheduling requirements under current Corps policy, and if funds are sufficient, contracts may be used for some of the work although this could raise costs.

Table 1. Conceptual schedule

Study Step	Duration
Kickoff / Charette	1
Public Involvement / Scoping Meetings	2
Alternatives Screened to Final Array	3
Alternatives Milestone Mtg to Approve Final Array	1
Alternative Formulation and Summary Evaluation of Final Array	10
Preliminary Draft Report Pkg	1
VE & ATR Reviews	1
Updated Preliminary Draft Report Pkg	1
Tentatively Selected Plan (TSP) & Mtg	1
Draft Report Pkg	1
HQUSACE Approves Release of Draft Report Pkg for Reviews	1
Concurrent Reviews	2
TSP Confirmed	0
Updated Draft Report Pkg	1
Agency Decision Milestone Meeting	1
Feasibility-Level Analysis Phase	3
Final Report Pkg	1
Concurrent Reviews of Final Report Pkg	1
Final Report Package to NWD	1
HQUSACE Approves Release for Final Reviews	1
State & Agency Review – 30 Days	1
Chief's Report	1
TOTAL	36

16. Cost Estimate and Budget by Fiscal Year

To accommodate Corps guidance, the study is estimated to cost approximately \$3M. Cost estimates of each discipline are in Appendix L. The study is beginning in late FY13 with \$90,000 in federal funds. The project was not named in the President’s Budget for FY14, and so may experience delayed or no appropriations in FY14. A full funding scenario would provide approximately \$410,000 in FY14, then \$500,000 in each of the remaining 2 federal fiscal years, to be matched with work-in-kind or cash by Denver each year. Denver’s estimated total in-kind contribution will be applied to its cost-share the first year. Cash will likely be needed in each following fiscal year to meet the non-Federal share of financial obligations for that fiscal year, and would be due no later than 30 calendar days before the fiscal year.

Denver and its partners will keep payment records for all pre-approved expenses and work-in-kind according to “Maintenance of Records” guidance, and will submit those to the Corps on at least a quarterly basis.

17. Quality Control Plan, Objectives, and Reviews:

A. Quality Objectives

i. Feasibility

Any plan studied in depth must meet feasibility tests:

- (f) Completeness within itself vs. dependence on uncontrollable factors
- (g) Effectiveness toward achieving the objectives partially or fully
- (h) Efficiency in producing benefit outputs per unit of incremental cost. For flood risk management, economic benefits must equal or exceed costs on an annualized basis. For ecosystem restoration, outputs measured in non-monetary units are compared to monetary costs using incremental cost analyses to find the most cost-efficient plans.
- (i) Acceptability: The plan is technically implementable; environmentally acceptable; economically and financially affordable; supportable politically, legally, and by regulatory institutions; and publicly acceptable.

ii. Scientific merit.

The study should use the best available affordable scientific research and information, to find plans supportable under scientific review.

B. Quality Review

The study will undergo internal Omaha District quality reviews, Corps agency technical review (ATR), in-progress reviews (IPRs) with higher levels, and public review. This is spelled out in the Review Plan in Appendix F.

The sponsor will conduct quality control (QC) and quality assurance (QA) for its internal, non-contracted products, and these will be subject to overall ATR. Each effort will include technical and supervisory review and signature. Contractors will use their own QC/QA teams and processes. These reviews will be subject to Corps and sponsor QA review and independent technical review.

18. Scope Control and Change Management:

A. Scope control

The level of activities (data collection, analysis, etc.), and the level of benefit quantification, will be scaled to the project. Throughout the study, the PDT will avoid efforts other than those focused on determining the critical decisions, how they will make them, the key decision drivers, whether more data will change the decision, and the risks (probability and consequence of making an undesirable decision) of using available data.

B. Change management

This PMP is the record of work to be done, and how. As the study progresses, the risk register and decision management log will record PDT choices and the basis for those. The Corps will revise the PMP at major milestones or major plan changes; PMP changes will be coordinated with the PDT including the sponsor.

Modest changes in scope, cost, and schedule can be approved by Corps and sponsor project managers. If changes would significantly increase duration or cost, the Corps' Deputy District Engineer and the Sponsor lead must approve. Increases in schedule beyond 3 years or in cost beyond \$3 million will need HQUSACE approval. Work not in accordance with this PMP may not be appropriate for expenditure of federal funds or for sponsor credit.

19. Communication plan

A. Vertical Coordination in the Corps

The Vertical Team will be engaged early and sufficiently to keep current on project development between milestones, to take part in IPRs, and to resolve critical issues early.

B. Between COE and Sponsor

Corps and Denver project managers will be responsible for overall Corps-Denver coordination and will brief their agencies as needed. Communication between technical staff can occur on a day-to-day basis without the project managers. Official communication may occur between Project Managers or at higher levels, in writing or by email.

C. Scoping

The sponsor and its partners have conducted substantial public involvement and scoping over the past decade. This study will build on those efforts. Public, agency, and tribal scoping will be held for any reaches or sites that have not had such scoping recently. Information announcing the scoping will be distributed to local media, with dates and with public meeting times and locations. Agencies and tribes will be sent letters. Points of contact will be made known for input submittal. Written and electronic input will be accepted.

D. Interagency Coordination

The Corps will coordinate with other federal agencies including the USFWS, EPA, and BIA; and with State agencies such as Colorado Department of Public Health and Environment, Dept. of Transportation, and Division of Wildlife. Other agencies and departments will be coordinated with as appropriate.

The study area is part of an ongoing Urban Waters Federal Partnership, and activities in the Denver metro area are part of EPA's Green Infrastructure Initiative. The goal of the Urban Waters Federal Partnership is to reconnect urban areas with their waterways, and to improve collaboration among the federal agencies working to improve those waters. The Corps will coordinate with the Urban Waters Federal Partnership to facilitate its objectives as appropriate.

E. Tribal Coordination

The Corps will consult and coordinate with affected Native American tribes on a government-to-government basis.

F. External Review

A single public review opportunity is required, on the drafts of the Report, Appendixes, and NEPA documents. This will be concurrent with other reviews of those documents including HQUSACE review, and will last approximately 30-45 days. The required public meeting(s) will be held early to midway through the review period. Information announcing the review will be distributed to local media, with dates and with public meeting times and locations. Points of contact will be made known for comment submittal. Written and electronic comments will be accepted. No additional public review is required on final study documents.

Upon completion of the final report, a State and agency (S&A) review will be conducted. The agencies invited to do this review will be determined by HQUSACE. Reviewers will review the draft Chief's Report, which will be a 10-page to 15-page summary of the study. HQUSACE will administer the S&A review process, with the District performing the actual distribution of review materials and drafting the response letters.

G. Information Technology

Information of PDT interest or public interest will be stored and transmitted in common Microsoft and Adobe formats such as Word .doc, Excel .xcl, .Adobe .pdf, etc. Information will be made into these formats by the originating member. All files should be kept small enough to easily manage, e.g. below 50MB. Files for email should be kept below 15MB or other limits of participants' systems. The final report will be below 100 pages and 50MB including graphics, if possible. Appendixes will be limited to material needed for summary evaluation, possibly under 200 pages plus public involvement documentation, and will not normally include raw data or model runs. Corps team members, and others as they can, will use Outlook calendars to reflect availability.

The Corps and/or Sponsor will establish a web page for the study. SharePoint or similar sites may be used to share information. The reconnaissance report, meeting announcements, and other pertinent information could be posted on the site. The site may be capable of receiving e-mail and could be a designated mechanism for public submittal of comments.

20. Study or Project Closeout Plan

Upon conclusion of the study, the Corps will determine when the authorized project is to be closed out. The sponsor and Corps will ensure they have submitted all records for costs incurred. The Corps will conduct an audit of costs and determine any imbalance of cost-sharing. Either party owing the other party any cash balance will provide that balance in a timely manner and in accordance with the Feasibility Cost Share Agreement.

21. Safety and Occupational Health Plan

The primary risks during study will likely be those associated with travel, and a possibility for risk during on-site data collection activities. Travel will be conducted safely, such as always using seat belts, avoiding adverse weather, packing safety gear for winter driving, avoiding long drives, avoiding driving outside regular workday hours, and carrying cell phones. Contractors will ensure that they have safety plans in effect for their activities.

22. Certification

This is to certify that the undersigned approve this PMP.

KIMBERLY WATANABE
Director of Capital Projects Management
City and County of Denver

DATE

TED H. STRECKFUSS
Deputy District Engineer
Planning, Programs, and Project
Management Division
Omaha District Corps of Engineers

DATE

Primary Corps Guidance References

- i.** Engineer Circular (EC) 1105-2-210 (1995). Ecosystem Restoration in the Civil Works Program, U.S. Army Corps of Engineers
- ii.** Engineer Regulation (ER) 5-1-11 (2006). U.S. Army Corps of Engineers Business Process, U.S. Army Corps of Engineers
- iii.** Engineer Regulation (ER) 11-1-321 (2005). Value Engineering, U.S. Army Corps of Engineers
- iv.** Engineer Regulation (ER) 200-2-2 (1988). Environmental Quality - Procedures for Implementing NEPA, U.S. Army Corps of Engineers
- v.** Engineer Regulation (ER) 405-1-12 (1985). Real Estate Handbook, U.S. Army Corps of Engineers
- vi.** Engineer Regulation (ER) 1105-2-100 (2000). Planning Guidance Notebook, U.S. Army Corps of Engineers
- vii.** Engineer Regulation (ER) 1110-1-12 (2006). Quality Management, U.S. Army Corps of Engineers
- viii.** Engineer Regulation (ER) 1110-2-1150 (1994). Engineering and Design for Civil Works Projects, U.S. Army Corps of Engineers
- ix.** Engineer Regulation (ER) 1165-2-501 (1999). Civil Works Ecosystem Restoration Policy, U.S. Army Corps of Engineers
- x.** Engineer Pamphlet (EP) 1165-2-502 (1999). Ecosystem Restoration - Supporting Policy Information, U.S. Army Corps of Engineers
- xi.** U.S. Water Resources Council (1983). Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies
- xii.** Engineer Circular (EC) 1165-2-214 (2012). Civil Works Review, U.S. Army Corps of Engineers
- i.** PMBP Manual - Version 1.0 (2009). Project Management Business Process, U.S. Army Corps of Engineers
- xiii.** HQUSACE website (2012). Planning SMART Guide, <http://planning.usace.army.mil/toolbox/smart.cfm>, U.S. Army Corps of Engineers



**US Army Corps
of Engineers**

APPENDIXES

DENVER COUNTY FEASIBILITY STUDY

ADAMS AND DENVER COUNTIES AUTHORITY

Omaha District Corps of Engineers

August 2013

- Appendix A - Teams**
- Appendix B - Draft Report**
- Appendix C - Risk Register**
- Appendix D - Decision Log**
- Appendix E - Value Management Plan**
- Appendix F – Review Plan**
- Appendix G - Study Process**
- Appendix H - Maintenance of Cost Records**
- Appendix I - Corps of Engineers Principles**
- Appendix J - Budget Ranking Criteria**
- Appendix K – Scopes of Work**
- Appendix L – Cost Estimates**

Appendix A – Teams

*Members of the Study Coordination Team

Corps PDT & DQC Team Omaha District Corps of Engineers, 1616 Capitol Ave., Omaha, NE 68102-4901			ATR Team		
PDT Discipline / Member	District QC Supervisor	District QC SME	ATR needed qualifications	ATR Reviewer	ATR Reviewer Credentials
* Steve Rothe Project Management, Plan Formulation CENWO-PM-AA (402) 995-2705 steven.c.rothe@usace.army.mil	* Greg Johnson, Chief, Plan Formulation Sec. CENWO-PM-AP (402) 995-2701 * Brad Thompson Chief, Planning Branch CENWO-PM-A (402) 995-2693		Senior professional experience formulating GI Ecosystem Restoration projects. Knowledgeable in SMART planning and in decision documents.		
Jennifer Davis Hydrology CENWO-ED-HE (402) 995-2015 jennifer.p.davis@usace.army.mil	Doug Clemetson Chief, Hydrology Section CENWO-ED-HE (402) 995-2340		Knowledge in outlier treatment, period of record, volume probability statistics. And in application of Bulletin 17B methods.		
Sediment & Channel Stabilization CENWO-ED-HF (402) 995-2---	Dan Pridal Chief, Sed & Channel Stabilization Section CENWO-ED-HF (402) 995-2336		Knowledge in geomorphologic/alluvial process assessment, and application of alluvial process models; including selection of representative reaches and selection the proper classification/sorting model.		
Candace Akins Real Estate Planning CENWO-RE-C (402) 995-2859 candace.e.akins@usace.army.mil	Rick Noel Chief, Real Estate Civil Branch CENWO-RE-C		Expertise in LERRD estates for ecosystem restoration flood risk management, in feasibility processes, and in baseline cost estimates.		
Real Estate Appraisals CENWO-RE-S	Nick Moustakes Chief, Real Estate Technical Services Branch CENWO-RE-S		Expertise in federal gross appraisal methods and uses.		
Dennis Gaare Geotechnical Engineering CENWO-ED-GB (402) 995-2246 dennis.s.gaare@usace.army.mil	Steve Butler Chief, Soils Section B CENWO-ED-GB		Expertise in		

