

CECW-CP

DEPARTMENT OF THE ARMY  
U.S. Army Corps of Engineers  
Washington, D.C. 20314-1000

EC 1165-2-210

Circular  
No. 1165-2-210

9 April 2010

EXPIRES 30 SEPTEMBER 2011  
Water Resources Policies and Authorities  
WATER SUPPLY STORAGE AND RISK REDUCTION  
MEASURES FOR DAM SAFETY

1. Purpose. The purpose of this circular is to establish policy and provide guidance on the impacts of dam safety deficiencies on water supply storage in U.S. Army Corps of Engineers (USACE) reservoirs.
2. Applicability. This circular applies to all USACE commands having Civil Works responsibilities.
3. References.
  - a. EC 1110-2-6064, Interim Risk Reduction Measures for Dam Safety
  - b. EC 1110-2-6061, Safety of Dams – Policy and Procedures
  - c. ER 1105-2-100, Planning Guidance Notebook, Appendix E, Section VIII, “Water Supply”
4. Distribution. Approved for public release; distribution is unlimited.
5. Dam Safety Action Classes (DSAC).
  - a. The Dam Safety Action Classification process was developed to provide consistent and systematic guidelines for appropriate actions to address dam safety issues and deficiencies of USACE dams. USACE dams are classified into one of five Dam Safety Action Classes (DSAC) based on individual dam safety risk (DSAC I being the highest risk level). DSAC classifications consider event probability, probability of failure, and consequences, given the physical properties of the dam.
  - b. See reference 3a for the definitions of DSAC classifications and the policies for developing, preparing and implementing Interim Risk Reduction Measures (IRRM) to reduce the probability and consequences of catastrophic dam failure.
  - c. A dam is a structure that changes over time. The nature and extent of changes depend on many internal and external factors. Therefore, the current DSAC

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classification of a dam is not a permanent rating. A DSAC classification may change as the condition of a dam changes or the probabilities and consequences of a dam failure change. See reference 3b for more comprehensive information on dam safety.

d. The provisions of this circular also apply to Federal levees, especially those which were constructed as part of a reservoir project to provide additional flood damage reduction measures.

6. Water Supply Storage in USACE Reservoirs.

a. National policy regarding water supply states that the primary responsibility for water supply rests with states and local entities. USACE may participate and cooperate in developing water supply in connection with construction, operation and modification of Federal navigation, flood damage reduction, or multipurpose projects. However, certain conditions of non-Federal participation are required. Reference 3c establishes the policies and procedures for including water supply storage in USACE reservoirs.

b. Dam safety must be on the critical path of all decisions regarding water supply storage in USACE reservoirs. Public safety is paramount. When water supply storage is requested by a non-Federal entity, USACE decision-makers at all levels must fully consider the condition of the dam and associated project levees, DSAC classification, IRRM and other remediation, and their impacts on pool levels and inspection, operation and maintenance of the project.

7. Conditions for Allocation and Reallocation of Storage.

a. DSAC I, II and III.

(1) An agreement for the allocation of authorized, uncontracted water supply storage or the reallocation of storage from the existing conservation pool (or in rare cases, the sediment reserve) is permitted, provided the district commander has informed the non-Federal entity, in writing, of the project's DSAC classification and the current status of the dam and reservoir; that water supply storage may be reduced by IRRM or other remediation; and that, upon execution of a water storage or surplus water agreement, the non-Federal entity will be required to share in the costs of IRRM and other remediation. See Appendix A for suggested language.

(2) A reallocation that would require raising the conservation pool is not permitted while a project is classified DSAC I, II or III.

b. DSAC IV.

(1) An agreement for the allocation of authorized, uncontracted water supply storage or the reallocation of storage from the existing conservation pool (or in rare cases, the sediment reserve), is permitted, provided the district commander has informed the non-Federal entity, in writing, of the project's DSAC classification and the

current status of the dam and reservoir; that the dam will be subject to elevated monitoring and evaluation; that water supply storage may be reduced by IRRM or other remediation; and that, upon execution of a water storage or surplus water agreement, the non-Federal entity will be required to share in the costs of IRRM and other remediation. See Appendix A for suggested language.

