ADMINISTRATOR'S MEMORANDUM
Dam Safety No. 1

DATE: May 11, 2018
TO: Water Allocation Bureau and Regional Offices
FROM: Jeff Peppersack, Water Allocation Bureau Chief
SUBJECT: Safety of Dams Program Procedures for Water Storage Dams

This memorandum supersedes the previous *Administrative Memorandum, Dam Safety No. 1*, dated April 14, 2010; and other preceding administrative procedures listed in chronologic order below:

DATE	ISSUED BY	SUBJECT
3/31/2004	Mike Stubblefield	Reevaluation of Downstream Hazards
1/07/2005	Glen Saxton	Dam Safety Program Procedures
9/01/2005	Guy Paul	Policy for Accepting Applications for Small Dams
1/09/2007	Mike Stubblefield	Removal of Certain 5-Year Dams from Inventory
1/10/2007	Mike Stubblefield	2006 Dam Inspections
2/16/2007	Sonny Hornbaker	Emergency Procedures

The purpose of this amendment is to resolve inconsistency between the prior version of the memo and Idaho Code resulting from legislative action in 2016 that modified Idaho Code, Title 42, Chapter 17. This memo provides policy guidance for managing the Idaho Department of Water Resources (**Department**) Safety of Dams Program (**Program**) while maintaining both the spirit and letter of the Idaho Code and other applicable law; namely rules authorized per Idaho Administrative Procedures Act (**Rules**). Further it attempts to address some of the inconsistencies, conflicts, and ambiguities created by various internal procedures implemented over the years. Changes that were made in 2016 to the dam safety statutes at the behest of the Department include the following:

§ 42-1709 – Inspection and oversight on complaint or director's determination
§ 42-1711 – Definitions
§ 42-1712 – Construction, enlargement, alteration or repair of dams --- Submission of duplicate plans, drawings, and specifications
§ 42-1715 – Inspection during construction, enlargement, alteration, repair or removal of dams and mine tailings impoundment structures --- Effect of noncompliance

I. Supervision, Technical Assistance, and Training

The Dam Safety Program Manager (**Program Manager**) will provide general Program supervision and procedural oversight. Managerial responsibilities and technical duties shall include review and approval of engineering design and reports, and providing technical assistance, training and training opportunity to designated dam safety staff in both the State and Region Offices, as described herein. The Program Manager will advise regional dam safety staff regarding the status of the state's inventory of dams and about changes in the Idaho Code, Rules, or Department policies that may affect the Program.

The Program Manager will solicit input from designated dam safety staff, region managers, and senior administration regarding implementation of the methods necessary to inspect and otherwise monitor

for public safety artificial barriers and embankments that have been determined to be regulated dams. The Program Manager will review annual dam inspection schedules prepared by the designated region staff for their respective region, or as described herein. Scheduling priorities will be coordinated with the Region Offices to ensure that dams with potential safety concerns are inspected and reported in a timely fashion. In addition, the Program Manager will establish the guidelines for report content, and the format necessary to document periodic dam inspections, and to maintain uniformity in the dam safety files, database and inventory records.

Designated dam safety staff within the Region Offices will prioritize their weekly work assignments and schedules to reflect the importance of completing dam inspections in a timely manner, while considering also other work assigned to them by the region manager. Dam safety staff will perform and document their inspections and reporting efforts in a professional manner and as prescribed herein.

All dam safety staff must be alert to conditions that could cause physical harm to themselves or to others, and shall exercise prudent and reasonable precautions commensurate with travel and conditions encountered on-site. While on-site, staff should never undertake an inspection of appurtenant features without using the proper tools and equipment necessary for safely completing the task at hand.

II. State of Idaho Regulated Dam Criteria

As required by Idaho Code § 42-1711, all artificial barriers or embankments constructed for the purpose of storing water that are ten (10) feet or more in height *and* which have a storage capacity of fifty (50) acre-feet or more shall be regulated by IDWR unless specifically exempted; however, subject to § 42-1709(2) which includes provision for regulation of any artificial barriers or embankments that would pose a threat of direct loss of life or significant property damage, regardless of size or storage capacity. For Program consistency, any whole number presented in the Idaho Code shall be interpreted to be a decimal equivalent; for example: ten (10) feet = 10.0 feet.