Corps PDT & DQC Team (cont'd)			ATR Team (cont'd)		
PDT Discipline / Member	District QC Supervisor	District QC SME	ATR needed qualifications	ATR Reviewer	ATR Reviewer Credentials
Cost Engineering CENWO-ED-C	Steve Kemp Chief, Cost Engineering Branch CENWO-ED-C		Expertise in MCACES/TRACES methodology, Total Project Cost calculation, MCX requirements incl. TPCS spreadsheet and escalation table. Ability to review nonstructural costs.	Cost Engineering MCX	
Tom Gorman Floodplain Management CENWO-ED-HB (402) 995-2322 thomas.g.gorman@usace.army.mil	Randy Behm Chief, Flood Risk & Floodplain Mgt. Section CENWO-ED-HB (402) 995-2322		Expertise in appropriate floodway determination using standard FEMA procedures. Extensive experience in flood plain modeling in HEC-RAS and/or HEC-2. Ability to review nonstructural measures.		
	Eric Laux Chief, Environmental Resources Section CENWO-PM-AE (402) 995-2682		Expertise in NEPA and other environmental compliance; integration of NEPA into Feasibility processes and documents; habitat modeling and its use, incl. annualizing outputs. Knowledgeable in appropriate monitoring and adaptive management, and its distinction from OMRR&R.		
Economics CENWO-PM-AE (402) 995-2688	Dave Brandon Chief, Economics, Cultural Res. & Dist. Quality Section CENWO-PM-AB (402) 995-2699		Expert in cost effectiveness / incremental cost analysis, IWRPlanning Suite, first costs and total costs, annualized benefits and costs, optimization, risk analysis. Ability to review nonstructural analysis.		
Sean Denning Design - Structures CENWO-ED-DW (402) 995-2613 Sean.A.Denning@usace.army.mil					
Civil Engineering CENWO-ED-D-					
Industrial Hygiene / Hazardous Materials CENWO-ED-H					
Programs Management CENWO-PM-P					
Office of Counsel	Tom Tracey Assistant Chief, Office of Counsel	N/A			

Denver PDT & QC Team			Denver Review Team		
Denver Public Works 2000 West 3 rd Ave., Denver, CO 80223					
Team Member	QC Supervisor	QC SME	ATR needed qualifications	ATR Reviewer	ATR Reviewer Credentials
*Kimberly Watanabe (303) 446-3593 kim.watanabe@denvergov.org					
Bruce Uhernik (303) 446-3645 bruce.uhernik@denvergov.org					
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Denver Parks and Recreation 201 West Colfax Ave., Dept. 601, Denver, CO 80202					
Gordon Robertson (720) 913-0615 gordon.robertson@denvergov.org					
Greenway Foundation 5299 DTC, Boulevard, Ste 710, Greenwood Village, CO 80111					
Jeff Shoemaker (303) 455-7109 w (303) 818-8078 c jeff@greenwayfoundation.org					
Capitol Representatives 726 South Poplar Street, Denver, CO 80224					
David Howlett (303) 433-1804 w (303) 619-6520 c david@capitolrepresentatives.com					
Marge Price (303) 433-1804 w (303) 619-6521 c marge@capitolrepresentatives.com					
Urban Drainage & Flood Control District 2480 West 26th Avenue, Suite 156-B, Denver, CO 80211					
Dave Bennets (303) 455-6277 dbennetts@udfcd.org					

Contractor Team			Corps ATR Team		
Team Member	QC Reviewer	Quality Assurance	ATR qualifications	ATR Reviewer	ATR Reviewer Credentials

VE Review Team	Name	Office	Phone	Email
District VE Officer	Rich Stricker	CENWO-ED-C		
Contracted Facilitator				
Contracted Biologist				
Contracted Hydrologic Engineer				
Contracted Geotechnical Engineer				
PDT Real Estate Specialist				
PDT Cost Engineer				
PDT Economist				
PDT Project Manager				

Corps Vertical Team	Name	Office	Phone	Email
NWD Planning				@usace.army.mil
NWD Hydrologic Engineering				@usace.army.mil
NWD Geotechnical Engineering				@usace.army.mil
NWD Real Estate				@usace.army.mil
NWD Environmental				@usace.army.mil
NWD Economic, Social and Cultural				@usace.army.mil
Ecosystem PCX				@usace.army.mil
Agency Technical Review Leader				@usace.army.mil
HQUSACE Regional Integration Team				@usace.army.mil

Appendix B - Draft Report

This Report Synopsis document will be submitted as read ahead material at each Milestone and is intended to follow the study through all levels of the planning process. Studies early in development will not have enough information to complete each section. Enter the appropriate data as it is developed.

Report Synopsis for Full Name of Study

1.0 Stage of Planning Process

(Feasibility) and step (i.e., P&G Six Planning Steps)

2.0 Study Authority

Original authority for the Adams County, CO, study was expanded by a resolution adopted 24 September, 2008, by the Committee on Transportation and Infrastructure, U.S. House of Representatives, Docket 2813, Adams and Denver Counties, Colorado, as follows:

Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That the Secretary of the Army review the report of the Chief of Engineers on the South Platte River and Tributaries, Colorado, Wyoming and Nebraska, published as House Document 669, 80th Congress, and other related reports to determine whether any modifications of the recommendations contained therein are advisable at the present time in the interest of flood damage reduction, floodplain management, water supply, water quality improvement, recreation, environmental restoration, watershed management, and other allied purposes, in Adams and Denver Counties, Colorado.

2.1 Additional Study Guidelines

Identify any HQ, ASA (CW), or MVD guidance issued for the study.

2.2 Study Area

Briefly describe the study area. It may encompass administrative regions, political jurisdictions, states, or watersheds. The P&G (1.4.7) define the study area as a geographic space that includes the following: “(a) The area defined in the study’s authorizing document; and (b) The locations of alternative plans, often called “**project areas**”(Planning Manual pg. 65). Include a map of the study area.

Example: “The study area includes Lake Charles and surrounding communities in Calcasieu and Cameron Parishes. It encompasses the Calcasieu river watershed and adjacent swamps and estuarine marshes. Portions of the Cameron National Wildlife Refuge fall within the study area.”

2.3 Project Area

Describe the locations of potential alternative plans or the area directly and indirectly impacted by construction or operation. Consider the surrounding area such as communities, industry, infrastructure, and known economic and environmental factors in the area. If a defined area is not identified at this time in the planning process, define it when available. Include a map of the project area.

Example: “The project area includes two unnamed drainage canals and adjacent neighborhoods in the City of Carencro. The city has a population of 5,000 people and includes two pre-war historic sites. Transportation infrastructure crossing the canals includes local streets, an interstate highway and two rail lines. A bald eagle nest is located on the bank of one of the canals.”

3.0 **Non-Federal Sponsor**

Include the name of the Non-Federal Sponsor and any executed agreements pertaining to the project.

4.0 **Problems/Opportunities**

State the problems and opportunities related to your project. Develop a clear problem statement; a simple, usually one sentence, assertion of the basic problem. Then, list opportunities to solve the problem.

Example: “Problem statement – seasonal tropical rainfall events combined with poor surface drainage cause residential flooding in downtown Lafayette residential areas.”

Example: “Opportunities – 1. Reduce flood damages in Lafayette.....”

5.0 **Planning Goal/Objectives**

State the project goals and objectives. Set the goals first; then establish objectives that will help attain the goals. Goals are few and idealistic in any given study and are typically general, broad, conceptual, timeless ideas. Objectives are developed from the problems and opportunities established in 4.0. An objective is a statement of the intended purposes of the project; it is a statement of what an alternative plan should try to achieve. Some general characteristics to use when developing objectives are to be specific, flexible, measurable, attainable, congruent, and acceptable.

List your objectives in order of highest priority.

Things to include in this section:

- State what each objective is measuring and what data is required to measure it. Each sub-function determines what data must be collected/reviewed to quantify the objectives and the PDT/sub-function then develops methods to collect the data. (Data examples; HUs, income, subsidence rate, housing, T&E species, salinity, land use)

- Explain how the collected data will support the evaluation of objectives. Consider the influence of future conditions on the data collected.

Example: “Goal – Improve shallow draft navigation on the Mississippi River.”

Example: “Objective – Increase year around draft in the river to increase barge traffic. River bathymetry and hydrograph data will be required to help establish existing draft availability and determine potential dredging volumes for alternatives.”

6.0 Planning Constraints

A constraint is a restriction that limits the extent of the planning process. These can be divided into **universal constraints** and **study-specific constraints**. Universal planning constraints are the legal and policy constraints to be included in every planning study and study-specific planning constraints are statements of things unique to a specific planning study that alternative plans should avoid. Constraints are designed to avoid undesirable changes between without- and with-plan conditions. List your constraints in order of highest priority.

Example: “Do not increase shoreline erosion in Lake Pontchartrain.”

Example: “Avoid impacts to designated critical habitat for the threatened Gulf sturgeon.”

7.0 Formulating Alternative Plans

Plan formulation is the process of building alternative plans that meet planning objectives and avoid planning constraints. Alternative plans are a set of one or more **management measures** functioning together to address one or more planning objectives. A management measure is a feature or activity that can be implemented at a specific geographic site to address one or more planning objectives. A feature is a “structural” element that requires construction or assembly on-site and an activity is defined as a “nonstructural” action.

7.1 Management Measures

Identify your management measures and which objective(s) it addresses.

Example: “Management measure - Build a jetty to protect the navigation channel entrance. The related objective that this measure addresses is improving navigation safety at the channel entrance.”

7.2 Screening of Measures

Screening is the ongoing process of eliminating, based on planning criteria, what is no longer important from further consideration. Criteria are derived from the specific planning study, based on the planning objectives, constraints, and the opportunities and problems of the study/project area.

List criteria used to screen your measures:

Examples:

- completeness of measure within itself vs. dependence on uncontrollable factors
- effectiveness toward achieving the objectives partially or fully
- efficiency such as cost-benefit effectiveness, low incremental cost
- feasibility in technical, environmental, legal, and social terms
- focus on significant federal resources

7.3 Key Uncertainties

Discuss the key uncertainties that may impact decisions and selection of a tentatively selected plan.

Examples: Debris load on railroad bridge & resulting upstream water surface profile; project footprint; condition of existing levee system unknown ; climate change; subsurface conditions; sediment aggradations; WSP with combined measures; existing EAD; USACE levee vegetation policy; real estate requirements & issues

7.4 Initial Array of Alternative Plans

Keeping in mind that alternative plans will be formulated through combinations of screened management measures, list the structural and nonstructural alternatives that will be formulated based on initial data collection and professional judgment (brainstormed)

Example: “Structural Alternative – Stabilize the stream bank with stone and place root balls along bendways to provide substrate for invertebrate attachment”

Example: “Nonstructural Alternative – Raise housing units in floodway and reforest remaining flood plain to create bottomland hardwood habitat.

7.5 Evaluation Array of Alternative Plans

Using criteria from Section 7.2 screen your initial array of alternative and list in order of highest priority based on which objectives are met.

Identify the types of beneficial and adverse effects of each alternative plan.

Quantify the effects using units of measure chosen to reflect federal interest and chosen models.

Weight each effect relative to the others based on importance.

Apply economic cost justification to recreation measures and plans.

7.6 Final Array of Alternative Plans

Identify your final array of alternative plans and list in order of highest priority based on which objectives are met.

Example: “Dredge a 45 foot deep X 500 foot wide channel from Mobile Bay to Alabama Harbor. Use the channel dredged material beneficially to create shorebird habitat on a new 200 acre bay island. Employ vessel speed limits in the new channel to minimize erosion of the created island habitat.”

8.0 Evaluation of Final Array of Alternative Plans

Independently evaluate the details of each alternative. In the evaluation step, the significant contributions or effects of an individual plan are quantified and judged. This is done for two reasons. First, the evaluation allows planners to determine whether or not the plan qualifies to advance and be compared against other plans that have independently qualified. Second, evaluation develops the specific criteria that will be used to compare those plans that do qualify and advance to the comparison step.

Evaluate each alternative individually by using the following five criteria:

- a) Forecast a most likely with-project condition
- b) Compare the without – and with – project condition to determine net benefits
- c) Assess or describe all important differences that result from the plan
- d) Appraise the differences
- e) Which objective(s) does the alternative meet? Does it avoid constraints?

9.0 Comparison of Final Array of Alternative Plans / Decision Criteria

Use the results of the five evaluation criteria listed in section 8.0 to compare the alternatives against one another. You can also use formal and informal comparison methods to explain the story fully. There are many criteria for comparing alternatives such as:

- Costs
- Benefits
- Compare alternatives based on their contribution to Federal objectives.
- Planning Objectives and Constraints—compare alternatives based on the degree to which they satisfy planning objectives without violating planning constraints.
- Environmental factors such as impacts to habitat, species, cultural resources or communities.
- Compare alternatives based on completeness, effectiveness, efficiency, and acceptability.

