



# South Carolina Dam Safety News

ISSUE 4

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## A Message from John McCain, PE - Manager Dams and Reservoirs Safety

The Dams and Reservoirs Safety Program continually strives to assist owners in complying with our state's law and regulations concerning Dam Safety. The law and regulations place an important and very serious responsibility on owners of High and Significant Hazard Potential dams with respect to the requirement to develop and maintain an Emergency Action Plan (EAP). An EAP is a document that primarily serves as an instruction manual for a dam owner that lays out the steps to take in the event of an emergency situation with their dam. With the extreme rainfall and flooding that occurred in 2015 it became apparent many dam owners did not have these plans completed and others that did, had not updated their plans in quite some time.

In our first effort to assist dam owners, the Dam Safety Program provided over 600 High and Significant Hazard Potential dam owners with pre-populated EAP templates in the mail. This was a massive undertaking by the Dam Safety Program and required the use of a team of six interns to assist full-time staff. While we don't currently have any plans to repeat this exercise, the Dam Safety Program is always available to provide assistance to dam owners in creating their EAPs. Furthermore, we are actively exploring the creation of an internet-based tool to assist dam owners with the creation, updating and storage of EAPs. We will provide more news on this topic in a future issue of our newsletter.

As mentioned above, we help with developing and maintaining your EAP. The services we offer free-of-charge include:

- Dam breach inundation modeling and map creation
- Facilitation of conversations between dam owners and County and State Emergency Management personnel for site-specific emergency planning
- Potentially Inundated Property identification and ownership research
- Conducting exercises to test implementation of EAPs in coordination with County and local emergency management personnel, local law enforcement and fire departments, etc.

If you have any questions about whether you need an EAP, or need help completing your EAP, please feel free to contact the Dam Safety Program or your Region Dam Safety Engineer as found on page 3.

# High Hazard Potential Dams Rehabilitation Grant

Very frequently dam owners inquire about the availability of grants and/or loans available to them for repairs to their dams. We would like to use this opportunity to discuss a new grant program offered through the Federal Emergency Management Agency's National Dam Safety Program known as the High Hazard Potential Dam Rehabilitation Grant Program (HHPD Grant Program). This grant was first offered in May 2019 with a total amount for all eligible States and Territories of \$10 million. SC DHEC submitted an application in July 2019 and was awarded \$301,821. The grant requires a 35% match of non-Federal funds, so SC DHEC is contributing \$162,519, for a total amount of \$464,340. The first year of the grant did not allow for construction or repair work on dams, only

preliminary studies, engineering, and design work, so SC DHEC decided to apply for funds to perform in-depth studies of the 22 dams that were determined to be eligible for grant funding. These studies will hopefully identify the biggest vulnerabilities and most cost-effective rehabilitation needs for the eligible dams. For 2020 and future grant years, SC DHEC is hoping that more dams will become eligible for grant funding as DHEC conducts inspections and risk assessments on its inventory of High Hazard Potential Dams. DHEC is the administrator of this grant and is responsible for making sub-awards to individual dam owners for eligible activities. To begin the process of identifying and selecting dam rehabilitation projects, DHEC will be reaching out to owners of the

most high-risk eligible dams to solicit proposals for rehabilitation projects. Proposals will be evaluated and ranked to determine which represent the most cost-effective use of federal funds to mitigate the risks posed by these unsafe High Hazard Potential dams. DHEC will then make sub-awards to the project sponsors that meet grant program requirements. To explore the grant program in detail, please visit FEMA's website for the HHPD Grant Program at: <https://www.fema.gov/rehabilitation-high-hazard-potential-dam-grant-program>

## Notices/Reminders

### Preparing for Summer Storms/Hurricane Season.

It's about that time again! All dam owners should ensure they and their dams are as prepared as possible for extreme rain events. As witnessed in recent years, tropical weather systems can have severe destructive impacts on dams. When intense rainfall or strong winds are in the forecast, dam owners should begin preparing. But it's not only tropical weather dam owners should be alert to. A summer thunderstorm that sits over a watershed for an extended period can drop 6-8" of rain in a matter of hours. After any rainfall event, the incoming flow from the upstream watershed can continue to flow into your pond for hours and days after the rainfall stops. In fact, you may not even receive a drop of rain at your dam, but rain in the upstream watershed will eventually flow into your pond and cause the water level to rise.

