

RECLAMATION MANUAL RELEASE

Comments on this draft release must be submitted to Maribeth Menendez (mmenendez@usbr.gov) by 10/29/2026.

Title XVI Water Reclamation and Reuse Program Projects, Desalination Construction Projects, and Large-Scale Water Recycling and Desalination Projects Feasibility Study Review Process WTR 11-01

WTR 11-01 now distinguishes between “Large-Scale Projects” and “Non-Large-Scale Projects,” ensuring that additional requirements apply only where appropriate and requirements do not exceed the current review standards for smaller Title XVI or desalination feasibility studies. The revised WTR 11-01 also strengthens and clarifies expectations for feasibility study report content, including adding an executive summary, a detailed project description, and improvements to the alternatives analysis and cost estimating sections, to reduce ambiguity and help prospective applicants prepare more complete, reviewable feasibility study reports. The feasibility review process includes shorter timelines, clearer roles across WRPO and regional offices, and structured procedures for requesting and reviewing additional information. The revisions modernize WTR 11-01, more clearly define expectations, and ensure feasibility studies are sufficiently clear, complete, and practical for both prospective applicants and review teams.

The 2026 revisions to WTR 11-01 update and clarify Reclamation’s feasibility study requirements for non-Federal WaterSMART Water Recycling and Desalination Projects, with the most significant updates incorporating the large-scale feasibility study requirements from WTR TRMR-128. The revisions formally extend the additional large-scale requirements, including a more in-depth alternatives analysis, a detailed benefit-cost economic analysis, and documentation of independent peer review, to Desalination and Large-Scale Water Recycling Projects with total capital costs of \$500 million or more. The additional requirements apply to the Large-Scale Water Recycling Program, if the program authority is extended or reauthorized, and to high-dollar desalination projects that may request up to 25 percent Federal funding without a specific per-project cap. While Large-Scale Water Recycling feasibility study requirements are included in this draft publication, if the program authority is not extended or reauthorized, all water recycling feasibility studies will instead be reviewed under the Title XVI Program

Prospective applicants under the WaterSMART Water Recycling and Desalination Programs will be expected to use the revised D&S required report contents for any studies submitted after 1/15/2027.

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Subject:	Title XVI Water Reclamation and Reuse Projects, Desalination Construction Projects, and Large-Scale Water Recycling and Desalination Projects Feasibility Study Review Process
Purpose:	To establish Bureau of Reclamation requirements and a review process for feasibility studies for Title XVI Water Reclamation and Reuse (Title XVI) Projects, Desalination Construction Projects, and Large-Scale Water Recycling and Desalination Projects. The benefits will include providing sufficient information for the required content of feasibility studies and clearly stating the review procedures.
Authority:	Reclamation Projects Authorization and Adjustment Act of 1992 – Title XVI Reclamation Wastewater and Groundwater Study and Facilities Act, section 1604 (Feasibility Studies) (Public Law [P. L.] 102-575; 43 USC 390h et seq.); Water Desalination Act of 1996, as amended; Water Infrastructure Improvements for the Nation Act of 2016 – Title III, Subtitle J, section 4009 (P.L. 114-322); and the Infrastructure Investment and Jobs Act – Title IX Western Water Infrastructure, section 40905 (P.L. 117-58). Hereafter collectively referred to as the “Program Authorities.”
Approving Official:	Director, National Programs Directorate, Project Development and Program Execution (NPD-PDPE)
Contact:	Water Resources and Planning Division, 86-63000

1. Introduction.

This D&S describes the required report contents and Reclamation’s review processes for feasibility studies submitted under the WaterSMART Water Recycling and Desalination Construction Programs to meet the requirements of a feasibility study as described in the Program Authorities. The Program Authorities require Reclamation’s review of a water recycling or desalination feasibility study, and Reclamation uses this D&S to determine if a study meets the requirements of a feasibility study as defined under section 1604 of P. L. 102-575, as amended. Title XVI of P.L. 102-575 requires a feasibility study that complies with section 1604 to be completed before funds are appropriated for the construction of any congressionally authorized Title XVI Project. Through this review, Reclamation also meets the requirements of section 4009 of P. L. 114-322 and section 40905 of P.L. 117-58 to review feasibility studies. Projects with a completed feasibility study found by Reclamation to meet program requirements are eligible to compete for funding under applicable Notices of Funding Opportunities.

The term feasibility used in this document applies only to feasibility study reviews for applicable water recycling and desalination projects. Reclamation’s responsibilities concerning traditional water resource feasibility studies not related to the aforementioned

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projects are addressed in a separate Reclamation Manual (RM) D&S, Water and Related Resources Feasibility Studies (CMP 09-02).

2. **Applicability.**

This D&S applies to all activities related to the review of all feasibility studies for water reclamation, recycling and desalination projects as outlined below.

