OKANAGAN RIVER RESTORATION INITIATIVE (ORRI)
SPAWNING BEDS IN THE PENTICTON CHANNEL

Project background:

- According to Traditional Ecological Knowledge, "the river channel (in Penticton), used to be rich in fish; Steelhead, Coho, Sockeye and King (Chinook) Salmon" (Ernst, 2000).
- Salmon spawning habitat is currently extremely limited in the Penticton Channel, mainly due to river channelization which created very flat channel grade, low water velocities, inadequate substrate material, Froude number out of the preferred range and low egg-fry survival.
- As permanent fish passage was at Skaha Lake Control Dam in 2014, gravel augmentation in the Penticton Channel has been identified as one of the highest river habitat priority.

Renaturalization goals and benefits:

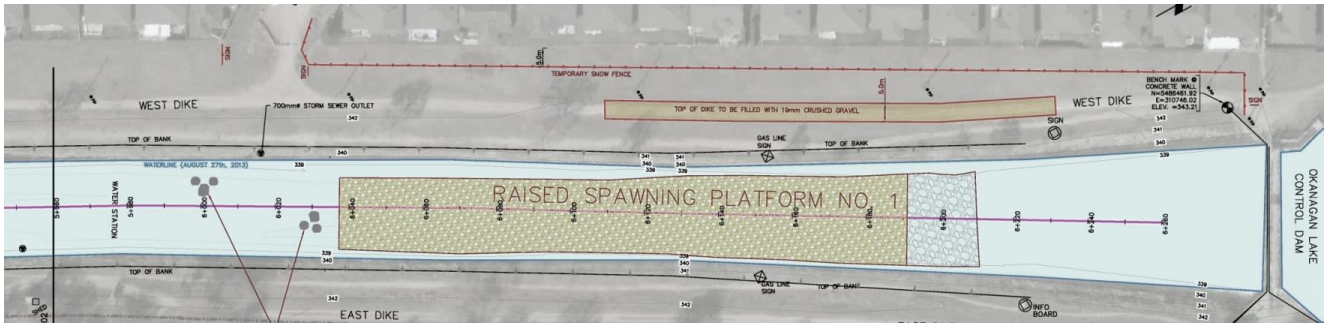
- Creating spawning areas (raised spawning beds) with optimized gravel size, bed slope and hydraulics for Sockeye, Kokanee, Steelhead, Rainbow Trout and Chinook.
- Enhancing rearing habitat for juvenile salmonids and Burbot with boulder clusters.

Design elements:

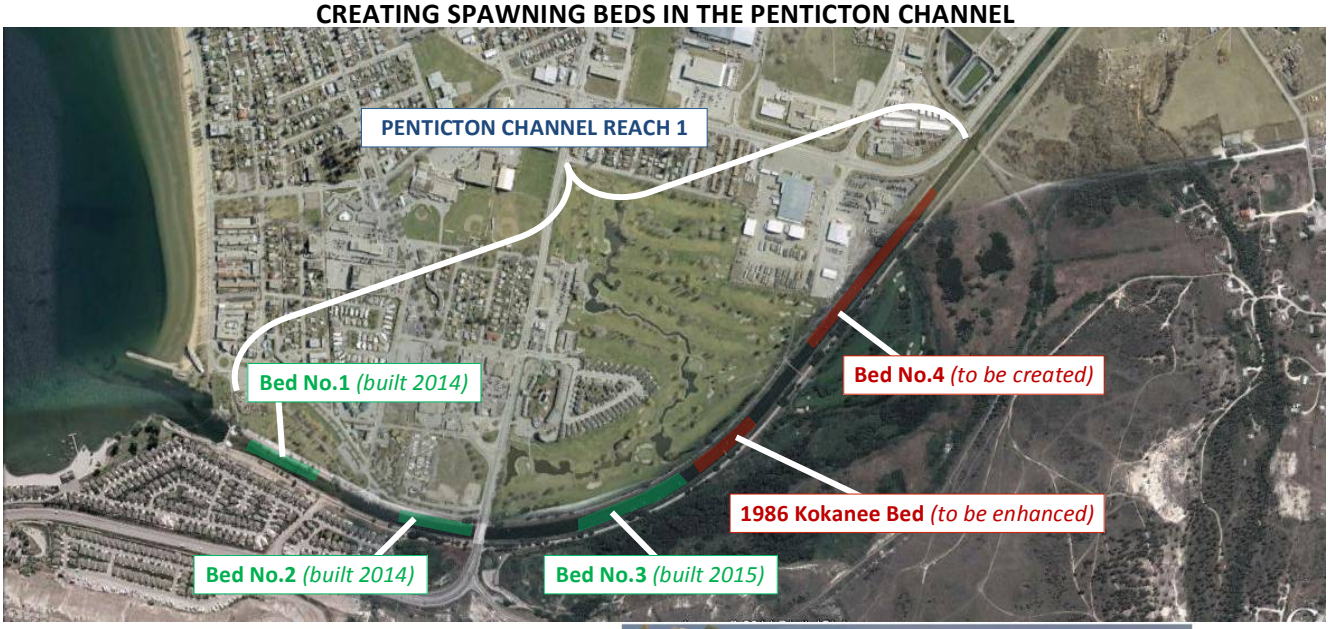
- The raised beds are immersed at all flows and are created placing spawning gravel directly over the existing river bed substrate.
    - Bed No.1: 173m long X 20m wide raised gravel bed designed for Sockeye and Chinook.
    - Bed No.2: 163m long X 20m wide raised gravel bed designed for Sockeye.
    - Bed No.3: 270m long X 20m wide raised gravel bed designed for Sockeye and Kokanee.
    - Bed No.4: 500m long X 20m wide raised gravel bed designed for Sockeye and Kokanee.
    - 1986 Kokanee Bed: 160m long X 20m wide raised gravel bed designed for Kokanee.
- The clusters are configured to optimize the hydraulics behind the boulders for rearing and feeding (development of invertebrates).

Timeline:

- **On-going**: Guidance from the ORRI Steering Committee and outreach activities.
- **2012-2013**: Conceptual designs for 4 beds/gravel bars in the upper reach of the Penticton Channel.
- **2013-2014**: Funding research, designs, permits and construction works for Beds No. 1 & No.2.
- **2015**: Funding research, designs, permits and construction works for Bed No.3.
- **2016-2019**: Funding research, designs, permits, and planned construction for Bed No.4 & Kokanee Bed.
- **2014-2018**: Effectiveness monitoring and adaptive management.



CREATING SPAWNING BEDS IN THE PENTICTON CHANNEL



AFTER: BOULDER CLUSTERS
ENHANCED REARING CONDITIONS
FOR BURBOT & JUVENILE TROUT

AFTER: RESTORED PLATFORMS No.1 & No.2
OPTIMIZED SPAWNING CONDITIONS
FOR SALMON & TROUT

BEFORE: DUE TO RIVER CHANNELIZATION
EXISTING UNSUITABLE SPAWNING CONDITIONS
(hydraulics, substrate, macrophytes, etc.)