Local Government & Flood Management

Kootenay Systems Workshop

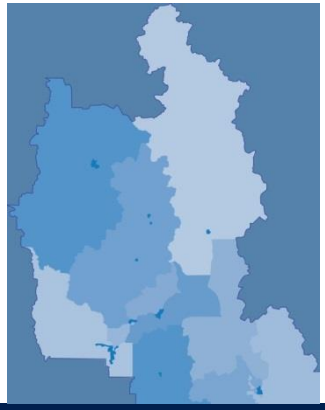
The Role of Local Government in Flood Management.

Presented by: Eileen Senyk, Planning Technician.

Seasonal flooding on the West Arm of Kootenay Lake.

Local Government Roles and Responsibilities

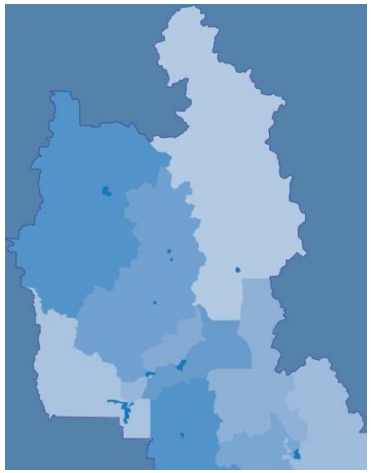
- Administration of RDCK Floodplain Management Bylaw #2080, 2009;
- Responsible for Emergency Management & Response;
- Incorporating conservation values into Official Community Plans;
- Incorporating recreational values into Official Community Plans;
- Protection of RDCK owned utilities infrastructure (water systems).



Why Floodplain Management?

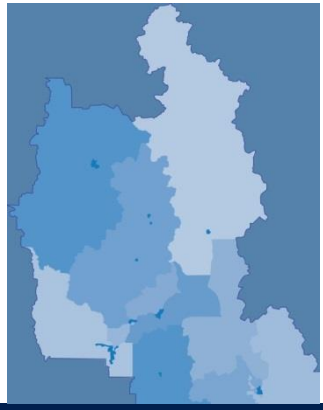
RDCK Floodplain Bylaw

- Floodplain Management Bylaw No 2080, 2009
  - Requires minimum elevations and setbacks for flood proofing
  - Identifies Alluvial Fan hazard areas
- Applies to all persons who construct on land designated as 'Floodplain'
- Building permit triggers floodplain bylaw requirements
- Floodplain bylaw/maps form the foundation upon which many land use decisions are made about how and where communities grow, floodplain requirements are incorporated into:
  - Building Bylaws
  - Subdivision Approvals (MOTI)
  - Official Community Plan
  - Zoning Bylaws
  - Emergency Planning