- A. This D&S applies to feasibility studies completed for congressionally authorized Title XVI projects and Title XVI projects eligible through section 4009(c) of P.L. 114-322.
- B. This D&S applies to feasibility studies completed for Desalination Construction projects eligible through section 4009(a) of P.L. 114-322.
- C. This D&S applies to feasibility studies completed for Large-Scale Water Recycling Projects eligible under section 40905 of P.L. 117-58 and Desalination Construction Projects with total estimated project costs of \$500 million or more. These projects are collectively referred to as “Large-Scale Projects,” hereinafter. Separately, Title XVI Projects and Desalination Construction Projects with total estimated project costs of less than \$500 million are hereinafter referred to as “Non-Large-Scale Projects.”

3. **Requirements and Responsibilities.**

A. **Providing oversight.**

- (1) The Water Resources and Planning Division (WRPD) Manager will oversee the execution of this D&S on a programmatic level and take such measures as are necessary for the proper oversight and overall implementation of the feasibility study reviews and approvals. The WRPD Manager will assign Program Coordinators for program implementation.
- (2) Regional Directors will ensure proper oversight of feasibility study reviews within their respective regions in cooperation with the WRPD Manager and provide consultation for identifying appropriate reviewing offices and review team members within their regions.

B. **Ensuring compliance.**

The NPD-PDPE Director will ensure compliance with programmatic requirements and provide consultation for identifying feasibility study review team members.

C. **Providing coordination.**

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- (1) The Program Coordinator will monitor ongoing feasibility study reviews to ensure that deadlines are met and that reviews comply with applicable law and policies. The Program Coordinator will collaborate with the Regional Coordinators to select review team members, in consultation with the Regional Directors and the NPD-PDPE Director. The Program Coordinator will also work with the reviewing office and review teams to resolve questions as they arise, provide periodic status updates on the reviews to the WRPD manager and the NPD-PDPE Director, and keep management informed of any emerging issues.
- (2) The Reviewing Office will facilitate the review of the feasibility study report by conducting an initial review to identify any missing significant items, announcing when the review will take place, establishing a schedule, coordinating meetings, providing copies of the report and other documents to the other team members, and communicating with the prospective applicant.
- (3) The Review Team will examine the feasibility study report to determine if the report meets the requirements of the Program Authorities, if the report contains all information required in Appendix A of this D&S, *Water Reclamation, Recycling or Desalination Feasibility Study Report Contents*, and adequately describes a technically and financially feasible project.
- (4) Regional Coordinators will oversee and manage all tasks to support feasibility study reviews within their respective regions. This includes collaborating with the Program Coordinator to select review team members, ensuring compliance with this D&S, and resolving any issues that may arise during feasibility study reviews within their regions.

4. Review Process for Feasibility Study Reports.

A. Review Process.

The following is a description of the feasibility study report review process. The Program Coordinator is to be included on correspondence developed during this process, monitor the ongoing reviews, and provide periodic status updates on the reviews to the WRPD Manager and the NPD-PDPE Director.

(1) Review Receipt and Office Assignment.

Feasibility study reports for the water reclamation, recycling or desalination project will be received by the appropriate Reclamation regional or area office. Upon receipt of the feasibility study report, the receiving office will identify the appropriate reviewing office, in consultation with the Regional Director.

(2) Initial Review.

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Within 15 calendar days of receipt, the reviewing office will conduct an initial review of the report to identify any missing significant items. This review is intended to be a quick-check (without thoroughly reading the report) for determining whether the minimum requirements in Appendix A *Water Reclamation, Recycling or Desalination Feasibility Study Report Contents* are included.

- (a) If the feasibility study report is incomplete, the reviewing office will notify the prospective applicant, in writing, of the items that need to be addressed prior to resubmitting the report.
- (b) If the feasibility study report appears to contain all the required information, the reviewing office will notify, in writing, the prospective applicant that the formal review process will begin. The formal review process begins after a successful initial review (i.e., the initial review is complete, the report appears to contain all required content, and the prospective applicant has been notified in writing).

(3) Establishment of the Review Team.

Within 10 calendar days from the successful initial review, the review team will be established. The Regional Coordinator will work jointly with the Program Coordinator to select the review team members, in consultation with the Regional Director and the NPD-PDPE Director. The review team shall consist of a minimum of three members, with one member representing WRPD, one member representing the reviewing office, and the third member as agreed by both directors. At least one member must have served on a previous review team. The Regional Director and NPD-PDPE Director are to be included on all correspondence developed during the team establishment process.

(4) Funding of Reviews.

WRPD will ensure that sufficient funding is available for the review team's expenses. The review of feasibility study reports will be subject to the availability of appropriations from the Congress. Reclamation may also receive funding from the prospective applicant to perform the review process through a Contributed Funds Agreement developed in accordance with the Sundry Civil Appropriations Act of 1922 (Pub. L. 66-389; 43 USC 395).

(5) Review of the Feasibility Study Report.

