



San Joaquin River Major Tributaries Sediment Transport Study

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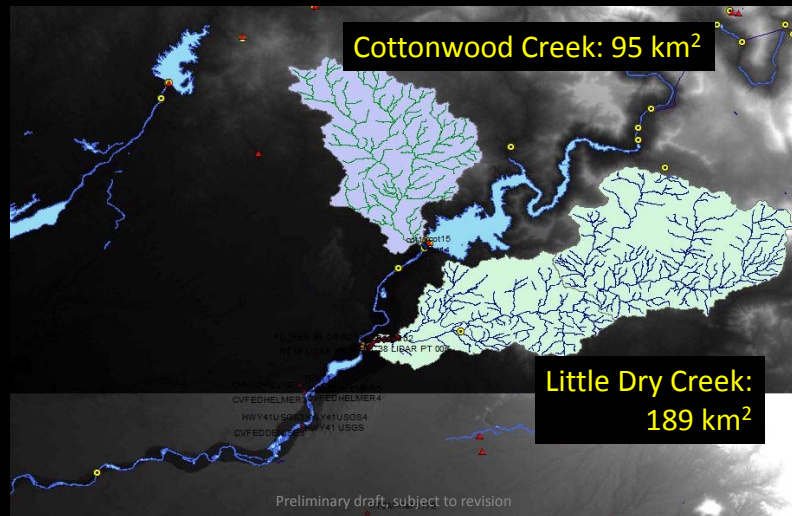
Preliminary draft, subject to revision

Importance

- Cottonwood and Little Dry Creeks are the two largest tributaries entering SJR below Friant Dam
 - Cottonwood Creek: enters ~0.35 km downstream of Friant Dam
 - Little Dry Creek: enters ~10.8 km downstream of Friant Dam
- Not much known about the sediment load or composition from the creeks
 - Have the potential to be an important sediment source
- Likely sediment load: (weathered granitic source rock)
 - Large amounts of fine sediment and sand (detrimental to salmonid habitat)
 - Some amount of gravel (beneficial to salmonids)

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Major tributaries: Large watersheds, enter SJR just below Friant Dam



Methods

Surveying and Monitoring

- Ground-based LiDAR
- Photo points
- Hobo pressure transducers

Sediment

- Grain size
- ISCO autosamplers
- Bunte traps, BLH-84

Modeling

- USGS iRIC hydrodynamic model

Preliminary draft, subject to revision

Methods

Ground-based LiDAR

- rapid 3D acquisition, range of 1.5km but we typically only use points within 100m



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GB LiDAR on Little Dry Creek

Methods

Ground-based LiDAR data:
(looks like photo but they are points)



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Methods

Sediment sampling and monitoring:

- ISCO autosamplers
- Hobo water level recorders
- Bunte traps*, BLH-84
- Surface grain size

Bunte traps



Cottonwood Creek



Cottonwood Creek

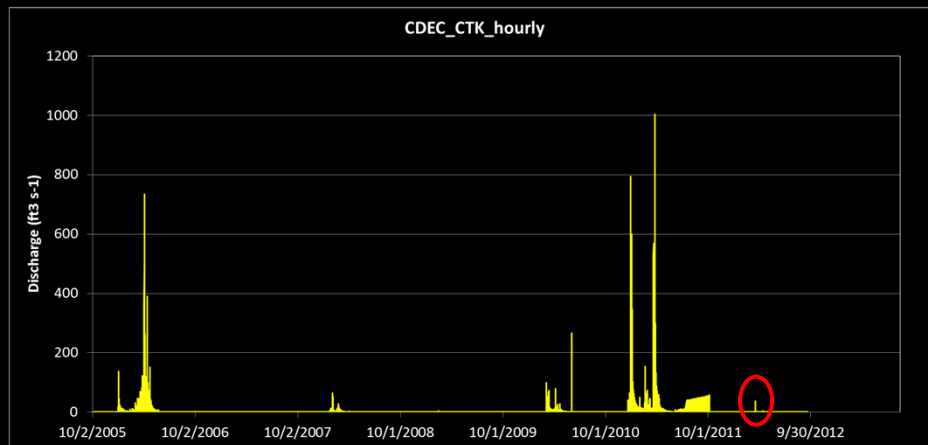


Circles = GB LiDAR locations,
Star = ISCO location

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image from Google Earth

Cottonwood Creek



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Cottonwood Creek



View from Bureau Rd bridge, October 2011,
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Following $\sim 1,004 \text{ ft}^3 \text{ s}^{-1}$ flow in March, 2011