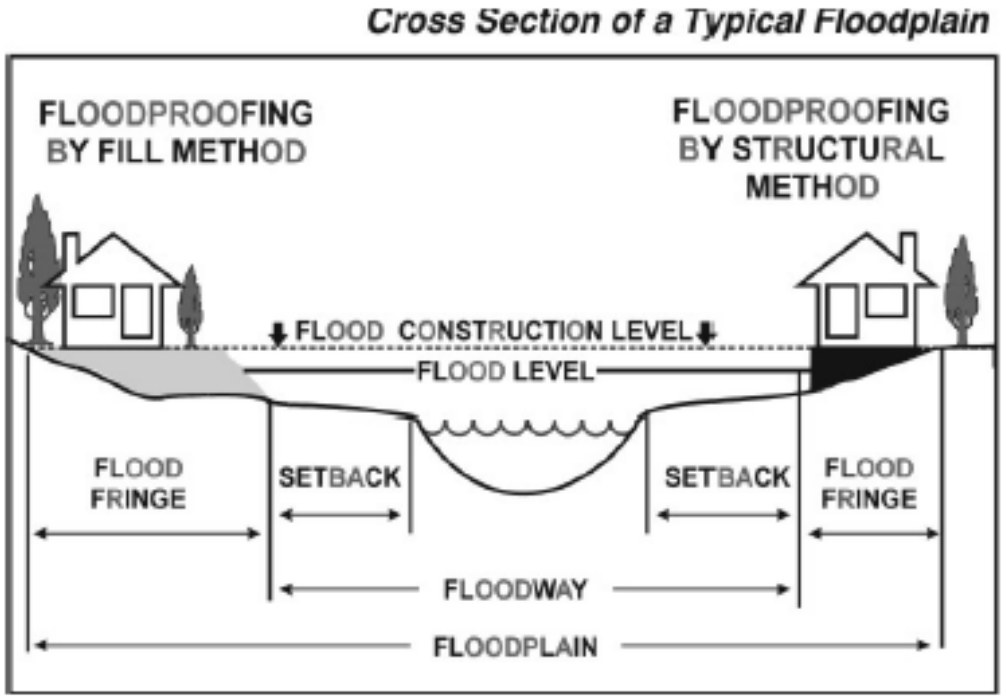
History

- From the early 1980s to 1993, Flood Construction Levels and Setbacks from the natural water line were provided as provincial guidelines
- 1993, first RDCK Floodplain Bylaw adopted which specifies Flood Construction Levels (FCL) and Setback requirements
- 2003 and 2004, legislative changes granted local governments the authority to manage land use in flood hazard areas:
  - the removal of BC Ministry of Environment approval for subdivisions and floodplain bylaws within flood hazard areas
  - granting of greater authority to local governments with the provision that provincial guidelines be taken into consideration