When such an event is forecast or has occurred, dam owners should:

- Evaluate the water level in the pond/lake and determine if water levels can be safely lowered to make room for incoming flows.
- Coordinate with dam owners and/or property owners downstream.
- Routinely clear debris from spillways.
- Review your Emergency Action Plan.
- Keep alert. As the storm passes, watch for rising waters.
- Report any concerns to the DHEC Dam Safety Program staff at 803-898-1939 (we are available 24/7 at this number)

### CodeRed

DHEC utilizes the CodeRED emergency notification service. This service allows the Dam Safety Program to send scripted telephone calls (robocalls), text messages, and emails to owners and operators of regulated dams. CodeRED messages can be targeted to only those dams in counties which may be affected

by a given condition, to specific dams identified by the program, or comprehensively to all dams across the state. Prior to the start of every hurricane season, the Dam Safety Program conducts a CodeRED test to owners of all regulated dams. Should you have questions about this service or wish to be added to the list for notification please contact the Dams and Reservoirs Safety Program at 803-898-4050 or email us at [response@dhec.sc.gov](mailto:response@dhec.sc.gov).

### Transfer of Ownership

If you transfer ownership of your dam, remember to complete the "Transfer of Ownership" form (available at [www.scdhec.gov/dams](http://www.scdhec.gov/dams)) and send it to us. In the event of an emergency, it is critically important that DHEC has correct contact information for the current owner. If you have any questions, please call Meagan O'Leary at 803-898-4050 or email us at [response@dhec.sc.gov](mailto:response@dhec.sc.gov).

# News

## Dam Safety Educational Opportunity for Homeowners and Property Owners Associations

SC DHEC's Dam Safety Program partnered with the Federal Emergency Management Agency (FEMA) to bring a targeted educational and training course to South Carolina for Homeowners Associations (HOAs) and Property Owners Associations (POAs) that own dams.

HOAs and POAs face unique difficulties when it comes to ownership and operation of a dam. These become compounded when they are faced with repairing or rebuilding a dam following the historic Flooding of 2015 and the subsequent hurricanes, we've experienced in SC. DHEC and FEMA are offering this targeted training and education opportunity to help HOAs and POAs think through these challenges.

SC DHEC Dam Safety Program will continue to provide educational opportunities for dam owners as resources allow. Recorded presentations may be viewed on the SC DHEC web site at <https://www.scdhec.gov/dams>.

## Meet Your Regional Engineer



### Jared Woodard, Area 4

I graduated from the University of South Carolina in 2019 with a bachelor's degree in Chemical Engineering. I started at DHEC in November 2019 and began working with the Dams Safety Program as the Regional Dam Engineer for Region 4, and I am located in the Florence Office. I look forward to meeting and working with dam owners throughout the Pee Dee region. I have always enjoyed the outdoors and the conservation of our ecosystem due to my involvement in Scouting. I am an Eagle Scout and I enjoy the occasional game of quidditch.



### Brian Young, Area 6

Brian Young received his bachelor's degree in 2018 from the University of South Carolina's Chemical Engineering program. He joined DHEC in 2019 to become the Regional Dam Safety Engineer covering Area 6, based out of the Aiken office. In his time with the Dam Safety Program, Brian has had the opportunity to meet and work with many dam owners across the state. His favorite thing about working in the program is the time spent out of the office visiting new places, while meeting and helping the dam owners. In his free time, Brian enjoys traveling and cooking.

