

## Sitka Sedge State Natural Area Habitat Restoration Project – Setback Dike Fact Sheet

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### What is a setback dike?

A setback dike is an elongated earthen ridge that is constructed to keep low-lying lands from being flooded during high tides or storm events. At Sitka Sedge, we are proposing to construct a setback dike south of the existing Beltz Dike to allow for improved tidal habitat and natural fish passage north of the setback dike, while still providing a level of protection for Tierra Del Mar south of the setback dike.

### Will the new setback dike at Sitka Sedge have a tide gate?

Yes, the setback dike will have a muted tidal regulator (MTR) installed. The operation of a MTR is different than a traditional tide gate because a gate equipped with a MTR is triggered to open or close automatically based on the interior water level (water level behind the dike), rather than the exterior water level (water level in front of the dike). With this design, the gates will default to open, allowing more opportunities for fish to pass through the tide gate to freshwater habitat, but will close when water levels inside the dike reach a predetermined, safe elevation.

### What will the setback dike look like?

The base of the dike will be as wide as 70-80 feet, while the top of the dike will be narrow at a minimum of 12 feet wide. The slope that faces Tierra Del Mar will be steeper than the slope that faces the estuary, but both slopes will be very gradual.

Once Oregon State Parks has finished planting the project site, the dike will become covered in wildflowers, grasses, and shrubs.

### How tall will the setback dike be?

While we haven't started the construction design process yet, we can assume that the setback dike will be at least 15 feet high, and probably more like 17 feet. Over time, the dike will settle—lowering the top elevation by up to 3 feet in some places. Initially, the dike will be overbuilt by a few feet to compensate for settlement to end up at a minimum of 15 feet in elevation.

### Will I be able to see the setback dike from Roma Avenue? How about Sand Lake Road?

You won't be able to see the dike from Roma Avenue. There is one spot on Sand Lake Road where the dike will be openly visible. The setback dike will be visible from Beltz Dike.

Click this YouTube link to see a computer simulation of the setback dike: <https://youtu.be/AzG7lvDf8u0>

### Where will the setback dike be located in Beltz Marsh?

Until the geotechnical survey and additional modeling have been completed, we are speculating that the dike will be located near where the historic beaver dam is located in the marsh—about 1,000 feet or 0.2 miles north from the north edge of Roma Avenue. Its location would divide the marsh so that a smaller basin of freshwater marsh would lie south of the dike and a larger area of open, tidal marsh would remain north of the dike. Our preliminary studies indicate that the area behind the setback dike will easily provide an adequate basin of water storage for stormwater draining from Tierra Del Mar, No Name Creek, and associated wetlands, while still reducing water levels near Tierra Del Mar compared to current storm conditions. The exact location of the dike will be dependent on underlying soils, surrounding topography, and construction accessibility. After surveys and modeling have progressed, we will share illustrations of the dike designs and location, and take your comments.

Will there be a trail added to the top of the new setback dike?

Recreation features are still in the planning stage, but we will explore any options for creating meaningful outdoor experiences at Sitka Sedge—including dike trails, viewpoints, and wetland boardwalks.

Why did OPRD choose the setback dike over replacing the tide gate in the current dike?

The setback dike offered the ability to restore natural tidal habitat to much of the marsh, and full fish passage to Reneke Creek and Beltz Creek, while also increasing flood protection for the community of Tierra Del Mar for a longer period of time. The option provided a win-win solution for both ecological and societal goals.

Is it true that the setback dike would provide some protection against sea level rise?

Because the setback dike would be built to a higher elevation and to modern FEMA standards, it would undoubtedly provide a higher level of flood protection to Tierra Del Mar than the existing dike. The existing dike has settled significantly in many locations and now has long sections as low as 12.1 feet in elevation. During the hydrology study of 2017, a tide of 11.97 feet was recorded. The current dike would be easily overtopped by very minor sea level rise, since current tides come within an inch or two of overtopping it already, but the setback dike would be at least 3 feet higher (and probably more) than the current dike's low areas. In addition to increased dike height, the setback dike would be engineered for increased resistance to higher seas as required by modern FEMA standards. Whereas the existing dike averages around 30 feet wide at the base, the modern setback dike would be around 80 feet wide at the base.

How will the setback dike affect groundwater and drainage in Tierra Del Mar?

