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PROCEDURE INSTRUCTION LETTER NO. I09-IV-01

FROM: NEAL MERRIFIELD 
Acting Administrator for Metal and Nonmetal
Mine Safety and Health

SUBJECT: Procedures for Documenting Inspections of Dams on Initial and
Subsequent Regular Inspections

Scope

This Procedure Instruction Letter (PIL) applies to all Metal and Nonmetal enforcement personnel conducting inspections of dams at mines and mills during regular (E01) inspections.

Purpose

This PIL provides guidance for Metal and Nonmetal enforcement personnel in documenting inspections of dams at metal and nonmetal mines and mills during regular inspections. This includes dams that impound water, tailings, or sediment. Information on dams meeting the hazard potential or size criteria explained below should be documented using approved MSHA forms "Metal and Nonmetal Tailings and Water Impoundment Inspection" (Form 4000-127) and "Water, Sediment, or Tailings Dam Inspection Checklist" (Form 4000-127a). Information on dams meeting the hazard potential or size criteria is also to be entered into MSHA's Dam Inventory in the MSIS database.

Procedure Instruction

The "Metal and Nonmetal Tailings and Water Impoundment Inspection" form (4000-127 - Attachment 1) and "Water, Sediment, or Tailings Dam Inspection Checklist" form (4000-127a - Attachment 2) are to be completed for all dams which meet any of the following criteria-

1. Dams classified as having "High Hazard Potential." These are dams, regardless of their condition or size, whose failure will probably cause loss of life;
2. Dams classified as having "Significant Hazard Potential." These are dams, regardless of their condition or size, whose failure would result in no probable

loss of life but would disrupt important utilities or cause significant economic loss or significant environmental damage; or

3. Dams classified as having “Low Hazard Potential.” These are dams which meet either of the size criteria given below whose failure would not be expected to cause loss of life, disrupt important utilities, or cause significant economic loss or significant environmental damage. The dam must either:
 - a. Equal or exceed 25 feet in height and can or does store a volume of more than 15 acre-feet, or
 - b. Exceed 6 feet in height and can or does store 50 or more acre-feet.

The attached spreadsheet (Attachment 3) can assist enforcement personnel in determining whether a dam meets the size criteria established in item number 3 above. Enforcement personnel are reminded that any portion of a retaining structure that is incised, meaning it is excavated below undisturbed natural ground so as to preclude that portion of the structure from being released, should not be included in the volume or the dam height used in the size criteria specified in item No. 3 above. A dam at a metal and nonmetal mine or mill meeting any of the three criteria above should also be entered into MSHA’s Dam Inventory on MSIS.

The “Metal and Nonmetal Tailings and Water Impoundment Inspection” form (4000-127) is to be completed the first time a dam that meets any of the three criteria is inspected (during or after construction). Information included on the form should reflect the conditions of the dam at the time of the inspection and not planned future conditions. During subsequent MSHA inspections, any changes from those originally noted, such as a change in dam height, should be noted by updating form 4000-127.

The “Water, Sediment, or Tailings Dam Inspection Checklist” form (4000-127a) is to be completed every time a dam meeting any of the three criteria above is inspected. This form is intended to inform the Agency of conditions that could have an adverse effect on the safety of the dam.

Regardless of whether a dam meets the three criteria above, all dams on mine or mill property are to be inspected during mandated inspections for conditions that could present a safety or health hazard to miners, such as inadequate berms along roads on top of the dam. However, the MSHA forms mentioned above are required to be completed only for dams meeting the specified hazard-potential or size criteria in this PIL.

One of the items of information on both forms is the “hazard potential classification” of the dam. This classification should be determined and assigned by the dam designer, because dams are designed to different safety standards depending on their hazard potential classification. For example, a high hazard potential dam should be designed

to accommodate a much larger storm than would a low hazard potential dam. Enforcement personnel should ask mine operators what hazard-potential classification has been assigned in the design of the dam. If a classification has been assigned, enforcement personnel should examine the dam and its downstream area to determine whether the classification appears to be reasonable.

Hazard potential classifications can change over time, such as due to increased development in the downstream area. If the classification appears reasonable, it should be entered on MSHA Form 4000-127. If the classification does not appear to be reasonable, or if no classification has been assigned by the dam designer or mine operator, then enforcement personnel should make a judgment of the hazard potential classification. This classification should be reported on form 4000-127. Where the classification is uncertain, the District Dam Safety Representative should be contacted for assistance in determining the appropriate hazard potential classification and discussing the classification with the mine operator. Assistance can also be requested from MSHA's Directorate of Technical Support's Mine Waste and Geotechnical Engineering Division.

Enforcement personnel should also request a copy of "Emergency Action Plans" that mine operators may have for dams on the property. These plans are required by many state agencies.

Completed Form 4000-127a and an updated (if applicable) Form 4000-127 should be attached to every regular inspection report. A copy of Form 4000-127a (and form 4000-127 if applicable) should be forwarded to the District Dam Safety Representative after each regular inspection is concluded at mines or mills having these structures. District Dam Safety Representatives should also be provided with a copy of the dam's "Emergency Action Plan" if one was obtained from the mine operator.