Identify the NER Plan. Identify the locally preferred plan (LPP) if it's not the NER Plan.

10.0 Selecting a Recommended Plan

How will a recommended plan be selected? Based on what? What objective(s)? Identify the NED Plan, NER Plan, Federally Supportable, or Locally Preferred Plan, etc. Note: Recommending a plan other than the NED or NER Plan requires following the procedures in the P&G and must include ASA(CW) approval.

Example: “A recommended plan will be selected by identifying the highest output least cost plan.”

11.0 Implementation and Impacts of Recommended Plan(s)

11.1 Environmental Impact documentation

- Environmental Assessment or Environmental Impact Statement
- FWS Endangered Species Act compliance letter
- Fish and Wildlife Coordination Act compliance letter
- Mitigation Plan
- Other environmental compliance
- Regional analysis relating to alternatives

11.2 Real Estate implementation description

- Minimum real estate requirements
- Gross appraisal
- Baseline cost estimate. Total Real Estate Costs

11.3 Institutional and Legal plan

- Partnerships and responsibilities for implementation including other agencies
- Inadequacies of existing statutory authorities and policies
- Proposed changes, their proponents and likelihood

11.4 Financial Plan

- Project cost summary, including interest during construction
- Cost Allocation among purposes
- Cost sharing
- Budget by fiscal year
- Sponsor financial capability analysis

12.0 Timeline

Include an estimated timeframe or schedule for completing the study. Identify any milestones that have already been completed.

Example: “A Feasibility Scoping Meeting was held in May 2011. A draft Tentatively Selected Plan will be identified in January 2012 and public release of the draft integrated report is scheduled for December 2012. The Chief of Engineers report is scheduled to be signed in July 2013.”

Appendix C - Risk Register

A feasibility study will continually ask how additional detail will affect the next planning decision. Where is the uncertainty? Will more data mean a better decision? What are the consequences of a wrong decision? One technique for executing this strategy is to develop and use a risk register.

The risk register collects information about:

- Risks and their causes.
- Consequences of risk.
- Likelihood of the risk occurring.
- Uncertainty of the risk consequences and likelihood of its occurring.
- PDT recommendation about the risk.

What is it? A risk register is a spreadsheet where the risks associated with the study outputs and project outcomes are documented based on input from the PDT and feedback from a risk specialist and other vertical team members.

Why is it used? It is a tool for identifying risks throughout the feasibility study iterative planning process. The risk register should be used as a guide for decision-making in a timely manner, making and accepting decisions based on information available to the PDT at that time.

The risk register:

- Identifies the risks the PDT and the Corps is willing to tolerate.
- Identifies ways the PDT will manage risks that are not acceptable.
- Documents all risk mitigation strategies being pursued in response to the identified risks.
- Grades risk mitigation strategies in terms of likelihood and consequence.
- Provides the vertical team with a documented framework to report risk status.
- Represents an actionable document prepared early in the study.
- Helps ensure the communication of risk management issues to key stakeholders.
- Provides a mechanism for seeking and acting on feedback.

Why Should the PDT Use a Risk Register?

The utilization of a risk register during a planning study to document and evaluate the risk associated with planning decisions was tried as a part of the National Pilot Program. This tool can help planners anticipate the potential effects of uncertainty on both the quality of their study decisions and project outcomes. In order to promote a more efficient and effective planning methodology and process, only necessary data should be gathered and only analyses needed should be performed to make good planning decisions.

Uncertainty and the Level of Detail

Throughout the Feasibility Study, the PDT must ask how added detail will affect the next decision:

- Where is the uncertainty?
- Does the uncertainty affect the decision?
- What are the consequences of a poor decision?

The risk register compiles the data needed to answer these questions. Multiple strategies can be used to collect and analyze the data. The planner can prioritize data gathering and analyses in areas critical for differentiating among alternatives and rely on a feasibility-level of design for the tentatively selected plan.

Using the Risk Register throughout the Feasibility Study

The register is a living document that should be maintained and kept current throughout the feasibility study. The risk register will evolve with the study and the recommended actions. The register should be prepared as early in the study process as possible, but only when the PDT assesses what data it has and what data it truly needs. Ideally, an initial risk register would be completed during the scoping charette and would be refined during the within a month following the charette.

New risks may be identified from time to time. The risk register will also change regularly as previously identified risks are reassessed in light of new information, or based on the effectiveness of the mitigation strategy. Risks that are identified in the planning study will continue to be evaluated, monitored, and managed through the life-cycle of the project, from planning to design, construction and operations.

A Closer Look at the Risk Register

All the risks identified at the beginning and during the life of a planning study are recorded in the risk register. Properly maintained, the risk register is a valuable tool to communicate risk management issues to the PDT, the Sponsor, the USACE Vertical Team and key stakeholders.

A risk register generally includes:

- Grading risks in terms of their likelihood of occurring and seriousness of impact on the study/project.
- Initial plans for mitigating each high level risk, the costs and responsibilities of the prescribed mitigation strategies and subsequent results.

The risk register includes the following columns on each of the tabs:

Likelihood Rating Terms

- High - the probability of undesirable result is unacceptable based on evidence. A significant deviation from the expected value is more likely than not.

- Medium - the probability of undesirable result is borderline tolerable/unacceptable based on evidence. A significant deviation from the expected value is as likely as not.
- Low - the probability of undesirable result is tolerable or acceptable based on evidence. A significant deviation from the expected value is less likely than likely.
- None - the probability of undesirable results is zero or so low as to be effectively treated as a zero based on evidence.

Consequence Rating Terms

- High - the consequence of this undesirable result is unacceptable based on evidence. If this deviates from expectations, it will significantly affect study or project outcomes.
- Medium - the consequence of this undesirable result is borderline tolerable/unacceptable based on evidence. If this deviates from expectations, it will produce noticeable changes in study or project outcomes
- Low - the consequence of this undesirable result is tolerable/acceptable based on evidence. If this deviates from expectations, changes in study or project outcomes will be minor.
- None - there are no undesirable consequences based on evidence. If this deviates from expectation there will be no change in study or project outcomes.

Uncertainty Rating Terms

- High - there is little to no concrete evidence available. There is very broad range of possible outcomes that include extremes.
- Medium - there is some good evidence and some significant data gaps. Extreme outcomes are not possible.
- Low - good evidence is available, data gaps are not significant. There is a limited range of possible outcomes.
- None - all relevant facts are known

Column	Value Described
Item number	A unique identifier for each risk
Date	Date entry was last updated
Task	This is the task, decision, problem, question, issue, event, hazard or opportunity that is to be managed.
Risk and its cause	Briefly identify the risk. Considering the Task, what can go wrong and how can it happen? Consequence Describe the consequence of the column D risk. If things do "go wrong" in the way described what is the specific consequence for the study or project outcomes? (List the most significant consequence first if more than one.)
Consequence rating	If the most significant consequence in column E occurs what is its potential magnitude? (High, Medium, Low, None)
Evidence for consequence rating	Specific evidence used to support the consequence rating
Likelihood rating	What is the likelihood that the most significant Consequence described in column E will occur? (High, Medium, Low, None)
Evidence for likelihood rating	Specific evidence used to support the likelihood rating
Uncertainty rating	How great is the uncertainty about either the consequence or likelihood of the risk identified in column D? (High, Medium, Low, None)
Risk rating	Qualitative risk rating from lookup table on "Risk Rating Tab" (High, Medium, Low, None)
Decision(s) Affected	Identify all the decision criteria that could be affected by the risk identified. If an important decision not represented among the decision criteria is affected identify it here.
Risk management options	Identify options available for reducing or mitigating the risk.
Recommendation	Identify any preferred course for managing the risk. Tolerate the risk is the default option.
Study Tasks Affected	For study risks identify any other study tasks that could be affected by the outcome of the risk identified for this entry.
Outcome	Describe the result of the risk management action.
Notes	Make note of any significant information not provided in the other cells.

Risk Register

Item	Date	Task	Risk and its cause	Consequence	Consequence rating	Evidence for consequence rating	Likelihood rating	Evidence for likelihood rating
<i>Id number</i>	<i>Date entry was last updated</i>	<i>This is the task, decision, problem, question, issue, event, hazard or opportunity that is to be managed.</i>	<i>Briefly identify the risk. Considering the entry in column C, what can go wrong and how can it happen?</i>	<i>Describe the consequence of the column D risk. If things do "go wrong" in the way described what is the specific consequence for the study or project outcomes? (List the most significant consequence first if more than one.)</i>	<i>If the most significant consequence in column E occurs what is its potential magnitude?</i>	<i>Enter specific evidence used to support the consequence rating in column F.</i>	<i>What is the likelihood that the most significant consequence in column E will occur?</i>	<i>Enter specific evidence used to support the likelihood rating in column H.</i>

Appendix D - Decision Log

Decision Log - (Study Name)				
Category	No.	Key Decision	Associated Risk/Discussion/Alts Considered	Alts Considered
<i>General Process (e.g., Federal Interest, LPP)</i>				
<i>Specific Category (e.g., Geotech, Environmental, Economics, Costs, Coastal Engineering...)</i>				
<i>Specific Category</i>				
<i>Specific Category</i>				
<i>Specific Category</i>				
<i>Specific Category</i>				

Name _____

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Appendix E - Value Management Plan

Value Engineering (VE) is required by ER 11-1-321, Change 1, paragraph 12, dated 1 January 2011. Civil Works projects with a Current Working Estimate (CWE) over \$10 M require two VE Studies: the first during plan formulation of the Feasibility Study, the second at the 35% design stage. Civil Works projects with a CWE between \$1M and \$10 M require a single VE Study at the 35% design stage.

The District Value Engineering Officer (VEO) will pre-approve the VE work. Regulations require use of a Certified Value Specialist (CVS) for CWE's over \$10 M. Use of a contractor or a CVS will be coordinated with the VEO. Omaha District has IDIQ contracts available to provide CVS facilitators and technical disciplines to support a VE Study.

The Value Engineering/Methodology Job Plan outlines specific steps to effectively analyze a report or construction design in order to develop the maximum number of alternatives to achieve the required functions. The detailed schedule will be determined when the detailed VE Plan is established.

The Value Engineering/Methodology includes a Pre-study, the actual VE Study, and a Post-study, performed sequentially although new information may cause the VE team to return to earlier steps. The three major periods of activity are described in the following paragraphs.

Pre-study.

- Documents such as feasibility reports, concept design information, plans, specifications, cost estimates, etc. will be provided to the PDT.

Study.

Information Phase.

- Present/discuss historical information/background.
- Present/discuss the most current design information. (Design documents will be furnished to the PDT prior to the study for review.)
- Review cost estimates and cost diagrams: 80/20 rule (80 percent (effects) of the cost is found in 20 percent (causes) of the major cost items (Pareto principle)).
- Discuss known or potential issues or problems

Function Analysis Phase.

- Identify functions. What is the basic function(s)? What are the secondary functions?
- Utilize the Functional Analysis System Technique (FAST) and/or Function Model/List. Why is this project being constructed? How will this project be constructed to meet the customer's needs (not necessarily wants) based on the most current design? When do functions occur?
- Determine the function focus. What is it? What does it do? What must it do?

Speculation Phase.

- Generate alternatives that meet the requirements of the basic function(s).
- Be creative; this is the point in the study for creativity. Do not try to analyze the alternatives.

Evaluation Phase.

- Evaluate and rank the alternatives from the speculation phase.
- Determine which alternatives will go forward for development.
- Determine which alternatives perform the basic function, maintain or improve quality, and potentially save dollars.

Development Phase.

- Develop each alternative that passes the evaluation phase.
- Provide the following required information when developing a quantitative alternative that produces cost avoidance (defined as a Value Engineering Proposal (VEP)): (1) describe the VEP, (2) describe the original design, (3) describe the proposed design, (4) state the advantages of the new design, (5) state the disadvantages of the new design, (6) write a justification for the new proposal, (7) develop a cost estimate depicting the difference between the original design and the new design, and (8) develop life-cycle costs when applicable.
- Describe qualitative improvements or provide design comments; e.g., nonmonetary project or process enhancements such as schedule improvements, quality improvements, functional improvements, plan validation/improvements, etc.

Presentation Phase. Present a brief PowerPoint presentation to the sponsor, PM, and/or other

- PDT members at the end of the study. Participants in the presentation will vary for each project.

Post-study.

- The VEO will ensure and/or prepare a VE report within 2 weeks from the completion of the VE study/workshop.
- The PM will obtain commitment from the sponsor for implementation of the VE proposals.
- The PDT will incorporate/implement the accepted VE proposals into the design.
- The VEO will properly record the VE study results.

Records.

The VEO will record VE study information in the Value Engineering Record System (VERS) at <https://ten.usace.army.mil/techexnet.aspx?p=VERS2.0>.

