

## F8 Stream Reach Summary

**Study Reach:** F8, Fraser River - Canyon below Strawberry Road downstream to the River Camp at Granby Ranch Golf Course.

**Reach Description:** Approximate channel length: 5 miles, approximate channel slope 0.8%.

This section of the Fraser River is remote and scenic. The public cannot easily access this area due to the canyon confines on the upstream end and the private land ownership on the downstream end. The reach begins as a narrow, confined and relatively steep canyon. The railroad follows the river through the canyon and often encroaches on the floodplain corridor. On the downstream end of the canyon, the valley opens to meadows, flatter slopes and an unconfined floodplain.



*Fraser River Canyon*



*Fraser River at 'River Camp' located downstream of canyon at the Granby Ranch Golf Course*

### **Flow Recommendations:**

***Environmental Flow Methodology:*** A study site was not established within this reach. CWCB flow recommendations are available. Environmental flow target recommendations were originally developed using a study by Chadwick (1985) which included relationships between brown and rainbow trout habitat with flow. Due to the indeterminate relations found in the Chadwick (1985) study for trout spawning habitat with flow, winter flow target ranges have been revised based upon our 2007 PHABSIM analysis for Reach F9, located immediately downstream.

### ***Water Users:***

- Irrigators, municipalities and industry flow-related issues: none reported
- Recreation includes angling, kayaking and rafting. Fraser Canyon is used occasionally for kayaking, when sufficient flows are present. Flows outside of recommended ranges result in somewhat dangerous conditions for floatboating. Access is somewhat limited due to private property ownership along this reach.

### ***Summary of Flows:***

#### Environmental, recommended target flow ranges

- 75 to 100 cfs for April through September
- 40 to 100 cfs for October through March
- No flushing flow recommendation possible. Assume flows recommended for adjacent reaches will be adequate.

#### CWCB flows

- 30 cfs summer (05/15 – 09/30)
- 19 cfs for winter (09/16 – 05/14)

Water Users

- Irrigators, municipalities and industry: One local diverter in this reach could potentially divert up to approximately 24 cfs. This diversion is made in the summer for irrigation and will likely have some return flows. .
- Recreation: Results from private and commercial users are presented below along with minimum, or tolerable flow ranges from American Whitewater for floatboating.
  - Kayaking: 350-900 cfs
  - Rafting: 500-1000 cfs
  - American Whitewater:
    - Fraser Canyon: minimum 700-1300 cfs, optimum 1300 cfs
  - Angling: 60 -200 cfs

**Stream Assessments:** In August 2008 Tetra Tech conducted two stream assessments in F8. These included Stream Reach Inventory /Channel Stability Evaluation (SRI/CSE), and the EPA Habitat Quality Assessment (HQA). The SRI/CSE evaluation scored in the ‘good’ category and the EPA HQA evaluation scored in the ‘suboptimal’ range: Overall, the stream assessments did not reveal any issues of significant concern. Results of both assessments are summarized in the following table. Details and methodology are presented in Appendix A.

Reach F8 Stream Assessments					
Stream Reach Inventory/Channel Stability Evaluation			EPA Habitat Quality Assessment		
Attribute			Attribute	Score	
<b>Upper Banks</b>			<b>Channel</b>		
1	Landform Slope	6	1	Aquatic Habitat Barriers/ Diversion	18
2	Mass wasting hazard	7	2	Aquatic Structure as Cover	18
3	Debris Jam Potential	5	3	Velocity/ Depth Regimes	18
4	Vegetation Cover	9	4	Channel Flow Status	18
		<b>Upper Bank Score:</b>	5	Channel Alteration	15
<b>Lower Banks</b>			6	Frequency of Riffles	18
5	Channel Capacity	1	7	Channel Sinuosity	6
6	Bank Rock Content	2	<b>Channel Score</b>		<b>111</b>
7	Flow obstructors & Deflectors	2	<b>Banks</b>		
8	Cutting	6	8	Bank Stability	18
9	Deposition	4	9	Riparian Vegetation Cover and Disturbance	10
		<b>Lower Bank Score:</b>	10	Riparian Vegetation zone width	10
<b>Channel Bottom</b>			<b>Bank Score</b>		38
10	Rock Angularity	2	<b>Total Score</b>		<b>149</b>
11	Brightness	2	<b>Notes</b>		
12	Consolidation/Particle Packing	4			
13	Bottom size distribution	4			
14	Bed Scour and Deposition	6			
15	Clinging Aquatic Veg	3			
		<b>Channel Bottom Score:</b>			21
		<b>Total Score:</b>			63

**Spawning Observations:** No spawning survey was conducted in Reach F8.

**Hydrologic Records:** No streamflow records are available for reach F8.

**Water Temperature:** F8 is a Tier II stream reach as designated by CDPHE with a chronic temperature standard of 18.2°C MWAT and an acute temperature standard of 23.8°C DM. Although, there is no temperature data available for this reach, temperature data reviewed in reaches F6 and F9 indicate stream temperatures for the Fraser River in this area are generally below the MWAT and DM standards. However, some exceedences have occurred and resulted in placement of F8 on the 303 (d) list of impaired waters for temperature, with a low priority.

