DELAWARE DEPARTMENT OF TRANSPORTATION – 2023

STATE OF GOOD REPAIR

SOGR for DelDOT's dams is defined using the minimum assigned Embankment and Spillway Condition Ratings. The Condition Rating assignment mirrors the NBIS Condition Rating System in structure and defines SOGR as follows:

Dam Inspection Program

Good Condition: NBI Rating ≥ 6
Poor Condition: NBI Rating ≤ 4

TARGETS AND MEASURES

DelDOT has developed a prioritization process - the Dam Deficiency Formula (DDF). The dam deficiency list is compiled annually to identify project needs with the main focus to address Poor Condition structures. DelDOT plans to improve the conditon of the dam inventory with the following goals to be reached by 2033:

DelDOT Dam Performance 10-Year Goals

# of Dams in Good Condition > 55%
# of Dams in Poor Condition < 10%

INVENTORY & CONDITION

2022 DelDOT Dam Condition Rating Summary

Condition Rating	All DelDOT Dams		High Hazard Dams		Significant Hazard Dams	
	# of Dams	% of Dams	# of Dams	% of Dams	# of Dams	% of Dams
Poor (≤4)	8	**22.9%**	8	**28.6%**	0	**0.0%**
Fair = 5	12	34.3%	8	28.6%	4	57.1%
Good (>6)	15	**42.9%**	12	**42.9%**	3	**42.9%**
Total =	35	100.0%	28	100.0%	7	100.0%

DAM PROGRAM PROGRESS

- 1974-2018: BREACH, PARTIAL FAILURE, OR SIGNIFICANT DAMAGE TO 16 DAMS (3 OCCURRED BETWEEN 2011-2022)
- 2010: DAM INSPECTION PROGRAM INITIATED
- 2012: DAM PRIORITIZATION PROCESS ESTABLISHED
- 2013: DAM PARTNERSHIP W/ DNREC FORMALIZED WITH MOA
- 2016: DAM REHABILITATION PROGRAM STARTED
- 2016: DAM ENGINEERING CONSULTANT AGREEMENT SECURED
- 2017: DAM EMERGENCY ACTION PLANS FINALIZED
- 2017-2022: WATER LEVEL MONITORING GAGES INSTALLED
- 2017-2022: MAJOR REHABILITATION PROJECTS COMPLETED FOR 3 DAMS

DAM STRUCTURES

Description:
State Dam Safety Regulations apply to all public-owned significant & high hazard dams. DelDOT owns or co-owns 35 regulated dams and has complete ownership & maintenance for 11 of the 35 dams. DelDOT owns and maintains the earthen dam portion for the other 24 dams while the spillway is owned and maintained by another agency or entity.

DelDOT's Dam Inventory consists of earthen dams that carry a public roadway throughout the state. The dams have at least one bridge structure on the dam with an associated spillway that controls the water level of the pond/lake. The majority of our dams were originally constructed as mill ponds that had some water control structure that flowed through the mill race to power the mill. Over time, most of the mills closed or were removed and the pond/lake became a recreational feature for fishing, swimming and boating.