The VEO will record an electronic copy of the VE studies in the Value Engineering Library on the USACE Value Engineering/Value Management shared drive at <https://kme.usace.army.mil/VE/Shared%20Documents/ValueEngineering.aspx>.

The VEO will keep and maintain accurate electronic VE files and pertinent data.

VE Certification.

VE certification is required to ensure compliance with applicable statutory requirements. The following VE Certification statement will accompany the feasibility study report, and for construction it will accompany the Bidability, Constructability, Operability, and Environmental document at the Ready to Advertise stage.

I, (**the PM**), certify that the Value Engineering process as required by ER 11-1-321, Army Programs Value Engineering, has been completed. Specifically, I certify compliance with Public Law 99-662 (33 USC 2288) and OMB Circular A-131. A VE study was (**completed**) on (**date**) by the appropriate authority. All VE proposals indicating potential savings over \$1,000,000 have been resolved with approval of the MSC/Engineering Center Commander.

Signature--PM

Signature--VEO Concurrence

The Contracting Officer will validate that PM/VEO certification has occurred prior to advertising or awarding the procurement action.



**US Army Corps
of Engineers**

Appendix F - REVIEW PLAN

ADAMS AND DENVER COUNTIES, COLORADO

FEASIBILITY STUDY - DENVER COUNTY

Omaha District

Northwestern Division Approval Date: pending

Last updated: Draft 15 January 2013

REVIEW PLAN
Adams and Denver Counties, Colorado
Feasibility Study - Denver County

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REVIEW PLAN
Adams and Denver Counties, Colorado
Feasibility Study and Report

1. Purpose and Requirements

a. Purpose

This Review Plan is a component of the Project Management Plan for the Adams and Denver Counties, Colorado, Feasibility Study and Report. This Review Plan defines the scope and level of review for that study and report. The purpose of review is to ensure that products and documents are of high quality and meet Federal criteria. Review covers significant major work products, analyses, and documents from planning, technical, and environmental aspects.

b. References

2. Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
3. EC 1105-2-412, Assuring Quality of Planning Models, 13 Mar 2011
4. ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
5. Draft Project Management Plan (PMP) for the Adams and Denver Counties, CO feasibility study
6. The NWD and Omaha District Quality Management Plans
7. CECW-CP Memorandum for Major Subordinate Commands, Subject: U.S. Army Corps of Engineers Civil Works Feasibility Study Program Execution and Delivery, 8 February 2012
8. ER 1110-1-12, Quality Management, 21 July 2006, including Change 1, 30 September 2006 and Change 2, 31 March 2011
9. Engineering and Construction Bulletin (ECB) No. 2012-18, Subject: Engineering Within the Planning Modernization Paradigm
10. EC 1165-2-209, Civil Works Review Policy, 31 January 2010, including Change 1, 31 January 2012
11. ER 1110-2-1302, Civil Works Cost Engineering, 15 September 2008.
12. ETL 1110-2-573, Construction Cost Estimating Guide for Civil Works, 30 September 2008
13. Planning SMART Guide, <http://planning.usace.army.mil/toolbox/smart.cfm>, as of 20 September 2012
14. ER 11-1-321, Army Programs Value Engineering, 28 February 2005
15. ER 200-2-2, Procedures for Implementing NEPA, March 1988

c. Requirements.

This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District

Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

16. Study Information

a. Decision Document.

Authorized name: Adams and Denver Counties, Colorado

17. Location: The study area extends approximately 10 river miles along the South Platte River and along its tributaries within Denver.

18. Type of decision document: Feasibility Report

19. Level of approval for the document: Chief of Engineers

20. Project Congressional authorization: required.

21. Accompanying type of National Environmental Policy Act (NEPA) documentation: Environmental Assessment

b. Study/Project Description.

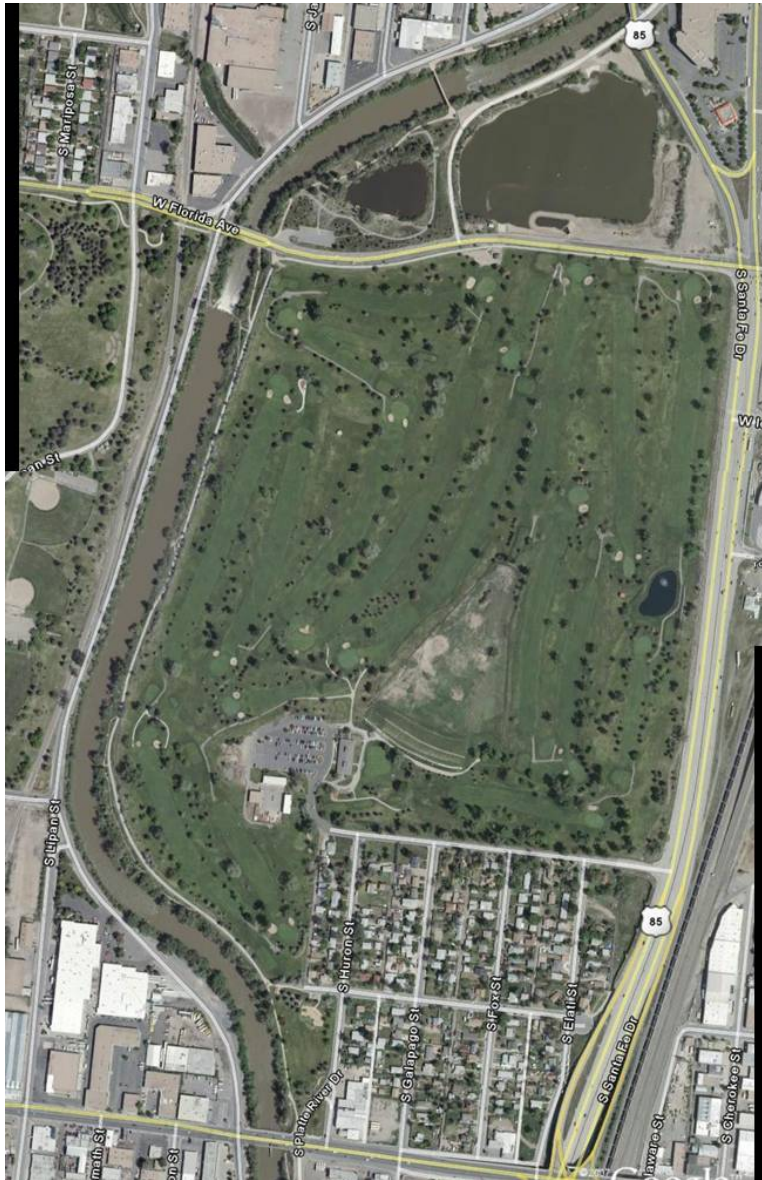
Study area: Denver County, population 600,000; urban residential, suburban, commercial, and industrial areas, in a metro area of population 2.4 million.

The Corps January 2010 Reconnaissance Study found greatest opportunity for habitat restoration at various unconnected parcels along the main stem and tributaries. Federal interest resource objectives include especially riparian habitat for migratory birds, but also wetlands and aquatic habitat. Study of these will involve considerations in biology, hydrology and hydraulics, and channel morphology and dynamics.



Types of measures/alternatives to be considered include:

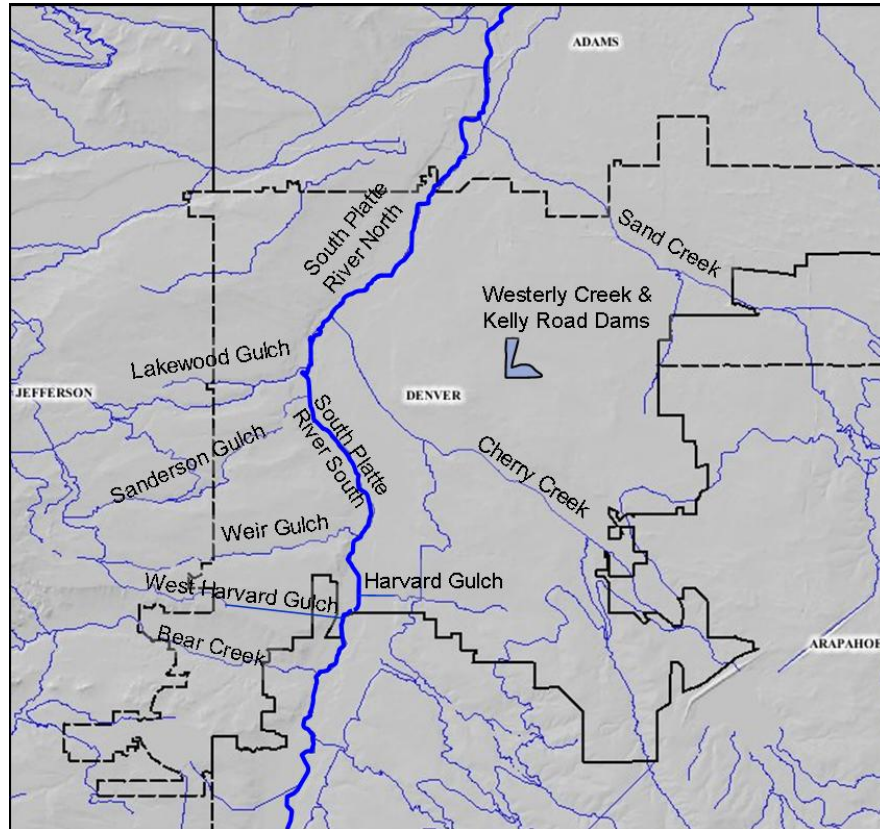
- Excavating channels wider at bottom and top, to increase wetted habitat and meandering.
- Excavating channels deeper and wider at bottom only, to increase wetted habitat.
- Excavating channel cross-sections wider at top only, to increase bank slope habitat.
- Planting vegetation without regrading.
- Removing exotic vegetation.
- Daylighting piped tributaries.
- Moving human use, buildings, infrastructure, and impact farther from channels.
- Developing wetlands by excavating backwaters and off-channel depressions and low benches.
- Developing wetlands by partially filling and reconfiguring existing ponds.
- Developing wetlands with storm water detention basins.
- Removing low-head dams.
- Notching dams.
- Installing fish passes.
- One-time removal of sediment.
- Sediment traps.
- Passive or active aeration measures.
- Bank benches to filter runoff water.
- Submerged bendway weirs to create depth diversity.
- Hardpoints along the shoreline to create depth diversity.
- Flow increases and timing, through revised upstream reservoir releases.
- Meandering of channels, or meandering of only low-flow channels.
- Increasing terrestrial habitat in areas near streams and wetlands.



Reach showing constraint of development along some segments, but also a golf course which is being repurposed, with a potential for habitat work.

Estimated cost (or range of cost) for a potentially recommended plan: \$20M to \$40M.

Cost-share sponsor: City and County of Denver, with partners Greenway Foundation, Denver Water Board, Colorado Water Conservation Board, and Urban Drainage and Flood Control District.



Denver's South Platte River and tributaries

Authorizations: flood damage reduction, floodplain management, water supply, water quality improvement, recreation, environmental restoration, watershed management, and other allied purposes.

Vertical team implementation guidance: N/A

c. Factors Affecting the Scope and Level of Review.

- i. Challenging study elements: No unusual technical, institutional, or social challenges are expected, other than those related to the urban location.
- ii. Preliminary assessment of possible risks that might affect project success:

Type	Magnitude	Impact on success
Study risk: Infrastructure proximity to stream may limit alternatives.	Moderate.	Moderate.
Implementation risk: Infrastructure near stream may be at increased risk from post-project stream instability.	Moderate.	Significant.
Study risk and implementation risk: Political boundary of study may limit alternatives and benefits.	Moderate.	Moderate.

- iii. Life/Safety issues: It is unlikely there would be any life/safety issues. Non-performance of ecosystem restoration work could have consequences to adjacent infrastructure such as roads; design would provide the needed redundancy or robustness to ensure no impact to the infrastructure and its related economics or public safety. Any work is expected to reduce existing residual flood risk. The life-safety risk assessment of the District Chief of Engineering will be secured in an early Feasibility update of this plan.
- iv. Request by Governor. There is, as of this date, no request by a Governor of an affected state for a peer review by independent experts
- v. Public dispute: The study is not likely to involve significant public dispute as to the size, nature, or effects of the project. It would be planned consistent with the sponsor's extensive public coordination and involvement and with its master plans reflecting that input
- vi. Cost or benefit. The study is not likely to involve significant public dispute as to the economic or environmental cost or benefit. The proposed environmental impact would be positive, considerable sponsor cost-share for the study would be in-kind, and considerable sponsor cost-share for a project would be LERRD already in hand.
- vii. Information in the decision document is not likely to be based on novel methods or models, be challenging to interpret, or present conclusions that are likely to change prevailing practices. The measures and alternatives listed above have been studied and implemented in prior efforts.
- viii. Stream restoration design may require moderate redundancy and/or robustness due to the presence of infrastructure so close to the stream.

d. In-Kind Contributions.