The review team will examine the feasibility study report to determine if the report contains all information required in Appendix A *Water Reclamation, Recycling or Desalination Feasibility Study Report Contents* of this D&S, and adequately describes a project that is technically and financially feasible and

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that provides a Federal benefit as required by the Program Authorities. The review team will strive toward consensus. If an impasse is reached, the NPD-PDPE Director will determine how to move forward.

(6) Request for Additional Information.

If the review team determines that the report contains insufficient information, the reviewing office will request, in writing, the needed information from the prospective applicant. The topics requiring clarification will be described in detail. The written request for additional information or clarification shall occur within 60 calendar days of the establishment of the review team. If necessary, the reviewing office shall coordinate a meeting with the prospective applicant to discuss the additional information being requested.

The review team will evaluate the additional information submitted, and within 45 calendar days of receipt of the information, the reviewing office will inform the prospective applicant whether the initial request for additional information is fulfilled or if further clarification is necessary. If further clarification is needed, the review team will provide examples of what is required and will offer to meet with the prospective applicant.

If the requested information cannot be obtained after two requests, the review team will notify the Regional Director and NPD-PDPE Director and will recommend one of the following: (i) continue to request information, (ii) find that the report contains insufficient information, or (iii) recommend the prospective applicant withdraw the report which will terminate the review process.

(7) Timeframe.

The review of a feasibility study report shall take no longer than 115 calendar days from the initiation of formal review process, excluding the periods when Reclamation is waiting for additional information from the prospective applicant, and when additional information is requested more than twice.

B. Notification of Feasibility Report Findings.

After completing its review, the review team will prepare a findings memorandum documenting the review process, the review team's findings, and the concurrence decisions of the Regional Director and the NPD-PDPE Director. The memorandum will include signature lines for the Regional Director and NPD-PDPE Director and will recommend one of the following findings: The feasibility report meets the requirements of WTR 11-01; The feasibility report does not meet the requirements of WTR 11-01; or The feasibility report is incomplete.

The Regional Director will review the review team's recommended finding and determine whether to concur. If the Regional Director concurs, the Regional Director will forward the recommended finding to the NPD-PDPE Director for

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consideration. The NPD-PDPE will determine whether to concur with the Regional Director's recommendation.

The findings memorandum must be signed, and the prospective applicant must be notified in writing, within 20 calendar days after the review process is completed. Final review team findings will be submitted to Congress after completion of the review process and concurrence by the Regional Director and the NPD-PDPE Director. The written notification to the prospective applicant will be based on the finding documented in the signed memorandum:

(1) Finding: Meets Requirements

If the feasibility report is found to meet the requirements of WTR 11-01, the reviewing office will notify the prospective applicant of Reclamation's finding. The notification will also identify any activities that must be completed before the project may receive construction funding and will clarify that Reclamation's competitive process for allocating funding is separate from the feasibility study review.

(2) Finding: Does Not Meet Requirements

If the feasibility report is found not to meet the requirements of WTR 11-01, the reviewing office will notify the prospective applicant of Reclamation's finding and explain why the proposed project does not meet the requirements.

(3) Finding: Incomplete

If the feasibility report is found to contain insufficient information, the reviewing office will notify the prospective applicant that the report was found incomplete. The notification will include a clear description of the additional information required. If the report is resubmitted for review, the review process will begin again at the review initiation stage.

5. Definitions.

A. Feasible.

The term feasible as used throughout this document applies only to WTR 11-01. The feasibility study contents in this D&S meet the requirements of the Program Authorities, including P. L. 102-575, as amended, which provides specific requirements for a feasible project such as (1) near- and long-term water demand and supplies in the study area; (2) all potential uses for reclaimed water; (3) at least two alternative measures or technologies available for water reclamation, distribution, and reuse for the project under consideration; (4) public health and environmental quality issues associated with use of reclaimed water; (5) whether development of the water reclamation and reuse measures under study would-- (A) reduce, postpone, or eliminate development of new or expanded water supplies, (B) reduce or eliminate the use of existing diversions from natural watercourses or withdrawals

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from aquifers, or (C) reduce the demand on existing Federal water supply facilities; (6) the market or dedicated use for reclaimed water in the project's service area; and (7) the financial capability of the non-Federal project sponsor to fund its proportionate share of the project's construction costs on an annual basis.

B. Large-Scale Project.

A Large-Scale project is either a Large-Scale Water Recycling Project or a Desalination Construction Project with total estimated project costs of \$500 million or more, representing the cost to plan, design, and construct all physical features of the project. Estimated total project costs must be based on the required cost estimating components of this D&S.

C. Non-Large-Scale Project.

A Non-Large-Scale Project is a Title XVI Project or a Desalination Construction Projects with total estimated project costs of less than \$500 million. Estimated total project costs must be based on the required cost estimating components of this D&S.