Cottonwood Creek



Preliminary draft, subject to revision
April 2012, vegetation recovering

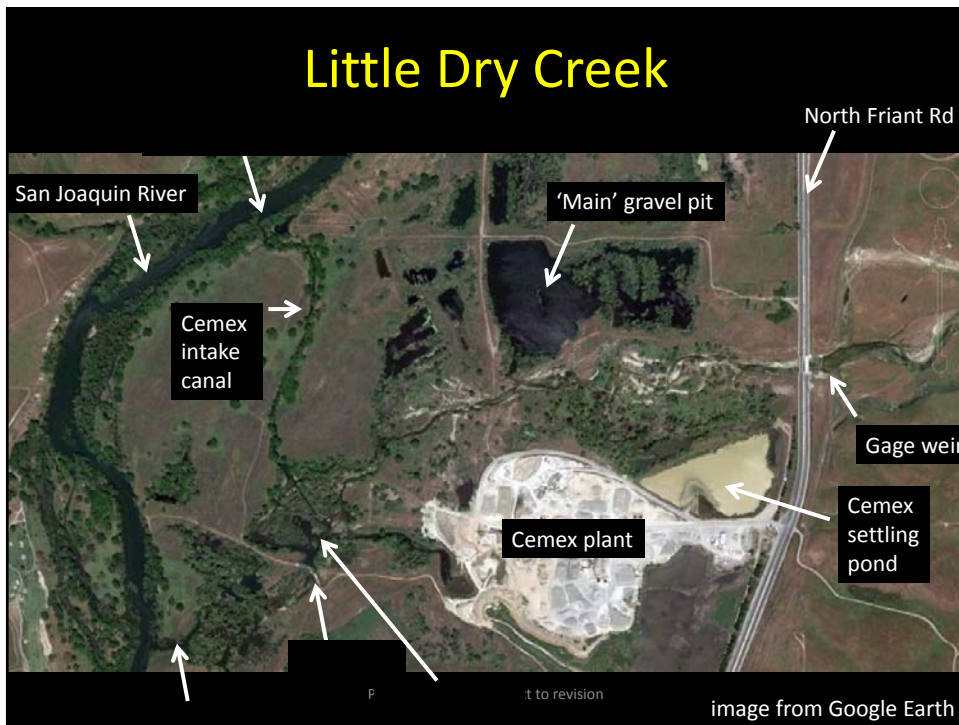
Cottonwood Creek



October 2011, view looking downstream towards Bureau Rd bridge. Note large amounts of vegetation, likely helped by canal seepage

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Little Dry Creek



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image from Google Earth

Little Dry Creek



Looking upstream at North Friant Rd Bridge. Note cobble and gravel bed

Little Dry Creek



Looking upstream at confluence of LDC and gravel pit return flow. Note large amount of sand stored in channel.