The hazard classification system assigned to dams and reservoirs provides an estimate of the potential adverse consequences to downstream life and property that could result from a dam failure and uncontrolled release of water exclusive of the size or the physical condition of the dam or mine tailings impoundment structure. A hazard classification is dependent only on the potential downstream failure consequences, and at any given time is independent from the physical condition assessment of the structure or its appurtenances.

Rules specific to dam safety (IDAPA 37.03.06) currently describe categories of "risk and size". Due to 2016 legislative changes to statute, the language in the Rules do not match language correctly used in statute; i.e. hazard and size. Unlike hazard, a risk determination must include a numerical probability of all known events and conditions that could negatively affect the performance of the dam. The Department does not perform a detailed risk analysis as a part of its hazard identification procedures. In order to clarify existing Rules until such time the Rules are updated for consistency with statute, this memorandum establishes that Department staff will use terminology consistent with contemporary dam safety standards, practices and Idaho Code. The assessment of potential consequences to downstream life and property resulting from the failure of a dam and uncontrolled release of water shall be properly identified as hazard, and not as risk. Accordingly, the correct terms for Department use are Low Hazard, Significant Hazard, or High Hazard; reflecting the increasing severity of potential failure consequences on downstream life and property.

The combination(s) of height, storage capacity, and hazard classification shall be used to distinguish dams and reservoirs subject to regulation by the Department from other non-regulated artificial barriers or embankments. In addition, other category of hydraulic structures exist that are specifically identified by Idaho Code to be non-regulated by the Department. The list includes the following:

- Barriers in a canal used to raise or lower water therein or divert water there from.
- Fills, retaining dikes, or structures less than 20 feet in height which are under the jurisdiction of the department of environmental quality or the department of agriculture, designed primarily for retention or treatment of municipal, livestock, or domestic wastes, or sediment and wastes from produce washing or food processing plants.
- Fills or structures determined by the director to be designed primarily for highway or railroad traffic.
- Levees that store water regardless of storage capacity.

III. Application for Construction or Enlargement of a New or Existing Dam

State authorization to appropriate water typically is required before legal storage of water can occur behind any dam or artificial impoundment, regardless its height, storage capacity, hazard classification, age, or method of construction. With few exceptions, such authorization is documented with a corresponding water right application, permit, license or decree. Dam safety staff cannot unilaterally authorize storage of water behind a dam absent the owner/applicant having secured the requisite water right or Department recognized exemption.

Applications and the requisite fee for construction or enlargement of a dam or mine tailings impoundment structure may be received by the Region Office(s), or by the State Office. Copies of all such transactions received by either office shall be immediately forwarded to the other office via USPS or digital transmission, together with any supporting documents such as plans, specifications, reports, surveys, photographs, correspondence, or related project information.

A construction application fee will not be charged to owners/applicants who desire to construct artificial barriers or embankments less than ten (10) feet high or less than fifty (50) acre-feet storage capacity, or other structures that are exempted specifically by statute from Department dam safety regulation.

Once a project not already in the state inventory database is determined to be a regulated dam, the receiving office (Region or State) will assign to it a National Inventory of Dams (NID) identification number. The NID identification number is generated automatically when a new record is entered into the dam safety database. To as great a degree as possible, all required fields in the database shall be filled with accurate information. Dams that do not correspond directly with a water right number shall be assigned a state identification number according to the basin where the project is located.

Proposed construction, enlargement or modification to any artificial barrier or embankment which is less than ten (10) feet high or impounds a reservoir with storage capacity less than fifty (50) acre-feet will proceed as follows:

- Upon receipt of an application to store water, dam safety staff in their respective regions will verify that information entered on the application form is valid. Confirmation may necessitate that dam safety staff visit the site to evaluate the proposed location relative to the stream

channel and the downstream hazard potential, and to prepare a trip report in sufficient detail to properly document the site visit.