D. Proposed Water Recycling or Desalination Project.

The proposed water reclamation, recycling or desalination project is the preferred alternative that the prospective applicant believes best meets its service area or regional water supply planning objectives.

E. Prospective applicant.

The prospective applicant is the local water agency that submits the water reclamation, recycling, or desalination feasibility study report to Reclamation. Prospective applicants include state, regional, or local authorities, such as: States, Tribes, municipalities, irrigation districts, and water districts, or wastewater districts, located within one of the following States or territories: Arizona, California, Colorado, Hawaii, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, Wyoming, American Samoa, Guam, the Northern Mariana Islands, or the Virgin Islands.

F. Review Team.

The review team is selected jointly by the NPD-PDPE Director and the responsible Regional Director. The review team consists of at least three individuals, with one representing the NPD-PDPE Director, one representing the reviewing office, and the third as agreed by both directors.

G. Reviewing Office.

The reviewing office is identified by the receiving office, in consultation with the responsible Regional Director and will facilitate the review of the water reclamation, recycling or desalination feasibility study report.

H. Water Reclamation, Recycling or Desalination Feasibility Study Report.

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A water reclamation, recycling or desalination feasibility study report is a report including any supporting documentation, which is prepared to document the results of a feasibility study conducted to assess proposed water reclamation, recycling, or desalination projects. Water reclamation, recycling or desalination projects have specific requirements for feasibility study report content, including the feasibility study considerations identified in P. L. 102-575, as amended.

I. Water Reclamation, Recycling and Desalination Project.

A water reclamation, recycling or desalination project is a project (including the necessary facilities and features) that reclaims and reuses municipal, industrial, domestic, or agricultural wastewaters, or impaired groundwater and/or surface water, including ocean or brackish water desalination. Reclaimed water, including desalinated water, can be used, consistent with state law, for a variety of purposes, including, but not limited to, environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, or recreation. Water reclamation, recycling and desalination projects are, primarily, locally sponsored projects with limited Reclamation participation. Specifically, the non-Federal sponsor owns the project facilities and features, and is responsible for construction, operation, maintenance, and replacement.

J. Completeness.

The extent to which an alternative provides and accounts for all features, investments, and/or other actions necessary to realize the planned effects, including any necessary actions by others. It does not necessarily mean that alternative actions need to be large in scope or scale.

K. Effectiveness.

The extent to which an alternative alleviates the specified problems and achieves the specified opportunities.

L. Efficiency.

The extent to which an alternative alleviates the specified problems and realizes the specified opportunities at the least cost.

M. Acceptability.

The viability and appropriateness of an alternative from the perspective of the Nation's general public and consistency with existing Federal laws, authorities, and public policies. It does not include local or regional preferences for particular solutions or political expediency.

N. Field Cost.

The field cost is an estimate of the capital costs of a feature or project from construction contract award to construction closeout. The field cost equals the

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contract cost plus construction contingencies. Construction contingencies are intended to account for costs resulting from changes in designs and/or differing site conditions encountered during construction. Non-contract costs are not included in this value.

6. Review Period.

This originating office will review this release every 4 years.

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Appendix A: Requirements for a Water Reclamation, Recycling or Desalination Feasibility Study Report.

1. Flexibility Concerning Format.

Information, analysis, and reports prepared for other purposes may be used to develop a water reclamation, recycling or desalination feasibility study report. However, the information included in the feasibility study must directly and clearly address each element described in Appendix A *Water Reclamation, Recycling or Desalination Feasibility Study Report Contents*.

2. Water Reclamation, Recycling or Desalination Feasibility Study Report Contents.

To ensure that a water reclamation, recycling or desalination feasibility study report complies with Program Authorities, other Federal laws, and to otherwise allow Reclamation to assess the feasibility of the proposed project, at a minimum the following information shall be included.

A. Executive Summary and Introductory Information.

The Prospective Applicant must provide the following executive summary information in a concise manner in one to two paragraphs: the problem and need for the project, and the selected alternative including project components, map, water recycling amounts (source water amounts/locations and water recycling recipients amounts/locations), cost (federal and non-federal costs/percentages), brine disposal (amounts and locations), and cost effectiveness of the selected alternative when compared to the other alternatives.

Additionally, provide the following introductory information for the proposed project.

- (1) identification of the non-Federal prospective applicant;
- (2) a description of the study and project area. Provide a study area/service area map, and a separate detailed project map that identifies existing features and new features to be constructed as part of the proposed project.
- (3) Provide a description of the site-specific project area where the reclaimed water supply will be needed and developed, and any reclaimed water distribution systems; and a description of the proposed water reclamation, reuse, or desalination project and its components. The project description must clearly define the scope of the project and include information to address the following:

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- (a) The description must show how the project scope is limited to work that is integral to desalinating, or reclaiming and reusing, wastewater or other impaired water sources.
 - (i) Project components that are considered normal operations, maintenance, and replacement (OM&R) may not be included in the project scope. OM&R is described as system improvements that replace or repair existing infrastructure or function without providing increased efficiency or effectiveness of water distribution over the expected life of the improvement.
- (b) If the prospective applicant has completed, is participating in, or is proposing any other separate Water Reclamation, Recycling, or Desalination project, the prospective applicant must describe how the proposed project is distinct from the other project and how duplication or overlap will be avoided. If the proposed project is related to a project completed or proposed by another prospective applicant or applicant in the same geographic area, the prospective applicant must describe how the proposed project is distinct from the other project and how duplication or overlap will be avoided.