(2) Recommendations for reallocations that would require raising the conservation pool will be considered by Headquarters USACE on a case-by-case basis. Reallocation reports that recommend pool raises must include a review of the Potential Failure Mode Analysis (PFMA) for the dam and an analysis of the effect of a higher pool elevation on the probable failure due to seismic or hydrologic conditions.

c. DSAC V.

(1) Although DSAC V dams are considered to be adequately safe, reallocation reports that recommend pool raises must include a review of the Potential Failure Mode Analysis (PFMA) for the dam and an analysis of the effect of a higher pool elevation on the probable failure due to seismic or hydrologic conditions.

(2) As stated in paragraph 5c, above, because a dam is a structure that changes over time, its current DSAC classification is not a permanent classification. Therefore, a non-Federal entity that has requested water supply storage must be informed, in writing, that the project's current DSAC V classification could change in the future. The information provided should include the possible impacts of such a change, including IRRM and other remediation, and, upon execution of a water storage agreement, the requirement to share in the costs of these measures. See Appendix A for suggested language.

d. Pending DSAC Classification. When a dam's DSAC classification has not yet been determined, the policies and procedures in reference 3c and the following conditions shall apply.

(1) Upon receiving a request from a non-Federal entity for water supply storage in a USACE reservoir, the district commander shall inform the non-Federal entity, in writing, that the dam is pending a DSAC classification and explain the possible impacts of classifications on storage, including IRRM and other remediation, and, upon execution of a water storage agreement, the requirement to share in the costs of these measures. See Appendix A for suggested language.

(2) If a DSAC classification is pending, reallocation decisions that would raise the conservation pool should be deferred until the dam has been evaluated and classified in accordance with reference 3a.

8. Surplus Water Agreements and Interim-use Irrigation Agreements. Surplus water agreements under Section 6 of the Flood Control Act of 1944, as amended, and interim-use irrigation agreements under Section 8 of the Flood Control Act of 1944, as

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amended, may be executed for one-to-five-year terms in accordance with reference 3c, provided the district commander has informed the non-Federal entity, in writing, of the project's DSAC classification and the current status of the dam and reservoir; that water supply storage, and thus the availability of water, may be reduced by IRRM or other remediation; and that, upon execution of a surplus water or interim-use irrigation agreement, the non-Federal entity will be required to share in the costs of IRRM and other remediation. See Appendix A for suggested language.

9. Emergency Withdrawal Permits. Permits for emergency withdrawals of water from USACE reservoirs for municipal and industrial purposes may be issued in accordance with reference 3c without regard to a project's DSAC classification. District commanders, however, shall inform permit applicants and permit holders, in writing, of any dam safety issues that may affect the quantity of water available for withdrawal. See Appendix A for suggested language.

10. Water Supply Allocation and Reallocation Studies.

a. A decision by the district commander to initiate or continue a water supply allocation or reallocation study requires following the guidance in paragraph 6b, above, and considering all relevant internal and external factors that determine the safety of USACE dams and the potential risks to public safety. Early consultation with the district dam safety officer is essential.

b. In some cases, the district commander, after consulting with the district dam safety officer, may initiate a water supply allocation or reallocation study while repair work or other remediation is underway. However, district recommendations submitted to Headquarters USACE must be consistent with the policies in paragraph 7, above, and will not be conditioned on the completion of work or the upgrading of a dam's DSAC classification.

c. Before initiating a water supply allocation or reallocation study, the district commander shall inform the requesting non-Federal entity, in writing, of the project's DSAC classification and the current status of the dam and reservoir; the restrictions and conditions imposed by this EC; the possibility that water supply storage in the reservoir may be reduced by IRRM or other remediation; and that, upon execution of a water storage agreement, the non-Federal entity will be required to share in the costs of IRRM and other remediation. See Appendix A for suggested language.