Little Dry Creek



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Little Dry Creek



Preliminary draft, subject to revision

Little Dry Creek



Circles = GB LiDAR locations,
Star = ISCO location

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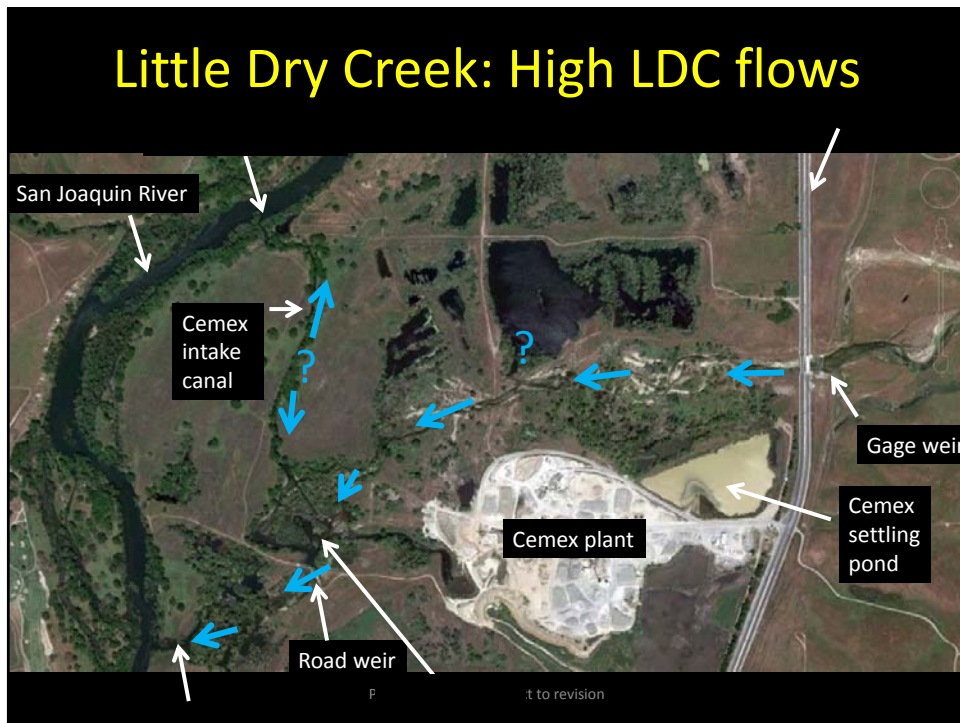
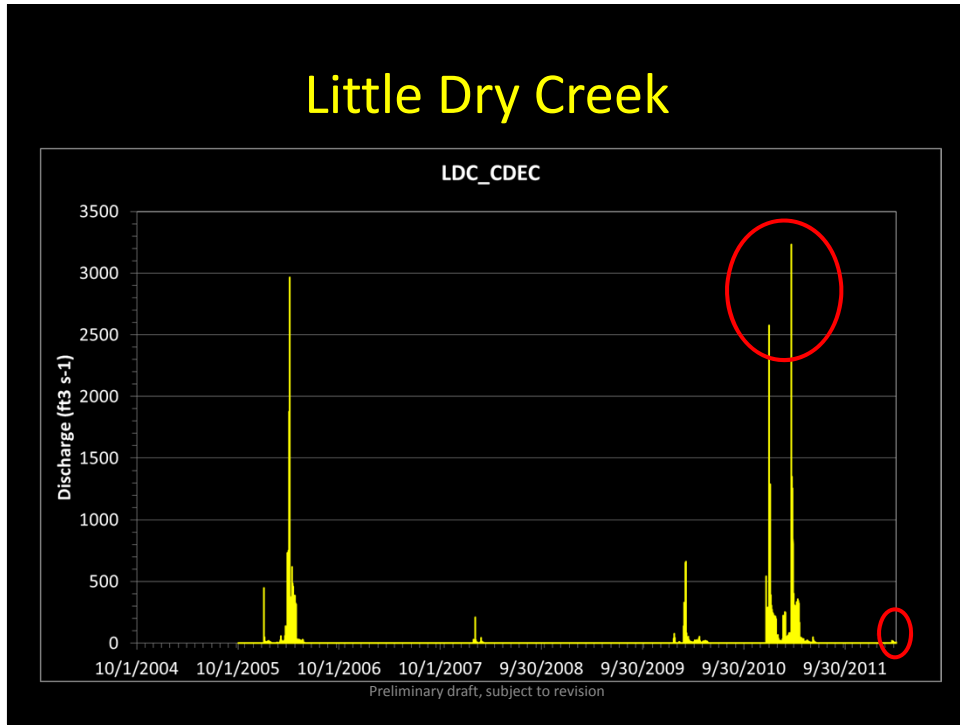
image from Google Earth

Little Dry Creek: summer months



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image from Google Earth



Little Dry Creek



Jan 2011, large amounts of sand deposition, sand splays

Little Dry Creek



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Oct 2011, large successful recruitment of cottonwood seedlings

Little Dry Creek: Low LDC flows



Little Dry Creek





WY10 and 11 flows