The District Dam Safety Representatives should enter new or changed information noted on Form 4000-127 into the MSIS Dam Inventory database as soon as practical. District Dam Safety Representatives must also retain indefinitely the completed 4000-127 forms and, if provided, the mine's latest "Emergency Action Plan" relevant to any dam. Form 4000-127a must be maintained for three years for dams meeting the above criteria at mines or mills in the respective district.

Field office supervisors must assure that all dams are inspected during every regular inspection. They should also assure that observations made by enforcement personnel during those inspections are noted on the appropriate forms for dams meeting the hazard potential or size criteria. Further, supervisors should assure that completed forms are forwarded to the District Dam Safety Representative as noted above.

Background

This PIL provides guidance to assure that congressionally mandated inspections of dams are performed in accordance with applicable provisions of the Federal Mine Safety and Health Act of 1977 and that these inspections are appropriately documented.

Authority

Federal Mine Safety and Health Act of 1977, as amended, 30 U.S.C § 801 et seq.; 30 C.F.R. §§ 56/57.20010

Filing Instructions

This instruction letter should be filed behind the tab marked "Procedure Instruction Letters" in the binder for Program Policy Handbooks and Procedure Instruction Letters.

Issuing Office and Contact Persons

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Distribution

All Program Policy Manual Holders
Metal and Nonmetal enforcement personnel

[Attachment 1](#) (4000-127)

[Attachment 2](#) (4000-127a)

[Attachment 3](#) (Spreadsheet for Impoundment Size Determination)

MSHA METAL AND NONMETAL TAILINGS AND WATER IMPOUNDMENT INSPECTION FORM

Note: This form should be completed for all dams classified as having high or significant hazard potential and for low-hazard-potential dams which either are 25 feet or more in height (and can store more than 15 acre-feet) or can store 50 acre-feet or more (and exceed 6 feet in height). For the same Mine ID Number, report each dam that meets any of these criteria on a separate form. Fill out as much information as can be obtained from the operator or directly determined.

MINE ID _____ Inspector _____

Date _____

Mine Name _____

Mining Company _____

Mine Product _____ MSHA District _____

MSHA Field Office _____

Name of Dam or Impoundment _____

Dam ID Number _____

(The Dam ID Number is assigned by the District and is the MSHA Mine ID Number followed by -01, -02, etc., so that individual mines at the mine that meet the hazard potential or size criteria have unique numbers.)

State _____ County _____

Does a state agency regulate this dam? Yes ___ No ___

If So, which State Agency? _____

Type of information provided on this form: New ___ Update ___

Is impoundment currently under construction? Yes ___ No ___

Dam owner's contact person _____ Phone # _____

The dam was designed by _____ aaaaaaaaaaaaaaaaaaaaaa _____

"

IMPOUNDMENT FUNCTION:

_____ Tailings/Mine Waste Disposal _____ Sediment Control
_____ Fresh Water Supply _____ Water Treatment _____ Other

Nearest Downstream Town Name: _____

Distance from the Dam _____ miles

Dam Location (coordinates of center of dam crest or point along dam crest for diked dams):

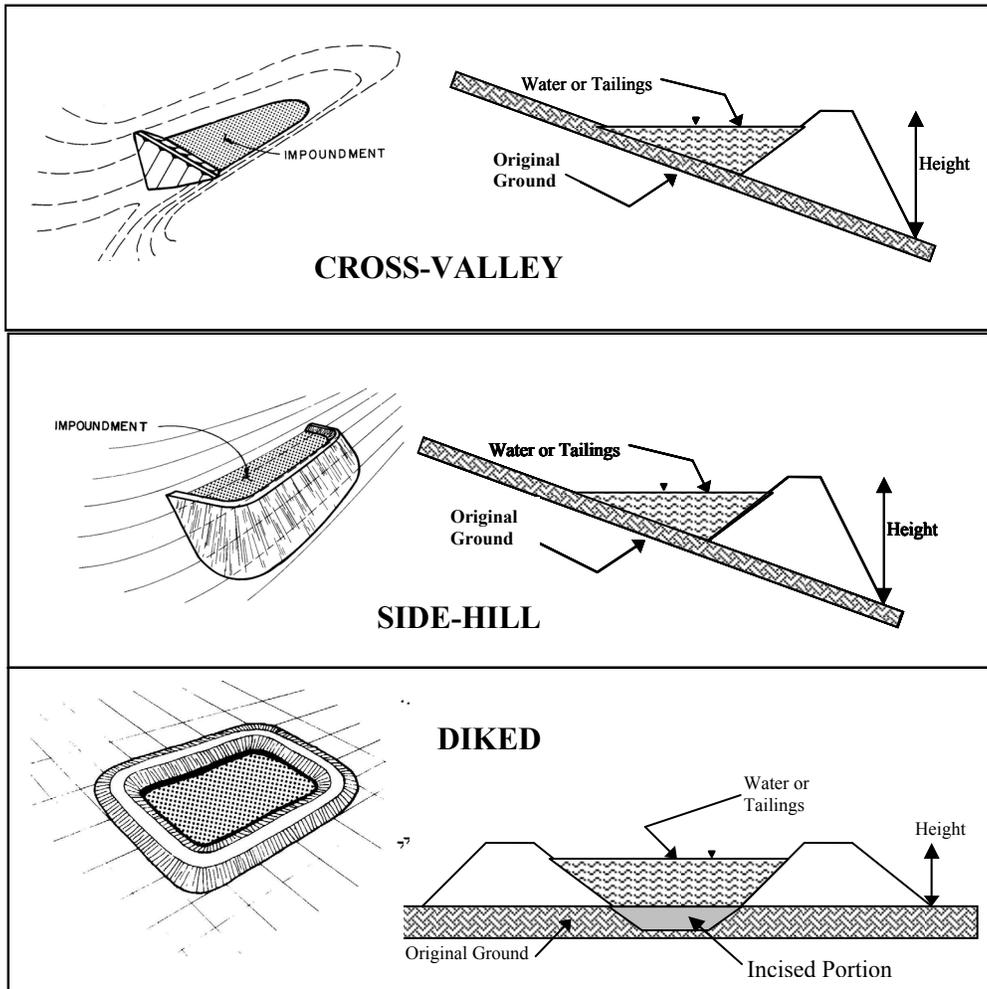
Longitude (as decimal) _____ (or as ___ Degrees ___ Minutes ___ Seconds)