The in-kind products and analyses to be provided by the non-Federal sponsor are still under development as the PMP and FCSA are being finalized and negotiated. Section 2.d. will be updated to reflect agreed to in-kind contributions upon execution of the FCSA.

3. GENERAL OVERVIEW OF PLANNING AND REVIEW PROCESS

a. SMART Planning Principles

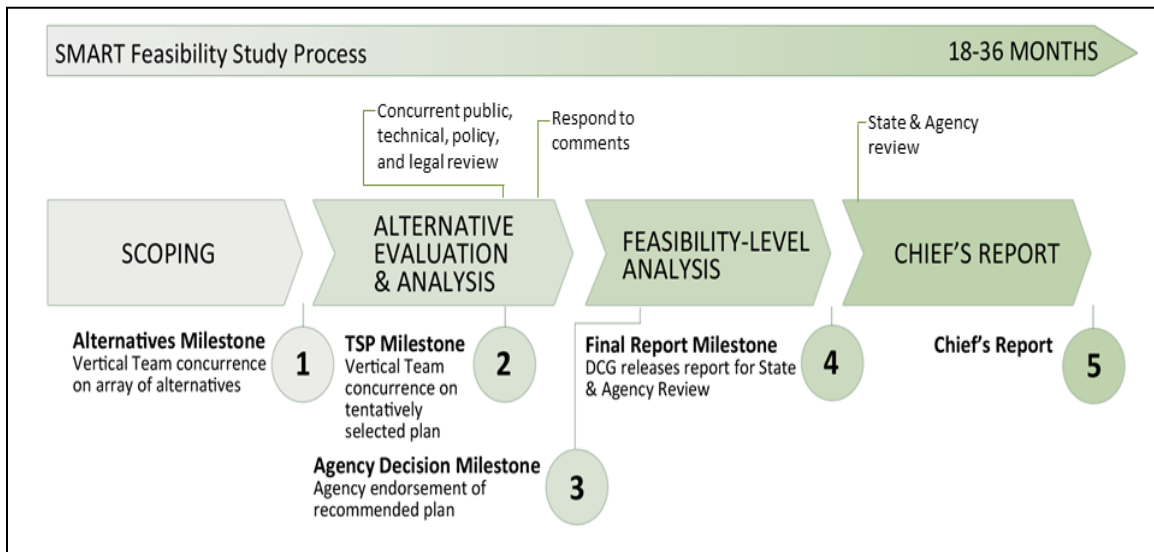
The Corps of Engineers uses the “SMART” paradigm for developing, reviewing, and approving decision documents. This paradigm aims to focus decision making on a streamlined process that incorporates risk and consequence considerations in shaping the amount, type, and level of detail involved in the analysis. SMART is an acronym for:

- S – Specific**
- M – Measureable**
- A – Attainable**
- R – Risk-informed**
- T – Timely**

The overarching goal of the SMART process is to get to the “right” information at the “right” time so that informed decisions can be made throughout the entire planning process instead of waiting until the end.

b. Feasibility Study Process

Below is a flowchart illustrating the feasibility study process, milestones, and review procedures to be followed throughout development of the decision document.



c. Review Process

Individual PDT members and supervisors will continually check their work products following standard Quality Management processes for the District. Officially designated comprehensive reviews at interim product milestones will be conducted at specified times. The table below illustrates the general steps that will be followed in conducting the study and shows how quality review procedures fit within the study process. Cost to conduct quality reviews are part of the total study costs and are cost shared as such. The only exception would be costs to conduct Independent External Peer Review (IEPR), if required, which is 100% federal expense and not cost shared. Costs to respond to comments received from IEPR are cost shared as part of the study costs.

Early interaction of the vertical team and resolution of issues will occur in a series of In Progress Reviews (IPR). IPRs will be held before milestone meetings. The District, Division, ATR lead, and HQUSACE will participate in all IPRs. HQUSACE may invite ASA(CW). The PDT will strongly encourage the non-Federal sponsor, resource agencies, and major stakeholders to participate in all IPRs. The IPR will include members of the ATR team as necessary.

Input will be sought at various times throughout the study and through various media. Significant comments and responses will be recorded in the report. The District will circulate NEPA documentation for review by agencies, organizations, and the public at Draft and Final Report.

Planning Steps, Milestones, and Reviews
SCOPING PHASE
<ul style="list-style-type: none"> • Initiate Study • Scoping / Charette
❖ Alternatives Milestone
ALTERNATIVE FORMULATION & ANALYSIS PHASE
<ul style="list-style-type: none"> • Define Existing and Future Without Project (No Action Plan) Condition • Evaluate Effects of Alternatives Plans • Compare Alternative Plans • ATR/QA of major technical products • Iterative reviews in this phase as needed: DQC, NWD, OWPR lead reviewer, RIT leader, and the ATR leader. • Value Engineering (VE) Review • Identify Tentatively Selected Plan (TSP)
❖ Tentatively Selected Plan Milestone
<ul style="list-style-type: none"> • Develop Draft Feasibility Report, Appendices, and NEPA document • District Quality Control (DQC) & Legal Certification of Draft Feasibility Report, Appendixes, and NEPA document <ul style="list-style-type: none"> • PDT Interdisciplinary Check Review • Chief & SME Quality Check Review & District Legal Certification • Quality Check Conference • District DQC & Legal Review Complete • HQUSACE approves release of Draft Feasibility Report and Appendixes and NEPA document for reviews • Concurrent Reviews of Draft Feasibility Report and Appendixes and NEPA document – allow ≥ 30 days <ul style="list-style-type: none"> • USACE Policy & Legal Review • Northwestern Division • Agency Technical Review (ATR) • Agency Review • Public Review • Conduct Public Meetings • Review of Draft Feasibility Report and Appendixes Complete • PDT/VT Selected Plan confirmation/revision
❖ Agency Decision Milestone and Meeting
FEASIBILITY-LEVEL ANALYSIS PHASE
<ul style="list-style-type: none"> • Develop Responses to Review Comments, Resolve Issues • Develop Final Feasibility Report and Appendixes • Reviews of Final Feasibility Report and Appendixes • DQC & Legal Certification of Final Feasibility Report and Appendixes and NEPA document

• Interdisciplinary Review by PDT
• Quality Check Review by Supervisors and Subject Matter Experts
• Quality Check Conference
• District Legal Certification
• Agency Technical Review (ATR)
• District DQC & Legal Review Complete
• District Commander signature and submittal to NWD of the final decision document
❖ Final Report Milestone (NWD submittal to HQUSACE)
CHIEF'S REPORT PHASE
• USACE Policy & Legal Review
• State & Agency Review – 30 days
• Develop Chief's Report
❖ Chief's Report Milestone

4. District Quality Control (DQC)

DQC is technical review of data, methods, and analyses, for all major disciplines used. DQC will generally follow Omaha District Standard Operating Procedure (SOP). This involves Interdisciplinary Review and Quality Check. Omaha District will manage DQC.

a. **Interdisciplinary Review**

Primary members of the PDT, including the sponsor, will conduct “Interdisciplinary Review” of PDT work. They will conduct quality control (QC) of their own work and the work of other team members, and conduct quality assurance (QA) review of sponsor work and contractor work. The sponsor and contractors will provide a quality control plan for their own work, and will conduct QC on their products.

b. **Quality Check**

Peers and supervisors within each discipline will conduct “Quality Check” of PDT work including sponsor work, and of contractor work.

c. **Documentation of DQC**

Review will be documented in ProjNet / DrChecks. A full report will be provided to the ATR team.

d. **Products to Undergo DQC**

DQC will occur on the products of each main discipline: planning, environmental compliance, hydrologic engineering, geotechnical engineering, real estate, project management, cost engineering, economics, and possibly other disciplines. Reviewers will conduct QC for each main technical product when it is produced and do a complete reading of the Draft Report and Final Report when those are ready.

e. Required DQC Expertise

At study initiation, District supervisors in each main discipline will assign themselves and a designated subject matter expert (SME) as Quality Check reviewers, subject to approval by NWD. Supervisors will provide the SME's name and organizational affiliation with a short paragraph on the credentials and relevant experiences of the SME. Sponsors will do the same.

f. Quality Assurance (QA)

QA is Northwestern Division's ongoing monitoring and review of the District's QC process, including PDT and DQC team qualifications. It will be conducted by the NWD chiefs in charge of planning, environmental planning and compliance, hydrologic engineering, geotechnical engineering, real estate, project management, cost engineering, economics, and possibly other disciplines. The sponsor and contractors will also conduct QA for their QC processes.

5. Agency Technical Review (ATR)

ATR is technical review by experienced subject matter experts outside the PDT and outside Omaha District. ATR will be managed by the Eco-PCX as the review managing organization (RMO).

g. Products to Undergo ATR

Reviewers will review not only work in their discipline but all data, products, and work of the PDT, sponsor, and contractors. ATR reviewers will assess assumptions, analyses, models, analytic methods, interpretations of analyses and conclusions, compliance with USACE guidance, and report presentation. ATR will occur at the Draft and Final of both the Report and the NEPA documentation. Where practicable, technical products that support subsequent analyses will also be ATR'd prior to being used in the study: perhaps including surveys & mapping, hydrology & hydraulics, geotechnical investigations, economic and environmental inventories, annual benefit estimates, and cost estimates. Reviewers will not make a recommendation on whether a particular alternative should be implemented.

h. Required ATR Team Expertise

The expected expertise needed is shown in the team roster table. Prior to completion of this Review Plan and prior to the execution of the FCSA, the RMO is to select the ATR lead from outside NWD. The ATR leader, with assistance from the RMO, will identify and secure the services of the ATR team. The team members will be identified by name and organizational affiliation with a short paragraph on both the credentials and relevant experiences of each reviewer. The Corps' Cost Engineering Mandatory Center of Expertise (MCX) will assist in determining the expertise needed on the ATR team. The RMO is also responsible for coordination with the Cost Engineering MCX.

i. Documentation of ATR

The ATR leader, in cooperation with the PCX and with assistance from the Cost MCX, will prepare the charge for the ATR team. The "charge" will contain instructions

regarding the objective of the review and the specific advice sought. Review will be documented in DrChecks. The Cost MCX will provide certification of the Final Report.

6. Independent External Peer Review (IEPR)

The study is not expected to include an environmental impact statement or to be controversial. It will have negligible adverse impact on scarce or unique cultural, historic, or tribal resources; no substantial adverse impacts on fish and wildlife species and their habitat including species listed as endangered or threatened or their critical habitat; and minimal life safety risk. Thus, an exemption from Independent External Peer Review (IEPR) will be sought. The study PMP and FCSA are still under development and will be finalized during FY13, and the need for IEPR will be revisited through that process. Upon final determination of the scope of study and likely potential alternatives the IEPR exclusion request will be submitted for review and approval during 4th quarter FY13.

7. policy and legal compliance review

The decision document will be reviewed throughout the study for compliance with federal and local law and policy. DQC and ATR conduct policy review by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents. HQUSACE Office of Water Policy Review (OWPR) is responsible for policy review and approval of the report. The policy review team will be identified and/or confirmed at study initiation. OWPR will assign a review manager, assemble the policy review team, and maintain a roster of the team. The vertical team will include a HQ staff member who acts as the Regional Integration Team member. ASA(CW) is to be involved throughout the study.

HQ policy review will be conducted throughout the study, before public circulation of the Draft Report, and at Final Report. The Final Report will be reviewed for compliance with previous guidance and the decision log before being sent for final state and agency review.

Legal review will be conducted by Counsel at the District, Division, and HQUSACE. Omaha district Office of Counsel is responsible for the legal review of the decision document and signing a certification of legal sufficiency. The legal review team will be identified and/or confirmed at study initiation.

8. Cost Engineering Mandatory Center of Expertise (MCX) Review

The Corps' Cost MCX will assist in determining the expertise needed on the ATR team, will assist development of the review charge, and will provide certification of the Final Report. The RMO is responsible for coordination with the Cost Engineering MCX.

9. Model Certification and approval

EC 1105-2-412 mandates the use of certified or approved models for all planning activities. Models not previously certified would need review and approval. However, it is expected that the only models used will be well-known and proven, Corps-developed

or commercial, engineering or evaluation software; thus no model review or certification is planned.

j. Planning Models

Models will likely include HEP HSI models, IWR Planning Suite, and MCACES/TRACES cost estimating software.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Habitat Models	Currently unknown which, if any, habitat model will be used.	TBD
IWR Planning Suite 1.0.11.0	IWR Planning Suite assists with plan formulation by combining user-defined solutions to planning problems and calculating the effects of each combination, or "plan." The program can assist with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are best financial investments and displaying the effects of each on a range of decision variables.	Certified

k. Engineering Models

Models will likely include HEC-RAS and Inroads quantity estimating software.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS 4.1 (River Analysis System)	The Hydrologic Engineering Center’s River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for analysis to evaluate the future without- and with-project conditions along waterways to be substantially modified.	H&H CoP Preferred Model

10. Value Engineering (VE) Review

VE is an attempt to identify cost saving and project enhancement options. A VE workshop or study will be conducted following the general VE Job Plan format prescribed by ASTM and SAVE International standards and the 5 step process (Information, Speculation, Analysis, Development and Presentation Phases). The study will include and document functional analysis methodology (FAST diagrams) and generation of alternatives. VE study team members will be independent of the PDT.