- The trip report, with photographs and other supporting information, shall make recommendation as to whether or not the proposed artificial barrier or embankment is deserving of dam safety regulation due to the perceived Low, Significant or High hazard classification. The report and recommendation shall be sent to the State Office within 30 days following the inspection.
- If the downstream hazard potential of the proposed artificial barrier or embankment is determined to be Significant or High, the Program Manager will notify the applicant in writing that before construction may proceed, it must first be designed by a professional engineer licensed in Idaho, and the design subsequently reviewed and approved by the Program.
- The State Office shall be responsible for final review and approval of design plans and specifications prior to authorizing construction. Additional inspections conducted during construction, including a final construction inspection, will be coordinated by the State Office before a *Certificate of Approval* (**Certificate**) is issued that authorizes impoundment of water.

Proposed construction, enlargement or modification to a dam equal to 10 feet or more in height and impounding a reservoir equal to 50 acre-feet or more will proceed as follows:

- Applicants shall engage the services of an Idaho licensed professional engineer for preparation of design plans and specifications for Department dam safety review and approval prior to commencing construction. The application form and requisite fee must be received before dam safety staff may begin review of design plans and specifications.
- The State Office shall coordinate the design review of the geology, hydrology, engineering, and other related reports, drawings, and specifications, as appropriate. Review and subsequent approval of final design documents will follow the guidelines and requirements enumerated in the Idaho Code § 42-1712 for water storage dams.
- Upon review and recommendation by the Program Manager, the Water Allocation Bureau Chief or delegated representative will approve for construction all design plans and specifications. As directed by Idaho Code, no construction of the dam shall proceed until the final design has been approved in writing. The State Office is responsible for providing copies of all correspondence and project information to the Region Office, and arranging construction inspections with the owner, engineer and dam safety staff, as appropriate and necessary.

IV. Hazard Evaluation and Classification

To provide additional clarification to existing dam safety statute and Rule, a High Hazard classification presumes that the downstream consequences of a dam failure and uncontrolled release of water will result in direct loss of human life. Significant Hazard implies that significant economic damage will occur to developed property, and includes also the potential for indirect loss of human life. A Low Hazard classification suggests that developed property may suffer minor damage, with a low potential for loss of life, or that damage will be limited to the dam owner's property.

Developed property is further divided according to habitable versus non-habitable infrastructure. Examples of habitable structures include permanently or seasonally occupied homes, businesses, schools, hospitals, RV parks or campgrounds, major utilities, and heavily travelled transportation links. Non-habitable infrastructure typically includes lightly travelled roads, culverts, minor utilities, unoccupied or infrequently occupied buildings or other uninhabited constructed features.

The classification of a dam and reservoir as a High hazard structure requires the preparation of an Emergency Action Plan and/or Operation Plan to help mitigate the potential downstream consequence of a dam failure and uncontrolled release of water. The plan should resemble a standardized format recognized by the Federal Emergency Management Agency Publication 64 "Emergency Action Planning for Dam Owners"; yet still allow for site-specific conditions and requirements of the owner/ operator and emergency responders. To provide uniformity, all plans should include both an Inundation Map and a Notification Chart.

- A properly prepared inundation map will illustrate downstream flood boundaries, peak water surface elevations or depths, and estimated flood-wave arrival times. If an inundation map is available, the flood boundaries can be used as a primary tool for documenting the appropriate hazard with regard to public safety. Dams for which inundation maps have not been prepared must necessarily be assigned a hazard classification based on other available information; a procedure which often relies heavily on the judgment and experience of the individual making such determination, and his/her familiarity with the project and its surroundings.
- A critical element of an Emergency/ Operation Plan contains an accurate list of individuals, organizations, and first responders to notify in the event of an emergency or failure situation. The notification chart must be updated periodically to ensure the names, contact information and responsibilities are current and correct.

Whenever the validity of a hazard classification for an existing or proposed dam is questioned, a detailed assessment of downstream development and riparian conditions below the dam will be performed with a focus on the perceived hazard to human life and developed property. A trip report shall be prepared to document the field observations, including all information necessary to support the revised hazard classification using guidelines and examples provided by the Program Manager. The report shall be placed in the dam safety file to enable future comparison during inspection, or as may be needed to support or revise the current hazard classification. Adjustment to a hazard rating assigned to any particular regulated dam requires concurrence between the State Office and the Region Office(s).

V. Inspection of Existing Dams

Idaho Code Section 42-1717 mandates that regulated dams be inspected periodically; at least once every five (5) years. Absent extenuating circumstances, dam safety staff are responsible for performing on-site inspections in the same year that the inspection has been scheduled. The dam owner or their representative should be contacted and encouraged to participate in the inspection whenever possible; especially for High Hazard dams. The frequency of scheduled inspections is based primarily on hazard classification, and the condition assessment reported from the previous inspection.