Latitude (as decimal) _____ (or as ___ Degrees ___ Minutes ___ Seconds)

Note: Longitude or latitude as a decimal equals [(degrees) + (minutes/60) + (seconds/3600)].

Longitude and latitude are input into MSIS as decimal values, with the longitude being negative.

CONFIGURATION:



Cross-Valley _____ Side-Hill _____ Diked _____

Note that any portion of an impoundment that is “incised,” meaning it is excavated below undisturbed natural ground such that release of that portion of the impoundment is precluded, should not be considered in the storage capacity or in the dam height reported on this form.

Type of dam construction: ___ upstream ___ downstream ___ centerline

Dam Height (above downstream toe): _____ feet Dam Crest Length: _____ feet

Reservoir Area: Width _____ feet Length _____ feet or _____ Acres (W x L / 43560)

Current Freeboard: _____ feet Drainage Area: _____ square miles

Normal Storage Capacity: _____ acre-feet Maximum Storage Capacity: _____ acre-feet

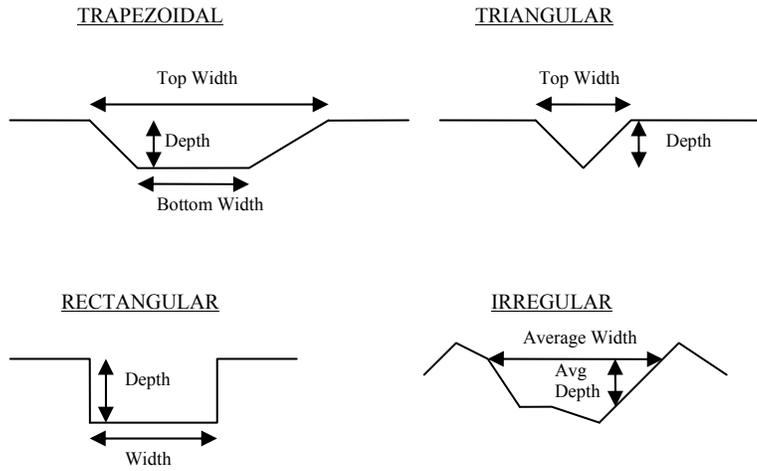
TYPE OF OUTLET: (Mark all that apply)

Open Channel Spillway:

Yes ___ No ___

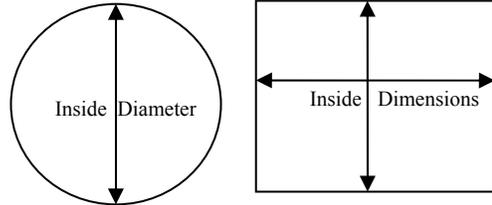
- ___ Trapezoidal
- ___ Triangular
- ___ Rectangular
- ___ Irregular

- ___ Channel Depth
- ___ Bottom (or average) width
- ___ Top width



Decant Conduit: Yes ___ No ___

Size of conduit: Inside diameter: ___ inches
 or Width: ___ inches x Height: ___ inches



Conduit Material

- ___ corrugated metal
- ___ welded steel
- ___ concrete
- ___ plastic (HDPE, PVC, etc.)
- ___ other (specify) _____

Is water flowing through the decant? Yes ___ No ___

Other Type of Outlet (specify, e.g. floating pump system) _____

Has the dam been totally removed or breached or has the impoundment been filled in so that the impounding capability has been eliminated? Yes ___ No ___
 If "Yes," as of what date? _____