11. Review Schedules and Costs

The PDT and others will continually check their work and others’ work to ensure quality. Official reviews will be conducted at designated times. Consistent with the Planning SMART Guide, all post-DQC reviews at designated times will occur concurrently, and

work will continue during reviews, to the maximum extent possible. All review costs (with the exception of IEPR panel costs which are funded at 100-percent federal expense) are part of total study costs and are cost-shared as such.

In the final State and Agency (S&A), the Final Report will be sent to affected states and agencies for review before preparation of a Chief’s Report; comments will be sent to HQUSACE. The review is managed by HQUSACE which bears its management costs. Responses will likely be prepared by the District at the expense of the cost-shared study.

Quality Review Procedures	Duration (workdays)	Cost (\$ '000)
ATR/QA of major technical products (concurrent with main study)	0	5
Value Engineering Review	0	0
• Pre-Study: Documents provided to VE Team, studied by VET	10	10
• VE Study, workshop: VET analyzes alternatives and develops a Value Engineering Proposal to PDT including sponsor.	10	35
• Post-Study: VEO prepares report, PM secures sponsor buy-in, PDT makes study changes.	10	15
DQC & Legal Review of Draft Feasibility Report, Appendixes, and NEPA document – sponsor and Corps	0	0
• PDT Interdisciplinary Review	10	10
• PDT Addresses Comments / Revises Draft Report and Appendixes	10	10
• Quality Check Review & District Legal Certification	10	15
• PDT Addresses Comments / Revises Draft Report, Appendixes, and NEPA document	10	15
• Quality Check Conference	2	10
• District DQC & Legal Review Complete	0	0
Concurrent Reviews of Draft Feasibility Report, Appendixes, and NEPA document	0	0
• USACE Policy & Legal Review (35 da)	45	0
• Agency Technical Review (ATR) (35 da)		55
• Public Review incl. revisions & responses (45 da)		10
• Conduct Public Meetings (3 da)		10
• Review of Draft Feasibility Report, Appendixes, and NEPA document Complete		0
District DQC & Legal Review of Final Feasibility Report, Appendixes, and NEPA document – sponsor and Corps	0	0
• PDT Interdisciplinary Review	10	15
• PDT Addresses Comments / Revises Final Report, Appendixes, and NEPA document	10	10
• Quality Check Review & District Legal Review	10	15
• PDT Addresses Comments / Revises Final Report, Appendixes, and NEPA document	10	15
• Quality Check Conference	3	10
• District DQC & Legal Review Complete	0	0

Concurrent Reviews of Final Feasibility Report, Appendixes, and NEPA document		0
• USACE Policy & Legal Review	35	0
• Agency Technical Review (ATR)		45
• Abbreviated Risk Analysis (if TPC <\$40M) or		10
• Crystal Ball Risk Analysis (if TPC >\$40M)		25
State & Agency Review of Final Feasibility Report, Appendixes, and NEPA document	30	10
Cumulative	225	\$ 370

a. Agency Technical Review Schedule and Cost.

ATR will be conducted by a qualified team from outside of the home district that is not involved in the day-to-day production of a project/product. There shall be appropriate consultation throughout the review with the allied Communities of Practice such as engineering and real estate, other relevant CXs, and other relevant offices to ensure that a review team with appropriate expertise is assembled and a cohesive and comprehensive review is accomplished. There shall be coordination with the Cost Engineering Mandatory Center of Expertise (MCX) located in the Walla Walla District, which will provide the cost engineering review and resulting certification. Costs for ATR are currently estimated at approximately \$100,000. Additional funds will be provided for the ATR lead to coordinate the effort. An ATR team and ATR lead will be identified with help from NWD Planning staff and the FRM-PCX at a later date.

b. VE Review Schedule and Cost

The NWO District Value Engineering Officer estimates that a VE study will cost approximately \$60,000.

c. Type I IEPR Schedule and Cost

The PMP and FCSA for this study are still under development. Current expectation is that an IEPR will not be required and an IEPR exclusion request will be submitted and approved in late FY13.

d. Model Certification/Approval Schedule and Cost.

The PMP and FCSA for this study are still under development. All models anticipated to be used during the study are currently believed to be acceptable. Coordination will take place with the ECO-PCX upon identifying a new model is required as part of the study. Costs for model certification, as necessary, will be utilized from contingency funding.

12. Public Participation

Public scoping meetings are being scheduled for immediately following signing of the FCSA in 4th quarter FY13, contingent on available funding. Public and agency input will be sought on the problems and opportunities facing the ecosystem along the South Platte River in Denver and Adams Counties; study goals, objectives, and constraints; and potential measures and alternatives that could be evaluated to address those needs. Public meetings will also take place once the draft document is ready for public review. The

Corps will utilize local media to advertise meetings and maintain a project website with information about the project.

Public comments will be provided to the review team prior to the start of each review.

At this time there are no plans to nominate potential peer reviewers from the public, however the opportunity to review the document will be afforded to the stakeholder group consisting of the non-Federal sponsor, municipalities and counties within the basin, and other local, state, and federal agencies working in the region. These opportunities will be made at the same time the general public reviews occur and as needed throughout the study process.

All reports and project documents will be made available in accordance with USACE policies.

13. Review Plan Coordination, Approval, and Updates

a. District Coordination.

This Review Plan outlines quality assurance procedures for conducting the study in accordance with current USACE, NWD, RMO, and District policies and guidance. Preparation of the Review Plan has been coordinated across all technical elements within the District. The recommended review procedures were developed in a risk-informed manner, and the factors considered are documented in Section 3.c. The Omaha District Chief of Engineering, Chief of Planning, and Planning Quality Manager have all reviewed this Review Plan and concur with its recommendations.

b. Review Management Organization (RMO) Coordination.

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is [*the Ecosystem Restoration Planning Center of Expertise \(ECO-PCX\)*](#)

The RMO will coordinate with the Cost Engineering Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

c. Review Plan Approval and Updates.

The Northwestern Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes

to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

14. Points of Contact and VT Reviewers

Public questions and/or comments on this review plan can be directed to the following points of contact:

- [Omaha District USACE](#)
 - Steve Rothe, Project Manager 402.995.2705
 - Greg Johnson, Chief of Plan Formulation and Project Management Section 402.995.2701
 - Dave Brandon, Chief of Econ, Cultural Resources, and Planning Quality Review 402.995.2699

- [Northwestern Division USACE](#)
 - Jeremy Weber, District Support Planner, 503.808.3858

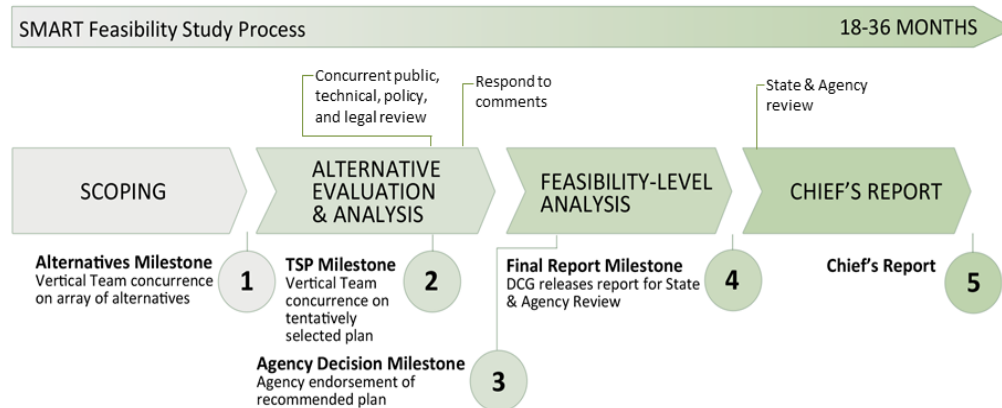
- [ECO-PCX USACE](#)
 - Jodi Creswell, ECO-PCX Operations Director, 309.794.5448

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

Appendix G - Study Process

As the following illustrates, a feasibility study moves progressively through a planning process, summarized into 4 steps here, with five key decision points or milestones.



A. Scoping Step, Alternatives Milestone

i. Scoping Kickoff and Charette.

Feasibility Study Kickoff includes a site visit, which is essential for the Vertical Team. Team objectives in holding a site visit are: geographic context, mutual vision of the goal, a common language for the site, familiarity with sponsor and stakeholders, and team building. The preferred method will be a real-place site visit. It will be conducted as part of the initial planning charette.

The PDT will prepare for the charette by conducting a dry run with District chiefs 2 weeks early. The charette will be a structured, collaborative workshop session, bringing a variety of viewpoints. It will be managed by a third-party facilitator. Participants will work collaboratively through one or more iterations of the 6-step planning process. Participation by the VT is required but this means only Division; Headquarters will not participate. Additional charettes could be scheduled if needed.

During the charette, the participants will use focused exercises and tools such as a Risk Register and the “Seven Pieces of Paper.” The “seven pieces of paper” will be developed by the entire PDT, rather than one person, and tell the story of the study. This will be based on existing information / decisions and use excerpts from existing writing where possible. The seven pieces of paper will cover the following seven areas:

1. Problems and Opportunities. What is the federal interest? The Corps interest? The Corps’ authorities and role? What are the federally significant ecosystem resources, and reasons for significance: technical, institutional, and public? The scale of the project?

2. Objectives & Constraints. What does success look like?
3. Decision Criteria. How will you measure success? Evaluation Criteria, Comparison Criteria, Selection Criteria.
4. Key Uncertainties. What areas of uncertainty do you expect to impact your planning decision?
5. Without Project Condition. What will it be/look like if we do nothing? What problems will be experienced by federally significant resources, in future without-project conditions? What is the preliminary inventory and forecast of future conditions, with readily available information?
6. Measures Screened. What was considered to meet the Objectives & Constraints, with explanation of measures screened out.
7. Formulated Plans under consideration. Initial formulation of alternative plans: measures combined into plans for each objective.

Charette work and decisions on these 7 topics will be recorded as the Report Synopsis, the first element of the Feasibility Report. If the PDT and VT agree on all these at the Planning Charette, a separate Alternatives Milestone Meeting is not needed. If there are needs for post-charette development and clarification of these topics, a subsequent Alternatives Milestone Meeting will be held.

After the charette, the PDT will develop the risk register, and based on that will develop a decision management plan laying out the way forward, the agreed upon level of detail and approaches.

ii. Alternatives Milestone.

If needed to address changes or clarifications developed after the charette, the teams will hold an Alternatives Milestone Meeting at which the VT and PDT will review and agree on the 7 key points, and will affirm that the objectives of the study are consistent with Corps authorities and priorities. The PDT will then update the draft report synopsis, the risk register, the scoping and review plans, and the decision log.

B. Steps: Alternative Formulation and Analysis.

Milestones: Tentatively Selected Plan and Agency Decision

i. Alternative Formulation and Analysis

During this phase of the feasibility study, the PDT will use a reasonable level of detail to collect data and model alternatives, to analyze and evaluate effectiveness with the intent of identifying a Tentatively Selected Plan (TSP). A full array of alternatives will be considered and evaluated. However, feasibility-level design work will focus on the agency recommended plan and a Locally Preferred Plan (LPP) if appropriate. To screen and evaluate alternative plans, the study will have adequate detail required by law and regulation for a Chief's Report and recommendation to Congress for an authorized

project. However, the level of detail, data, and models must be focused on what is necessary.

The PDT will conduct In Progress Reviews (IPRs) with NWD, as needed, engaging the RIT, ATR lead, and OWPR lead as advisors. Iterative DQC and NWD QA checks, and RIT, ATR & OWPR lead interaction during IPRs will address the adequacy of the draft report content prior to the TSP milestone. After IPRs, the PDT will update the risk register and documentation of key decisions (decision log).

Before the TSP Milestone meeting, the PDT should have:

- Prepared the draft feasibility report which includes a summary evaluation of the final array of alternatives and a rationale for the TSP selection; this will be submitted upward not for review but as a read-ahead to inform the Vertical Team before the discussions and decisions at the milestone meeting. Draft feasibility report documentation should follow ER 1105-2-100, Appendix G, general evaluation guidelines (Exhibit G-1) and be compliant with NEPA and other applicable laws, policies and regulations (Exhibit G-8). The PDT will provide a level of detail of documentation on the TSP that is commensurate with other alternatives analyzed during this phase. It is expected that limited additional TSP detail will be included for this public draft report. Details related to the Selected Plan will be developed and evaluated as part of the next phase of the study.
- Secured an LPP waiver from the ASA(CW) if an LPP is being pursued.
- Updated the Risk Register.
- Updated the team's process documents as needed with the next steps of the study – the decision management plan, review plan, etc. The decision management plan should be focused on the needs of the study and focus on the decisions to be made. It is not simply a list of tasks or a replacement of the Project Management Plan.

ii. Tentatively Selected Plan Milestone

The TSP Milestone meeting can be an in-person or virtual meeting. At the meeting, the Vertical Team and Project Delivery Team agree on the Tentatively Selected Plan (TSP) or the Locally Preferred Plan (LPP), on the analysis the PDT used to reach its decision, and on the proposed way to develop costs and designs for the final feasibility study report. Following the milestone meeting, an updated decision log documenting decisions and agreements will be vetted with the Vertical Team. The updated draft Report will tell the story of the Problem, the alternatives considered, the without project conditions, and the rationale for the agency selected plan.