The Department's regional offices currently have unequal numbers of regulated dams, and accordingly, unequal numbers of annual inspections. Western Region currently has approximately 175 regulated dams; followed in turn by Eastern (±110), Southern (±60) and Northern (±45). Although this distribution may change slightly with time, clearly the inspection burden varies significantly by region. To help ensure annual inspections are performed in a timely manner, the Southern Region dam safety staff shall be responsible for performing inspection of selected regulated dams and reservoirs located in Basins 17, 51 and 55 (see Table 1). Although these enumerated basins lie outside the regional boundary established for the Southern Region, such division will help contribute to better distribution of Department resources currently available to inspect these dams.

Table 1			
DAM NAME	IDWR File	NID	HAZARD
Curlew Valley	17-2000	ID00007	Significant
Diamond A	51-2232	ID00083	Low
Grasmere North	51-2233A	ID00190	Significant
Grasmere Middle	51-2233A	ID00411	Low
Grasmere East	51-2233B	ID00516	Significant
Grasmere South Dike	51-2233B	ID00517	Low
Snow Creek N.	51-2237A	ID00084	Low
Snow Creek S.	51-2237B	ID00535	Low
Tindall	51-2240	ID00085	Low
Strickland	51-2242	ID00192	Low
Little Blue	55-2009	ID00193	Significant
Big Blue	55-2016	ID00194	Significant
Slack	55-2027	ID00090	Low
Sommerville	55-2168	ID00094	Low
Nouque	55-2209	ID00097	Low
Scrappy Creek	55-4009	ID00235	Low
Brace	55-4062	---	???
Shoofly	55-7002	ID00364	Low
Payne Creek	55-2169	ID00198	Low
Squaw Creek	55-2181	ID00236	High
Mountain View	55-xx06	ID00286	Significant

Priority for inspection, regulation, and enforcement actions on dams shall be given to those structures whose failure would directly or indirectly threaten downstream life and property; i.e. High Hazard and Significant Hazard dams and reservoirs. The target inspection frequency for Department regulated dams shall be two (2) years for High Hazard dams, three (3) to four (4) years for Significant Hazard dams, and five (5) years for Low Hazard dams. Note that these targets can be modified cooperatively by the State and Region Office(s) as determined necessary to promote efficiency in travel and scheduling, to assist with completing inspections in a timely manner, and to avoid duplication of effort should other agencies be involved. Any regulated dam may be inspected more frequently during construction, and if operation, maintenance, or repair deficiencies prove to be an unresolved public safety issue.

Non-regulated barriers or embankments will not be included on the Department's annual inspection schedule. Typically, non-regulated barriers or embankments will not be inspected unless a formal complaint is received specific to the integrity of the structure and/or its threat to the safety of downstream life and property; however, such may qualify for inspection if, during the course of other Department related activity, Department staff observe and report an unsafe condition.

Prior to conducting any safety inspection, dam safety staff must review the project file to familiarize themselves of condition assessments, concerns, and recommendations observed and noted during previous inspections. Additionally, design plans, asbuilt drawings, monitoring data and surveys also should be reviewed if available; especially when the inspector is new or unfamiliar with the project or its design, construction and operation history.

During the inspection of the dam, the inspector shall record their observations of the dam and appurtenant works, and the adjacent site conditions. A copy of the previous inspection report should be

taken into the field for comparative purposes to help evaluate changed conditions such as seepage, erosion, broken equipment, slope and crest settlement, animal burrows, vegetative growth or other potential problems. In addition, all uncorrected deficiencies or deferred maintenance identified from earlier inspections must again be clearly documented in the current report. Photographs should be used to record changed conditions, deficiencies, and any other unique or unusual observation; clearly dated and labeled as necessary and appropriate.

In addition to inspection of the dam and appurtenant works, a cursory observation of the area downstream of the dam should be performed to determine whether or not human development has occurred in the time since the prior inspection that could affect the hazard classification of the dam. If there is no observed change in downstream development, then it shall be noted on the inspection report. Observed changes must be properly noted and evaluated with respect to the current hazard classification. Any proposed revision to the downstream hazard classification will be confirmed by the State Office before the hazard classification is changed and recorded in the dam safety database.