Area	Regional Office	Dam Safety Staff	Office Phone	Mobile Phone
1	Anderson	Hannah Vinson <a href="mailto:vinsonhm@dhec.sc.gov">vinsonhm@dhec.sc.gov</a>	864-260-5585	864-276-1907
2	Greenville	Chuck Owens <a href="mailto:owensc@dhec.sc.gov">owensc@dhec.sc.gov</a>	864-372-3273	864-561-1395
3	Columbia	Ryan Sullivan <a href="mailto:sullivrd@dhec.sc.gov">sullivrd@dhec.sc.gov</a>	803-896-9548	843-992-0238
4	Florence	Jared Woodard <a href="mailto:woodarjc@dhec.sc.gov">woodarjc@dhec.sc.gov</a>	843-673-6684	843-687-5991
5	Orangeburg	Dani Felkel <a href="mailto:felkeldh@dhec.sc.gov">felkeldh@dhec.sc.gov</a>	803-533-5490	803-614-5222
6	Aiken	Brian Young <a href="mailto:youngbc@dhec.sc.gov">youngbc@dhec.sc.gov</a>	803-642-1637	803-995-0030

## New Starting 2020, Information Bulletins

The Dam Safety Program is developing and compiling information bulletins for various dam safety related topics. The initial bulletin was included as an insert with the June 2019 issue of Dam Safety News and was titled "When Do I need a Permit". An information bulletin concerning temporary siphon installation is included with this issue of the Newsletter. The Newsletter will continue to be issued in the spring of each year with new issues of information bulletins in the fall. Various topics will be chosen to assist dam owners and to broaden their knowledge on these subjects. As the technical bulletins are developed, they will be published in the fall and available on the Dam Safety website at <https://www.scdhec.gov/dams>. Any input from owners on topics of interest is welcome and encouraged, topic requests may be sent to [response@dhec.sc.gov](mailto:response@dhec.sc.gov).

## DHEC Regional Staff Listing



## Siphon Quantity Chart

The Siphon Quantity Chart is a graphical display of the relationship between pond size and the number of siphons required for one foot of drawdown in 24 hours. The graph was created in a manner as to allow use across a variety of siphon sizes, pond sizes, drawdown volumes, and drawdown times.

The primary use of the chart is for the user to decide how many specified size siphons they would need to deploy to a pond. The user would simply determine which graphical line to follow based on the siphon size available to them. Next, they would find the size of the pond in question on the horizontal axis and visually record where the siphon size and pool area intersect, which returns the number of siphons of the given size to drawdown the pond one vertical foot in 24 hours.

Despite ignoring the change in pool area with depth, this chart information can be extrapolated for many applications. The user may, for example, determine they need to drawdown two vertical feet of water for their pond. They can take their normal number of siphons and double it, to determine how many siphons they need for this specific scenario. In contrast, the user may have

the need to drawdown one foot of water in 48 hours as opposed to 24 hours. In this case, they may divide the initial number of siphons required by two to achieve this solution. In short, the user can vary the chart linearly to manipulate any of the five main variables: number of siphons, siphon size, pool area, drawdown height, and drawdown time. In the event that the user has trouble extrapolating all of these possibilities from the chart, they can reference the table on the chart that describes the typical discharge of several siphon sizes.

The chart represents typical conditions and performance may vary based on driving head, siphon parts, or change in pond area as drawn down occurs. The driving head used to create the chart was 18 feet, calculated as the difference in elevation between the water surface and the outlet. Less driving head results in longer drawdown times. Additionally, the chart does not account for any conveyance other than through siphons, thus ignoring any spillways, overtopping, voids, or additional removal of water.