The identification and resolution of ATR and policy concerns are documented in the decision log.

Before the Agency Decision Milestone meeting, the PDT, VT, and Review Team should:

- Complete concurrent reviews
- Consider all review comments and document significant comments and responses in the draft decision document. Comments that may affect the selected plan will be discussed during the Agency Decision Milestone meeting.
- Conduct IPRs and document IPRs with memoranda for record
- Update the decision log
- Vet the MFR or Decision Log through Vertical Team
- Update the Risk Register, including the project study issue checklist.
- Update the team's process documents as needed with the next steps of the study – the decision management plan, review plan, etc.

Any read ahead information for the meeting, e.g., MSC Commander's briefing, a report synopsis and highlights of public, ATR, policy review, and legal certification comments, what the team has accomplished and the path forward, will be provided two weeks in advance.

iii. Agency Decision Milestone

The Agency Decision Milestone is a checkpoint where the vertical team confirms that the analyses in the draft report and the recommendations as a result of the concurrent reviews are compliant with policy and that there is a capable non-Federal sponsor(s) ready to support project implementation. The Project Delivery Team and Vertical Team bring forward the TSP to Senior Leadership, including the Deputy Commanding General of Civil and Emergency Operations (DCG-CEO) for confirmation. With confirmation, this plan becomes the agency recommended plan that will be the focus of increased engineering and cost design / detail sufficient to complete the feasibility study report.

At the Milestone meeting a panel of senior HQUSACE leaders chaired by the DCG-CEO will determine whether the selected plan should be endorsed. If the selected plan is endorsed, the Panel will also approve the way forward for feasibility-level design. The Office of the Assistant Secretary of the Army (Civil Works) (OASA(CW)) may be invited to participate in the Agency Decision Milestone meeting as deemed necessary. The milestone meeting will be conducted by webinar or in-person and the briefing will be led by the MSC Commander.

The results of the agency recommendation milestone meeting are added to the decision log.

C. Step: Feasibility-Level Analysis.
Milestone: Final Report Milestone

i. Feasibility-Level Analysis

Between the Agency Decision Milestone and the Final Report Milestone, the PDT is developing the design and cost detail to reduce risk of uncertainty with cost data, engineering effectiveness, environmental impacts, and economic benefits.

The Feasibility Level Design of the agency recommended plan occurs after the Agency Decision Meeting. This phase of the study includes development of the Final Draft Report and additional design of the recommended plan to reduce risk and uncertainty with cost data, engineering effectiveness, environmental impacts, and economic benefits.

After identification of the agency recommended plan, the PDT will determine a recommended investment level and proposed cost allocations for implementing the recommended plan, based on existing cost sharing policy. If at the Agency Decision Milestone HQUSACE Senior Leadership agreed that the Locally Preferred Plan (LPP) should be carried forward, the PDT will develop a sufficient level of cost and engineering detail on both the agency recommended plan and the LPP to determine the appropriate cost allocation for authorization. Current policies requiring a LPP waiver from the ASA(CW) if the LPP is being pursued continue to apply.

The Feasibility Level Design phase includes:

- Sufficiently detailed design on the TSP (and LPP if appropriate), in order to improve accuracy of implementation costs, engineering effectiveness, and economic benefits.
- Preparation of the final feasibility report with identification of the agency recommendation.
- Cost Schedule Risk Analysis (CSRA).
- In-progress reviews (IPRs) with the VT as necessary to resolve any policy or agency issues.
- Release of Division Engineer's Notice

The design effort will require increased use of critical thinking (i.e. engineering judgment) in the analysis and cost estimates. The PDT must analyze minimum design requirements to assure functionality, life safety, and develop accurate cost and schedule information. Each project will use a "risk register" previously developed to assess the likelihood of each project feature impacting cost, schedule and/or function/safety. The PDT should use the risk register to identify the level of detail and focus areas necessary to further design the agency recommended plan and for the agency to make a recommendation to Congress. The goal is to minimize data collection and analysis for low impact features during the Feasibility design. High impact features should be carefully scoped such that data collection and analysis is commensurate with risk and adds value to the decision making process, accuracy to the cost and schedule, or reduces risk. The PDT shall work closely to identify areas where design details would be beneficial to reduce uncertainty. For items with significant cost and schedule risk,

mitigation strategies should be identified and/or discussed in the project's Risk Management Plan.

Additional modeling and design should improve the definition of alternative impacts to the environment, mitigation plans, economic damages and benefits. If the additional design results in significant changes that would affect the selection of the agency's recommended plan, then the team should re-evaluate the alternative selection process. The agency may determine that there are multiple best plans for recommendation based on different objectives.

The final feasibility report and NEPA documentation should follow ER 1105-2-100, Appendix G, general evaluation guidelines (Exhibit G-1) and be compliant with all applicable laws, policies and regulations (Exhibit G-8). In the final report, the PDT will provide a level of detail and documentation on the agency recommended plan that is greater than the alternatives analyzed previously, because the agency decision was made on equivalent levels of detail.

Final Report includes updated detail on the recommended plan, including cost and engineering detail.

District Quality Control (DQC) and Agency Technical Review (ATR) will be completed prior to District Commander signature of the final decision document. Once the District Commander signs the recommendations in the final decision document, the USACE district will forward the final report, final NEPA document, and related materials to NWD. The District Commander's signature is for the recommendation and does not constitute the project decision in accordance with ER 2-2-200. Therefore, the Record of Decision (ROD) or Finding of no Significant Impact (FONSI) will not be signed at or before this time.

All reviews will be completed prior to the District Commander signing the report, except State & Agency review, final NEPA review and HQUSACE policy review.

ii. Final Report Milestone

The final report milestone is the NWD Commander's submittal of the District's final report and NEPA document to HQUSACE. Final decision documents recommending the authorization of new projects and/or modification of existing projects must be transmitted to HQUSACE for review and approval prior to the execution of design agreements or project partnership agreements (PPAs), and the subsequent obligation and expenditure of funds for design or construction.

D. Step: Washington Level Review Milestone: Chief's Report

The MSC submittal of the final report and NEPA document to HQUSACE initiates a series of Washington-level actions that would ideally culminate in the authorization of

the recommended project. Upon receiving the MSC submittal materials (ER 1105-2-100, Appendix H, Exhibit H-7), the HQUSACE policy review team will briefly assess the compliance of the materials with previous guidance and the decision log to identify any obvious concerns that may warrant delaying the release for state and agency review. The Office of Water Project Review (OWPR) review lead will summarize these and any other remaining policy and legal concerns for the DCG-CEO.

- **State and Agency Review**

Provided that all policy issues have been addressed and the recommended plan does not vary significantly from the selected plan endorsed at the agency endorsement milestone, the DCG-CEO may choose to approve release of the final report and NEPA document and draft report of the Chief of Engineers for State and Agency (S&A) and final NEPA review. If all policy issues have been addressed and the recommended plan varies significantly from the agency-endorsed plan, the DCG-CEO may choose to convene a Civil Works Review Board as a corporate checkpoint for determining that the final decision and NEPA documents, and the proposed Report of the Chief of Engineers are ready to release for state and agency review and final NEPA review.

The Office of Water Project Review (OWPR) will provide a coordination package to the District to initiate the S&A Review as soon as possible after the approval for release by the Deputy Commanding General of Civil and Emergency Operations (DCG-CEO). OWPR will provide a mailing list, signed transmittal letters, and the draft Report of the Chief of Engineers to the District with instructions for mailing copies of the report to the State and Federal agencies for S&A Review.

The District will date and mail the transmittal letters and enclosures according to the written HQUSACE instructions. (Keep copies to verify the dates.) The transmittal letters will explain the current status of the report and final NEPA documents and direct any comments to the USACE Director of Civil Works. OWPR will contact any agencies or Governor's offices that do not respond by the end of the review period.

OWPR will identify any State or Agency comments that warrant a response and the Regional Integration Team (RIT) planner will coordinate with the MSC and District to draft response letters for signature by the Chief, Planning and Policy Division at HQUSACE.

- **Chief's Report Milestone – The Chief's Report is developed for signature.**

Appendix H - Maintenance of Cost Records Feasibility Cost-Share Agreement (FCSA) (Article VI)

Procedures for keeping books, records, documents, and other evidence pertaining to expenses incurred pursuant to an FCSA for credit toward the sponsor's share of the total project cost are set forth in both the FCSA and the Project Management Plan (PMP) for the project.

Once the government and the sponsor agree which parties are responsible for the various portions of the work, costs are negotiated for comparison to the cost for the government to perform the work and an agreement is reached for cost and performance.

As addressed in the FCSA, as costs are finalized, they are reviewed for reasonableness, allowability, and allocability as they relate to the project. The application of standards for testing of these costs is based upon the type of recordkeeping system the sponsor maintains as part of the normal course of business. When possible, this system should differentiate between costs related to the FCSA and all other costs incurred during the normal course of business. Examples of types of documents typically used as proof of payment to establish a relationship to the PMP include, but are not limited to, the following:

1. **PAYROLL:** Payroll and associated time and attendance documents for each individual charging to the project. These documents should show base rates and any added overhead charges. An explanation of how those overhead charges are calculated should also be included. If the payroll system is generic (due to a job order system not being available), certification from the sponsor to include dates and events relating to participation in the Project Study Team (Article IV) may be used. Other types of in-house efforts to perform in-kind services may be handled in the same manner as long as the information is certified and documented for comparison to the PMP's negotiated amount.

2. **TRAVEL/LOCAL MILEAGE:** Travel documents or certified claims from employees for reimbursement that show dates of travel, itineraries, daily rates, transportation expenses (e.g., airfare), allowable mileage, and any reimbursable miscellaneous expenses. Reasonable mileage rates are determined to be those that are reasonable and customary to the sponsor but not in excess of the same rate reimbursed to federal government employees. (Current rate is \$.405 per mile).

3. **MEETING ATTENDANCE:** Labor and travel costs for attendance at meetings identified under Article IV "Study Management and Coordination" associated with the project.

4. **CONTRACTS:** Contract and purchase order documents or any other type of contractual agreement that documents types of goods and services procured. These documents should be accompanied by copies of contractor pay estimates or vendor invoices related to those contracts or purchase orders. Check registers or printouts documenting actual disbursement of these monies are also a component of the package.

5. **EQUIPMENT USAGE:** Negotiated services that require the rental or usage of existing equipment owned by the sponsor require either (1) the supporting documentation identified under Item No. 4, if rented, or (2) the basis for a billable rate when applied; the latter would include the dates, times, and purpose the equipment was used for.

6. **MISCELLANEOUS:** Any other documentation related to expenses incurred in the execution of an FCSA as negotiated expenses approved by either incorporation into the FCSA or by the Project Manager.

7. **DONATED IN-KIND SERVICES:** Typically, when services other than those related to real estate lands, easements, rights-of-way, and relocations are provided at no cost to a sponsor from a third party, those costs are set to zero in the PMP and the reduction shared equally between the government and the sponsor. The only exception to this pertains to work performed under the Continuing Authorities Program (Sections 1135, 206, and 204), where legislation adopted under Section 203 of WRDA 1992 has created specific allowances.

8. **FINAL AUDIT:** Any additional costs not included in the initial PMP incurred by the sponsor as a result of auditing the records to assure that the funds were properly used are included in the total project cost and cost shared.

NOTE: Costs incurred PRIOR to the signing of the FCSA are not allowable costs.

Sources:

Project Management Guidance Letter Number 4, Credit for Local Sponsor Cost Associated with Project Activities

32 C.F.R. Section 33.20

Prepared by Planning, Programs, and Project Management Branch
31 January 2003

Appendix I

Corps of Engineers Principles

Corps Civil Works Strategic Plan

- Work with others toward integrated, sustainable solutions;
- Restore and protect the environment;
- A holistic and multipurpose approach;
- Attention to the watershed as a logical water resource project unit;
- Collaboration, partnership, and teamwork in planning and implementation;
- Consistent with Environmental Operating Principles;

Corps Environmental Operating Principles

- Seek environmental accountability, to maintain the environment in a healthy, diverse, and sustainable condition;
- recognize the interdependence of life and the physical environment, proactively considering environmental consequences of Corps programs and acting accordingly in all appropriate circumstances;
- seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another;
- continue to accept responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems;
- seek ways and means to assess and mitigate cumulative impacts to the environment, bringing systems approaches to the full life cycle of our processes and work;
- build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work; and respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

Appendix J - Budget Ranking Criteria **From Budget EC, Appendix 2**

The Corps will annually rank the project among its other ecosystem restoration projects, for consideration in budget priority. The following criteria may be applied, although the precise definitions and scoring of each may change for each fiscal year.