B. Statement of Problems and Needs.

Describe key water resource management problems and needs for which a water reclamation, recycling or desalination project will provide a solution, including the following information. All past data and projections shall include a minimum timeframe of 30 years, beginning at least 10 years before the study is written and extending until at least 20 years after the study is written. Include data for additional future years if there is a known major shift in future water availability and/or usage.

- (1) Description of the water management problems and needs in the project area that the water reclamation, recycling or desalination project will address.
- (2) Description of past, current, and projected water supplies, including water rights, and potential sources of additional water other than the proposed water reclamation, recycling or desalination project, and plans for potential new facilities other than the proposed project.
- (3) Description of past, current, and projected water demands.
- (4) Description of current and/or projected water supply and demand imbalances.
- (5) Description of any water quality concerns for the current and projected water supply.

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C. Water Reclamation, Recycling or Desalination Opportunities.

Address the opportunities for water reclamation, recycling or desalination in the study area, including the following information.

- (1) Description of all uses for the project's treated water or categories of potential uses, including, but not limited to, environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, and recreation. Identify any associated water quality, and treatment requirements.
- (2) Description of the water market available to utilize reclaimed, recycled, or desalinated water, including:
 - (a) Identification of existing and potential users, expected use, peak use, desire to use reclaimed, recycled or desalinated water, including letters of intent if applicable and available.
 - (b) Description of any consultation with potential reclaimed, recycled or desalinated water customers.
 - (c) Description of the market assessment procedures used.
- (3) Discussion of potential barriers (for example: physical, converting systems for reused water, or public acceptance) to implementing the water reclamation, recycling or desalination project. Identify methods or community incentives to stimulate reclaimed, recycled or desalinated water demand, and approaches being used to eliminate obstacles which will inhibit the use of reclaimed, recycled or desalinated water, including pricing.

D. Source Water.

Identify the sources of water that could be reclaimed, recycled, or desalinated, including the following information.

- (1) Identification of all the water and wastewater agencies that have jurisdiction in the potential service area or over the sources of reclaimed, recycled or desalinated water.
- (2) Description of potential sources of water to be reclaimed, recycled or desalinated, including current and projected wastewater sources or impaired surface and ground waters.
- (3) Description and location of the source water facilities, including capacities, existing flows, treatment processes, design criteria, plans for future facilities,

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and quantities of impaired water available to meet new reclaimed, recycled or desalinated water demands.

- (4) Description of any current water reclamation, recycling or desalination taking place in the study area, including a list of reclaimed water uses, type and amount of reuse, technologies and treatment processes being used, and a map of existing pipelines and use sites.

E. Description of Alternatives.

The following information is required:

- (1) Statement of the specific objectives all alternatives, including the water reclamation, recycling or desalination project, are designed to address, including the targeted water demand volume to be met.
- (2) Description of reasonable and viable alternatives that address the prospective applicant's planning objectives identified in Appendix A, Paragraph E (1). The alternatives must include the proposed project (i.e., a reclaimed, recycled, or desalination alternative), and other alternatives that meet a similar water demand as the proposed project. Alternatives presented should address the prospective applicant's problems and needs at comparable scales.
- (3) Description of applicable discharge or disposal of the source water if the proposed water reclamation, recycling, or desalination project is not implemented. For water reclamation and recycling projects, this should include how the wastewater or treated effluent that would serve as source water for the proposed project would otherwise be treated, discharged, or disposed of, including any planned new wastewater facilities, if applicable. For desalination projects, the feasibility report should explain whether this requirement is applicable to the project's source water and, if not, provide a brief explanation.
- (4) Description of one or more treatment technologies that could be used in the proposed water reclamation, recycling or desalination project under consideration, if applicable. Where a project only consists of reclaimed, recycled or desalinated water distribution, alternative plans for distribution or implementation must be provided. These alternatives must be approvable by the state(s) or tribal authorities in which the project will be located.
- (5) For Large-Scale Projects, the following additional requirements must be met:
 - (a) A description of the baseline condition of existing and expected future conditions if the proposed project, or any alternative project, is not

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implemented. Describe the current water supply situation, wastewater disposal practices, groundwater conditions, drought reliability, treatment capacity, environmental conditions, customer demand, or operational constraints that would continue if the project does not move forward.