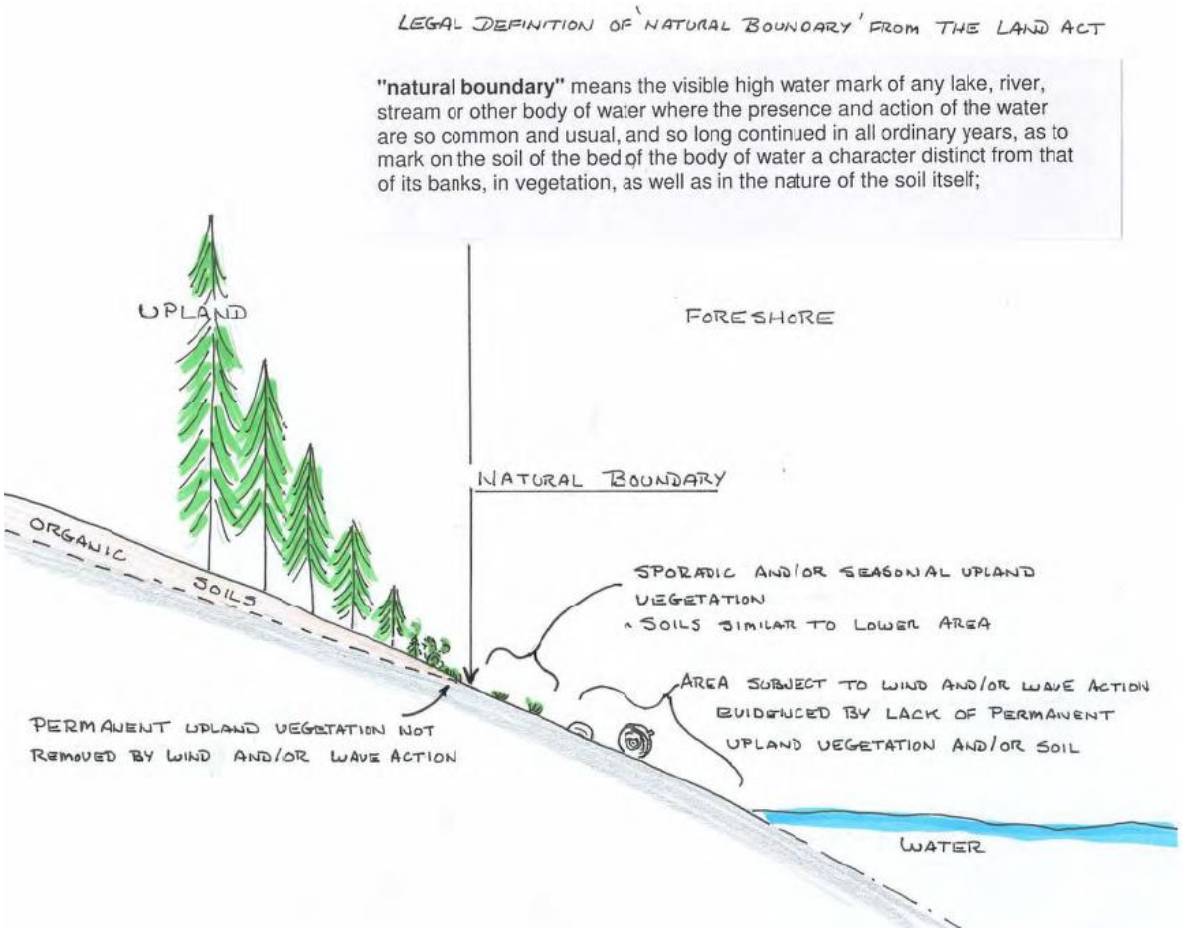
Typical Floodplain

- Setbacks are typically measured from the Natural Boundary
- Flood Construction Levels (FCL) are measured to the underside of floor systems
- Unless otherwise stated all other lakes and watercourses have a 15m setback, 1.5m FCL

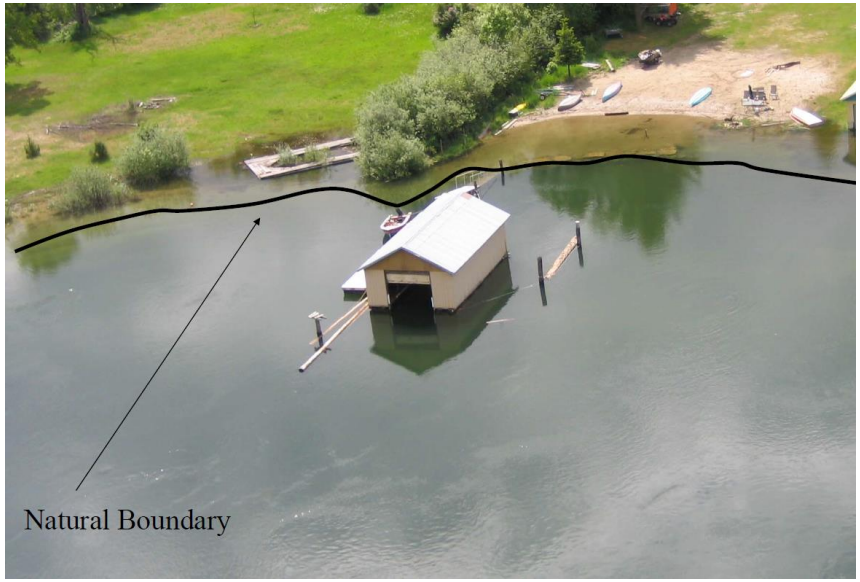


Natural Boundary

- What is the Natural Boundary?
- Simply defined it is the line along the foreshore where the vegetation starts to grow
- Natural process, occurs slowly and imperceptibly



Natural Boundary cont'd



- Setbacks are measured from the natural boundary
- Lake levels will often rise higher than the natural boundary

Kootenay River (Creston) 200 Year Floodplain

- Kootenay River (USA to Kootenay Lake)
  - Setback 30m
  - Setback 7.5m from dikes or any structure used for flood protection
  - FCL 537.9m (1765') to 536.5m (1760')
  - 200 year floodplain defined
  - 356 private parcels

Kootenay Lake to Grohman

Kootenay Lake to Grohman Narrows

- Setback 15m
- FCL 536.5 (1760') to 535.0m (1755')
- 1584 private parcels affected.

- 536.5 (1760') FCL for Main Lake
- Province determined that this is level the lake is expected to rise to in the event of a flood equal to the 1894 flood plus a freeboard
- The freeboard allowance of 0.76m (2.5') is to account for among other things, wave action and wind setup
- FCL includes consideration of the storage effect of the Duncan and Libby dams

Kootenay Lake Example

- 2006, West Arm at 533.6m (1750.65') - photos
- 2012, Main Lake peaks at 534.56m (1753.8') – highest since 74'
- Does the 536.5m (1760') FCL provide adequate protection?