**Water Quality:** As of April 2010 this reach of the Fraser River has been placed by the State of Colorado on the 303(d) list for monitoring and evaluation for copper. Available data in reach F6, upstream, shows elevated pH and phosphorus. However, there are no indications this is a concern in F8.

**Water Supply Issues (UPCO):** There are no reported water supply issues under current or future conditions.

**Summary of Results and Additional Remarks:**

1. CWCB flow recommendations are somewhat low compared to the recommended environmental flows. Recommended environmental flow target ranges are commonly available throughout much of the water year.
2. Water temperature and quality appear supportive of a cold-water fishery and stream assessments indicate no significant issues.
3. Flows for water users including recreation are generally adequate.
4. The environmental flows developed from the Chadwick 1985 data fall into line quite well with the recommendations for reaches F6 and F9 made during this study using the 2007 PHABSIM investigations. Likewise, flushing flow recommendations for F6 and F9 should be supportive of the brown and rainbow trout fishery within reach F8.

**Restoration Opportunities:** Implementation of recommendations upstream will benefit F8. Other opportunities are noted below.

- ✓ Explore opportunities to improve public access in F8. This might include trail connect to F7 should public access be improved there as well.

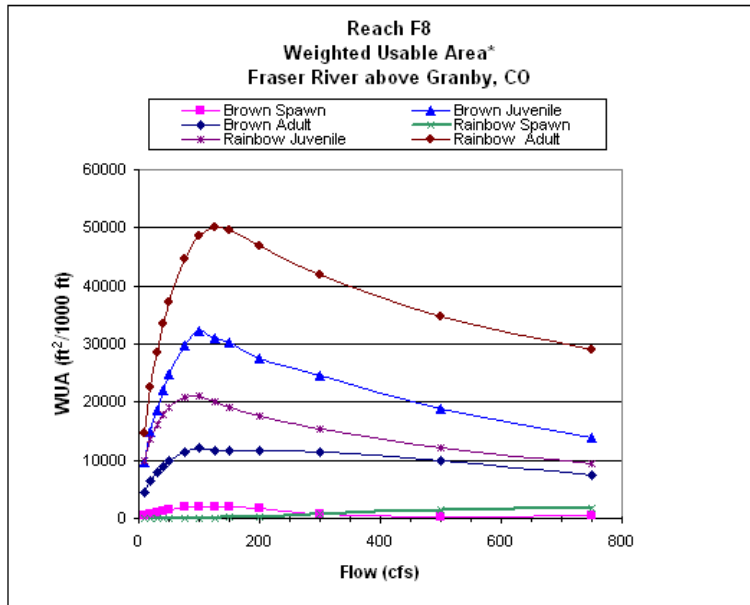
**Monitoring:** Establish and implement a monitoring program. Parameters should include pH and surface water temperature monitoring. Consider the addition of air temperature monitoring. If public access is improved in this reach consider monitoring recreational use, angling in particular.

Support Data

Weighted Useable Area Plots and Tables

Habitat-flow relations for the target species and life stages for Reach F8 developed by Chadwick and Associates, 1986.

Reach F8							
Discharge	Total Area	Brown Spawn	Brown Juvenile	Brown Adult	Rainbow Spawn	Rainbow Juvenile	Rainbow Adult
(cfs)	(ft <sup>2</sup> )	Weighted Useable Area (ft <sup>2</sup> /1000 ft stream length)					
10	43550	431	9655	4363	0	9889	14720
20	56740	730	14962	6508	0	13633	22463
30	61335	900	18672	7963	0	16112	28627
40	65048	1191	21967	9042	0	17805	33381
50	68120	1395	24870	9946	0	19133	37246
75	69989	1890	29747	11429	0	20809	44546
100	71145	2016	32114	12179	0	21073	48608
125	72205	2052	31086	11764	115	20019	50073
150	73347	2019	30270	11711	163	19195	49553
200	76507	1754	27415	11593	330	17707	46829
300	79568	674	24550	11469	666	15466	41809
500	82817	339	18846	9837	1464	12121	34774
750	82074	417	13797	7454	1627	9378	29051



\*Fraser River above Granby (Segment 2, 1978-1985 data collected by Chadwick and Associates)