Before leaving the site, the inspector must be certain that the dam and all appurtenant features have been thoroughly examined and reported. If a particular feature cannot be accessed, then it must be noted in the report stating the reason why the component was not inspected; to include a brief description of the site conditions, tools or methods necessary to complete this effort in the future. If serious deficiencies are observed that threaten the ability of the dam to safely impound water, the dam safety inspector should promptly notify the owner and both the Program Manager and the respective region manager. Observations that suggest an imminent dam failure must be reported immediately.

Dams that are subject to both state and federal jurisdictional authority will be inspected according to an agreed schedule, and in the company of the cooperating agency whenever possible to leverage inspection and technical knowledge, and to help avoid inefficient duplication of effort; for example, dams owned by Bureau of Reclamation (USBR), Army Corps of Engineers (USACE), or those licensed by the Federal Energy Regulatory Commission (FERC).

VI. Certificates of Approval and Storage Authorization

The Program Manager, acting on behalf of the Department Director, is responsible for issuing a Dam and Reservoir Certificate of Approval for Significant hazard and High hazard dams. The region manager, acting on behalf of the Department Director, is responsible for issuing a Certificate for Low hazard dams. A Certificate shall be issued for all dams upon a finding that the dam is suitable to impound water, within the limitations prescribed in the Certificate (Idaho Code § 42-1719). All Certificates shall remain valid for a specific interval of time until expired, or until revoked or modified by the Department. The time interval should be consistent with the inspection schedule. The owner of a dam for which a Certificate has been issued shall not, through action or inaction, cause the dam to impound water beyond the expiration date of the Certificate. The Department must ensure that a Certificate is forthcoming in a timely manner, or that action is initiated to prevent storage, as appropriate.

Following the inspection of a regulated dam, a new (or renewed) Certificate shall be issued to all suitable new and existing dams and reservoirs regulated by the Department. The inspection report, a draft Certificate and a draft storage authorization letter advising the owner of the inspection results and requirements thereof, will be prepared by the inspector in a manner consistent with established guidelines and formats within 45 days following the inspection:

- Draft Certificates and draft transmittal letters written to owners/operators of all Low Hazard dams, regardless their size, will be reviewed, edited as appropriate, and signed by the respective region manager of the individual performing the inspection.
- Draft transmittal letters and draft Certificates prepared for High Hazard and Significant Hazard dams will be reviewed, edited as appropriate, and signed by the Program Manager.

A copy of each transmittal letter and Certificate prepared by the Region Office shall be provided to the State Office as expeditiously as possible; likewise, the State Office shall return the favor in similar manner. The Department's goal is to provide the dam owner with a transmittal letter, inspection report, and Certificate within 90 days after the inspection has been performed.

Each Certificate will authorize storage for a specific period of time with a corresponding expiration date that corresponds to the inspection schedule. December 31 of a given year is the preferred date for the storage expiration on the Certificate, but any expiration date may be used depending on specific project requirements, inspection frequency, or by special request. If a scheduled inspection is delayed and cannot be performed prior to expiration of the Certificate, then the Department must issue an interim extension to the Certificate, or conduct an "out of schedule" inspection of the project to ensure uninterrupted storage authorization, if appropriate.

The Certificate may be allowed to expire without renewal if operation, maintenance, or repair deficiencies prove to be an unresolved public safety issue. Under Idaho Code § 42-1701B the continued storage of water absent a valid Certificate of Approval may result with the alleged violator being issued a Notice of Violation (**NOV**). The NOV shall be served in person or by certified mail stating the following:

- A description of the alleged violation
- The designated chapter, Rule, permit, condition of approval or order which has been violated
- A Remedy for resolution, including any demand to cease and desist, restoration and mitigation measures
- An amount of any civil penalty the director seeks for redress of the violation

Pursuant to Idaho Code § 42-1719, the Department Director may revoke an existing Certificate whenever it is determined that the dam or reservoir constitutes a danger to life and property. Before any Certificate is revoked prior to the date of expiration, the Department Director shall hold a hearing in accordance with Idaho Code § 42-1701A.