

JOHN OLIVER PUMP STATION BRIEF

Brief Project Description

- This project was proposed to help address local flooding concerns along with environmental improvements in East Delta and involves installing fish friendly pumps at the Oliver Pump Station. Minor channel improvements were also included near the pump station.
- This project will assist in addressing flooding problems as well as providing improved opportunity for fish to return to Boundary Bay. As the projects are near recreational / transportation facilities there is the potential to easily integrate with existing and proposed recreational trails.

Description of the Physical Works

- The project involves addressing flooding concerns and local environmental improvement through the addition of fish friendly pumps. At the existing Oliver Pump Station four large screws pumps, electrical upgrades and dike improvements were completed. The Oliver Pumps Station, is located at the outlet of Big Slough and serves as the main outlet for drainage of East Delta Farmland, the southern portion of North Delta and a portion of Surrey uplands from east of 120th Street to 128th Street and south of 64th Avenue.
- Channel improvements works in the vicinity of the proposed pump stations have incorporated fish habitat enhancement.
- The historical channels in this area were cutoff when the dyke was constructed to protect the communities of Surrey and Delta. Now with this project completed it, will provide an opportunity to increase the salmonid fish spawning and return of fish fry to Boundary Bay. The pump station will also assist in reducing flooding and also keep the channel clear so that the salmonid life cycle for the watercourses in this area can be restored.

Description of the Problem this Project will address

- This project seeks to reduce the risk of flooding associated with urban development, new roads and highways. These projects increased the runoff impacts in the lowlands with increased pump capacity the flood risk will be reduced.
- Further fish access to local tributary stream was reduced over many years with the construction of dykes and pump stations. By installing fish friendly screw pumps, ability for fish to migrate safely through the system will be greatly improved.
- The flooding problems have been always existed as much of the Delta is low lying (-0.5m to 1.5m geodetic elevation in the low lands). Steps have been taken over the years by the municipality and also the Fraser River Flood Control Program to improve the drainage and reduce the frequency of floods. The farmers in East Delta have made crop loss claims against Delta, claiming that urban development runoff is impacting crops. This project will assist in reducing the flood risk.
- From a sustainability perspective the works installed in the 1970's were not planned and designed with the same level of sensitivity to environmental issues as is currently done. The upgraded pump station improvement will allow fish fry to pass from the fresh water environment to the marine during the full range of tidal conditions. Previously this

occurred through the flood boxes but only during a low tide. Fish needed to avoid the original turbine pumps and with the addition of “fish friendly pumps” they can return to Boundary Bay in all tidal conditions.

The project will consist of the following:

- Installation of fish-friendly pumps in a new structure capable of conveying a flow of approximately 2.5 m³/s capacity or slightly more under maximum future head conditions;
- Improvements to the existing pump station and the power infrastructure to accommodate the increased pumping capacity (including higher capacity electrical service to the facility, consideration of a higher efficiency pump motors for existing pumps, backup power capability, and installation of new transformers / electrical equipment) ;
- Instrumentation for improved operation, continuous measurement and monitoring (i.e. SCADA and CCTV) for improved water level and flow monitoring; and,
- Expansion of Big Slough and tributary channels / culverts near the pump station to include fish habitat structures and features.
- Build to allow future raising of the dike as required from sea level rise.





East Delta – Boundary Bay Dyke Foreshore Protection Oliver Pump Station Area

Project Background

- Delta is applied for funding assistance to upgrade approx 300m of dyke in Boundary Bay
- The section of dike near Oliver Pump Station will be then seventh phase of an erosion protection upgrade that began in 2003
- Since 2003, approx 2km of dyke has been upgraded along Boundary Bay from west of 104 St to 112 St.
- The dyke provides a coastal barrier that protects low lying agricultural land and ultimately, the communities of Ladner, lower Tsawwassen and Surrey.
- Original dyke design called for a seaward slope face of 1.5H:1V which was revised and constructed to 2H:1V utilizing 600mm minus rip rap

Project Description

- Delta upgraded the seaward side of the dyke to a 3H:1V slope
- The dyke crest serves as a popular walking and biking route for local residents
- An appropriate toe will be excavated and a 300mm thick filter layer comprised of 200mm diameter crushed rock will be applied
- Finally a larger, more durable 1200mm minus rip rap layer will be installed and tightly “knitted in”

Benefits

- upgrading flood protection to approximately 35,000 residences and businesses
- reduced maintenance costs due to cleaning up post storm events
- rehabilitation approximately 300m of Delta’s dyke network for access and recreation