

Overview

This factsheet provides general information about on and offstream reservoirs to help you better understand how reservoirs can be connected to a watercourse. This fact sheet also discusses how the State Water Resources Control Board (State Water Board) defines a watercourse as well as what the State Water Board considers when evaluating whether a reservoir may be subject to the Division of Water Right's (Division) permitting authority.

What is a Watercourse?

A watercourse is a natural channel, or an artificial channel under certain conditions, which conveys natural flows of water such as a river, stream, or even a ditch. A major characteristic of a watercourse is a defined channel that transports the water. Channels have two parts: a bed and a bank. A bank is the side area that confines water in its channel at the watercourse's highest flow. The bed is the physical bottom of a channel, which transports the water vertically. Although a defined channel is a common indicator of a watercourse, the factors considered in identifying a watercourse are not limited to the presence of a defined bed and bank. Looking at a channel's sediment transport or signs of scouring can also indicate the presence of a watercourse. Watercourses do not have to empty into a stream, lake, or body of water, and can have intermittent or seasonal water flow. Watercourses can range from big rivers that support a wide range of aquatic life to ephemeral streams that have water flowing less than a couple months or even days out of the year. If a reservoir is connected to a watercourse it is considered onstream.



diagram of defined bed and bank

What is an Onstream Reservoir?

Onstream reservoirs block the natural flow of water through a watercourse and retain or store the water through embankment, dam or other means of impounding water. This may seem to be a straightforward determination but it can become more complicated when a reservoir is situated within a drainage or spring source, or has multiple sources of surface water that are not always flowing with water. Consideration of the local hydrology and landscape is important for classifying onstream reservoirs. One tool the public can use is Google Maps to identify contour lines that can indicate where watercourses exist. This fact sheet does not capture every possible scenario that may exist for onstream reservoirs. If you are unsure of whether your reservoir is on or offstream, please contact a water rights lawyer or qualified professional. More information on possible firms or consultants can be found here:

https://www.waterboards.ca.gov/waterrights/board_info/contacts.html



The red circle highlights the watercourse that is flowing into the reservoir.

What is an Offstream Reservoir?

Offstream reservoirs are located outside a watercourse and receive water from a watercourse via various conveyance methods used to move the water from the watercourse to the storage location. Offstream reservoirs are not physically or hydrologically connected to a watercourse, and as such, typically have less impacts on stream, riparian, and wetland habitats. Examples of offstream conveyance methods are pipes, aqueducts, and other artificial methods, with a few exceptions. A water right is still required for these types of diversion and storage dependent on diversion and use. Consideration of the local hydrology and landscape is important when constructing your offstream reservoir to make sure it will stay offstream and not connect to a watercourse. Spillways should be designed to spread out, dissipate, and infiltrate any surface or sub-surface flows to prevent channelization of flow and maintain a disconnection from nearby watercourses.



water tanks

Reservoirs Not Subject to the Division's Permitting Authority

Reservoirs that do not receive any water from a watercourse can receive water that the Division does not regulate. Water sources such as sheet flow, diffused surface water usually originating from rain events, and groundwater, are not subject to the Division's permitting authority. Reservoirs that collect sheet flow, groundwater, or other water that is not subject to the Division's permitting authority do not require a water right. For example, a rain catchment reservoir that only receives water from sheet flow and rain does not need to register with the Division. These types of reservoirs are hard to construct and require extensive documentation and planning.



rain catchment reservoir

Why Does It Matter?

Onstream reservoirs are connected to a watercourse and have the potential to adversely impact the broader watershed. Onstream reservoirs can impede fish passage above or below a dam. Alterations to the natural stream flow contribute to changes in water quality and temperature, cause erosion, interrupt sediment transport, and can increase predation of fish. It is essential to properly plan and mitigate the potential negative effects of a reservoir to the local hydrology.

The State Water Board will make determinations on a case-by-case basis and may use aerial photos, historical maps, site investigations, geological data, and other information to determine if the reservoir is onstream. Once the appropriate party or, where resources are available, the State Board has determined the reservoir is within the Division's permitting authority, the applicant should work closely with a qualified professional, water rights lawyer, or the State Water Board's Division of Water Rights to identify what permit and registration options are suitable for the project. More information regarding the Division's appropriate water rights and requirements can be found here: <https://www.waterboards.ca.gov/waterrights/>. Please contact the State Water Resource Control Board, Division of Water Rights with additional questions about the permitting and licensing of onstream or offstream reservoirs at: 916-341-5300 or by mail at: 1001 I Street, Sacramento, CA 95814 14th floor Attn: Permitting, Licensing and Registration Sections.