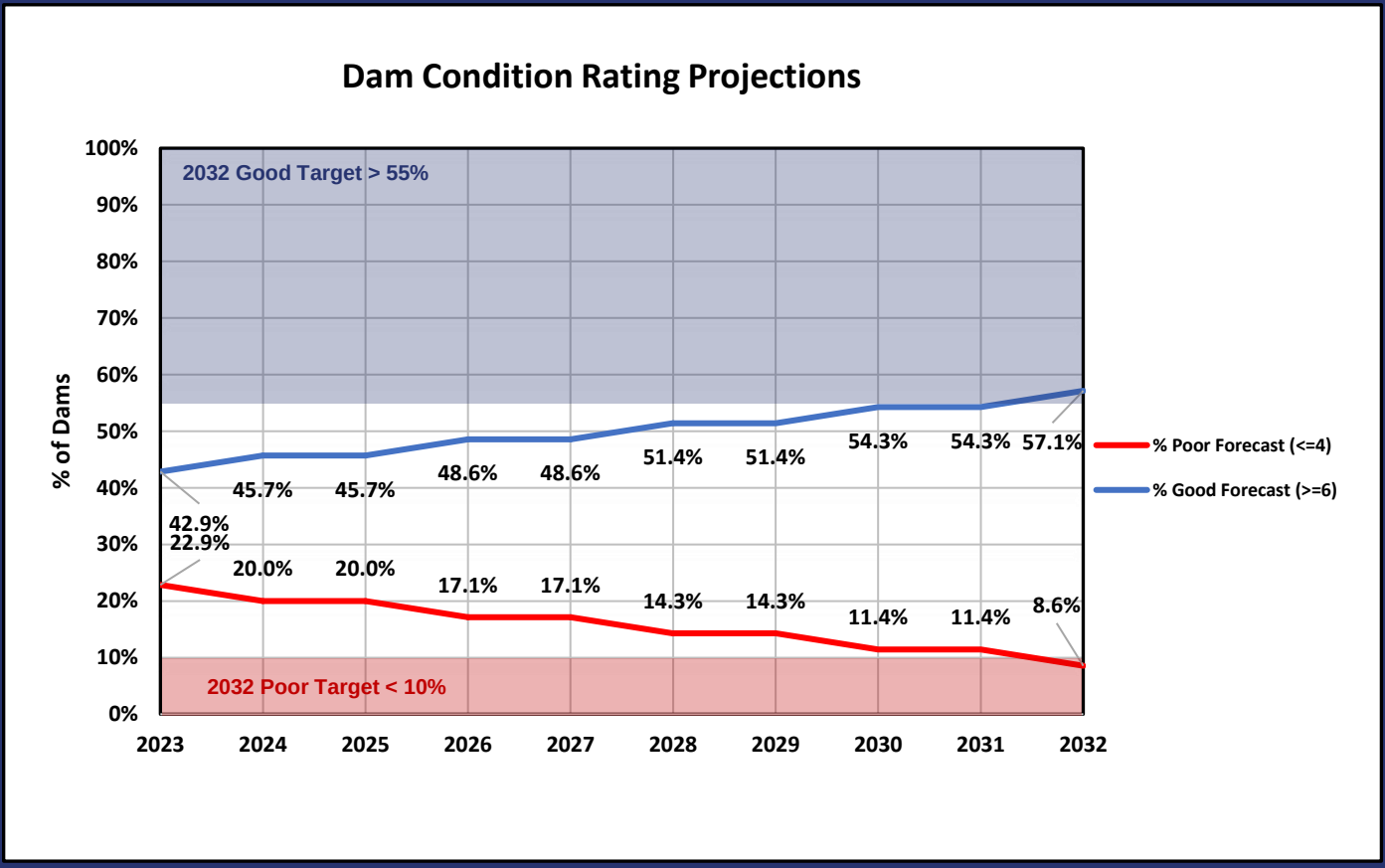
Tide gate and dike water control structures are not included with the Dam Program.

Annual Budget:
The goal is to put out a dam rehabiliation project every 2 years which results in 5 projects over the next 10 years. The planned spend for FY23-25 is $3.6M. Based on this while accounting for inflation and assuming a project roughly every 2 years, we can expect a total budget of $20M over the next 10 years. This equates to $2.0M/year or $4M/dam project on average.

Asset Valuation:
The replacement cost is used to derive the Asset Valuation for the dam inventory. Dams have the four components: earthen dam itself, bridge(s) on the dam, spillway(s) on the dam, and the pavement for the road that the dam carries. The replacement cost is calculated and then mutliplied by the health index for each component with the sum of all the components summed up to obtain the dam valuation.

Total Dam Asset Valuation: $87.53M

FORECASTED PERFORMANCE PROJECTIONS



*Note: The 10-Year Condition Forecast is based on current programmed dam rehabilitation projects.

POTENTIAL RISKS

Design/Constuction Standards: Most of DelDOT's dams were constructed in the early 1900's and were constructed prior to any natiowide standards or design requirements. Therefore, DelDOT's dams lack the design features of modern-day dam design and construction processes that ensure the safety and protection needs of an earthen dam. This, inherently, results in DelDOT's dams being more susceptible to a dam failure or a dam breach. Along these lines, the type of soil/fill material that was used to build-up our earthen dams may not contain adequate material properties that are now required and conducive for dam construction..

Vegetation Overgrowth: Even though our dams have exisited for quite some time, they were not inspected or maintained in the way that earthen dams require until Delaware's Dam Regulations were promulgated in 2009. All of DelDOT's dams contain trees and moderate vegetation growth, which not only impredes a thorough inspection of the dam, but also allows for the increased potential for seepage to occur and large voids in the dam as a result from fallen or dead/decayed trees.

Dams In Series: DelDOT has multiple locations where a dam exists upstream and/or downstream of another dam. This puts the downstream dams at an increased risk for failure if the upstream dam should overtop, breach, or fail.

Evacuation Routes: As all DelDOT dams carry a public road, a number of these roads serve as primary or secondary evacuation route access corridoors in the event of a severe weather event such as a hurricane or a nor' easter storm. These types of weather events often contain significant amounts of rain that can potentially result in overtopping of a dam. This puts the safety and mobility of the traveling public at an increased risk and can hinder emergency response efforts.