



TOWN OF
BRECKENRIDGE

FAQs for Surrounding Neighbors of Goose Pasture Tarn Dam

DAM SAFETY

Why is Goose Pasture Tarn Dam being rehabilitated?

To address dam safety issues, primarily related to the condition of the existing service spillway. Those issues were identified in spring of 2016 and the Town has been working on plans to make repairs since that time.

We have heard that Goose Pasture Tarn Dam is classified as a high-hazard dam. What is a high-hazard dam and is it at greater risk of failure compared to other dams?

Dams are classified based on the consequences of their sudden failure, NOT on the likelihood of a failure. High-Hazard dams are the highest consequence classification due to the potential for loss of life if the dam fails. Only the consequences of a dam failure, and not the condition of the dam itself, are considered in assigning the hazard potential classification. High hazard dams are inspected every year and given a condition rating. In spring of 2016 Goose Pasture Tarn was given an "unsatisfactory" rating and a reservoir storage restriction was ordered. The reservoir was lowered four feet, and at this lower reservoir level the dam is considered safe. That reservoir level must be maintained until repairs are made to the dam. Other interim measures to ensure public safety while the Town works to make the necessary repairs include working with the Town and County Emergency Managers, the Town's Engineer and Colorado Dam Safety on the dam's Emergency Action Plan. These coordinated emergency planning and exercising activities help to ensure public safety in the unlikely event of a problem at the dam.

Is the dam currently being monitored?

The Town Public Works Department routinely observes the dam and measures instrumentation used to monitor the condition of the dam. The dam is also inspected on a yearly basis by both Colorado Dam Safety and dam engineers working for the Town.

Because of the risk of flooding, will you be holding off construction until after the spring/early summer runoff has passed?

No. Construction is planned to start in the late spring/early summer each year. The currently operating service spillway and outlet works will handle runoff flows during the first construction season, and a reservoir diversion consisting of a 96-inch diameter pipe will be constructed to divert flows around the west side of the dam during construction of the new spillway in 2022. The new spillway and rehabilitated low-level outlet works will handle reservoir flows during the 2023 construction season.

What do you mean by diversion?

A diversion includes routing natural river or stream flows around a dam while the dam is being constructed. The diversion is designed to handle flows up to a conservative flood level that is selected based on factors that include the duration of construction and the proximity of downstream populations and structures. The reservoir diversion designed for Goose Pasture Tarn Dam has been designed to handle flow approaching a 100-year storm event, which is considered conservative but appropriate given the close proximity of the Town of Breckenridge located two miles downstream of the dam.

Can the Town of Breckenridge live with the lower reservoir level and not spend the money on this project?

No. Colorado Dam safety does not use storage restrictions as a permanent risk reduction measure. Dam owners are required to develop a plan to repairs the problem at the dam in a reasonable period of time. The Town of Breckenridge has a good plan and is working diligently toward rehabilitation the dam based on this requirement.

Looking at the inundation mapping, I see my home is in the inundation zone. What are my options?

FEMA NFIP (National Flood Insurance Program) insurance is an option. If interested, citizens should contact their homeowners insurance agent. Your agent can provide you information regarding the location of your property with respect to floodplain designations. Citizens who live within dam failure flood inundation limits may be in a "Zone X ,special flood hazard" area and qualify for preferred risk insurance. There are limits on NFIP insurance, but there are options to supplement that insurance on secondary insurance markets. Additionally, it is good to be aware of individual options to evacuate to higher ground, above and out of the inundation zone in the unlikely event that a problem at the dam prompts an evacuation alert.

How long would it take for water to reach Lake Dillon in the event that the dam fails and would Dillon Dam fail in this event?

Based on the information shown on the inundation map for the dam, the time would be about 2 hours and there would be no impact to Dillon Dam.

Are Real Estate values diminished for structures within dam failure inundation zones?

Although we have not studied this issue in Colorado, we have not heard of property values diminishing because they are near streams. "River Front" properties seem to remain popular throughout Colorado despite the presence of High Hazard dams on most of our rivers.

CONSTRUCTION SCHEDULE

What is the anticipated overall length of construction?