Significance. Items 53 – 65 are required for all items funded in the Investigations and Construction accounts and projects listed in paragraph II-2.13. Blank entries will equal zero. The scores for items 53, 55, 57, 59, 61, 63, and 65 (for projects in PED or Construction) will be totaled and serve as an indication of the significance of the proposed restoration. Only one option may be selected in each of these items. For example if the proposed project contributes to a national plan (10 points) as well as a state plan (2) points only 10 points may be entered. The first score is the maximum points available for each item. The basis for the ranking assigned for Habitat Scarcity, Connectivity, Special Status Species, Hydrologic Character, Geomorphic Condition, and Plan Recognition must be documented. The term “regional” is defined as involving two or more states; a state and comparable entity in Canada or Mexico; a state and a Tribe; two Tribes, an area of a size comparable to the previous items, or an area covered by an activity that has significant Federal legal and multi-agency support even though entirely within one state such as a Joint Venture area identified under the North American Waterfowl Management Plan, rather than a smaller geographic area. Justification for the scores should relate to the project outputs in the project description or narrative justification.

53. HABITAT SCARCITY AND STATUS = The scarcity of the habitat to be restored. This criterion is based on trend information and relative abundance of the habitat. All special aquatic sites as defined in the 404(b)(1) guidelines are nationally important and relatively scarce. This criterion is designed to identify habitats with exceptional regional or national scarcity. Restoration of a scarce habitat that was always scarce in the project area or one at the limits of its range, and is relatively stable at near historic abundance would rate zero.

Scoring is as follows:

25 = Nationally scarce habitat and becoming scarcer (declining trend) as demonstrated by a Federal, regional, or state/Tribal report, or general scientific agreement as documented by peer-reviewed professional publications/societies. The report must refer to the specific habitat type and preferably would also mention the region in which the project is located. This score may not be based on broad classifications of aquatic habitats such as wetlands that are recognized under programs such as the National Wetlands Inventory as declining

18 = Regionally scarce and becoming scarcer as demonstrated by a Federal, regional, or state/Tribal report, or general scientific agreement as documented by professional publications/societies.

10 = Nationally scarce and important habitat as demonstrated by a Federal, regional, or state/Tribal report, or general scientific agreement as documented by professional publications/societies. This score may be applied to broad classifications of aquatic habitats such as wetlands that are recognized under programs such as the National Wetlands Inventory as declining.

5 = Other declining or scarce aquatic habitats.

0 = A habitat type that is stable at natural levels or improving beyond natural levels.

54. Document the basis for the score in column 53 in 200 characters. Examples: 90% of (type of habitat) lost in x (size of or name of region) area since yyyy (year) as documented in... Examples of reports might be North American Waterfowl Mgt Plan documents and NOAA's Essential Fish Habitat documents. Additional potential sources may be found in "Significance in Environmental Project Planning: Resource Document" IWR Report 96-R-7 at <http://www.iwr.usace.army.mil/inside/products/pub/iwrreports/96r07.pdf>. If species are cited as the justification the score will be changed to zero. If no specific citation is provided the score will be changed to zero.

55. CONNECTIVITY = This criterion addresses the extent to which a project facilitates the movement of native species by contributing to the connection of other important habitat pockets within the ecosystem, region, watershed or migration corridor, or adds a critical component to an ecosystem or contributes to increased biodiversity.

Scoring is as follows:

25 = Project makes a critical direct physical connection between existing habitat areas within a corridor or larger landscape reducing population isolation, expanding home ranges, or providing access to areas supporting life requisites as recognized by or demonstrated by community or species models. An example would be restoring the connection between two pockets of what was once a larger wetland, or two patches of bottomland hardwood forest separated by drained agricultural land, or removal of a dam to open up additional habitat. For specific species, action provides critical life requisites (sites or habitats providing foraging, breeding or cover) that complete or expand the functionality of the system contributing to the stability of the species or population.

18 = Project creates a nodal connection between existing habitat areas within a corridor (as in a waterfowl flyway) or larger landscape facilitating animal migration or flow of genetic material for a nationally or internationally recognized species. The project would not be physical adjacent to other habitat areas in the corridor but would be spaced such that it provides a critical resting/feeding or other link between two other habitat areas. Examples would be restoring a marsh resting area along a defined migration corridor for a specific species or group of

species such as the sand hill and whooping cranes or the creation of horseshoe crab spawning habitat to provide foraging habitat supporting internationally migratory Redknots.

10 = Project improves suitability of an existing connection or corridor; or expands functional area(s) within a splintered migratory corridor or home range; or provides an important scarce habitat type that complements adjacent exiting habitat types by providing one or more missing life cycle requisites for a number of species. For example, expanding or adding resting or foraging areas that improve the functionality or carrying capacity of the system.

5 = Project provides a large expansion to an existing habitat increasing the carrying capacity of the system without substantially increasing the habitat or species diversity.

0 = The project is an isolated unit or adds a relatively small increment to a much larger habitat. . For example, a project that takes advantage of an opportunity to restore a portion of a drained field or adds five acres to a 500-acre wetland.

56. Document the basis for the score in column 55 in 200 characters; such as: connect x National and y state wildlife areas, connect 5 tracts totaling x acres. Include a list of the primary species used to justify score. Failure to include documentation of the areas and species will lower the score five points.

57. SPECIAL STATUS SPECIES = The project must provide a significant contribution to some key life requisite within the potential range of a species to receive points in this category. The demonstrated presence or potential presence of a species of concern in the project area is not sufficient to justify a score above zero. Scoring is as follows:

10 = Project provides habitat for life requisites that complete or add to existing life requisites within the project's area of influence or footprint for Federally listed or candidate threatened or endangered species as documented in FWCA/NMFS correspondence and/or Biological Assessment/Opinion as appropriate. In the reconnaissance or early Feasibility phase documentation may be an e-mail or MFR of a conversation, documentation of the results of a scoping meeting.

5 = Project provides habitat for life requisites that complete or add to existing life requisites within the project's area of influence or footprint for species covered by international treaty, such as International Migratory Birds, that are of special concern or have special significance (typically would not include common or abundant species).

3 = Project provides habitat for life requisites that complete or add to existing life requisites within the project's area of influence or footprint for State listed or candidate species.

0 = None.

58. Document the basis for the score in column 57 in 200 characters by listing species and life requisite met (e.g. e.g. – bald eagles/nesting habitat). Cite discussion with resource agencies responsible for managing the special status species in the project area. The discussion should be documented in an mfr or email. Cite a federal recovery plan if applicable. The species must have a demonstrated presence in the area or a strongly probability of a potential presence. Failure to include the species and life requisite provided will lower the score five points but to no less than zero.

Regarding Hydrologic Character and Geomorphic Condition (59-62 below) since the goal of Corps ecosystem restoration projects is “to restore degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition”; the project has in all probability been formulated with an implicit if not explicit target of achieving a more “natural” condition. Reference sites, historic stream gage data, the physical parameters required to restore and sustain the desired native habitat may be a means to define “natural” for each project.

59. **HYDROLOGIC CHARACTER:** This criterion recognizes the importance of appropriate hydrology in maintaining the ecological functions of aquatic, wetland, and riparian systems. The hydrologic character refers to the timing, magnitude, duration, frequency, and rates of change of the flows, water levels, and surface/subsurface exchange processes. Projects that restore and sustain the natural hydrologic “signature” of a system are more likely to provide sustainable environmental services. Scoring is as follows:

20= Project fully restores the natural hydrology to the system or site, as demonstrated by appropriate analyses and/or data.

15 = Project partially restores the natural hydrology to the system or site, and the restored hydrologic variables are demonstrated through appropriate analyses to overcome the factors causing impacts. This level of credit also applies to projects where measures have been identified and justified to address critical and unavoidable needs. Examples include pulsed flooding that triggers critical life history behavior or flows of materials and nutrients between channel and floodplain but that doesn't replicate fully normative magnitude, duration, frequency, etc. and full ecosystem benefits obtaining thereof.

10 = Hydrologic impairment does not exist at the site **OR** the hydrology is restored to the best attainable condition, but remains a limiting factor in ecosystem health.

5 = Some elements of the system or site hydrology are restored but most conditions necessary for a more natural hydrology are not attained.

0 = The project does not address hydrologic restoration, although hydrologic impairments exist on the system **OR** critical goals are not attained.

60. Document the basis for the score in column 58 in 300 characters discussing which aspects restored and basis for the target condition. Reference hydrologic attributes. Water quality is not an appropriation justification for a score. Be sure to link proposed actions to hydrologic outcomes. Include quantification of the change if possible, especially for projects in PED and Construction. Tie benefits to key thresholds or a reference system

61. GEOMORPHIC CONDITION: This criterion relates to the establishment of suitable structure and physical processes for successful restoration. The scale, form, and landscape position of the system, along with key processes such as erosion, sediment transport and deposition play a critical role in defining ecosystem health and resilience and must be considered in project development. The term “system” in the following criteria would apply to large-scale projects such as Everglades or projects with a substantial geomorphic impact on distinct areas adjacent to the site. Other projects will be evaluated at the site level. Scoring is as follows:

20= Project fully restores the natural or attainable geomorphic processes and form to the system or site, including the appropriate diversity and dynamics, as demonstrated by suitable analyses and/or data.

15 = Project restores the key geomorphic processes to the system or site, and the system is expected to recover full ecological function within an appropriate timeframe. This level of credit also applies to projects where measures have been identified and justified to address critical and unavoidable needs. Examples include sediment amendments or large woody debris insertion below dams.

10 = Geomorphic impairment does not exist at the site **OR** the geomorphology is restored to the best attainable condition, but remains a limiting factor in ecosystem health.

5 = The form of the project location or system is restored, but some key system processes remain degraded or non-functional. (An example might be restoration of an oxbow on a stream that is not allowed to meander naturally.)

0 = The project does not address geomorphic restoration, although geomorphic impairments exist on the system **OR** critical goals are not attained.

62. Document the basis for the score in column 61 in 300 characters discussing which aspects restored and basis for the target condition. Link project actions to pertinent geomorphic outcomes. Reference key attributes and include quantification

of the change especially for PED and Construction. Tie benefits to key thresholds or a reference system.

63. PLAN RECOGNITION = This criterion recognizes Corp ecosystem restoration projects that contribute to watershed or basin plans as emphasized in the “Civil Works Strategic Plan”. This criterion ranks the importance of the plan that the Corps project supports. Recovery plans may not be used as a basis for a score. Scoring is as follows:

10 = A Corps study or project that contributes to a multi-agency comprehensive watershed or basin plan developed in support of Federal priorities as demonstrated in laws or specifically authorized programs such as; Everglades, CALFED, Chesapeake Bay plan, etc.

5 = A Corps study or project that contributes to a multi-agency regional watershed or basin plan. Examples of this would include plans developed by groups such as the Delaware Basin Commission, or plans pertaining to Joint Venture Areas under the National Waterfowl Management Plan.

2 = A Corps study or project that contributes to a State/Tribal or local watershed or basin plan.

0 = A Corps project that does not contribute to any collaborative comprehensive or watershed or basin plan.

64. Document the basis for the score in 63 in 200 characters. Include the name and date of plan used as the basis of the score.

65. SELF-SUSTAINING = This requirement applies to only the PED and Construction phases. Enter NA for Reconnaissance and Feasibility phases. The ideal goal of most restoration is a self-sustaining ecosystem consisting of natural processes. The cost of the average annual O&M per acre (using the number of acres in column40) will be used as an indicator of the level of human intervention needed to maintain the restoration outcome. The most recent cost estimates or the actual costs of O&M (if greater than the latest estimate) will be used in this calculation.

Scoring is as follows:

20 = Low relative O&M costs. The average annual O&M cost per acre must be \$15.00 or less.

10 = Medium relative O&M costs. The average annual O&M cost per acre is greater than \$15.00 but less than \$100.00.

0 = High relative O&M costs. The average annual O&M cost per acre equals or exceeds \$100.00.

66. TOTAL SCORE = The sum of the scores entered in columns 53, 55, 57, 59, 61, 63, and 65. P2 will auto fill. Maximum if 130.

67. NATIONALLY SIGNIFICANT = If the study/project received the highest score possible in the Scarcity, Connectivity, and Special Status Species columns, and at least a 5 in Plan Recognition then P2 will enter a “Y” for yes in this column. If this criterion is not met an “N” for no will be entered. .

68. REGIONALLY SIGNIFICANT – If the study/project received at least the second highest score in Scarcity, Connectivity, Special Status Species and Plan recognition columns, then P2 will enter a “Y” for yes in this column. If this criterion is not met an “N” for no will be entered.