## Typical Temporary Siphon Installation Detail

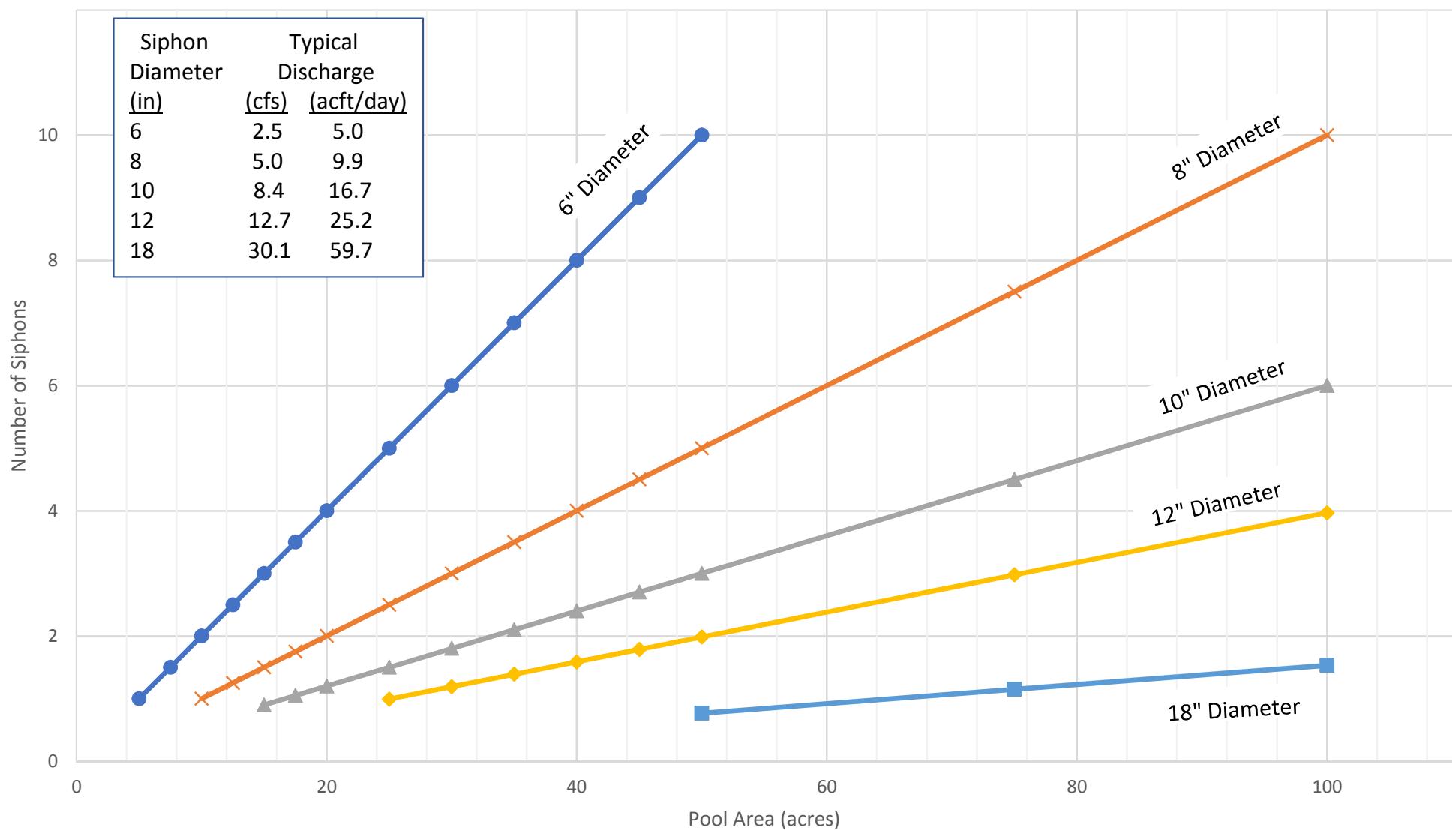
The Typical Temporary Siphon Installation Detail provides a standard installation set up for a temporary siphon. The siphon can be assembled as shown in the detail when all of the criteria are met or considered. The strainer detail and tee detail represent the best practice, as they provide information and equipment necessary for the success of the siphon.

The maximum lift a siphon can provide is 20 feet for most applications at sea level. If required, siphons may be secured with stakes or ropes (larger pipe diameters require more robust restraints). In most slope scenarios, 22.5-degree elbows should be used, however, 45-degree elbows may be used as needed. A 6-inch strainer requires 54 holes evenly spaced over the top half of the strainer.