Kootenay/Columbia Setback & FCL

Kootenay River

- Corra Lyn to Brilliant*

  Setback: safeline for properties with a covenant and reference plan, or 15.0m

  FCL 454.8m (1492') to 453.3m (1487')

  130 private parcels

- Brilliant to Columbia*

  Setback 30m

  FCL 426.7m (1400')

  12 private parcels

Columbia River

- Arrow Reservoir*

  Setback: safeline for properties with a covenant and reference plan; or 30m (100') from the 440.7m (1446') contour interval.

  FCL 443.5m (1455')

  1263 private parcels

- Columbia River (Keenleyside to RDKB)*

  Setback 30.0m

  FCL 426.3m (1399') to 420.7m (1380')

  307 private parcels

* Denotes FCL and Setback Requirements, 200 year Floodplain not determined

Duncan Setback & FCL Requirements

Duncan

Duncan Lake*

Setback 30m

FCL 581.2m (1907')

61 private parcels

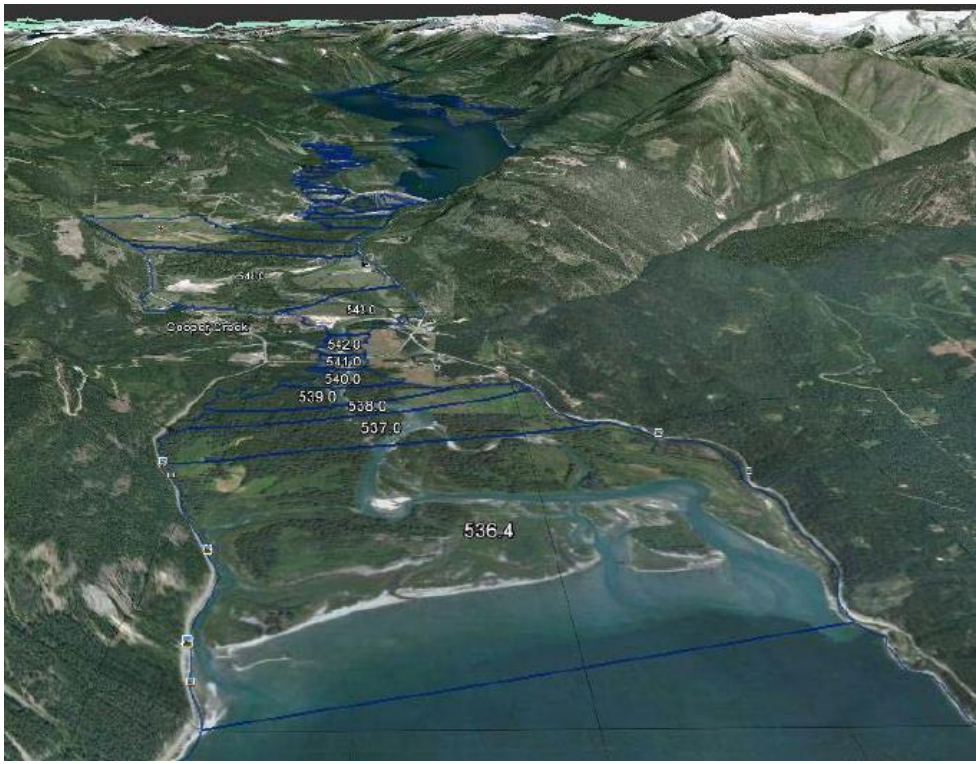
Duncan River

Setback: as defined by covenant, or as determined by Schedule B, or 30.0m

FCL 549m (1801') to 536.4m (1760')