Construction is anticipated to extend over three seasons: Season 1 from May to October 2021; Season 2 from May to October 2022; and Season 3 from June to August 2023.

Will construction extend into the winter or will there be a shutdown period?

No major construction work is anticipated after October of 2021 and 2022, but there may be a need to extend construction into November and possibly December if necessary to complete work prior to a winter shutdown.

What will be the hours of operation for construction?

Construction activities will be limited to the following hours of operation in accordance with requirements of the Town of Blue River: Monday through Friday, 7:30 AM - 6:00 PM; and Saturday, 9:00 AM - 5:00 PM. An exception is that dewatering planned during the summer of 2022 will require continuously operating wells and electric generators over a 24 hour period, 7 days a week.

Where can I find information on the construction schedule?

A simple construction schedule is outlined in the Fact Sheet handed out during the public meetings and posted on the Town of Breckenridge website: www.townofbreckenridgegptd.com. The website will be maintained through construction, and the Town intends to periodically post updates to the construction schedule on the website.

When will you be issuing a call for contractors?

The Town anticipates requesting proposals from interested contractors in August 2020.

POTENTIAL CONSTRUCTION IMPACTS

What are the impacts of construction on residents located along the Lakeshore Loop Road from Highway 9 to the Project site, and along the Blue River immediately downstream of the dam?

Downstream residents located along Wagon Road and Lakeshore Loop Road will be impacted by construction traffic at times when demolished material is being removed from the site, and when concrete and fill material are brought into the site. Residents located alongside the dam, and along Wagon Road immediately downstream of the dam will be impacted by construction noise. The loudest anticipated noise may be during demolition of the spillways, which will require using jackhammers, hydraulic rams and other measures to break apart and remove those structures. Continuous dewatering, 24-hours a day, 7 days a week, will be required during a portion of the summer in the 2022 construction season, and residents located very close to the dam may hear the generators used to operate the dewatering wells. Some dust from construction operations is expected, and measures to abate the dust will be implemented.

Given that construction vehicles and equipment will access the Project from Lakeshore Loop Road, how will resident access to the road be maintained during construction?

The Town is currently considering requiring only one way heavy construction traffic along Lakeshore Loop Road, where heavy equipment would enter the road from Highway 9, and exit the site on Wagon Road back to Highway 9. If that is done, the heavy construction traffic will be along the inside lane, which will help reduce the potential for destabilizing the outboard slope supporting the road. A conditions survey will be performed to document the condition of both Lakeshore Loop Road and Wagon Road prior to construction, and the contractor will be required to maintain the roads and access to the residents during construction and return the roads to their original condition following construction. Measures for temporarily widening portions of Lakeshore Loop Road by about 5 feet are also being considered to improve access for both residents and heavy construction equipment. The Town of Breckenridge will work with the residents and the Town of Blue River on any plans for road widening.

Will construction traffic into and out of the site primarily occur along Highway 9 to the south or to the north of the site?

The contractor selected for the work will determine the most economic locations for importing materials, and hauling materials off site. We anticipate that construction traffic along Highway 9 will be both to the south and to the north.

Are there any plans for blocking reservoir access to the new spillway using anchored stop-logs?

There are currently no plans to use stop-logs or other measures to block off the spillway.

Will there be any blasting or demolition?

Demolition will be required to remove the two existing overtopping concrete spillway structures, the control house located at the crest of the dam, and other small structures. No blasting is planned and blasting will not be allowed.

RESERVOIR USE/ IMPACTS

What is the schedule for lowering the reservoir?

In August of 2021, the reservoir will be completely drained for about one month, then allowed to refill to the normal restricted water level through wintertime. In May 2022, reservoir will be drawn down about 8 feet below the current restricted level and maintained at that level from its current level and keep it there until September, then lower the reservoir entirely to the bottom for one month to complete final work on the low-level outlet. After that, the reservoir will come back up to its original pre-restricted level at end of 2022 and remain through the end of construction in 2023.

What are the anticipated residential well impacts?

A preliminary assessment of impacts to residential water wells located around the reservoir resulting from three reservoir drawdowns indicates that residential wells located within about 300 feet of the reservoir could see a temporary drop in water levels greater than 5 feet. The largest impacts are anticipated to occur when the reservoir is completely drained for about one month in the late summer/fall of both 2021 and 2022, and to a much lesser extent when the reservoir is lowered 8 feet for about four months in the early to mid-summer of 2022.