- (b) An evaluation of the trade-offs among stakeholders and resources between alternatives identified in Appendix A, Paragraph E (2) in terms of acceptability, efficiency, effectiveness, and completeness (see definitions of terms under Section 5 of the D&S).
- (c) The trade-off analysis can be qualitative and/or quantitative, and it must be of sufficient detail to justify selection of the proposed project and enable the public to understand the decision rationale, confirm the supporting analyses and findings, and develop their own informed opinions and/or decisions regarding the validity of the analysis and any associated recommendations.

F. Cost Estimates

Projects considered in this D&S are in the planning stage, and at a minimum, appraisal level cost estimates are required for each alternative described in Appendix A, Paragraph E (2). Appraisal level cost estimates are defined in RM D&S Cost Estimating FAC 09-01 and further defined for the Water Recycling and Desalination Programs herein. Costs must be provided for all activities across the full project life cycle, including but not limited to environmental review and permitting, land and easement acquisition, planning, engineering design, construction (contract and non-contract costs), and annual operation, maintenance, and replacement (OM&R) costs. The cost estimates must include a calculation for the total life cycle cost and identify and justify assumptions for real cost escalation and discount factors. Cost estimates must be developed using sound practices in estimate preparation. Several cost estimate requirements are further defined below, depending on the scale of the project.

- (1) For Large-Scale Projects, the selected project and all alternatives identified in Appendix A, Paragraph E (2) shall include at least the following cost estimating components as relevant to the project:
 - (a) **Construction Cost:** Provide a comprehensive Field Cost estimate that reflects the full scope of the project. The estimate should identify the anticipated costs for each project feature required to deliver a complete system. Present itemized costs in a clearly organized work breakdown structure aligned by project feature. Include contingency line items for

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- design refinement, procurement type(s), and modifications during construction.
- (b) Non-Contract Cost: Provide costs associated with work or services provided in support of the project; these may include project management, investigations and data collection, Lands and Right of Way, design, construction management, environmental compliance, and commissioning.
 - (c) Escalation: For projects that are to be developed over an extended period of time, or at some distant time in the future, estimates shall account for escalation that may occur.
 - (d) Operations, Maintenance, and Replacement costs for all project features. Provide a work breakdown structure organized by project feature and a narrative of the anticipated operations.
 - (e) Basis of Cost Estimate: A write-up that describes the level of detail in the cost estimate (i.e. bottoms-up detail, unit price, lump sum, etc.). This Basis of Cost Estimate write-up must include important assumptions within the cost estimate for major items of work and if appropriate will include major uncertainties or unknowns within the cost estimate.
 - (f) Cost estimates shall be signed and dated by the preparer.
- (2) For Non-Large-Scale Projects, the selected project and all alternatives identified in Appendix A, Paragraph E (2) shall include at least the following cost estimating components as relevant to the project:
- (a) Construction Cost Estimate: at a minimum, provide a list of the basic project features and associated costs. Include contingency line items for design refinement, procurement type(s), and modifications during construction. These estimates may be prepared from rough general designs that use available site-specific design data and are intended to be used as an aid in selecting the most economical plan by comparing alternative projects. The cost breakdown structure should be developed with as much detail as possible and based on sound estimating practices.
 - (b) Non-Contract Cost: Provide costs associated with work or services provided in support of the project; these may include project management, investigations and data collection, Lands and Right of Way, design, construction management, environmental compliance, and

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commissioning. The non-contact cost estimate can be a separate itemized estimate or included as a percentage added to the Construction Cost.

- (c) Escalation: For projects that are to be developed over an extended period of time, or at some distant time in the future, estimates shall account for escalation that may occur.
 - (d) Operations, Maintenance, and Replacement costs for all project features. Develop the OM&R Estimate to a comparable level of detail for each alternative considered.
 - (e) Basis of Cost Estimate – A write-up that describes the level of detail in the cost estimate (i.e. bottoms-up detail, unit price, lump sum, etc.). This Basis of Cost Estimate write-up must include important assumptions within the cost estimate for major items of work and if appropriate will include major uncertainties or unknowns within the cost estimate.
 - (f) Cost estimates shall be signed and dated by the preparer.
- (3) Costs shall also be presented in terms of the average annual project water produced expressed in dollars per acre-foot per year (acre-ft/yr). Project costs must include additional costs for planning, design, investigations and include references and assumptions as appropriate.

G. Economic Analysis.

A water reclamation, recycling or desalination feasibility study report must include an economic analysis of the proposed water reclamation, recycling or desalination project relative to other alternatives described in Appendix A, Paragraph E (2). This assessment needs to identify the degree to which the water reclamation, recycling or desalination project alternative is cost-effective, and the economic benefits that are to be realized after implementation. The prospective applicant must submit the following information for the economic analysis in a water reclamation, recycling or desalination feasibility study report.

- (1) The economic analysis included in the feasibility study report shall describe the conditions that exist in the area and provide projections of the future with, and without, the project. Emphasis in the analysis must be given to the contributions that the project could make toward alleviation of economic problems and the meeting of future water demand.