Groundwater and surface water studies completed by consultants over the last three years concluded that the existing dike and small, broken tide gate trap more groundwater and stormwater than the other scenarios we reviewed, especially during and after significant rainfall. Because the setback dike would block incoming high tides over a set height, and because it would have a large and efficient tide gate to quickly drain the area behind the dike during the outgoing tide, *it would result in lower water levels near Tierra Del Mar than now*. With lower overall water levels in the marsh during storm events, the setback dike would not raise groundwater or surface water in Tierra Del Mar. The main influence on Tierra Del Mar stormwater buildup is proper maintenance of the roadside ditches. As residents have noted in recent years, cleaning of these ditches alleviated most of the stormwater accumulation that was experienced prior to the ditch cleaning. OPRD has no authority or responsibility for Tierra Del Mar ditches, but will design the setback dike to be able to accommodate maximum flow from the ditch network, assuming the ditches remain clear and efficient.

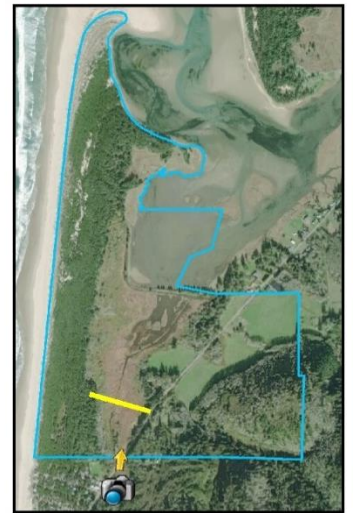
Will I have an opportunity to participate in the design of the setback dike?

Yes, OPRD will be sharing designs at several different phases and seeking comments from the community.

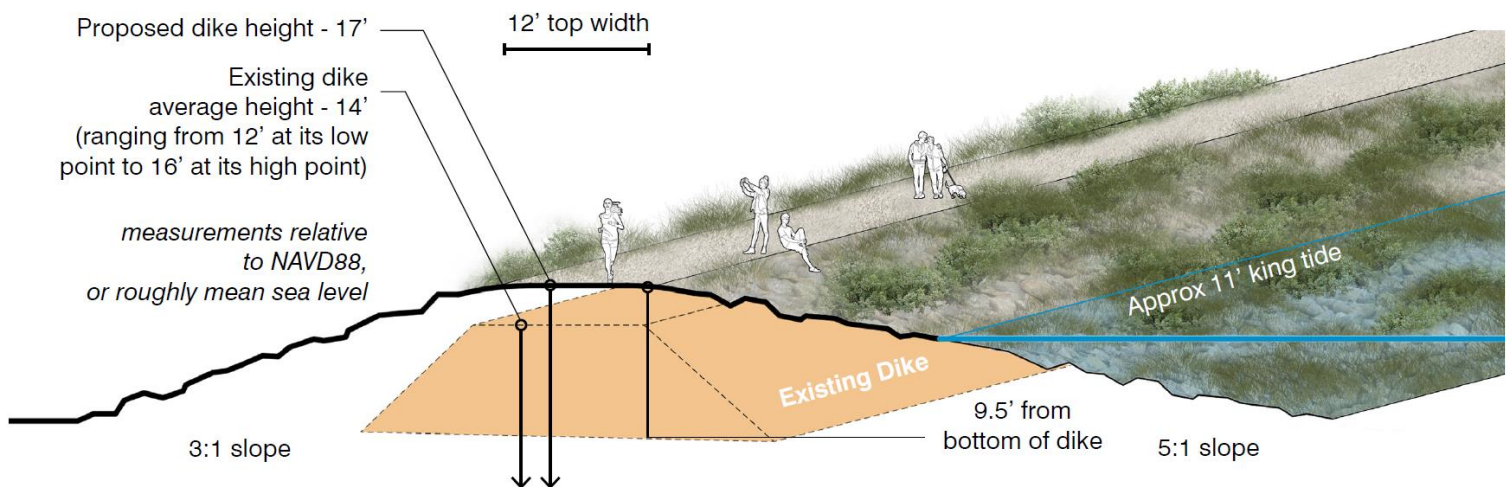
Possible view of setback dike from standing on the existing Beltz Dike looking south.



Setback dike visibility example as viewed from the south on Sand Lake Road near the No Name Creek crossing.



### EXAMPLE: Proposed Dike Section



\* The existing dike is shown nested under the proposed dike only for size and elevation comparison. The proposed dike will be constructed in a different location than the existing.