d. Studies which are underway or completed should be updated as necessary to reflect changed conditions or a change in DSAC classification prior to submitting a report to Headquarters USACE. In such instances, the district commander shall provide to the non-Federal entity, in writing, the information in paragraph c, above, as applicable.

e. Dam safety evaluations are conducted by the district dam safety team as part of the USACE dam safety program. The results of these evaluations must be addressed

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in all water supply allocation or reallocation studies. The district dam safety officer should be on the study team.

f. Reallocation reports that recommend pool raises must include a review of the Potential Failure Mode Analysis (PFMA) for the dam and an analysis of the effect of a higher pool elevation on the probable failure due to seismic or hydrologic conditions.

g. The general provisions of this paragraph also apply to studies and assessments that support surplus water agreements, interim-use irrigation agreements, and emergency withdrawal permits.

#### 11. Existing Agreements.

a. District commanders shall periodically inform current water supply users, in writing, of the safety status of dams; potential impacts on water supply storage; IRRM underway or expected to be initiated; and long-term remediation that is planned or contemplated. See Appendix A for suggested language.

b. Notwithstanding any IRRM or long-term remediation to address dam safety concerns, the terms of existing agreements with water supply users remain in effect and water supply users are obligated to abide by the terms of their agreements, to include making the payments prescribed therein.

c. For irrigation contracts administered by the Bureau of Reclamation, district commanders shall periodically inform the appropriate Bureau area manager, in writing, of the safety status of dams; any potential impacts on water stored for irrigation; IRRM underway or expected to be initiated; and long-term remediation that is planned or contemplated.

12. Principal Advisor. The USACE Dam Safety Officer is the principal advisor to the Chief of Engineers and the Director of Civil Works on all dam safety matters.

13. Exceptions. Requests for exceptions to the policies and procedures in this EC will be considered on a case-by-case basis by the Director of Civil Works upon the advice and recommendation of the USACE Dam Safety Officer. Requests will be submitted through command channels to the appropriate Headquarters USACE Regional Integration Team (RIT) in Washington, DC.

FOR THE COMMANDER:



STEVEN L. STOCKTON, P.E.  
Director of Civil Works

Appendix A: Suggested Language  
for Letters to Non-Federal Entities

APPENDIX A

SUGGESTED LANGUAGE FOR LETTERS TO NON-FEDERAL ENTITIES  
REGARDING WATER SUPPLY STORAGE IN USACE RESERVOIRS <sup>1</sup>

Dear \_\_\_\_\_:

Choose one of the following:

Requests for Storage <sup>2</sup>

You have requested storage space in [*Name of Project*] for water supply uses. Such storage may be available, subject to preparation and approval of a report and compliance with applicable Federal and state laws and regulations. Before proceeding, however, we must inform you of the status of the dam at [*Name of Project*] and the potential impacts on water supply storage.

Requests for Use of Surplus Water or Interim-use Water for Irrigation <sup>2</sup>

You have requested [the use of surplus water] [the interim use of water] in [*Name of Project*] for [water supply] [irrigation] purposes. Storage for such use may be available, subject to preparation and approval of a report and compliance with applicable Federal and state laws and regulations. Before proceeding, however, we must inform you of the status of the dam at [*Name of Project*] and the potential impacts on water supply storage.

Requests for Emergency Withdrawals

[You have requested] [We have approved] the use of water in [*Name of Project*] for emergency purposes. We want to inform you of the status of the dam at [*Name of Project*] and the potential impacts on water supply storage.

Existing Agreements

You have been provided [storage space] [surplus water] [interim-use water] in [*Name of Project*] for [water supply] [irrigation] purposes. We wish to provide [information] [updated information] regarding the status of the dam and the potential impacts on water supply storage.