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- (2) A comparison of the alternatives described in Appendix A, Paragraph E (2) that would satisfy the same demand as the proposed water reclamation, recycling or desalination project, including benefits to be gained by each alternative, total project cost, life cycle cost, and corresponding cost of the project water produced expressed in dollars per million gallons, and/or dollars per acre-foot. Cost estimates for the alternatives must be developed to the level necessary to provide the required cost estimating components outlined in Appendix A, Paragraph F. Alternatives used for comparison must be likely and realistic, and developed with the same standards with respect to interest rates and period of analysis.
- (3) The benefits of the project can be measured in terms of the cost of the alternative most likely to be implemented in the absence of the project, consistent with the methods described in Paragraph 7.B of the Department of the Interior's Agency Specific Procedures For Implementing the Council on Environmental Quality's Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies (707 DM 1). If demonstrating the cost of the alternative most likely to be implemented in the absence of the project as a measure of benefit, it is assumed that the two alternatives would provide comparable levels of service. The feasibility study report must provide this comparison, if applicable.
- (4) Some water reclamation, recycling or desalination project benefits will be difficult to quantify; for example, a drought tolerant water supply, reduced water importation, and other social or environmental benefits. These benefits shall be documented and described qualitatively as completely as possible. These qualitative benefits can be considered as part of the justification for a water reclamation, recycling or desalination project in conjunction with the comparison of project costs described above.
- (5) For Large-Scale Projects, the following additional requirements must be met to provide a more detailed economic alternatives analysis:
 - (a) Identification, quantification, and monetization of benefits, both direct use benefits and indirect use benefits, for the selected project and the alternatives identified. Benefits may include, but are not limited to, benefits related to water supply, recreation, ecosystems, water quality, energy efficiency, public health, other social benefits, and/or avoided costs.
 - (b) A comparison of the benefits and costs associated with the selected water reclamation, recycling, or desalination project and the alternatives

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identified. The results of this comparison should be discounted to net present value. The analysis must identify the alternative that reasonably maximizes net public benefits.

- (i) The comparison must include a benefit-cost ratio for the selected project and each alternative.
- (ii) The analysis must discuss the extent to which the selected project maximizes benefits.
- (c) A summary table showing the net present value of monetized benefits and costs and a listing and ranking of the benefits described qualitatively.

H. Selection of the Proposed Water Reclamation, Recycling or Desalination Project.

- (1) A description of the selected alternative under the study (i.e., the proposed water reclamation, reuse, or desalination project and its components).
- (2) Provide a justification of why the proposed water reclamation, recycling or desalination project is the selected alternative in terms of meeting objectives, demands, needs, cost effectiveness, and other criteria important to the decision.
- (3) Provide an analysis and, if applicable, an affirmative statement of whether the proposed water reclamation, recycling or desalination project would address the following:
 - (a) reduction, postponement, or elimination of development of new or expanded water supplies;
 - (b) reduction or elimination of the use of existing diversions from natural watercourses, or withdrawals from aquifers;
 - (c) reduction of demand on existing Federal water supply facilities; and
 - (d) reduction, postponement, or elimination of new or expanded wastewater facilities.

I. Environmental Consideration and Potential Effects.

The review of a water reclamation, recycling or desalination feasibility study report does not require National Environmental Policy Act (NEPA) compliance. The Department of the Interior categorical exclusion 1.11 “Activities which are educational, informational, advisory, or consultative to other agencies, public and

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private entities, visitors, individuals or the general public” applies to Reclamation’s consultative review, and preparation of the water reclamation, recycling or desalination feasibility study reports. As stated in Paragraph 1. *Scope*, Reclamation is not making a recommendation to go forward with the proposed water reclamation, recycling or desalination project, nor is Reclamation using the water reclamation, recycling or desalination feasibility study report to propose an action to the Congress.

- (1) The water reclamation, recycling or desalination feasibility study report must include sufficient information on the proposed water recycling or desalination project to allow Reclamation to assess the potential measures and costs that will be necessary to comply with NEPA, and any other applicable Federal law. Accordingly, the following information is required.
 - (a) Discussion whether, and to what extent, the proposed water reclamation, recycling or desalination project will have potentially significant impacts on endangered or threatened species, public health or safety, natural resources, regulated waters of the United States, or cultural resources.
 - (b) Discussion whether, and to what extent, the project will have potentially significant environmental effects, or will involve unique or undefined environmental risks.
 - (c) Description of the status of required Federal, state, tribal, and/or local environmental compliance measures for the proposed water reclamation, recycling or desalination project, including copies of any documents that have been prepared, or results of any relevant studies.
 - (d) Any other information available to the prospective applicant that would assist with assessing the measures that will be necessary to comply with NEPA, and other applicable Federal, state or local environmental laws such as the Endangered Species Act or the Clean Water Act.
 - (e) Discussion of how the proposed water reclamation, recycling or desalination project will affect water supply and water quality from the perspective of a regional, watershed, aquifer, or river basin condition.
 - (f) Discussion of the extent to which the public was involved in the feasibility study, and a summary of comments received, if any.
 - (g) Description of the potential effects the project will have on historic properties. Discussion must include potential mitigation measures, the

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potential for adaptive reuse of facilities, an analysis of historic preservation costs, and the potential for heritage education, if necessary.