200 year floodplain defined

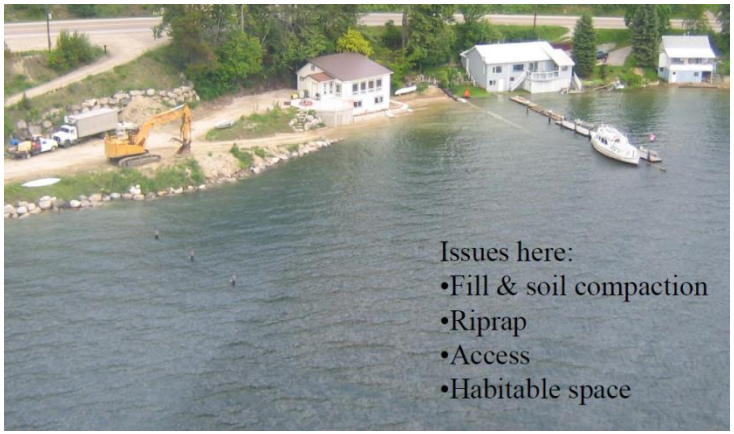
77 private parcels

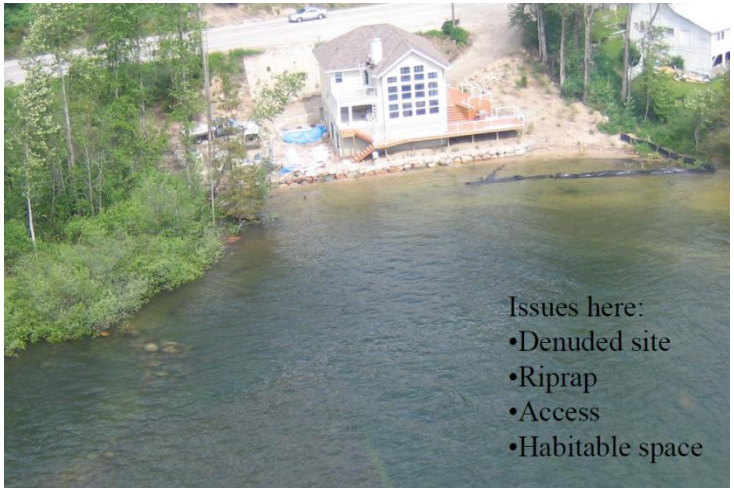


* Denotes FCL and Setback Requirements, 200 year Floodplain not determined

Common Concerns

- Is your home or property at risk of flood or built on an alluvial fan?
- Was your home was built prior to flood regulation (1993)?
- Does your home meet the current FCL and setback requirements?
- Have you considered flood damage potential for other values such as wharfs, docks, boat house, ancillary buildings?
- How will climate change impact flood patterns?





Additional Resources

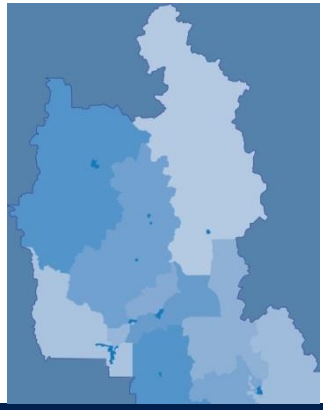
- To answer these types of questions, please contact RDCK Planning Staff or reference the following resources such as mapping of floodplain and alluvial fan hazards:

Floodplain Bylaw:
http://www.rdck.ca/assets/Government/Bylaws/Land~Use-Planning/2080_Floodplain-2.pdf

Floodplain Bylaw Mapping via RDCK Webmap:
https://maps.rdck.bc.ca/

RDCK website:
http://www.rdck.ca/EN/index.html

RDCK Brochure: Floodplains Alluvial Fans and Geotechnical Hazards
http://www.rdck.ca/EN/main/services/land-use-planning/floodplains-alluvial-fans-geotechnical-hazards.html



RDCK Owned Utility Infrastructure

The Regional District operates 20 water systems, some of which are located on Kootenay Lake and Kootenay River.

This pump house in Balfour was affected by flood waters in the summer of 2012.

July 7, 2012

June 26, 2012

Emergency Management and Response

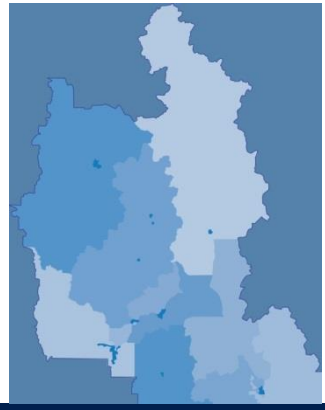
In the event of an emergency the RDCK:

- Is responsible for evacuating residents;
- Provides mitigative works (sand bags);
- Provides press releases to keep the public informed of what is happening;
- Implements recommendations made by the Province (coordinating works on the ground).

Dike on Crawford Creek

Upcoming changes to the Emergency Program Act:

- The RDCK will have an Incident Commander for flood events;
- The RDCK will be responsible for mitigative works (e.g. dikes) outside of emergency response.



Thank you!