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<sup>1</sup> This language is provided to assist district commanders in preparing letters to non-Federal entities as required in paragraphs 7a, 7b, 7c(2), 7d(1), 8, 9 10a, and 11 of the basic document. Each letter should be tailored to address specific situations and circumstances regarding the status of the dam and any remediation planned or underway.

<sup>2</sup> Letters should be sent to non-Federal entities prior to initiation of studies or assessments. For completed studies or studies underway, the letter may be modified to inform non-Federal entities of changed conditions or a change in DSAC classification.

General

While the Army Corps of Engineers recognizes the numerous public benefits of providing storage in its reservoirs for water supply purposes, the Corps also recognizes its responsibility to provide storage in a safe, secure and reliable environment. The Corps continually evaluates its dams and determines if remediation may be necessary to meet and maintain current Corps safety standards.

The Corps is totally committed to the safety of its dams. Corps dams are classified through a risk assessment process into five Dam Safety Action Classes (DSAC) which represent varying levels of safety risks.

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For DSAC I, II, III

The dam at [*Name of Project*] has been classified DSAC [I – Extremely High Risk] [II – Very High Risk] [III – Moderate to High Risk]. As a result, the Corps [may implement] [plans to implement] [is implementing] interim or long-range measures to remediate the conditions which led to the dam's DSAC classification. These measures may impact the storage in the reservoir for water supply purposes, such that the amount of storage available for water supply could be reduced. Corps water supply storage agreements require non-Federal users to share the costs of remediation in proportion to the storage space that has been provided to each user.

In the interests of public safety, Corps water supply policy does not allow the conservation pool to be raised at projects where dams are classified DSAC I, II or III. Therefore, only storage within the existing conservation pool may be considered for water supply purposes. [DELETE THIS PARAGRAPH IF THE NON-FEDERAL ENTITY IS REQUESTING SURPLUS WATER, INTERIM-USE WATER FOR IRRIGATION, OR WATER FOR EMERGENCY USES].

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For DSAC IV

The dam at [*Name of Project*] has been classified DSAC IV – Low Risk, but it does not meet all Corps safety standards. As a result, the Corps will conduct elevated monitoring and evaluation of the dam. In the event the DSAC classification is elevated to a higher level of risk, the Corps may implement interim or long-range measures to remediate the conditions which led to the new DSAC classification. These measures may impact the storage in the reservoir for water supply purposes, such that the amount of storage available for water supply could be reduced. Remediation is cost-shared with water supply users in proportion to the storage space that has been provided to each user.

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For DSAC V

The dam at [*Name of Project*] has been classified DSAC V – Adequately Safe (Residual Risk is considered Tolerable). However, because a dam is a structure that changes over time, the DSAC classification may be elevated to a higher level of risk if conditions change. In such cases, the Corps may implement interim or long-range measures to remediate the conditions which led to the elevated risk. These measures may impact the storage in the reservoir for water supply purposes, such that the amount of storage available for water supply could be reduced. Remediation is cost-shared with water supply users in proportion to the storage space that has been provided to each user.

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DSAC Pending

The dam at [*Name of Project*] has not yet been assigned a DSAC classification. Therefore, until the dam is evaluated and classified, the Corps cannot determine if interim or long-range remediation will be necessary. If implemented, remediation may impact the storage in the reservoir for water supply purposes, such that the amount of storage available for water supply could be reduced. Remediation is cost-shared with water supply users in proportion to the storage space that has been provided to each user.

In the interests of public safety, the Corps will defer decisions to raise the conservation pool for water supply storage until the dam has been evaluated and classified. [DELETE THIS PARAGRAPH IF THE NON-FEDERAL ENTITY IS REQUESTING SURPLUS WATER, INTERIM-USE WATER FOR IRRIGATION, OR WATER FOR EMERGENCY USES].

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General

We will continue to work with you in your efforts to meet your present and future water needs. To this end, we continually review our projects for effectiveness, efficiency and safety. If you have questions about any matters addressed in this letter, or wish to learn more about the Corps' commitment to dam safety, please contact

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