Does the Town have a plan for providing water to residents around Goose Pasture Tarn Reservoir during periods when the reservoir is lowered for construction?

The Town is currently seeking information on the water demand of surrounding residents located in proximity of the reservoir, and assessing measures to provide water to residences wells that are significantly impacted. Possible measures may include offering impacted residents treated Town water stored in temporary water tanks on or near the impacted residences, but a final plan has not yet been developed. The Town is also considering installing temporary wells to help in monitoring water levels, and performing water level monitoring and water quality testing in selected residential wells.

When the project is done, will the reservoir level be back up to what it has been?

Yes. In 2016, Colorado Dam Safety placed a restriction requiring the reservoir to be maintained 4 feet below the original reservoir level because of dam safety concerns. The rehabilitation is intended to address those concerns, and the reservoir will be raised back up to the original reservoir level (four feet about the current restricted level) following construction.

Can the public access and use the reservoir while the Project is underway?

The Town of Blue River has indicated that the reservoir will be off-limits and blocked for recreation use during construction, primarily for safety reasons. Starting in August 2021 the reservoir will be lowered about 8 feet to 29 feet, making it difficult and unsafe to attempt accessing the reservoir pool. There is also a safety concern regarding public interference with construction activities on the dam.

Will there be any mitigation for loss of recreational use during construction?

No measures to mitigate the loss of recreation during construction has been considered to date. However, the Town plans to restock the reservoir with fish after the Project is completed.

When the lake is drawn down, will there be any deepening or digging out of the reservoir?

There will be no dredging or digging out of the reservoir. The construction is only for rehabilitation of the dam.

Will the project cause any other impacts to wells besides drawdown-related impacts?

No, the only impact to wells will result from bringing down the reservoir level. Construction work is limited to the area of the dam itself and the area directly downstream from it.

Where can I find information about my well's construction?

Well permit and any construction or well test information may be found on the following Colorado Department of Water Resources website: [https://dwr.state.co.us/Tools/Well Permits](https://dwr.state.co.us/Tools/Well%20Permits) . There is a "DNR Viewer" on that website that is linked to the DWR permits by the following website: <https://gis.colorado.gov/dnrviewer/Index.html?viewer=mapviewer>

The reservoir will be empty at end of the season. When its tributary will be at a very slow flow as you're trying to refill it, how quickly do you realistically expect it to refill?

We estimate that the reservoir could refill in about 3 weeks to one month under average fall flow conditions, but could take longer under low fall flow conditions. The Town has agreements with upstream reservoir operators to obtain up to 400 acre-feet of water, and may request that water to help fill the reservoir if needed.

ENVIRONMENTAL

How are flows along the Blue River going to be maintained during construction?

A reservoir diversion primarily consisting of a large diameter pipeline will be constructed during the first year of construction (2021) to provide continuous river flow during construction in addition to protecting the dam from flooding impacts during the rehabilitation. Both the reservoir diversion and the low-level outlet works will be used to maintain minimum river flows during the winter shut-downs.

Are there any considerations for requiring that construction equipment use environmentally friendly oils and fluids in order to reduce the potential for impacts to the reservoir?

Currently there are no such consideration. The Contractor will be required to follow spill containment and prevention measures to protect the construction areas, reservoir and river from any environmental impacts.

Will the fish below the reservoir be affected by construction activities?

The fish located in the pool within and immediately downstream of the spillway will be impacted when that pool is drained to construct the bottom of the new spillway. Fish habitat in the Blue River channel located downstream of the pool is not anticipated to be impacted by construction.

What will happen to the fish in the reservoir when the reservoir is completely drained down?

Some rainbow trout fish in the reservoir have gill lice, and Colorado Fish and Wildlife has indicated that they do not want the fish to be released from the reservoir in order to contain that decrease. The Town of Breckenridge will work with the Town of Blue River to see if it is possible to allow for fishing in the reservoir in the summer of 2021, but any remaining fish will likely be removed as practical prior to draining the reservoir in the fall of 2021.