Larger holes should be provided for larger strainers: 1.5-inch, 2.0-inch, 2.5-inch and 3.5-inch for 8-, 10-, 12-, and 18-inch strainers, respectively. All siphon joints should be solvent welded. The siphon can be primed by closing the downstream valve/cap, filling the pipe with water, then closing the valve at the tee, and finally, opening the downstream valve/cap. For expedience, a 1.5-inch to 2-inch diameter pump may be used to prime a siphon. Please visit <https://youtu.be/EkPN15ZKsow> for additional information.

# Siphon Quantity Chart

## Number of Siphons Required for 1 Foot Drawdown in 24 Hours



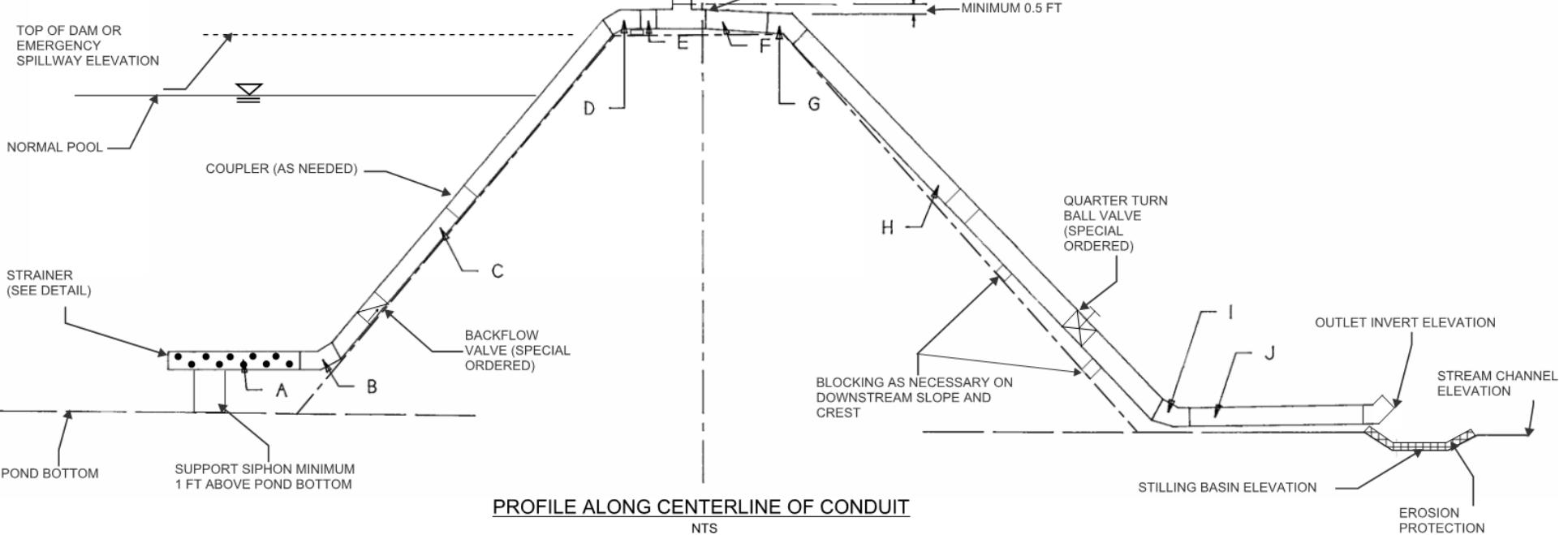
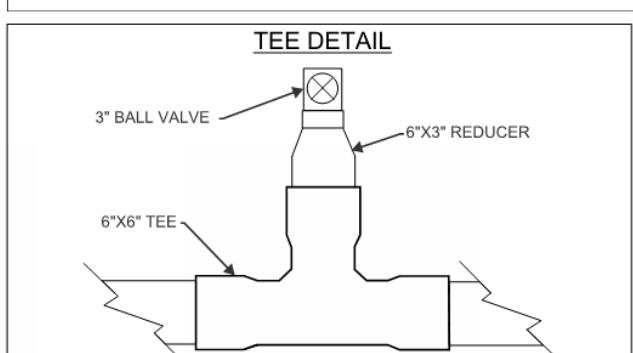
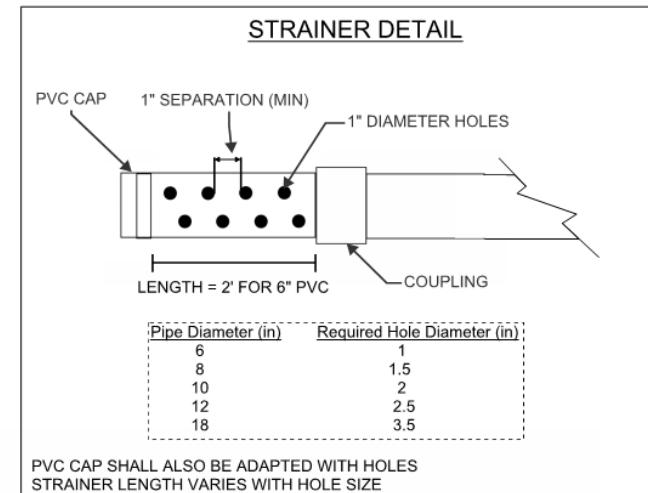
\*Chart represents typical conditions described in DSG 101 document, Use of Siphon Quantity Chart. Performance may vary based on driving head, siphon parts, or change in pond area as water is drawn down.