- (2) If, at a later date, Reclamation provides funds for construction, all appropriate NEPA and other environmental and cultural compliance must be completed prior to any ground disturbing activities for the project to be eligible.

J. Legal and Institutional Requirements.

The water reclamation, recycling or desalination feasibility study shall identify any legal or institutional requirements, or barriers to implementing the proposed project.

- (1) Analysis of any water rights issues potentially resulting from implementation of the proposed water reclamation, recycling desalination project. All proposed water reclamation, recycling or desalination projects must comply with state water law.
- (2) Discussion of legal and institutional requirements (e.g., contractual water supply obligations, Indian trust responsibilities, water rights settlements, regional water quality control board requirements), state, and/or local requirements with the potential to affect implementation of the project. Water reclamation, recycling or desalination projects using Reclamation project water must address contractual requirements as described in RM D&S, Reuse of Bureau of Reclamation Project Water (PEC 05-09).
- (3) Discussion of the need for multi-jurisdictional or interagency agreements, any coordination undertaken, and any planned coordination activities.
- (4) Discussion of permitting procedures required for the implementation of water reclamation, recycling or desalination projects in the study area, and any measures that the prospective applicant can implement that may speed the permitting process.
- (5) Discussion of any unresolved issues associated with implementing the proposed water reclamation, recycling or desalination project, how and when such issues will be resolved, and how the project would be affected if such issues are not resolved.
- (6) Identification of waste-stream discharge treatment and disposal water quality requirements for the proposed water reclamation, recycling or desalination project (e.g., brine disposal).
- (7) Description of rights to wastewater discharges resulting from implementation of the proposed water reclamation, recycling or desalination project.

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K. Financial Capability of Prospective Applicant.

At the water reclamation, recycling or desalination feasibility study stage, Reclamation must request enough information to determine that the prospective applicant is likely to demonstrate financial capability if the project moves to construction. If, at a later date, a prospective applicant applies for and receives a grant for construction costs, Reclamation will request more detailed information to make a determination that the recipient is financially capable of funding the non-Federal share of the project's costs before funds are released for construction. Accordingly, the following information is required to be included in the water reclamation, recycling or desalination feasibility study report.

- (1) Proposed schedule for project implementation.
- (2) Discussion of the willingness of the prospective applicant to pay for its share of capital costs and the full operation, maintenance, and replacement costs.
- (3) A plan for funding the proposed water reclamation, recycling or desalination project's construction, operation, maintenance, and replacement costs, including an analysis of how the prospective applicant will pay construction and annual operation, maintenance, and replacement costs.
- (4) Description of the non-Federal funding condition. The reasonably foreseeable future actions that the prospective applicant would take if Federal funding were not provided for the proposed water reclamation, recycling or desalination project, including estimated costs.
- (5) Description of all Federal and non-Federal sources of funding and any restrictions on such sources, for example, minimum or maximum cost-share limitations. Generally, for water reclamation, recycling or desalination projects, the Federal cost share is limited to 25 percent, up to the per project Federal funding cap identified in each funding opportunity.

L. Research Needs.

At a minimum, the report must include a statement on whether the proposed water reclamation, recycling or desalination project includes basic research needs, and the extent that the proposed project will use proven technologies and conventional system components. The following information is required only if further research is necessary to implement the proposed water reclamation, recycling or desalination project:

- (1) description of research needs associated with the proposed water reclamation, recycling or desalination project, including the objectives to be accomplished through research;

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- (2) description of the basis for Reclamation participation in the identified research;
- (3) identification of the parties who will administer and conduct necessary research; and
- (4) identification of the timeframe necessary for completion of necessary research.

M. Peer Review.

For Large-Scale Projects, the prospective applicant must ensure that a peer review of the feasibility study is completed by qualified specialists that ensures data collection, technical analyses, designs, and cost estimates are technically sound. The peer review process must ensure that assumptions, findings, and conclusions of the scientific information are clearly stated and supported; identify oversights, omissions, and inconsistencies; and acknowledge limitations and uncertainties. The following information is required.

- (1) Description of all peer review or quality assurance/quality control conducted on the analyses presented in the study and the scope and responsibility of the reviewers.
- (2) Identification of the number of peer reviewers and the expertise and affiliation of the independent reviewers. Each reviewer shall be independent and not have been involved in the development of the material under review.
- (3) A comment disposition summary describing issues raised during peer review or quality assurance/quality control and how they were addressed.