### TYPICAL TEMPORARY SIPHON INSTALLATION DETAIL

NOTES:	
1. IF REQUIRED, USE STAKES OR ROPES TO SECURE PIPE.	
2. FOR EXPEDIENCE, USE 1.5" TO 2.0" DIAMETER PUMP TO PRIME SIPHON.	
3. DOWNSTREAM LEG SHALL NOT EXCEED 20 VERTICAL FEET.	
4. THE MAXIMUM LIFT IS 20' FOR MOST SCENARIOS NEAR SEA LEVEL.	
5. ALL JOINTS TO BE SOLVENT WELDED	
6. PRIME SIPHON BY CLOSING DOWNSTREAM VALVE, OPEN 3-INCH BALL VALVE AT TEE (ON TOP OF DAM) AND FILL PIPE WITH WATER, CLOSE THE BALL VALVE (CREATING AN AIRTIGHT PIPE) AND OPEN DOWNSTREAM VALVE.	
7. 22.5-DEGREE ELBOWS APPLICABLE FOR MOST SLOPE SCENARIOS, 45-DEGREE ELBOWS MAY BE USED AS NEEDED FOR STEEPER SLOPES	
8. 6-INCH DIAMETER STRAINER REQUIRES 54 HOLES EVENLY SPACED OVER TOP HALF OF STRAINER	

ITEM	DESCRIPTION
A	FT OF PIPE
B	22.5-DEGREE ELBOW
C	FT OF PIPE
D	22.5-DEGREE ELBOW
E	FT OF PIPE
F	FT OF PIPE
G	22.5-DEGREE ELBOW
H	FT OF PIPE
I	22.5-DEGREE ELBOW
J	FT OF PIPE

ALL PIPE AND FITTINGS ARE SHOWN AS 6-INCH DIAMETER SCHEDULE 40 PVC (OTHER PIPE DIAMETERS SIMILAR).





**Dam Safety Program**  
2600 Bull Street  
Columbia, SC 29201

## Training/Conferences

Regional ASDSO conference in Charleston has been rescheduled for Dec 7-10, 2020. For more information on this conference and other ASDSO training opportunities visit <https://www.damsafety.org/>.



**We're On Call**  
Dam Safety Program Staff are available 24-7 in the event of an emergency situation at **803-898-1939**

View past issues of this newsletter at [www.scdhec.gov/dams](http://www.scdhec.gov/dams).



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